2022 Regional Transportation Plan & Sustainable Communities Strategy

Draft Program Environmental Impact Report
SCH # 2022010019

prepared by

Stanislaus Council of Governments
1111 I Street., #308
Modesto, California 95354
Contact: Emma Goldsmith, Assistant Transportation Planner

prepared with the assistance of

Rincon Consultants, Inc.
7080 N. Whitney Avenue, Suite 101
Fresno, California 93720

June 2022

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Environmental Scientists | Planners | Engineers
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Executive Summary

This document is an Environmental Impact Report (EIR) analyzing the environmental effects of the proposed 2022 Regional Transportation Plan & Sustainable Communities Strategy (2022 RTP/SCS, or Valley Vision 2046). This section summarizes the characteristics of the proposed project, alternatives to the proposed project, and the environmental impacts and mitigation measures associated with the proposed project.

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Project Description

This EIR has been prepared to examine the potential environmental effects of the proposed 2022 Regional Transportation Plan & Sustainable Communities Strategy (hereafter referred to as the 2022 RTP/SCS). The following is a summary of the full project description, which can be found in Chapter 2, *Project Description*.

The proposed 2022 RTP/SCS covers the entire area of Stanislaus County and includes all the incorporated cities and unincorporated communities contained therein. Refer to Figure 2-1 in Chapter 2, *Project Description,* for a map of the project location. Capital improvement projects identified in the 2022 RTP/SCS are located on State highways, county roads and locally owned streets, as well as on transit district property and public utility lands.

Project Objectives

The purpose of the 2022 RTP/SCS is to coordinate and facilitate the programming and budgeting of all transportation facilities and services within Stanislaus County through the year 2046 and demonstrate how the region will integrate transportation and land use planning to meet the greenhouse gas emissions reduction targets established by the California Air Resources Board and in accordance with other State and Federal regulations. It identifies reasonably available sources of funding for transportation. The 2022 RTP/SCS is a plan for improving the quality of life for residents of Stanislaus County by planning for wise transportation investments and informed land use choices. The plan achieves its overall objectives by combining transportation investment and policies with integrated land use strategies that reduce per capita vehicle miles traveled (VMT) and emissions. The project objectives are as follows:

- Provide an efficient, integrated, multi-modal transportation system for the movement of people and goods that enhances the physical, economic, and social environment in the Tulare county region.
- System Performance: Develop an efficient, maintained, and safe circulation network that maximizes circulation, longevity, and fiscal responsibility while minimizing environmental impacts.

- Transit: Provide a safe, secure, coordinated and efficient public transit system that can reasonably meet the needs of residents.
- Aviation: Support development of a regional system of airports that meets the air commerce and general aviation needs of the county.
- Rail: Promote safe, economical, convenient rail systems and schedules that meet the needs of passenger and freight services in the region.
- Goods Movement: Provide a transportation system that efficiently and effectively transports goods to, from, within, and through Tulare County.
- Active Transportation: Improve, enhance, and expand the region's bicycle and pedestrian systems and connectivity to those systems, while keeping them safe and convenient.
- Regional Roads and Corridors: Preserve and enhance regional transportation roads and corridors.
- Air Quality and Greenhouse Gases: Promote the improvement of air quality and GHG reductions through congestion management, coordination of land use, housing, and transportation systems, provision of alternative modes of transportation, and provision of incentives that reduce vehicle miles traveled.
- Public Health: Promote public health in the region by providing opportunities for residents to bicycle and walk to destinations such as home, work, school, medical facilities, and commercial and service businesses.
- TSM Strategies, TDM Measures, TCMS, and ITS Programs: Improve transportation mobility and operations by improving and utilizing TSM strategies, TDM measures, TCMS and ITS programs
- Environmental Justice: Ensure that transportation investments do not discriminate on the basis of race, color, national origin, sex, age or disability.
- Emerging Technologies: Support the development and implementation of emerging technologies in the surface transportation system.
- SCS: Develop an integrated land use plan that meets CARB targets.

Project Characteristics

The most recent RTP/SCS was adopted by StanCOG in 2018 (2018 RTP/SCS). This 2022 update is a technical update which reflects changes in planning assumptions, planning lists, legislative requirements, demographics, local land use policies, and resource constraints while preserving the foundational elements of the 2018 RTP/SCS.

The 2022 RTP/SCS plans how the Stanislaus County Region will meet its transportation needs for the approximately 24-year period from 2022 to 2046, considering existing and projected future land use patterns as well as forecast population and job growth. Continued growth in the region would occur independently with or without implementation of the RTP/SCS. Therefore, the RTP/SCS is intended to accommodate the inevitable growth of the region and distribute growth. The RTP/SCS would not directly increase population; rather, the RTP/SCS intends to provide framework on how to plan for expected growth. The 2022 RTP/SCS plans for approximately $8.6 billion in revenues expected to be available to the region from all transportation funding sources over the course of the planning period. It identifies and prioritizes expenditures of this anticipated funding for transportation projects of all transportation modes: highways, streets and roads, transit, rail, bicycle and pedestrian, as well as transportation demand management measures and intelligent transportation systems.

The 2022 RTP/SCS is based on a preferred land use and transportation scenario (Scenario D, also referred as the "Neighborhood Infill" scenario)[1] which defines a pattern of future growth and transportation system investment for the region emphasizing growth within existing neighborhoods and facilitating the transformation of established neighborhoods over time. The preferred land use scenario principally allocates growth in neighborhood infill areas and center and corridor infill areas, and would encourage development of a diverse range of housing types over time. Under this land use scenario, approximately 51 percent of dwelling unit growth would occur in jobs-rich areas, and approximately 75 percent of dwelling unit growth of occur in low vehicle miles traveled (VMT) areas. 84 percent of growth would consist of infill development. This land use scenario would reduce greenhouse gas emissions by approximately 11.7 percent by 2035, with a minimal amount of farmland impacted or converted to non-agricultural use. Figure 2-2 in Section 2, *Project Description,* shows the 2022 RTP/SCS envisioned land use scenario.

There are four required elements of the RTP (Policy Element, Sustainable Communities Strategy, Financial Element, and Action Element); all of which must be internally consistent. The goals and strategies in the policy element reflect regional priorities for mobility, which are supported by the assumptions in the SCS, and are further reflected in the funding allocations in the financial element. A scenario represents the potential future interaction of these elements. Each land use scenario has been evaluated through a series of metrics to inform policymakers and the public how the scenario meets regional goals and strategies for improvement over current conditions. Each element's relationship to scenario development is discussed in the subheadings below.

Development Patterns

- Infill within downtowns and mixed-use neighborhoods;
- Limited expansion of existing community boundaries; and
- Greater emphasis on growth in downtowns and mixed-use centers.

Complementary Uses

- Compact development within mixed-use centers and in new traditional neighborhoods;
- Increased mix of housing-type options through increased proportion of multifamily housing; and
- Services, employment and housing in proximity.

Development Density

- Average residential density is 15.9 dwelling units per acre;
- Greater percentage of new multifamily, mixed-use housing and duplex/townhomes within and near downtowns and centers;
- Provide a mix of smaller lot single-family and multifamily housing in new neighborhoods;
- Limited large lot single family development; and
- Development occurs at the upper end of general plan densities.

[1] StanCOG staff presented four possible scenarios or transportation futures for consideration as the foundation of the 2022 RTP/SCS during preliminary planning. The approach to the 2022 RTP/SCS places emphasis on continuation of the goals and strategies from the 2018 plan. The 2018 RTP/SCS has provided a guide for specific policy and funding decisions made by the StanCOG Board and informed by committee recommendations and actions since the adoption of the previous RTP/SCS, and so on. The 2022 plan update will continue to serve as the general framework for future Board actions. StanCOG selected Scenario D, the Neighborhood Infill scenario, as the foundational scenario upon which the 2022 RTP/SCS is based, and is comprised of similar land use patterns and growth as included in the 2018 RTP/SCS. The other scenarios are distinguished by varying land use patterns, and investment strategies, which were then modeled for efficiency.

Transit/Transportation Corridors

- Increased investment and availability of alternative modes of travel; and
- Assumes an ACE station in Modesto

The 2022 RTP/SCS is organized into the following chapters:

Chapter 1: Executive Summary. Includes an overview of the RTP/SCS, the preferred scenario and its performance, an explanation of the planning process, and the allocation of transportation funding.

Chapter 2: Introduction. Discusses legal authority, regulatory setting and planning initiatives, and transportation and land use issues related to controlling growth within Stanislaus County. In addition, the chapter discusses the overall purpose of the RTP/SCS, goals and objectives, and outlines the planning process.

Chapter 3: Regional Transportation System. Describes the overall existing conditions of the planning area, which includes roadways, active transportation infrastructure, public transit, and aviation.

Chapter 4: Future Conditions. The chapter continues to discuss potential future transportation possibilities, including the topic of technology trends (topic of transportation as a service, autonomous vehicles, and car sharing). The chapter also discusses land use patterns, demographics such as existing and forecasted population growth, housing needs, and economic and employment conditions. Lastly, the chapter includes the Investment Plan, which describes how the RTP/SCS allocates and applies existing and new sources of revenue, and fiscal constraints.

Chapter 5: Environmental Justice. Analyzes the effect of the RTP/SCS planning and project implementation process on minority and low-income populations, to ensure that no one population is unfairly burdened or rewarded based on transportation investments.

Chapter 6: Scenario Development. Provides a summary of the RTP/SCS intent and the link between land use and transportation planning. This chapter discusses the different scenarios proposed in the planning process, as well as addresses the transportation performance measures which gauge the performance of the RTP.

Chapter 7: Scenario Evaluation. This section discusses the measures used to gauge performance of each scenario and the selection of the preferred scenario.

Chapter 8: Action Plan. This section describes the Investment Plan of the RTP/SCS, which includes the Tier-I Project List highlighting proposed transportation improvement projects. In addition, the section discusses the project selection criteria on how projects were selected.

Chapter 9: Public Outreach. This section discusses the public involvement in the planning and development process of the RTP/SCS.

Of these nine chapters of the 2022 RTP/SCS, the Planning Process, Investment Plan and Transportation Performance Policies (included in Chapters 1, 6, and 8) are the three sections that include provisions with the potential to create physical changes to the environment and will be the primary focus for analysis in this EIR.

Alternatives

As required by the California Environmental Quality Act (CEQA), this EIR examines alternatives to the proposed project. Studied alternatives include the following three alternatives. Based on the alternatives analysis, Alternative 2 was determined to be the environmentally superior alternative.

- **Alternative 1: No Project Alternative** (SCS Scenario A: Stay the Course). The No Project Alternative depicts future growth continuing without reference to any of the Regional Blueprint principles or strategies, such as an emphasis on compact development. This scenario can be considered "status quo." It assumes current sub-regional growth trends continue consistent with growth forecast and continuing split of growth between cities, unincorporated communities, and rural areas. Only transportation projects from the approved 2018 RTP list would be constructed under this alternative.
- **Alternative 2: City Retrofit** (SCS Scenario B: City Retrofit). The City Retrofit Alternative includes a land use scenario which defines a pattern of future growth and transportation system investment for the region emphasizing growth on underutilized land along the region's commercial corridors and downtown areas. The City Retrofit Alternative principally allocates over 90 percent of growth in existing, developed areas, compared to 84 percent for the proposed 2022 RTP/SCS. This is achieved under this alternative by locating new housing along commercial corridors close to existing and future job centers and amenities for daily living. The alternative emphasizes compact development, reducing the need for personal vehicle use, and would minimize impacts to agricultural and rural areas. Growth would be divided between center and corridor infill areas and neighborhood infill areas, with a minimal amount of growth occurring in undeveloped areas. This alternative includes the same list of transportation projects as the proposed 2022 RTP/SCS.

Chapter 6 of the EIR describes these alternatives in further detail and compares their impacts to the proposed project's impacts.

Areas of Known Controversy

The EIR scoping process identified few areas of known controversy for the proposed project. Responses to the Notice of Preparation of a Draft EIR and input received are summarized in Table 1-1 of Chapter 1, *Introduction*.

Issues to be Resolved

Issues to be resolved include the choice among alternatives, and the nature of mitigation measures to be adopted.

Summary of Impacts and Mitigation Measures

Table ES-1 summarizes the direct environmental impacts of the proposed project, proposed mitigation measures, and residual impacts (the impact after application of mitigation, if required). Impacts are categorized as follows:

- **Significant and Unavoidable.** An impact that cannot be reduced to below the threshold level given feasible mitigation measures. Such an impact requires a Statement of Overriding Considerations to be adopted if the proposed project is approved per §15093 of the *State CEQA Guidelines*.
- **Less than Significant with Mitigation Incorporated.** An impact that can be reduced to below the threshold level given feasible mitigation measures.
- **Less than Significant.** An impact that may be adverse but does not exceed the threshold levels and does not require mitigation measures.

- **No Impact:** The proposed project would have no effect on environmental conditions or would reduce existing environmental problems or hazards.

Cumulative impacts of the 2022 RTP/SCS are not summarized Table ES-1. They are evaluated in each resource section of EIR Chapter 4.

Table ES-1 Summary of Environmental Impacts, Mitigation Measures, and Residual Impacts

Impact	Mitigation Measure(s)	Impact
Aesthetic and Visual Resources		
Impact AES-1. The proposed transportation projects and land use projects envisioned under the 2022 RTP/SCS would have a substantial adverse effect on scenic vistas and substantially damage scenic resources within highways identified to have high scenic qualities or designated by the State as eligible scenic highways. Impacts would be significant and unavoidable.	**AES-1(a) Discouragement of Architectural Features that Block Scenic Views.** The implementing agency shall, or can and should, design projects to minimize contrasts in scale and massing between the project and surrounding natural forms and development. Setbacks and acoustical design of adjacent structures shall be preferentially used as mitigation for potential noise impacts arising from increased traffic volumes associated with adjacent land development. The use of sound walls, or any other architectural features that could block views from the scenic highways or other view corridors, shall be discouraged to the extent possible. Where use of sound walls is found to be necessary, walls shall incorporate offsets, accents, and landscaping to prevent monotony. In addition, sound walls shall be complementary in color and texture to surrounding natural features. **AES-1(b) Tree Protection and Replacement.** The implementing agency for new roadways, extensions, and widenings of existing roadways, trails and facility improvements shall, or can and should, avoid the removal of existing mature trees to the extent possible consistent with adopted local City and County policies as applicable. The implementing agency of a particular 2022 RTP/SCS project shall replace any trees lost at a minimum 2:1 basis and incorporate them into the landscaping design for the roadway when feasible. The implementing agency also shall ensure the continued vitality of replaced trees through periodic maintenance.	Significant and Unavoidable
Impact AES-2. The proposed transportation projects and land use patterns envisioned by the proposed 2022 RTP/SCS would in non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site or its surroundings, and in an urbanized area, would conflict with applicable zoning and other regulations governing scenic quality. Impacts would be significant and unavoidable.	**AES-2(a) Recontouring for Adjacent Landforms** Where a particular 2022 RTP/SCS project affects adjacent landforms, the local jurisdiction in which the project is located should ensure that recontouring provides a smooth and gradual transition between modified landforms and existing grade. This requirement can be accomplished through the placement of conditions on the project by the implementing agency during the project specific environmental review. **AES-2(b) Landscaping for Landform Variation.** The local jurisdiction in which a particular project is located should ensure that associated landscape materials and design enhance landform variation, provide erosion control and blend with the natural setting. This requirement can be accomplished through the placement of conditions on the project by the local jurisdiction during individual environmental review. To ensure compliance with approved landscape plans, the implementing agency should provide a performance security equal to the value of the landscaping/irrigation installation. **AES-2(c)Design Measures for Visual Compatibility.** The implementing agency shall, or can and should, require measures that minimize contrasts in scale and massing between the project and surrounding natural forms and developments. Strategies to achieve this include: ▪ Siting or designing projects to minimize their intrusion into important viewsheds; ▪ Avoiding large cuts and fills when the visual environment (natural or urban) would be substantially disrupted; ▪ Ensuring that re-contouring provides a smooth and gradual transition between modified landforms and existing grade; ▪ Developing transportation systems to be compatible with the surrounding environments (e.g., colors and materials of construction material; scale of improvements);	Significant and Unavoidable

Impact	Mitigation Measure(s)	Impact
	▪ Designing and installing landscaping to add natural elements and visual interest to soften hard edges, as well as to restore natural features along corridors where possible after widening, interchange modifications, re-alignment, or construction of ancillary facilities. The implementing agency shall provide a performance security equal to the value of the landscaping/irrigation installation to ensure compliance with landscaping plans; and ▪ Designing new structures to be compatible in scale, mass, character, and architecture with existing structures.	
Impact AES-3. Development of proposed transportation projects and land use patterns under the proposed 2022 RTP/SCS would create a new source of substantial light or glare that would adversely affect daytime or nighttime views in the area. Impacts are significant and unavaoidable.	**AES-3(a) Roadway and Project Lighting.** The implementing shall, or can and should, minimize roadway lighting to the extent possible, consistent with safety and security objectives, and shall not exceed the minimum height requirements of the local jurisdiction in which the project is proposed. This may be accomplished through the use of back shields, hoods, low intensity lighting, and using as few lights as necessary to achieve the goals of the project. As part of planning, design, and engineering for projects, project sponsors shall ensure that projects proposed near light-sensitive uses avoid substantial spillover lighting. Potential design measures include, but are not limited to, the following: ▪ Lighting shall consist of cutoff-type fixtures that cast low-angle illumination to minimize incidental spillover of light into adjacent properties and undeveloped open space. Fixtures that project light upward or horizontally shall not be used. ▪ Lighting shall be directed away from habitat and open space areas adjacent to the project site. ▪ Light mountings shall be downcast, and the height of the poles minimized to reduce potential for backscatter into the nighttime sky and incidental spillover of light onto adjacent private properties and undeveloped open space. Light poles will be 20 feet high or shorter. Luminary mountings shall have non-glare finishes. ▪ Exterior lighting features shall be directed downward and shielded in order to confine light to the boundaries of the subject project. Where more intense lighting is necessary for safety purposes, the design shall include landscaping to block light from sensitive land uses, such as residences. **AES-3(b) Glare Reduction Measures.** Implementing agencies shall, or can and should, minimize and control glare from transportation and infill development projects near glare-sensitive uses through the adoption of project design features such as: ▪ Planting trees along transportation corridors to reduce glare from the sun; ▪ Creating tree wells in existing sidewalks; ▪ Adding trees in new curb extensions and traffic circles; ▪ Adding trees to public parks and greenways; ▪ Landscaping off-street parking areas, loading areas, and service areas; ▪ Limiting the use of reflective materials, such as metal; ▪ Using non-reflective material, such as paint, vegetative screening, matte finish coatings, and masonry; ▪ Screening parking areas by using vegetation or trees; ▪ Using low-reflective glass; and ▪ Complying with applicable general plan policies, municipal code regulations, city or local controls related to glare	Significant and Unavoidable

Impact	Mitigation Measure(s)	Impact
	▪ Tree species planted to comply with this measure shall provide substantial shade cover when mature. Utilities shall be installed underground along these routes wherever feasible to allow trees to grow and provide shade without need for severe pruning.	
Agricultural and Forestry Resources		
Impact AG-1. The proposed transportation improvements and land use scenario envisioned by the 2022 RTP/SCS could result in the conversion of important farmland to non-agricultural uses, or conflict with existing zoning for agriculture or a Williamson Act contract. This would be a significant and unavoidable impact.	**AG-1 Agricultural Land Impact Avoidance and Minimization.** Implementing agencies shall, or can and should, implement measures, where feasible based on project-and site-specific considerations that include, but are not limited to those identified below. ▪ Require project relocation or corridor realignment, where feasible, to avoid Important Farmland, agriculturally zoned land and/or land under Williamson Act contract; ▪ Compensatory mitigation at a minimum 1:1 (impacted: replaced) acreage ratio with Important Farmland of equivalent or better quality; ▪ Require acquisition of conservation easements on land at least equal in quality and size as mitigation for the loss of Important Farmland through an appropriate land trust (e.g., Central Valley Farmland Trust); and/or ▪ Institute new protection of farmland in the project area or elsewhere through the use of long-term restrictions on use, such as 20-year Farmland Security Zone contracts (Government Code Section 51296 et seq.) or 10-year Williamson Act contracts (Government Code Section 51200 et seq.).	
Impact AG-2. The proposed transportation improvements and land use projects envisioned by the 2022 RTP/SCS would not conflict with the existing zoning for forest land, timberland, or timberland production, nor convert forest land to non-forest uses. Impacts	None required.	
Air Quality		
Impact AQ-1. The Proposed 2022 RTP/SCS would conflict with or obstruct the goals of SJVAPCD's 2018 PM2.5. Impacts would be significant and unavoidable.	**AQ-1 PM Emissions Reduction.** The implementing agency shall ensure, to the maximum extent feasible, that the following measures are implemented: a. Support the use of existing air quality and transportation funds and seek additional funds to continue the implementation of the CARB Carl Moyer Program, which is intended to retrofit and replace trucks and locomotives to reduce particulate matter. b. Incentivize the reduction of mobile PM emissions from mobile exhaust and entrained PM sources such as tire wear, brake wear, and roadway dust through funding.	Significant and Unavoidable

Impact	Mitigation Measure(s)	Impact
	c. Hold forums and workshops to encourage land use projects to incorporate transportation demand management (TDM) strategies as part of the project design to reduce the number of vehicular trips across the transportation network. Potential strategies could include ridesharing, carpooling, subsidized public transit, flexible work hours, and parking management measures.	
Impact AQ-2. Construction activities associated with transportation improvements and land use projects envisioned by the 2022 RTP/SCS would result in cumulatively considerable net increase in criteria pollutants for which the project region is in non-attainment under an applicable federal or state ambient air quality standard. This impact would be significant and unavoidable.	**AQ-2(a) Application of SJVAPCD Feasible Mitigation Measures.** For all projects, the implementing agency shall incorporate the most recent SJVAPCD feasible mitigation measures and/or technologies for reducing inhalable particles based on analysis of individual sites and project circumstances. Additional and/or modified measures may be adopted by the SJVAPCD prior to implementation of individual projects under the 2022 RTP/SCS; therefore, the most current list of feasible mitigation measures at the time of project implementation shall be used. The current SJVAPCD feasible mitigation measures include the following (SJVAPCD 2015b): ▪ All disturbed areas, including storage piles, which are not being actively utilized for construction purposes, shall be effectively stabilized of dust emissions using water, chemical stabilizer/suppressant, and/or covered with a tarp or other suitable cover or vegetative ground cover. ▪ All land clearing, grubbing, scraping, excavation, land leveling, grading, cut and fill, and demolition activities shall be effectively controlled of fugitive dust emissions utilizing application of water or by presoaking. ▪ When materials are transported off-site, all material shall be covered, or effectively wetted to limit visible dust emissions, and at least six inches of freeboard space from the top of the container shall be maintained. ▪ Following the addition of materials to, or the removal of materials from, the surface of outdoor storage piles, said piles shall be effectively stabilized of fugitive dust emissions utilizing sufficient water or chemical stabilizer/suppressant. ▪ An owner/operator of any site with 150 or more vehicle trips per day, or 20 or more vehicle trips per day by vehicles with three or more axles shall implement measures to prevent carryout and trackout. ▪ The hours of operation of heavy duty equipment and/or the amount of equipment in use shall be limited to the minimum amount necessary to complete the project. **AQ-2(b) Diesel Equipment Emissions Standards** The implementing agency shall ensure, to the maximum extent feasible, that diesel construction equipment meeting CARB Tier 4 emission standards for off-road heavy-duty diesel engines is used. If use of Tier 4 equipment is not feasible, diesel construction equipment meeting Tier 3 (or if infeasible, Tier 2) emission standards shall be used. These measures shall be noted on all construction plans, and the implementing agency shall perform periodic site inspections. **AQ-2(c) Electric Construction Equipment.** The implementing agency shall ensure that, to the extent feasible, construction equipment utilizes electricity from power poles rather than temporary diesel power generators and/or gasoline power generators.	Significant and Unavoidable

Impact	Mitigation Measure(s)	Impact
Impact AQ-3. Operation of the proposed transportation improvements and land use projects envisioned by the 2022 RTP/SCS would result in a cumulatively considerable net increase of PM2.5. Impacts would be significant and unavoidable.	**AQ-3 Long-term Regional Operational Emissions.** Implementing agencies can and should implement long-term operational emissions reduction measures. Such reduction measures include the following: ▪ Require that all interior and exterior architectural coatings for all developments utilize coatings following SJVAPCD Rule 4601, Architectural Coatings. ▪ Increase building envelope energy efficiency standards in excess of applicable building standards and encourage new development to achieve zero net energy use. ▪ Install energy-efficient appliances, interior lighting, and building mechanical systems. Encourage installation of solar panels for new residential and commercial development. ▪ Locate sensitive receptors more than 500 feet of a freeway, 500 feet of urban roads with 100,000 vehicles/day, or rural roads with 50,000 vehicles/day. ▪ Locate sensitive receptors more than 1,000 feet of a major diesel rail service or railyards. Where adequate buffer cannot be implemented, implement the following: ▪ Install air filtration (as part of mechanical ventilation systems or stand-alone air cleaners) to indoor reduce pollution exposure for residents and other sensitive populations in buildings that are close to transportation network improvement projects. ▪ Use air filtration devices rated MERV-13 or higher. ▪ Plant trees and/or vegetation suited to trapping roadway air pollution and/or sound walls between sensitive receptors and the pollution source. The vegetation buffer should be thick, with full coverage from the ground to the top of the canopy Install higher efficacy public street and exterior lighting. ▪ Use daylight as an integral part of lighting systems in buildings. ▪ Use passive solar designs to take advantage of solar heating and natural cooling. ▪ Install light colored “cool” roofs, cool pavements. ▪ Install solar and tankless hot water heaters. ▪ Exclude wood-burning fireplaces and stoves. ▪ Incorporate design measures and infrastructure that promotes safe and efficient use of alternative modes of transportation (e.g., neighborhood electric vehicles, bicycles) pedestrian access, and public transportation use. Such measures may include incorporation of electric vehicle charging stations, bike lanes, bicycle-friendly intersections, and bicycle parking and storage facilities. ▪ Incorporate design measures that promote ride sharing programs (e.g., by designating a certain percentage of parking spaces for ride sharing vehicles, designating adequate passenger loading and unloading and waiting areas for ride sharing vehicles, and providing a web site or message board for coordinating rides).	Significant and Unavoidable

Impact	Mitigation Measure(s)	Impact
Impact AQ-4. The proposed transportation improvements and land use projects envisioned by the RTP/SCS would expose sensitive receptors to substantial particulate matter pollutant concentrations. Impacts would be significant and unavoidable.	**AQ-1 PM Emissions Reduction.** The implementing agency shall ensure, to the maximum extent feasible, that the following measures are implemented: a. Support the use of existing air quality and transportation funds and seek additional funds to continue the implementation of the CARB Carl Moyer Program, which is intended to retrofit and replace trucks and locomotives to reduce particulate matter. b. Incentivize the reduction of mobile PM emissions from mobile exhaust and entrained PM sources such as tire wear, brake wear, and roadway dust through funding. c. Hold forums and workshops to encourage land use projects to incorporate transportation demand management (TDM) strategies as part of the project design to reduce the number of vehicular trips across the transportation network. Potential strategies could include ridesharing, carpooling, subsidized public transit, flexible work hours, and parking management measures.	Significant and Unavoidable
Impact AQ-5. The transportation improvements and land use projects envisioned by the proposed 2022 RTP/SCS would expose sensitive receptors to substantial TAC concentrations. Impacts would be significant and unavoidable.	▪ **AQ-4 Health Risk Reduction Measures.** Transportation project sponsor agencies shall implement the following measures: ▪ During project-specific design and CEQA review, the potential localized particulate (PM10 and PM2.5) impacts and their health risks shall be evaluated for individual projects. Localized particulate matter concentrations shall be estimated using procedures and guidelines consistent with U.S. EPA 2015's Transportation Conformity Guidance for Quantitative Hot-Spot Analyses in PM2.5 and PM10 Nonattainment and Maintenance Areas. If required based on the project-level hotspot analysis, project-specific mitigation shall be added to the project design concept or scope to ensure that local particulate (PM10 and PM2.5) emissions would not reach a concentration at any location that would cause estimated cancer risk to exceed the SJVAPCD threshold of 20 in one million. Per the U.S. EPA guidance (2015), potential mitigation measures to be considered may include but shall not be limited to: providing a retrofit program for older higher emitting vehicles, anti-idling requirements or policies, controlling fugitive dust, routing traffic away from populated zones and replacing older buses with cleaner buses. These measures can and should be implemented to reduce localized particulate impacts as needed. ▪ Retain a qualified air quality consultant to prepare a health risk assessment (HRA) in accordance with CARB and OEHHA requirements to determine the exposure of nearby residents to TAC concentrations. ▪ If impacts result in increased risks to sensitive receptors above significance thresholds, plant trees and/or vegetation suited to trapping TACs and/or sound walls between sensitive receptors and the pollution source. ▪ In addition, consistent with the general guidance contained in CARB's Air Quality and Land Use Handbook (2005) and Technical Advisory on Strategies to Reduce Air Pollution Exposure Near High-Volume Roadways (2017), appropriate and feasible measures shall be incorporated into project building design for land use projects including residential, school and other sensitive uses located within 500 feet (or other appropriate distance as determined by the lead agency) of freeways, heavily travelled arterials, railways and other sources of diesel particulate matter, including roadways experiencing significant vehicle delays. The appropriate measures shall include one or more of the following methods, as appliable and as determined by a qualified professional. The implementing agency shall	Significant and Unavoidable

Impact	Mitigation Measure(s)	Impact
	incorporate health risk reduction measures based on an analysis of individual sites and project circumstances. These measures may include: ▪ Avoid siting new sensitive land uses within 500 feet of a freeway or railway. ▪ Require development projects for new sensitive land uses to be designed to minimize exposure to roadway-related pollutants to the maximum extent feasible through inclusion of design components including air filtration and physical barriers. ▪ Do not locate sensitive receptors near the entry and exit points of a distribution center. ▪ Locate structures and outdoor living areas for sensitive uses as far as possible from the source of emissions. As feasible, locate doors, outdoor living areas and air intake vents primarily on the side of the building away from nearby high volume roadways or other pollution source. As feasible, incorporate dense, tiered vegetation that regains foliage year-round and has a long life span between the pollution source and the project. ▪ Maintain a 50-foot buffer from a typical gas dispensing facility (under 3.6 million gallons of gas per year). ▪ Install, operate and maintain in good working order a central heating and ventilation (HV) system or other air take system in the building, or in each individual residential unit, that meets the efficiency standard of the MERV 13. The HV system should include the following features: ▪ Installation of a high efficiency filter and/or carbon filter-to-filter particulates and other chemical matter from entering the building. ▪ Use of either HEPA filters or ASHRAE 85 percent supply filters. ▪ Completion of ongoing maintenance. ▪ Retain a qualified HV consultant or Home Energy Rating Systems rater during the design phase of the project to locate the HV system based on exposure modeling from the mobile and/or stationary pollutant sources. ▪ Maintain positive pressure within the building. ▪ Achieve a performance standard of at least one air exchange per hour of fresh outside filtered air. ▪ Achieve a performance standard of at least four air exchanges per hour of recirculation. Achieve a performance standard of 0.25 air exchanges per hour of unfiltered infiltration if the building is not positively pressurized. ▪ Require project owners to provide a disclosure statement to occupants and buyers summarizing technical studies that reflect health concerns about exposure to highway/freeway exhaust emissions.	
Impact AQ-6. Construction of the proposed transportation improvements and land use projects envisioned by the 2022 RTP/SCS would not result in other emissions (such as those leading to odors) adversely affecting a substantial number of people.	**None required.**	Less than significant.

Impact	Mitigation Measure(s)	Impact
Impacts would be less than significant.		
Biological Resources		
Impact BIO-1. Implementation of transportation projects and the land use scenario envisioned by the 2022 RTP/SCS would have a substantial adverse effect, either through habitat modifications, on species identified as candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service. Impacts would be significant and unavoidable.	**BIO-1(a) Biological Resources Screening and Assessment.** The implementing agencies shall, or can and should, implement the following measures during CEQA review of projects implementing the proposed 2022 RTP/SCS. On a project-by-project basis, a preliminary biological resource screening shall be performed as part of the environmental review process to determine whether the project has any potential to impact biological resources. If it is determined that the project has no potential to impact biological resources, no further action is required. If the project would have the potential to impact biological resources, prior to construction, a qualified biologist shall conduct a biological resources assessment to document the existing biological resources within the project footprint plus a buffer and to determine the potential impacts to those resources. The biological resources assessment shall evaluate the potential for impacts to all biological resources including, but not limited to: special-status species, nesting birds, wildlife movement, sensitive plant communities, critical habitat, Essential Fish Habitat, and other resources judged to be sensitive by local, state, and/or federal agencies. Pending the results of the biological resources assessment, design alterations, further technical studies (i.e., protocol surveys) and/or consultations with the USFWS, CDFW and/or other local, state, and federal agencies may be required. If the project cannot be designed without complete avoidance, the sponsor agency shall coordinate with the appropriate regulatory agency (i.e., USFWS, NMFS, CDFW, USACE) to obtain regulatory permits and implement project - specific mitigation prior to any construction activities. The following mitigation measures [BIO-1(b) through BIO-1(j)] shall be incorporated only as applicable into the biological resources assessment and/or the project CEQA document for projects where specific resources are present or may be present and impacted by the project. Note that specific surveys described in the mitigation measures below may be completed as part of the biological resources assessment where suitable habitat is present. The results of the biological resources screening and assessment shall be provided to the implementing agency for review and approval. **BIO-1(b) Special-status Plant Species Surveys.** If completion of the project-specific biological resources assessment determines that special-status plant species have potential to occur on-site, surveys for special-status plants shall be completed prior to any vegetation removal, grubbing, or other construction activity of each project (including staging and mobilization). The surveys shall be floristic in nature and shall be seasonally timed to coincide with the target species identified in the project-specific biological resources assessment. All plant surveys shall be conducted by a qualified biologist approved by the implementing agency no more than two years prior to project implementation. All special-status plant species identified on-site shall be mapped onto a site-specific aerial photograph or topographic map. Surveys shall be conducted in accordance with the most current protocols established by the CNPS, CDFW and/or USFWS. A report of the survey results shall be submitted to the implementing agency for review. If special-status plant species are identified, mitigation measure BIO-1(c) shall apply. **BIO-1(c) Special-status Plant Species Avoidance, Minimization, and Mitigation.** If state or federally listed and/or CRPR 1 and 2 species are found during special-status plant surveys [pursuant to mitigation measure BIO-1(b)], then the project shall be re-designed to avoid impacting these plant species to the maximum extent feasible. Occurrences of these species that are not within the immediate disturbance footprint but are located within 50 feet of disturbance	Significant and Unavoidable

Impact	Mitigation Measure(s)	Impact
	limits shall have bright orange protective fencing installed at least 30 feet beyond their extent, or other distance as approved by a qualified biologist, to protect them from harm. If CRPR 3 and 4 species are found, the biologist shall evaluate to determine if they meet criteria to be considered special-status, and if so, the same process as identified for CRPR 1 and 2 species shall apply. If special-status plants species cannot be avoided and would be impacted by a project implemented under the 2022 RTP/SCS, all impacts shall be mitigated at a minimum ratio of 1:1 (number of acres or individuals restored to number of acres or individuals impacted) for each species as a component of habitat restoration. A restoration plan shall be prepared and submitted to the implementing agency. **BIO-1(d) Endangered/Threatened Species Habitat Assessment and Protocol Surveys.** If the results of the biological resources assessment determine that suitable habitat may be present for any such species, protocol habitat assessments/surveys shall be completed in accordance with CDFW and/or USFWS/NMFS protocols prior to issuance of any construction permits/project approvals. Alternatively, in lieu of conducting protocol surveys, the implementing agency may choose to assume presence within the project footprint and proceed with development of appropriate avoidance measures, consultation, and permitting, as applicable. If the target species is detected during protocol surveys, or protocol surveys are not conducted and presence assumed based on suitable habitat, mitigation measure BIO-1(e) shall apply. **BIO-1(e) Endangered/Threatened Species Avoidance and Compensatory Mitigation.** If habitat is occupied or presumed occupied by federal and/or state listed species and would be impacted by the project, the implementing agency shall redesign the project in coordination with a qualified biologist to avoid impacting occupied/presumed occupied habitat to the extent feasible. If occupied or presumed occupied habitat cannot be avoided, the implementing agency shall estimate the total acreages for habitat that would be impacted prior to the issuance of construction permits/approvals. Compensatory mitigation shall be achieved through purchase of credits at a USFWS, NMFS and/or CDFW approved conservation bank if available for the affected species, and/or through providing compensatory mitigation to offset impacts to federal and/or state listed species habitat. Compensatory mitigation shall be provided at an appropriate ratio to fully offset project impacts, as determined by a qualified biologist for permanent impacts. Compensatory mitigation may be combined/nested with special-status plant species and sensitive community restoration where applicable. Temporary impact areas shall be restored to pre-project conditions. If on and/or off-site compensatory mitigation sites are identified, the implementing agency shall retain a qualified biologist to prepare a Habitat Mitigation and Monitoring Plan (HMMP) to ensure the success of compensatory mitigation sites that are to be conserved for compensation of permanent impacts to federal and/or state listed species. The HMMP shall identify long term site management needs, routine monitoring techniques, techniques, and success criteria, and shall determine if the conservation site has restoration needs to function as a suitable mitigation site. If restoration is required on the conservation site, the HMMP shall contain the restoration components outlined under the Restoration Plan listed in measure BIO-1(c). The HMMP shall be submitted to the implementing agency.	

Impact	Mitigation Measure(s)	Impact
	BIO-1(f) Endangered/Threatened Species Avoidance and Minimization. The following measures shall be applied to aquatic and terrestrial species, where appropriate. Project sponsors shall select from these measures as appropriate depending on site conditions, the species with potential for occurrence, and the results of the biological resources screening and assessment (measure BIO-1[a]). ▪ Preconstruction surveys for federal and/or state listed species with potential to occur shall be conducted where suitable habitat is present by a qualified biologist not more than 48 hours prior to the start of construction activities. The survey area shall include the proposed disturbance area and all proposed ingress/egress routes, plus a 100-foot buffer. If any life stage of federal and/or state listed species is found within the survey area, the appropriate measures in the BO or Habitat Conservation Plan(HCP)/Incidental Take Permit (ITP) issued by the USFWS/NMFS (relevant to federal listed species) and/or the ITP issued by the CDFW (relevant to state listed species) shall be implemented; or if such guidance is not in place for the activity, the USFWS, NMFS and/or CDFW shall be consulted to determine the appropriate course of action. The results of the pre-construction surveys shall be submitted to the implementing agency for review and approval prior to start of construction. ▪ Ground disturbance shall be limited to the minimum necessary to complete the project. The project limits of disturbance shall be flagged. Areas of special biological concern within or adjacent to the limits of disturbance shall have highly visible orange construction fencing installed between said area and the limits of disturbance. ▪ All projects occurring within/adjacent to aquatic habitats (including riparian habitats and wetlands) shall be completed between April 1 and October 31, to avoid impacts to sensitive aquatic species. ▪ All projects occurring within or adjacent to sensitive habitats that may support federally and/or state endangered/threatened species shall have a qualified biologist present during all initial ground disturbing/vegetation clearing activities. Once initial ground disturbing/vegetation clearing activities have been completed, said biologist shall conduct daily pre-activity clearance surveys for endangered/threatened species. Alternatively, and upon approval of the CDFW and/or USFWS or as outlined in project permits, said biologist may conduct site inspections at a minimum of once per week to ensure all prescribed avoidance and minimization measures are begin fully implemented. ▪ No endangered/threatened species shall be captured and relocated without authorization from the CDFW and/or USFWS. ▪ If pumps are used for dewatering activities, all intakes shall be completely screened with wire mesh not larger than five millimeters to prevent animals from entering the pump system. ▪ If at any time during construction of the project an endangered/threatened species enters the construction site or otherwise may be impacted by the project, all project activities shall cease. At that point, the USFWS, NMFS and/or CDFW shall be consulted to determine the appropriate course of action, or the appropriate measures implemented in accordance with the BO or HCP/ITP issued by the USFWS (relevant to federal listed species) and/or the ITP issued by the CDFW (relevant to state listed species) and work can then continue as guided by those documents and the agencies as appropriate.	

Impact	Mitigation Measure(s)	Impact
	▪ All vehicle maintenance/fueling/staging shall occur not less than 100 feet from any riparian habitat or water body. Suitable containment procedures shall be implemented to prevent spills. A minimum of one spill kit shall be available at each work location near riparian habitat or water bodies. ▪ No equipment shall be permitted to enter wetted portions of any affected drainage channel. ▪ All equipment operating within streambeds (restricted to conditions in which water is not present) shall be in good conditions and free of leaks. Spill containment shall be installed under all equipment staged within stream areas and extra spill containment and clean up materials shall be located in close proximity for easy access. ▪ If project activities could degrade water quality, water quality sampling shall be implemented to identify the pre-project baseline, and to monitor during construction for comparison to the baseline. ▪ At the end of each workday, excavations shall be secured with cover or a ramp shall be provided to prevent wildlife entrapment. ▪ All trenches, pipes, culverts, or similar structures shall be inspected for animals prior to burying, capping, moving, or filling. **BIO-1(g) Non-Listed Special-status Animal Species Avoidance and Minimization.** Depending on the species identified in the biological resources screening assessment (measure BIO-1[a]), measures shall be selected from among the following to reduce the potential for impacts to non-listed special-status animal species: ▪ Preconstruction clearance surveys shall be conducted within 14 days prior to the start of construction (including staging and mobilization). The surveys shall cover the entire disturbance footprint plus a minimum 100-foot buffer and shall identify all special-status animal species that may occur on-site. All non-listed special-status species shall be relocated from the site either through direct capture or through passive exclusion. A report of the preconstruction survey shall be submitted to the implementing agency for their review and approval prior to the start of construction. ▪ A qualified biologist shall be present during all initial ground disturbing activities, including vegetation removal, to recover special-status animal species unearthed by construction activities. ▪ Upon completion of the project, a qualified biologist shall prepare a final compliance report documenting all compliance activities implemented for the project, including the preconstruction survey results. The report shall be submitted within 30 days of completion of the project. ▪ If special-status bat species may be present and impacted by the project, within 30 days of the start of construction a qualified biologist shall conduct presence/absence surveys for special-status bats, in consultation with the CDFW, where suitable roosting habitat is present. Surveys shall be conducted using acoustic detectors and by searching tree cavities, crevices, and other areas where bats may roost. If active bat roosts or colonies are present, the biologist shall evaluate the type of roost to determine the next step. ▪ If a maternity colony is present, all construction activities shall be postponed within a 250-foot buffer around the maternity colony until it is determined by a qualified biologist that the young have dispersed or as recommended by CDFW through consultation. Once it has been determined that the roost is clear of bats, the roost shall be removed immediately.	

Impact	Mitigation Measure(s)	Impact
	▪ If a roost is determined by a qualified biologist to be used by a large number of bats (large hibernaculum), alternative roosts, such as bat boxes if appropriate for the species, shall be designed and installed near the project site. The number and size of alternative roosts installed will depend on the size of the hibernaculum and shall be determined through consultations with the CDFW. ▪ If other active roosts are located, exclusion devices such as valves, sheeting or flap-style one-way devices that allow bats to exit but not re-enter roosts discourage bats from occupying the site. ▪ **BIO-1(h) Preconstruction Surveys for Nesting Birds.** The implementing agencies shall, or can and should, implement the following measures during CEQA review of projects implementing the proposed 2022 RTP/SCS. For construction activities occurring during the nesting season (generally February 1 to September 15), surveys for nesting birds covered by the CFGC, the Migratory Bird Treaty Act, and Bald and Golden Eagle Protection Act shall be conducted by a qualified biologist no more than 30 days prior to vegetation removal activities. A qualified biologist shall conduct preconstruction surveys for raptors. The survey for the presence of bald and golden eagles, shall cover all areas within of the disturbance footprint plus a one-mile buffer where access can be secured. The survey area for all other nesting bird and raptor species shall include the disturbance footprint plus a 300-foot and 500-foot buffer, respectively. If active nests (nests with eggs or chicks) are located, the qualified biologist shall establish an appropriate avoidance buffer ranging from 50 to 300 feet based on the species biology and the current and anticipated disturbance levels occurring in vicinity of the nest. The objective of the buffer shall be to reduce disturbance of nesting birds. All buffers shall be marked using high-visibility flagging or fencing, and, unless approved by the qualified biologist, no construction activities shall be allowed within the buffers until the young have fledged from the nest or the nest fails. For bald or golden eagle nests identified during the preconstruction surveys, an avoidance buffer of up to one mile shall be established on a case-by-case basis in consultation with the USFWS and CDFW. The size of the buffer may be influenced by the existing conditions and disturbance regime, relevant landscape characteristics, and the nature, timing, and duration of the expected disturbance. The buffer shall be established between February 1 and September 15; however, buffers may be relaxed earlier than September 15 if a qualified ornithologist determines that a given nest has failed or that all surviving chicks have fledged, and the nest is no longer in use. A report of these preconstruction nesting bird surveys and nest monitoring (if applicable) shall be submitted to the implementing agency for review and approval prior to the start of construction. **BIO-1(i) Fence and Signpost Restriction.** Any fencing posts or signs installed temporarily or permanently throughout the course of the project shall have the top three post holes covered or filled with screws or bolts to prevent the entrapment of wildlife, specifically the talons of birds of prey. Also, fencing shall incorporate wildlife friendly design elements, such as smooth wires and having a 6-inch or greater gap above grade. Fencing shall also be designed to be wildlife friendly (e.g., smooth top wire, smooth bottom wire at 6 inches above grade, etc.). **BIO-1(j) Worker Environmental Awareness Program (WEAP).** The implementing agencies shall, or can and should, implement the following measures during CEQA review of projects implementing the proposed 2022 RTP/SCS. Prior to	

Impact	Mitigation Measure(s)	Impact
	initiation of construction activities (including staging and mobilization), all personnel associated with project construction shall attend WEAP training, conducted by a qualified biologist, to aid workers in recognizing special-status resources that may occur in the project area. The specifics of this program shall include identification of the sensitive species and habitats, a description of the regulatory status and general ecological characteristics of sensitive resources, and review of the limits of construction and mitigation measures required to reduce impacts to biological resources within the work area. A fact sheet conveying this information shall also be prepared for distribution to all contractors, their employers, and other personnel involved with construction of the project. All employees shall sign a form documenting that they have attended the WEAP and understand the information presented to them.	
Impact BIO-2. Implementation of the transportation projects and the land use scenario envisioned by the 2022 RTP/SCS would result in substantial adverse impacts on sensitive habitats, including sensitive natural communities, and federally protected wetlands. This impact would be significant and unavoidable.	**BIO-2(a) Aquatic Resources Jurisdictional Delineation and Impact Avoidance.** The implementing agencies shall, or can and should, implement the following measures during CEQA review of projects implementing the proposed 2022 RTP/SCS. If the results of measure BIO-1(a) indicates projects implemented under the proposed 2022 RTP/SCS occur within or adjacent to wetland, drainages, riparian habitats, or other areas that may fall under the jurisdiction of the CDFW, USACE, and/or RWQCB, a qualified biologist shall complete an aquatic resources delineation in accordance with the requirement set forth by each agency. The result shall be submitted to the implementing agency, USACE, RWQCB, and/or CDFW, as appropriate, for review and approval, and the project shall be designed to avoid and minimize impacts to jurisdictional areas to the extent feasible. The delineation shall serve as the basis to identify potentially jurisdictional areas to be protected during construction, through implementation of the avoidance and minimization identified in measure BIO-2(f). **BIO-2(b) Wetland, Drainages, and Riparian Habitat Restoration.** The implementing agencies shall, or can and should, implement the following measures during CEQA review of projects implementing the proposed 2022 RTP/SCS. Unavoidable impacts to jurisdictional wetlands, drainages, and riparian habitat shall be mitigated at an appropriate ratio to fully offset project impacts, as determined by a qualified biologist retained by the implementing agency and shall occur on-site or as close to the impacted habitat as possible. A mitigation and monitoring plan consistent with regulatory agency requirements shall be developed by a qualified biologist and submittal to the regulatory agency overseeing the project for approval. Alternatively, mitigation shall be accomplished through purchase of credits from an approved wetlands mitigation bank. **BIO-2(c) Landscaping Plan.** If landscaping is proposed for a specific project, a qualified biologist/landscape architect retained by the implementing agency shall prepare a landscape plan. Drought tolerant, locally native plant species shall be used. Noxious, invasive and/or non-native plant species that are recognized on the Federal Noxious Weed List, California Noxious Weeds List and/or California Invasive Plant Council Inventory shall not be permitted. Species selected for planting shall be regionally appropriate native species that are known to occur in the adjacent native habitat types. **BIO-2(d) Sensitive Natural Community Avoidance and Mitigation.** If the results of measure BIO-1(a) indicates projects implemented under the proposed 2022 RTP/SCS would impact sensitive natural communities, the implementing agency shall avoid impacts to sensitive natural communities through final project design modifications if feasible.	Significant and unavoidable

Impact	Mitigation Measure(s)	Impact
	If the implementing agency determines that sensitive natural communities cannot be avoided, impacts shall be mitigated on-site or offsite at an appropriate ratio to fully offset project impacts, as determined by a qualified biologist based on any applicable resource agency guidelines. Temporarily impacted areas shall be restored to pre-project conditions. A Restoration Plan shall be developed by a qualified biologist and submitted to the implementing agency. **BIO-2(e) Invasive Weed Prevention and Management Program.** Prior to start of construction for each project that occurs within or adjacent to native habitats, an Invasive Weed Prevention and Management Program shall be developed by a qualified biologist retained by the implementing agency to prevent invasion of native habitat by non-native plant species. The plan shall be submitted to the implementing agency for review and approval. A list of target species shall be included, along with measures for early detection and eradication. The plan, which shall be implemented by the implementing agency, shall also include, but not be limited to, the following measures to prevent the introduction of invasive weed species: ▪ During construction, limit the use of imported soils for fill. If the use of imported fill material is necessary, the imported material must be obtained from a source that is known to be free of invasive plant species. ▪ To minimize colonization of disturbed areas and the spread of invasive species, the contractor shall stockpile topsoil and redeposit the stockpiled soil after construction or transport the topsoil to a permitted landfill for disposal. ▪ All erosion control materials, including straw bales, straw wattles, or mulch used on-site must be free of invasive species seed. ▪ Exotic and invasive plant species shall be excluded from any erosion control seed mixes and/or landscaping plant palettes associated with the proposed project ▪ All disturbed areas shall be hydroseeded with a mix of locally native species upon completion of work in those areas. **BIO-2(f) Wetlands, Drainages, and Riparian Habitat Best Management Practices During Construction.** The following best management practices shall be required by the implementing agency for development within or adjacent to wetlands, drainages, or riparian habitat: ▪ Access routes, staging and construction areas shall be limited to the minimum area necessary to achieve the project goal and minimize impacts to other waters including locating access routes and ancillary construction areas outside of jurisdictional areas. ▪ To control sedimentation during and after project implementation, appropriate erosion control materials shall be deployed to minimize adverse effects on jurisdictional areas in the vicinity of the project. ▪ Project activities within the jurisdictional areas should occur during the dry season (typically between June 1 and November 1) in any given year, or as otherwise directed by the regulatory agencies. ▪ During construction, no litter or construction debris shall be placed within jurisdictional areas. All such debris and waste shall be picked up daily and properly disposed of at an appropriate site.	

Impact	Mitigation Measure(s)	Impact
	▪ Raw cement, concrete, or washings thereof, asphalt, paint or other coating material, oil or other petroleum products, or any other substances which could be hazardous to aquatic species resulting from project related activities, shall be prevented from contaminating the soil and/or entering wetlands, drainages, or riparian habitat. ▪ All refueling, maintenance and staging of equipment and vehicles shall occur at least 100 feet from bodies of water and in a location where a potential spill would not drain directly toward aquatic habitat (e.g., on a slope that drains away from the water source). Prior to the onset of work activities, a plan must be in place for prompt and effective response to any accidental spills.	
Impact BIO-3. Implementation of the transportation projects and the land use scenario envisioned by the 2022 RTP/SCS would interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites. This impact would be significant and unavoidable.	**BIO-3(a) Project Design for Wildlife Connectivity.** All projects including long segments of fencing and lighting shall be designed to minimize impacts to wildlife. Fencing or other project components shall not block wildlife movement through riparian or other natural habitat. Where fencing or other project components that may disrupt wildlife movement is required for public safety concerns, they shall be designed to permit wildlife movement by incorporating design features such as: ▪ A minimum 16 inches between the ground and the bottom of the fence to provide clearance for small animals; ▪ A minimum 12 inches between the top two wires, or top the fence with a wooden rail, mesh, or chain link instead of wire to prevent animals from becoming entangled; and ▪ If privacy fencing is required near open space areas, openings at the bottom of the fence measure at least 16 inches in diameter shall be installed at reasonable intervals to allow wildlife movement, or the fence may be installed with the bottom at least 16 inches above the ground level. ▪ If fencing or other project components must be designed in such a manner that wildlife passage would not be permitted, wildlife crossing structures shall be incorporated into the project design as appropriate. ▪ Lighting installed as part of any project shall be designed to be minimally disruptive to wildlife (see mitigation measure AES-3(a) Roadway Lighting for lighting requirements) **BIO-3(b) Maintain Connectivity in Drainages.** No permanent structures shall be placed within any drainage or river that would impede wildlife movement (i.e., no hardened caps or other structures in the stream channel perpendicular to stream flow be left exposed or at depth with moderate to high risk for exposure as a result of natural bed scour during high flow events and thereby potentially create impediments to passage). In addition, upon completion of construction within any drainage, areas of stream channel and banks that are temporarily impacted shall be returned to pre-construction contours and in a condition that allows for unimpeded passage through the area once the work has been complete. If water is to be diverted around work sites, a diversion plan shall be submitted to StanCOG and/or local jurisdiction for review and approval prior to issuance of project construction permits/approvals. The diversion shall be designed in a way as to not impede movement while the diversion is in place. **BIO-3(c) Construction Best Management Practices to Minimize Disruption to Wildlife** The following construction BMPs shall be incorporated into all grading and construction plans in order to minimize temporary disruption of wildlife, which could hinder wildlife movement:	Significant and unavoidable.

Impact	Mitigation Measure(s)	Impact
	▪ Designation of a 20 mile per hour speed limit in all construction areas. ▪ Daily construction work schedules shall be limited to daylight hours only. ▪ Mufflers shall be used on all construction equipment and vehicles shall be in good operating condition. ▪ All trash shall be placed in sealed containers and shall be removed from the project site a minimum of once per week. ▪ No pets are permitted on project site during construction.	
Impact BIO-4. Implementation of the transportation projects and the land use scenario envisioned by the 2022 RTP/SCS would not conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance. Impacts would be less than significant.	None required.	Less than significant
Cultural Resources		
Impact CUL-1. Transportation improvement projects and the land use scenario envisioned by the 2022 RTP/SCS would cause a substantial adverse change in the significance of a historical resource pursuant to §15064.5. This impact would be significant and unavoidable.	**CR-1 Built Environment Historical Resources.** Prior to the issuance of an individual project permit, the implementing agency of a 2022 RTP/SCS project involving a building or structure over 45 years of age shall prepare a map defining the project area. This map shall indicate the areas of disturbance associated with construction and operation of the facility and will help in determining whether known and potential historical resources are located within the project area. If a building or structure greater than 45 years in age is within the identified impact zone, a survey and evaluation of the building(s) and/or structure(s) to determine their eligibility for recognition under State, federal, or local historic resource designation criteria shall be conducted. The evaluation shall be prepared by an architectural historian or historical architect meeting the Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation, Professional Qualification Standards (PQS) as defined in 36 CFR Part 61. All buildings and structures 45 years of age or older within the project area shall be evaluated in their historic context and documented in a report meeting the State Office of Historic Preservation guidelines. All evaluated properties shall be documented on Department of Parks and Recreation Series 523 Forms. The report shall be submitted to the implementing agency for review and concurrence. If historical resources are identified within the project area of a proposed development, efforts shall be made to the extent feasible to ensure that impacts are mitigated. Application of mitigation shall generally be overseen by a qualified architectural historian or historic architect meeting the PQS, unless unnecessary in the circumstances (e.g., preservation in place). In conjunction with any development application that may affect the historical resource, a	Significant and Unavoidable

Impact	Mitigation Measure(s)	Impact
	report identifying and specifying the treatment of character-defining features and construction activities shall be provided to the implementing agency for review. To the greatest extent possible to ensure that the relocation, rehabilitation, or alteration of the resource is consistent with the Secretary of the Interior's Standards for the Treatments of Historic Properties (Standards). In accordance with CEQA, a project that has been determined to conform with the Standards generally would not cause a significant adverse direct or indirect impact to historical resources (14 CCR § 15126.4(b)(1)). Application of the Standards shall be overseen by a qualified architectural historian or historic architect meeting the PQS. In conjunction with any development application that may affect the historical resource, a report identifying and specifying the treatment of character-defining features and construction activities shall be provided to the implementing agency for review and concurrence. If significant historical resources are identified on a development site and compliance with the Standards and/or avoidance is not possible, appropriate site-specific mitigation measures shall be established and undertaken. Mitigation measures may include documentation of the historical resource in the form of a Historic American Building Survey-Like report. The report shall comply with the Secretary of the Interior's Standards for Architectural and Engineering Documentation and shall generally follow the HABS Level III requirements, including digital photographic recordation, detailed historic narrative report, and compilation of historic research. The documentation shall be completed by a qualified architectural historian or historian who meets the PQS and submitted to the implementing agency prior to issuance of any permits for demolition or alteration of the historical resource. Copies of the report shall be provided to a local library and/or other appropriate repositories.	
Impact CUL-2. Construction activity associated with **t**ransportation improvement projects and the land use scenario envisioned by the 2022 RTP/SCS may cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5. Potential impacts to archaeological resources would be significant and unavoidable.	**CR-2(a) Archaeological Resources Impact Minimization.** Before construction activities, implementing agencies shall, or can and should, retain a qualified archaeologist to conduct a record search at the Northwest Information Center to determine whether the project area has been previously surveyed and whether resources were identified. When recommended by the Information Center, implementing agencies shall, or can and should, retain a qualified archaeologist to conduct archaeological surveys before construction activities. Implementing agencies shall, or can and should, follow recommendations identified in the survey, which may include, but would not be limited to: subsurface testing, designing and implementing a Worker Environmental Awareness Program, construction monitoring by a qualified archaeologist, or avoidance of sites and preservation in place. Recommended mitigation measures will be consistent with State CEQA Guidelines Section 15126.4(b)(3) recommendations and may include but not be limited to preservation in place and/or data recovery. All cultural resources work shall follow accepted professional standards in recording any find including submittal of standard DPR Primary Record forms (Form DPR 523) and location information to the appropriate California Historical Resources Information System office for the project area. **CR-2(b) Unanticipated Discoveries During Construction.** During construction activities, implementing agencies shall, or can and should, implement the following measures. If evidence of any prehistoric or historic-era subsurface archaeological deposits (e.g., ceramic sherds, refuse scatters, lithic scatters, habitation debris, etc.), are discovered during construction-related earthmoving activities all ground-disturbing activity proximate to the discovery shall be halted until a qualified archaeologist (36 CFR Section 61) can assess the significance of the find. If the find is a	Significant and Unavoidable

Impact	Mitigation Measure(s)	Impact
	prehistoric archaeological site, the appropriate Native American group shall be notified. If the archaeologist determines that the find does not meet the CRHR standards of significance for cultural resources, construction may proceed. If the archaeologist determines that further information is needed to evaluate significance, a testing plan shall be prepared and implemented. If the find is determined to be significant by the qualified archaeologist (i.e., because the find is determined to constitute either an historical resource or a unique archaeological resource), the archaeologist shall work with the implementing agency to avoid disturbance to the resources, and if complete avoidance is not feasible in light of project design, economics, logistics and other factors, shall recommend additional measures such as the preparation and implementation of a data recovery plan. All cultural resources work shall follow accepted professional standards in recording any find including submittal of standard DPR Primary Record forms (Form DPR 523) and location information to the appropriate California Historical Resources Information System office for the project area. If the find is a prehistoric archaeological site, the culturally affiliated California Native American tribe shall be notified and afforded the opportunity to monitor mitigative treatment. During evaluation or mitigative treatment, ground disturbance and construction work could continue in other parts of the project area that are distant enough from the find not to impact it, as determined by the qualified archaeologist.	
Impact CUL-3. Construction activity associated with **t**ransportation improvement projects and the land use scenario envisioned by the 2022 RTP/SCS could result in the disturbances to human remains including those interred outside of formal cemeteries. Potential impacts to human remains would be less than significant.	None required.	Less than Significant
Energy		
Impact E-1. Future transportation improvement projects and the land use scenario envisioned by the 2022 RTP/SCS would not Result in significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, or increase reliance	None required.	Less than Significant

Impact	Mitigation Measure(s)	Impact
on fossil fuels. This impact would be less than significant.		
Impact E-2. The proposed 2022 RTP/SCS would not increase reliance on fossil fuels or decrease reliance on renewable energy sources. Impacts would be less than significant.	None required.	Less than Significant
Impact E-3. The proposed 2022 RTP/SCS would not conflict with or obstruct a State or local plan for renewable energy or energy efficiency. This impact would be less than significant.	None required.	Less than Significant
Environmental Justice		
Impact EJ-1. The proposed transportation improvements and land use projects envisioned by the 2022 RTP/SCS would result in adverse impacts to EJ households. This impact would be significant and unavoidable.	No mitigation measures are feasible. Impacts would remain significant and unavoidable.	Significant and Unavoidable
Impact EJ-2. The proposed transportation improvements and land use projects envisioned by the 2022 RTP/SCS would not result in disproportionately lower distribution of benefits derived from the proposed transportation improvement projects to EJ communities. This impact would be less than significant.	None required.	Less than Significant

Impact	Mitigation Measure(s)	Impact
Impact EJ-3. Implementation of the land use scenario envisioned by the proposed 2022 RTP/SCS would not decrease the availability of affordable housing stock. This impact would be less than significant.	None required.	Less than Significant
Geology and Soils		
Impact GEO-1. The proposed transportation improvements and land use projects envisioned by the proposed 2022 RTP/SCS would not directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving rupture of a known earthquake fault, strong seismic ground shaking, seismic-related ground failure, including liquefaction, or landslides. Impacts would be less than significant.	None required.	Less than Significant
Impact GEO-2. The proposed transportation improvements and land use projects envisioned by the proposed 2022 RTP/SCS would not result in substantial soil erosion or the loss of topsoil. Impacts would be less than significant.	None required.	Less than Significant
Impact GEO-3. Implementation of transportation improvements and future projects included in the land	None required.	Less than Significant

Impact	Mitigation Measure(s)	Impact
use scenario envisioned in the proposed 2022 RTP/SCS could be located on unstable soils subject to landslides and soils subject to expansion. This impact would be less than significant.		
Impact GEO-4. Implementation of proposed transportation improvements and the land use scenario envisioned by the proposed 2022 RTP/SCS could cause a substantial adverse change in or disturb known and unknown paleontological resources as defined in CEQA under guidelines section 15064.5. Impacts to paleontological resources would be significant and unavoidable.	**GEO-5 Paleontological Resources Mitigation and Monitoring Program.** The implementing agency of a proposed 2022 RTP/SCS project involving ground disturbing activities (including grading, trenching, foundation work and other excavations) shall, or can and should, retain a qualified paleontologist, defined as a paleontologist who meets the Society of Vertebrate Paleontology (SVP) standards for Qualified Professional Paleontologist (SVP 2010), to conduct a Paleontological Resources Assessment (PRA). The PRA shall determine the age and paleontological sensitivity of geologic formations underlying the proposed disturbance area, consistent with SVP Standard Procedures for the Assessment and Mitigation of Adverse Impacts to Paleontological Resources (SVP 2010) guidelines for categorizing paleontological sensitivity of geologic units within a project area. If underlying formations are found to have a high potential (sensitivity) for paleontological resources and/or could be considered a unique geologic feature, the following measures shall apply: ▪ **Avoidance.** Avoid routes and project designs that would permanently alter unique paleontological and unique geological features. If avoidance practices cannot be implemented, the following measures shall apply. ▪ **Retention of a Qualified Paleontologist.** A Qualified Paleontologist shall be retained to create a Paleontological Resources Monitoring and Mitigation Program (PRMMP) to direct all mitigation measures related to paleontological resources. The Qualified Paleontologist shall meet the qualifications for a Qualified Professional Paleontologist, which is defined by the SVP as an individual, preferably with an M.S. or Ph.D. in paleontology or geology, who is experienced with paleontological procedures and techniques, who is knowledgeable in the geology of California, and who has worked as a paleontological mitigation project supervisor for a least two years (SVP 2010). ▪ **Paleontological Worker Environmental Awareness Program (WEAP).** Prior to the start of ground disturbance activity, construction personnel shall be informed on the appearance of fossils and the procedures for notifying paleontological staff should fossils be discovered by construction staff. ▪ **Paleontological Monitoring.** Paleontological monitoring shall be conducted by a qualified paleontological monitor, who is defined as an individual who has experience with collection and salvage of paleontological resources and meets the minimum standards of the SVP (2010) for a Paleontological Resources Monitor. The duration and timing of the monitoring will be determined by the Qualified Paleontologist based on the observation of the geologic setting from initial ground disturbance. If the Qualified Paleontologist determines that full-time monitoring is no longer warranted, based on the specific geologic conditions once the full depth of excavations has been reached, they may recommend that monitoring be reduced to periodic spot-checking or ceased entirely. Monitoring shall be reinstated if any new ground disturbances are required, and reduction or suspension shall be reconsidered by the	Significant and Unavoidable

Impact	Mitigation Measure(s)	Impact
	Qualified Paleontologist at that time. In the event of a fossil discovery by the paleontological monitor or construction personnel, all work in the immediate vicinity of the find shall cease. A Qualified Paleontologist shall evaluate the find before restarting construction activity in the area. If it is determined that the fossil(s) is (are) scientifically significant, the Qualified Paleontologist shall complete the following measures to mitigate impacts to significant fossil resources: ▪ **Fossil Salvage**. If significant fossils are discovered, the implementing agency shall be notified immediately, and the qualified paleontologist (or paleontological monitor) shall recover them. Typically, fossils can be safely salvaged quickly by a single paleontologist and not disrupt construction activity. In some cases, larger fossils (such as complete skeletons or large mammal fossils) require more extensive excavation and longer salvage periods. In this case, the paleontologist shall have the authority to temporarily direct, divert or halt construction activity to ensure that the fossil(s) can be removed in a safe and timely manner. ▪ **Preparation and Curation of Recovered Fossils**. Once salvaged, fossils shall be identified to the lowest possible taxonomic level, prepared to a curation-ready condition, and curated in a scientific institution with a permanent paleontological collection, such as the Natural History Museum of Los Angeles County, along with all pertinent field notes, photos, data, and maps. ▪ **Final Paleontological Resources Mitigation and Monitoring Report**. Upon completion of ground disturbing activity (and curation of fossils, if necessary) the Qualified Paleontologist shall prepare a final mitigation and monitoring report outlining the results of the PRMMP. The report shall include discussion of the location, duration and methods of the monitoring, stratigraphic sections, any recovered fossils, and the scientific significance of those fossils, and where fossils were curated. The report shall be submitted to the sponsor agency. If the monitoring efforts recovered fossils, then a copy of the report shall also be submitted to the designated museum repository.	
Greenhouse Gas Emissions and Climate Change		
Impact GHG-1. Proposed transportation improvements and land use projects envisioned by the proposed 2022 RTP/SCS would generate GHG emissions that may have a significant impact on the environment. Impacts would be significant and unavoidable.	**GHG-1 Construction GHG Reduction Measures.** The project sponsor shall incorporate the most recent GHG emission reduction measures for off-road construction vehicles during construction. The measures shall be noted on all construction plans, and the implementing agency shall perform periodic site inspections. Current GHG-reducing measures include the following: ▪ Use of diesel construction equipment meeting CARB's Tier 4 certified engines wherever feasible for off-road heavy-duty diesel engines and comply with the State Off-Road Regulation. Where the use of Tier 4 engines is not feasible, Tier 3 certified engines shall be used; where the use of Tier 3 engines are not feasible, Tier 2 certified engines shall be used; ▪ Use of on-road heavy-duty trucks that meet CARB's 2007 or cleaner certification standard for on-road heavy-duty diesel engines, and comply with the State On-Road Regulation; ▪ Minimizing idling time (e.g., five-minute maximum). Signs shall be posted in the designated queuing areas and or job sites to remind drivers and operators of the five-minute idling limit; ▪ Use of electric-powered equipment in place of diesel-powered equipment when feasible;	Significant and Unavoidable

Impact	Mitigation Measure(s)	Impact
	▪ Use of alternatively fueled or catalyst-equipped diesel construction equipment when feasible, to the extent electric powered equipment is not feasible; ▪ Substitute gasoline-powered in place of diesel-powered equipment, when neither electric-powered equipment or alternatively fueled or catalyst-equipped diesel equipment is feasible; and ▪ Project proponents shall incentivize that construction workers carpool, and/or use electric vehicles to commute to and from the project site.	
Impact GHG-2. Proposed transportation improvements and land use projects envisioned by the proposed 2022 RTP/SCS would result in a net increase in GHG emissions by 2046 compared to the existing baseline conditions and would therefore have a significant impact on the environment. Impacts would be significant and unavoidable.	**GHG-2 Land Use Project Energy Consumption and Water Use Reduction Measures.** For land use projects under their jurisdiction, cities and the County can and should implement measures to reduce energy consumption, water use, solid waste generation, and VMT, all of which contribute to GHG emissions. Project-specific environmental documents may adjust these mitigation measures as necessary to respond to site-specific conditions. These measures include, but are not limited to: ▪ Require new residential and commercial construction to install solar energy systems or be solar-ready ▪ Require new residential and commercial development to install low flow water fixtures ▪ Require new residential and commercial development to install water-efficient drought-tolerant landscaping, including the use of compost and mulch ▪ Require new development to exceed the applicable Title 24 energy-efficiency requirements ▪ Require new development to be fully electric ▪ Require new residential and commercial development to offer information on recycling, composting, and disposal of household hazardous waste and e-waste ▪ Require new development to implement circulation design elements in parking lots for no-residential uses to reduce vehicle queuing and improve the pedestrian environment	Significant and unavoidable
Impact GHG-3. The transportation improvements and land use projects envisioned by the proposed 2022 RTP/SCS would not conflict with regional SB 375 per capita passenger vehicle CO_2 emission reduction targets of 16 percent by 2035 from 2005 levels. Impacts would be less than significant.	None required.	Less than Significant
Impact GHG-4. Implementation of the proposed 2022 RTP/SCS would conflict with the State's ability	**GHG-4 Transportation-Related GHG Reduction Measures**. The implementing agency shall incorporate the most recent GHG emission reduction measures and/or technologies for reducing VMT and associated transportation related GHG emissions. Current GHG-reducing measures include the following:	Significant and Unavoidable

Impact	Mitigation Measure(s)	Impact
to achieve SB 32, EOs S-3-05 and B-55-18, and applicable local GHG reduction plan targets and goals. Impacts would be significant and unavoidable.	▪ Installation of electric vehicle charging stations beyond those required by State and local codes ▪ Utilization of electric vehicles and/or alternatively fueled vehicles in company fleet ▪ Provision of dedicated parking for carpools, vanpool, and clean air vehicles ▪ Provision of vanpool and/or shuttle service for employees ▪ Implementation of reduced parking minimum requirements ▪ Implementation of maximum parking limits ▪ Provision of bicycle parking facilities beyond those required by State and local codes ▪ Provision of a bicycle-share program ▪ Expansion of bicycle routes/lanes along the project site frontage ▪ Provision of new or improved transit amenities (e.g., covered turnouts, bicycle racks, covered benches, signage, lighting) if project site is located along an existing transit route ▪ Expansion of existing transit routes ▪ Provision of transit subsidies ▪ Expansion of sidewalk infrastructure along the project site frontage ▪ Provision of safe, pedestrian-friendly, and interconnected sidewalks and streetscapes ▪ Provision of employee lockers and showers ▪ Provision of on-site services that reduce the need for off-site travel (e.g., childcare facilities, automatic teller machines, postal machines, food services) ▪ Provision of alternative work schedule options, such as telework or reduced schedule (e.g., 9/80 or 10/40 schedules), for employees ▪ Implementation of transportation demand management programs to educate and incentivize residents and/or employees to use transit, smart commute, and alternative transportation options	
Hazards and Hazardous Materials		
Impact HAZ-1. Transportation improvement projects and the land use scenario envisioned by the proposed 2022 RTP/SCS may facilitate the routine transport, use, or disposal of hazardous material, and may result in reasonably foreseeable upset and accident conditions involving the release of hazardous materials	None required.	Less than Significant

Impact	Mitigation Measure(s)	Impact
into the environment. Impacts would be less than significant.		
Impact HAZ-2. Transportation improvement projects and land use projects envisioned in the proposed 2022 RTP/SCS would not emit hazardous emissions or handle hazardous or acutely hazardous materials, substances or waste within one-quarter mile of an existing or proposed school. Impacts would be less than significant.	None required.	Less than Significant
Impact HAZ-3. The proposed 2022 RTP/SCS includes transportation improvement projects and land use scenario projects that could be located on sites on the list of hazardous material sites compiled by Government Code Section 65962.5, and therefore create a significant hazard to the public or environment. This impact would be significant and unavoidable.	**HAZ-3 Site Remediation.** If an individual project included in the proposed 2022 RTP/SCS is located on or near a hazardous materials and/or waste site compiled by Government Code Section 65962.5, the implementing agency shall prepare a Phase I ESA in accordance with the American Society for Testing and Materials' E-1527-05 standard. For work requiring any demolition or renovation, the Phase I ESA shall make recommendations for any hazardous building materials survey work that shall be done. All recommendations included in a Phase I ESA prepared for a site shall be implemented. If a Phase I ESA indicates the presence or likely presence of contamination, the implementing agency shall require a Phase II ESA, and recommendations of the Phase II ESA shall be fully implemented. Examples of typical recommendations provided in Phase I/II ESAs include removal of contaminated soil in accordance with a soil management plan approved by the local environmental health department; covering stockpiles of contaminated soil to prevent fugitive dust emissions; capturing groundwater encountered during construction in a holding tank for additional testing and characterization and disposal based on its characterization; and development of a health and safety plan for construction workers.	Significant and Unavoidable
Impact HAZ-4. Transportation improvement projects and the land use scenario envisioned in the proposed 2022 RTP/SCS located within an airport land use plan or within two miles of a public or public use airport would not result in a safety hazard for people residing or working in the project area.	None required.	Less than Significant

Impact	Mitigation Measure(s)	Impact
Impacts would be less than significant.		
Hydrology and Water Quality		
Impact HYD-1. Implementation of proposed transportation projects and future projects included in the land use scenario envisioned in the proposed 2022 RTP/SCS would not violate water quality standards or waste discharge requirements, or otherwise substantially degrade surface or ground water quality. Impacts would be less than significant.	None required.	Less than Significant
Impact HYD-2. Transportation and land use projects implementing the proposed 2022 RTP/SCS would substantially decrease groundwater supplies and interfere with groundwater recharge such that it may impede sustainable groundwater management of the basin. Impacts would be significant and unavoidable.	**HYD-2(a) Construction Dust Suppression Water Supply**. For all proposed 2022 RTP/SCS projects, where feasible, reclaimed and/or recycled water shall be used for dust suppression during construction activities. This includes use of such reclaimed water in water trucks utilized for project construction occurring outside developed areas and away from water infrastructure which would otherwise provide such reclaimed water. This measure shall be noted on construction plans and shall be spot checked by the local jurisdiction. **HYD-2(b) Landscape Watering.** In jurisdictions that do not already have an appropriate local regulatory program related to landscape watering, proposed 2022 RTP/SCS projects that include landscaping shall be designed with drought tolerant plants and drip irrigation. When feasible, native plant species shall be used. In addition, landscaping associated with proposed improvements shall be maintained using reclaimed water when feasible. If reclaimed water could feasibly be utilized for project landscape watering due to proximity of reclaimed water sources but is unavailable due to lack of connecting infrastructure, local agencies or transportation sponsors shall conduct an analysis of the upgrades needed to provide such infrastructure, which will include the potential for new connections to existing reclaimed water systems to provide reclaimed water to other nearby sources besides the proposed project in the analysis, and shall perform such steps as necessary to utilize available reclaimed water if feasible.	Significant and Unavoidable
Impact HYD-3. Transportation and future land use projects implementing the proposed 2022 RTP/SCS would not substantially alter the existing drainage pattern of a site or area through alteration of the	None required.	Less than Significant

Impact	Mitigation Measure(s)	Impact
course of a stream or river or through the addition of impervious surfaces in a manner where drainage changes would result in flooding on- or off-site, redirect or impede flood flows, exceed the capacity of stormwater systems, or provide additional polluted runoff. Impacts would be less than significant.		
Impact HYD-4. transportation and land use projects implementing the proposed 2022 RTP/SCS would not risk release of pollutants due to project inundation in flood hazard, tsunami, or seiche zones. Impacts would be less than significant.	None required.	Less than significant
Impact HYD-5. Transportation and land use projects implementing the proposed 2022 RTP/SCS could conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plans. Impacts would be significant and unavoidable.	**HYD-2(a) Construction Dust Suppression Water Supply**. For all proposed 2022 RTP/SCS projects, where feasible, reclaimed and/or recycled water shall be used for dust suppression during construction activities. This includes use of such reclaimed water in water trucks utilized for project construction occurring outside developed areas and away from water infrastructure which would otherwise provide such reclaimed water. This measure shall be noted on construction plans and shall be spot checked by the local jurisdiction. **HYD-2(b) Landscape Watering.** In jurisdictions that do not already have an appropriate local regulatory program related to landscape watering, proposed 2022 RTP/SCS projects that include landscaping shall be designed with drought tolerant plants and drip irrigation. When feasible, native plant species shall be used. In addition, landscaping associated with proposed improvements shall be maintained using reclaimed water when feasible. If reclaimed water could feasibly be utilized for project landscape watering due to proximity of reclaimed water sources but is unavailable due to lack of connecting infrastructure, local agencies or transportation sponsors shall conduct an analysis of the upgrades needed to provide such infrastructure, which will include the potential for new connections to existing reclaimed water systems to provide reclaimed water to other nearby sources besides the proposed project in the analysis, and shall perform such steps as necessary to utilize available reclaimed water if feasible.	Significant and Unavoidable
Land Use & Planning		
Impact LU-1. Implementation of proposed transportation	None required.	Less than Significant

Impact	Mitigation Measure(s)	Impact
improvements and the land use scenario envisioned by the proposed 2022 RTP/SCS would not physically divide an established community. This impact would be less than significant.		
Impact LU-2. The proposed 2022 RTP/SCS project implementation would not cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation (including, but not limited to, the General Plan or Zoning Ordinance) and result in a physical change to the environment not already addressed in the other resource chapters of this EIR. This impact would be less than significant.	Mitigation measures are provided for applicable resources throughout their respective environmental issue area sections of the EIR to reduce impacts.	Less than Significant
Noise		
Impact N-1 Construction activity associated with transportation improvements and land use projects envisioned by the proposed 2022 RTP/SCS would generate a substantial temporary increase in ambient noise levels in excess of standards established in local general plans or noise ordinances and would generate a substantial absolute noise increase over existing noise levels. This	**N-1 Construction Noise Reduction.** To reduce construction noise levels to achieve applicable standards, implementing agencies for transportation and land use projects shall implement the measures identified below where feasible and necessary. a) Compliance with local Construction Noise Regulations. Implementing agencies shall ensure that, where residences or other noise sensitive uses are located within 800 feet of construction sites without pile driving, appropriate measures shall be implemented to ensure consistency with local noise ordinance requirements relating to construction. Specific techniques may include, but are not limited to, restrictions on construction timing, use of sound blankets on construction equipment, and the use of temporary walls and noise barriers to block and deflect noise. b) Noise Complaint and Enforcement Manager. Designate an on-site construction complaint and enforcement manager for projects within 800 feet of sensitive receivers. Implementing agencies shall post phone numbers for the on-site enforcement manager at construction sites along with complaint procedures and who to notify in the event of a problem.	Significant and Unavoidable

Impact	Mitigation Measure(s)	Impact
impact would be significant and unavoidable.	c) Pile Driving. For any project within 3,200 feet of sensitive receptors that requires pilings, the implementing agency shall require caisson drilling or sonic pile driving as opposed to pile driving, where feasible. This shall be accomplished through the placement of conditions on the project during its individual environmental review. d) Construction Equipment Noise Control. Implementing agencies shall ensure that equipment and trucks used for project construction utilize the best available noise control techniques (including mufflers, use of intake silencers, ducts, engine enclosures, and acoustically attenuating shields or shrouds). e) Impact Equipment Noise Control. Implementing agencies shall ensure that impact equipment (e.g., jack hammers, pavement breakers, and rock drills) used for project construction be hydraulically or electrically powered wherever feasible to avoid noise associated with compressed air exhaust from pneumatically powered tools. Where use of pneumatically powered tools is unavoidable, use of an exhaust muffler on the compressed air exhaust can lower noise levels from the exhaust by up to about 10 dBA. When feasible, external jackets on the impact equipment can achieve a reduction of 5 dBA. Whenever feasible, use quieter procedures, such as drilling rather than impact equipment operation. f) Construction Activity Timing Restrictions. The following timing restrictions shall apply to proposed 2022 RTP/SCS activates creating noise levels at or above 65 dBA at a nearby dwelling unit, except where timing restrictions are already established in local codes or policies. Construction activities shall be limited to: g) Monday through Friday: 7 a.m. to 6 p.m. h) Saturday: 9 a.m. to 5 p.m. i) Placement of Stationary Noise Sources. Locate stationary noise sources as far from noise-sensitive receptors as possible. Stationary noise sources that must be located near existing receptors will be equipped with the best available mufflers.	
Impact N-2. Transportation improvements envisioned by the proposed 2022 RTP/SCS would generate a substantial permanent increase in ambient noise levels in excess of standards or over existing noise levels and generate a substantial absolute noise increase over existing noise levels. This impact would be significant and unavoidable.	**N-2 Noise Assessment and Control for Mobile and Point Source Reduction.** Implementing agencies for 2022 RTP/SCS projects shall complete detailed noise assessments using applicable guidelines (e.g., Caltrans Traffic Noise Analysis Protocol) for roadway projects that may impact noise sensitive receptors. The implementing agency shall ensure that a noise survey is conducted that, at minimum: ▪ Determines existing and projected noise levels ▪ Determines the amount of attenuation needed to reduce potential noise impacts to applicable State and local standards ▪ Identifies potential alternate alignments that allow greater distance from, or greater buffering of, noise-sensitive areas ▪ If warranted, recommends methods for mitigating noise impacts, including: ▪ Appropriate setbacks ▪ Sound attenuating building design, including retrofit of existing structures with sound attenuating building materials ▪ Use of sound barriers (earthen berms, sound walls, or some combination of the two)	Significant and Unavoidable

<table>
<tr><th>Impact</th><th>Mitigation Measure(s)</th><th>Impact</th></tr>
<tr><td></td><td>▪ Locate transit-related passenger stations, central maintenance facilities, decentralized maintenance facilities, and electric substations away from sensitive receptors to the maximum extent feasible.

Where new or expanded roadway projects are found to expose receptors to noise exceeding normally acceptable levels, the individual project lead agency shall implement techniques as recommended in the project-specific noise assessments. The preferred methods for mitigating noise impacts shall include the use of appropriate setbacks and sound attenuating building design, including retrofit of existing structures with sound attenuating building materials where feasible. In instances where use of these techniques is not feasible, the use of sound barriers (earthen berms, sound walls, or some combination of the two) shall be considered. Whenever possible, a combination of elements shall be used, including open grade paving, solid fences, walls, and landscaped berms. Other techniques such as rubberized asphalt or “quiet pavement” shall be used where feasible to reduce road noise for new roadway segments or modifications requiring repaving. The effectiveness of noise reduction measures shall be monitored by taking noise measurements and installing adaptive mitigation measures to achieve applicable standards.</td><td></td></tr>
<tr><td>Impact N-3. Construction activities associated with transportation projects under the proposed 2022 RTP/SCS would generate excessive groundborne vibration levels. New truck, bus, and train traffic resulting from the proposed 2022 RTP/SCS would generate excessive vibration levels. These impacts would be significant and unavoidable.</td><td>N-3(a) Vibration Mitigation for Construction of Transportation Projects. Where local vibration and groundborne noise standards do not apply, implementing agencies of proposed 2022 RTP/SCS projects utilizing heavy construction equipment shall estimate vibration levels generated by construction activities and use the Caltrans vibration damage potential threshold criteria to screen for and screen out projects as to their potential to damage buildings on site or near a project.

Caltrans Vibration Damage Potential Threshold Criteria
<table>
<tr><th></th><th colspan="2">Maximum PPV (in/sec)</th></tr>
<tr><th>Structure and Condition</th><th>Transient Sources</th><th>Continuous/Frequent Intermittent Sources</th></tr>
<tr><td>Extremely fragile historic buildings</td><td>0.12</td><td>0.08</td></tr>
<tr><td>Fragile buildings</td><td>0.20</td><td>0.10</td></tr>
<tr><td>Historic and some old buildings</td><td>0.50</td><td>0.25</td></tr>
<tr><td>Older Residential structures</td><td>0.50</td><td>0.30</td></tr>
<tr><td>New residential structures</td><td>1.00</td><td>0.50</td></tr>
<tr><td>Modern industrial structures</td><td>2.00</td><td>0.50</td></tr>
<tr><td colspan="3">Source: Transportation and Construction Vibration Guidance Manual (2020b)</td></tr>
</table>
If construction equipment would generate vibration levels exceeding acceptable levels as established by Caltrans, implementing agencies of the proposed 2022 RTP/SCS shall, or can and should, complete the following tasks:
▪ Prior to construction, survey the project site for vulnerable buildings, and complete geotechnical testing (preconstruction assessment of the existing subsurface conditions and structural integrity), for any older or historic buildings within 50 feet of pile driving. The testing shall be completed by a qualified geotechnical engineer and qualified historic preservation professional and/or structural engineer.</td><td>Significant and Unavoidable</td></tr>
</table>

Impact	Mitigation Measure(s)	Impact
	▪ Prepare and submit a report to the lead agency that contains the results of the geological testing. If recommended by the preconstruction report implementing agencies shall require ground vibration monitoring of nearby historic structures. Methods and technologies shall be based on the specific conditions at the construction site. The preconstruction assessment shall include a monitoring program to detect ground settlement or lateral movement of structures in the vicinity of pile-driving activities and identify corrective measures to be taken should monitored vibration levels indicate the potential for building damage. In the event of unacceptable ground movement with the potential to cause structural damage, all impact work shall cease, and corrective measures shall be implemented to minimize the risk to the subject, or adjacent, historic structure. ▪ To minimize disturbance withing 550 feet of pile-driving activities, implement "quiet" pile-driving technology, such as predrilling of piles and the use of more than one pile driver to shorten the duration of pile driving), where feasible, in consideration of geotechnical and structural requirements and conditions as defined as part of the geotechnical testing, if testing was feasible. ▪ Use cushion blocks to dampen noise from pile driving. ▪ Phase operations of construction equipment to avoid simultaneous vibration sources **N-3(b) Vibration Mitigation for Operation of Transportation Projects.** Where local vibration and groundborne noise standards do not apply, implementing agencies of proposed 2022 RTP/SCS projects shall comply with all applicable local vibration and groundborne noise standards, or in the absence of such local standards, comply with guidance provided by the FTA in Transit Noise and Vibration Impact Assessment (FTA 2018) to assess impacts to buildings and sensitive receptors and reduce vibration and groundborne noise. FTA recommended thresholds shall be used except in areas where local standards for groundborne noise and vibration have been established. Methods that can be implemented to reduce vibration and groundborne noise impacts include, but are not limited to: ▪ Bus and Truck Traffic ▪ Constructing of noise barriers ▪ Use noise reducing tires and wheel construction on bus wheels ▪ Use vehicle skirts (i.e., a partial enclosure around each wheel with absorptive treatment) on freight vehicle wheels	
Impact N-4. Land use projects envisioned by the proposed 2022 RTP/SCS may place sensitive receptors in areas with noise levels in excess of standards established in the local general plan or noise ordinance. This impact would be significant and unavoidable.	**N-4 Noise Mitigation for Land Uses.** If a land use project is located in an area with exterior ambient noise levels above local noise standards, the implementing agency shall ensure that a noise study is conducted to determine the existing exterior noise levels in the vicinity of the project. If the project would be impacted by ambient noise levels, feasible attenuation measures shall be used to reduce operational noise to meet acceptable standards. In addition, noise insulation techniques shall be utilized to reduce indoor noise levels to thresholds set in applicable State and/or local standards. Such measures may include but are not limited to dual-paned windows, solid core exterior doors with perimeter weather stripping, air conditioning system so that windows and doors may remain closed, and situating exterior doors away from roads. The noise study and determination of appropriate mitigation measures shall be completed during the project's individual environmental review.	Significant and Unavoidable
Impact N-5. Transportation improvements and land use	**N-5 Noise Mitigation Near Airports.** Implementing agencies for all new development proposed to be located within an existing airport influence zone, as defined by the locally adopted ALUCP or local general plan, or within two miles of	Significant and Unavoidable

Impact	Mitigation Measure(s)	Impact
projects envisioned by the proposed 2022 RTP/SCS would be located in close proximity to existing airports such that applicable exterior and interior noise thresholds would be exceeded. Impacts would be significant and unavoidable.	a private use airport, shall require a site-specific noise compatibility study. The study shall consider and evaluate existing aircraft noise, based on specific aircraft activity data for the airport in question, and shall include recommendations for site design and building construction. Such measures may include but are not limited to dual-paned windows, solid core exterior doors with perimeter weather stripping, air conditioning system so that windows and doors may remain closed, and situating exterior doors away from roads, such as dual paned windows. The noise study and determination of appropriate mitigation measures shall be completed during the project's individual environmental review.	
Population and Housing		
Impact POP-1. Transportation and land use projects implementing the proposed 2022 RTP/SCS would not induce substantial unplanned population growth, either directly or indirectly. This impact would be less than significant.	None required.	Less than Significant
Impact POP-2. transportation and land use projects implementing the proposed 2022 RTP/SCS would temporarily displace existing housing and people but would not necessitate the construction of replacement housing elsewhere. Impacts would be less than significant.	None required.	Less than Significant
Transportation		
Impact T-1. transportation projects and land use projects envisioned by the proposed 2022 RTP/SCS would not conflict with any program, plan, ordinance or policy addressing the circulation system, including transit,	None required.	Less than Significant

Impact	Mitigation Measure(s)	Impact
roadway, bicycle and pedestrian facilities. This impact would be less than significant.		
Impact T-2. The proposed 2022 RTP/SCS would result in an overall increase in regional VMT above baseline (2021) conditions. The proposed 2022 RTP/SCS would result in a small decrease in VMT per capita below baseline (2021) conditions. Regional VMT and VMT per capita impacts from implementation of the proposed 2022 RTP/SCS would be significant and unavoidable. The induced travel impact at the regional level would be less than significant.	**T-2(a) Regional VMT Reduction Programs.** Implementing agencies shall require implementation of VMT reduction strategies through TDM programs, impact fee programs, mitigation banks or exchange programs, in-lieu fee programs, and other land use project conditions that reduce VMT. Programs shall be designed to reduce VMT from existing land uses, where feasible, and from new discretionary residential or employment land use projects. The design of programs and project specific mitigation shall focus on VMT reduction strategies that increase travel choices and improve the comfort and convenience of sharing rides in private vehicles, using public transit, biking, or walking. Modifications may include but are not limited to: ▪ Provide car-sharing, vanpool, bike sharing, and ride-sharing programs ▪ Implement or provide access to commute reduction programs ▪ Provide a bus rapid transit system ▪ Improve pedestrian or bicycle networks, or transit service ▪ Provide transit passes ▪ Encourage telecommute programs ▪ Incorporate affordable housing into the project ▪ Increase density ▪ Increase mixed uses within the project area ▪ Incorporate improved pedestrian connections within the project/neighborhood ▪ Incentivize development in low VMT communities ▪ Incentivize housing near commercial and offices ▪ Increase access to goods and services, such as groceries, schools, and daycare ▪ Incorporate neighborhood electric vehicle network ▪ Orient the project toward transit, bicycle, and pedestrian facilities ▪ Provide traffic calming ▪ Provide bicycle parking ▪ Limit parking ▪ Separate out parking costs ▪ Provide parking cash-out programs **T-2(b) Project Level VMT Analysis and Reduction.** Transportation project sponsor agencies shall evaluate transportation projects that involve increasing roadway capacity for their potential to increase VMT. Where project-level increases are found to be potentially significant, implementing agencies shall, or can and should, identify and	Significant and Unavoidable

Impact	Mitigation Measure(s)	Impact
	implement measures that reduce VMT. Examples of measures that can reduce the VMT associated with increases in roadway capacity include tolling new lanes to encourage carpools and fund transit improvements; converting existing general-purpose lanes to high occupancy vehicle lanes; VMT banks; and implementing or funding offsite travel demand management. Implementing agencies shall evaluate VMT as part of project specific CEQA review and discretionary approval decisions for land use projects. Where project level significant impacts are identified, implementing agencies shall identify and implement measures that reduce VMT. Examples of measures that reduce VMT include infill development, mixed use and transit-oriented development, TDM strategies, complete streets, reduced parking requirements, and providing alternative transportation facilities, such as bike lanes and transit stops.	
Impact T-3. Transportation and land use projects implementing the proposed 2022 RTP/SCS would not substantially increase hazards due to geometric design features or incompatible uses. This impact would be less than significant.	None required.	Less than Significant
Impact T-4. Transportation and land use projects implementing the proposed 2022 RTP/SCS would not result in inadequate emergency vehicle access, nor would projects implemented under the proposed 2022 RTP/SCS impair implementation or physically interfere with an adopted emergency response plan or emergency evacuation plan. This impact would be less than significant.	None required.	Less than Significant
Tribal Cultural Resources		
Impact TCR-1. Transportation projects and the land use scenario envisioned in the proposed 2022 RTP/SCS would cause a substantial adverse	**TCR-1(a) Identified Tribal Cultural Resources Impact Minimization.** Transportation project sponsor agencies shall comply with AB 52, which may require formal tribal consultation. If the implementing agency determines that a project may cause a substantial adverse change to a tribal cultural resource, they shall implement mitigation measures identified in the consultation process required under PRC Section 21080.3.2, or shall implement the following measures where feasible to avoid or minimize the project-specific significant adverse impacts:	Significant and Unavoidable

Impact	Mitigation Measure(s)	Impact
change in the significance of a tribal cultural resource. This impact would be significant and unavoidable.	▪ Avoidance and preservation of the resources in place, including, but not limited to: designing and building the project to avoid the resources and protect the cultural and natural context, or planning greenspace, parks, or other open space to incorporate the resources with culturally appropriate protection and management criteria. ▪ Treating the resource with culturally appropriate dignity, taking into account the tribal cultural values and meaning of the resource, including, but not limited to, the following: ▫ Protecting the cultural character and integrity of the resource ▫ Protecting the traditional use of the resource ▫ Protecting the confidentiality of the resource ▪ Establishment of permanent conservation easements or other culturally appropriate property management criteria for the purposes of preserving or utilizing the resources or places. ▪ Native American monitoring by the appropriate tribe during soil disturbance for all projects in areas identified as sensitive for potential tribal cultural resources and/or in the vicinity (within 100 feet) of known tribal cultural resources. **CR-2(b) Unanticipated Discoveries During Construction**. During construction activities, implementing agencies shall, or can and should, implement the following measures. If evidence of any prehistoric or historic-era subsurface archaeological deposits (e.g., ceramic sherds, refuse scatters, lithic scatters, habitation debris, etc.), are discovered during construction-related earthmoving activities all ground-disturbing activity proximate to the discovery shall be halted until a qualified archaeologist (36 CFR Section 61) can assess the significance of the find. If the find is a prehistoric archaeological site, the appropriate Native American group shall be notified. If the archaeologist determines that the find does not meet the CRHR standards of significance for cultural resources, construction may proceed. If the archaeologist determines that further information is needed to evaluate significance, a testing plan shall be prepared and implemented. If the find is determined to be significant by the qualified archaeologist (i.e., because the find is determined to constitute either an historical resource or a unique archaeological resource), the archaeologist shall work with the implementing agency to avoid disturbance to the resources, and if complete avoidance is not feasible in light of project design, economics, logistics and other factors, shall recommend additional measures such as the preparation and implementation of a data recovery plan. All cultural resources work shall follow accepted professional standards in recording any find including submittal of standard DPR Primary Record forms (Form DPR 523) and location information to the appropriate California Historical Resources Information System office for the project area. If the find is a prehistoric archaeological site, the culturally affiliated California Native American tribe shall be notified and afforded the opportunity to monitor mitigative treatment. During evaluation or mitigative treatment, ground disturbance and construction work could continue in other parts of the project area that are distant enough from the find not to impact it, as determined by the qualified archaeologist.	
Wildfire		
Impact WF-1. Proposed transportation improvements and land use projects	**WF-1(a) Wildfire Risk Reduction.** For individual transportation or land use project within or less than two miles from an SRA or very high fire hazard severity zones, the implementing agency shall require appropriate mitigation to reduce the risk. Examples of mitigation to reduce risk of loss, injury or death from wildlife include, but are not limited to:	Significant and Unavoidable

Impact	Mitigation Measure(s)	Impact
envisioned by the 2022 RTP/SCS would be located in or near a SRA or very high fire hazard severity zone, and significant loss, injury, or death from wildfires or downstream flooding or landslides would occur. Impacts would be significant and unavoidable.	▪ Require the use of fire-resistant vegetation native to the StanCOG region and/or the local microclimate of the project site and discourage the use of fire-prone species especially nonnative, invasive species. ▪ Enforce defensible space regulations to keep overgrown and unmanaged vegetation, accumulations of trash and other flammable material away from structures. ▪ Provide public education about wildfire risk, fire prevention measures, and safety procedures and practices to allow for safe evacuation and/or options to shelter-in-place. ▪ Require adherence to the local hazard mitigation plan, as well as the local general plan policies and programs aimed at reducing the risk of wildfires through land use compatibility, training, sustainable development, brush management, public outreach, and service standards for fire departments. ▪ Ensure sufficient emergency water supply. ▪ Encourage the use of fire-resistant vegetation native to the StanCOG region and/or the local microclimate of the project site and discourage the use of fire-prone species especially non-native, invasive species. ▪ Require a fire safety plan be submitted to and approved by the local fire protection agency. The fire safety plan shall include all of the fire safety features incorporated into the project and the schedule for implementation of the features. The local fire protection agency may require changes to the plan or may reject the plan if it does not adequately address fire hazards associated with the project as a whole or the individual phase of the project. ▪ Prohibit certain project construction activities with potential to ignite wildfires during red-flag warnings issued by the National Weather Service for the project site location. Example activities that should be prohibited during red-flag warnings include welding and grinding outside of enclosed buildings. ▪ Require fire extinguishers to be onsite during construction of projects. Fire extinguishers shall be maintained to function according to manufacturer specifications. Construction personnel shall receive training on the proper methods of using a fire extinguisher. ▪ Smoking and open fires shall be prohibited at individual transportation or land use projects sites included in 2022 RTP/SCS during construction and operations. A copy of the notification to all contractors regarding prohibiting smoking and burning shall be provided to the respective County in the StanCOG Region. **WF-1(b) Fire Protection Plan.** Individual transportation or land use projects included in the 2022 RTP/SCS shall prepare a Fire Protection Plan that meets Fire Prevention Bureau of Stanislaus County requirements. The plan shall contain (but not be limited to) the following provisions: ▪ All construction equipment shall be equipped with appropriate spark arrestors and carry fire extinguishers. ▪ A fire watch with appropriate firefighting equipment shall be available at the Project site at all times when welding activities are taking place. Welding shall not occur when sustained winds exceed that set forth by the Fire Prevention Bureau of Stanislaus County unless a Fire Prevention Bureau of Stanislaus County -approved wind shield is on site. ▪ A vegetation management plan shall be prepared to address vegetation clearance around all Wind Turbine Generators (WTGs) and a regularly scheduled brush clearance of vegetation on and adjacent to all access roads, power lines, and other facilities.	

Impact	Mitigation Measure(s)	Impact
	▪ Operational fire water tanks shall be installed prior to construction. ▪ Provisions for fire/emergency services access if roadway blockage occurs due to large loads during construction and operation ▪ Cleared, maintained parking areas shall be designated; no parking shall be allowed in non-designated areas. ▪ The need for and/or use of dedicated repeaters for emergency services. ▪ Appropriate Hot work permits (such as cutting and welding permits) shall be obtained from the jurisdictional fire agency. ▪ Compliance with California PRC 4291, 4442, and 4443.	

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1 Introduction

1.1 Statement of Purpose

This document is a Program Environmental Impact Report (EIR) that describes environmental impacts associated with the proposed 2022 Regional Transportation Plan-Sustainable Communities Strategy (2022 RTP/SCS) ("Plan" or "project") proposed by the Stanislaus Council of Governments (StanCOG).

Section 21000 et seq. of the California Public Resources Code, commonly referred to as the California Environmental Quality Act of 1970 (CEQA), requires the evaluation of environmental impacts associated with all planning programs or development projects proposed. As such, this EIR is an informational document for use by StanCOG, other agencies and the public in their consideration and evaluation of the environmental consequences of implementing the proposed 2022 RTP/SCS.

This section discusses (1) the purpose of this EIR; (2) 2022 RTP/SCS and EIR background; (3) the type of environmental document prepared for the 2022 RTP/SCS; (4) the content and format of the EIR; and (5) the environmental review process required under CEQA. The proposed project is described in detail in Section 2.0, *Project Description*.

1.2 Project Background

As both the federally-designated metropolitan planning organization (MPO) and the State-designated regional transportation planning agency (RTPA) for Stanislaus County, StanCOG is required by both federal and State law to prepare a county-level Regional Transportation Plan (RTP) to serve as a long-range (at least 20-year) transportation planning document. State and federal law also requires that the RTP be updated every four years. As such, the RTP is the long-range transportation plan for Stanislaus County. The StanCOG RTP was updated in 2004, 2007, 2011, 2014, and most recently in 2018. The 2014 update was the first to contain a Sustainable Communities Strategy, as this was a new requirement pursuant to Senate Bill (SB) 375. A comprehensive program environmental impact report was prepared for the 2014 RTP/SCS update to satisfy CEQA requirements. The 2022 RTP/SCS update lists Tier I roadway projects to improve the transportation system during the 2022-2046 planning period (approximately 25 years). Tier I includes short-range and long-range projects that StanCOG considers fully fundable from anticipated revenue sources and likely to be programmed during the life of the RTP/SCS. Although some of the projects from the 2018 RTP may have been completed or are currently under construction, many have not. Additionally, new projects have been incorporated into the 2022 RTP/SCS from the 2018 RTP/SCS.

The 2022 RTP/SCS is the culmination of a multi-year effort that aims to maintain or enhance the efficient and effective movement of goods, services, and persons. Further, the SCS, as part of the RTP, seeks to coordinate local land use and transportation systems within the region to reduce emissions from cars and light trucks. StanCOG is required by federal law to develop an RTP that determines the needs of the transportation system and prioritizes proposed transportation projects. The RTP is also necessary to obtain and allocate federal and state funding for regional transportation projects.

In compliance with the CEQA Guidelines (Section 15063), StanCOG, as the lead agency responsible for the 2022 RTP/SCS, solicited preliminary public agency comments on the project through distribution of a Notice of Preparation (Appendix A) and receipt of public comments during a scoping meeting

held virtually on January 13, 2022, via Zoom. The NOP scoping process is described and discussed further in Section 1.7, *Public Review and Participation Process*.

1.3 Purpose and Legal Authority

This Program EIR has been prepared in compliance with the CEQA Statutes and Guidelines. In general, the purpose of an EIR is to (see CEQA Guidelines Section 15121(a)):

a. Analyze the environmental effects of the adoption and implementation of the Plan;
b. Inform decision-makers, responsible and trustee agencies and members of the public as to the range of the environmental impacts of the Plan;
c. Recommend a set of measures to mitigate significant adverse impacts; and
d. Analyze a range of reasonable alternatives to the proposed Plan.

As the lead agency for preparing this EIR, StanCOG will rely on the EIR analysis of environmental effects in its review and consideration of the proposed 2022 RTP/SCS prior to approval.

As discussed in further detail below in Section 1.5.2, *CEQA Streamlining Under SB 375*, SB 75 provides streamlining benefits for certain transit-oriented projects consistent with an adopted SCS. Pursuant to these provisions of SB 375, this EIR has also been prepared to allow qualifying projects to streamline their environmental review.

1.4 Type of Environmental Document

This document is a Program EIR. Section 15168(a) of the CEQA Guidelines states that:

> A Program EIR is an EIR which may be prepared on a series of actions that can be characterized as one large project and are related either: (1) geographically; (2) as logical parts in a chain of contemplated actions; (3) in connection with issuance of rules, regulations, plans, or other general criteria, to govern the conduct of a continuing program; or (4) as individual activities carried out under the same authorizing statutory or regulatory authority and having generally similar environmental effects which can be mitigated in similar ways.

As a programmatic document, this EIR presents a regionwide assessment of the impacts of the proposed 2022 RTP/SCS. Analysis of site-specific impacts of individual projects is not required in a program EIR. Many specific projects are not currently defined to the level that would allow for such an analysis. Individual specific environmental analysis of each project will be performed as necessary by the appropriate implementing agency prior to each project being considered for approval. This program EIR serves as a first-tier environmental document under CEQA supporting second-tier environmental documents for:

- Transportation projects developed during the engineering design process; and
- Land use and development projects, including residential or mixed-use projects and transit priority projects consistent with the SCS.

Project sponsors implementing subsequent projects would undertake future environmental review for projects in the proposed 2022 RTP/SCS. These agencies would include cities (Ceres, Hughson, Modesto, Newman, Oakdale, Patterson, Riverbank, Turlock, and Waterford) and Stanislaus County. Agencies that would implement a project are also referred to herein as sponsor agencies in this EIR.

This would include Caltrans, Amtrak, and transit agencies operating in the region, among others. All of these sponsors, as well as the StanCOG member agencies, would be able to prepare subsequent environmental documents that incorporate by reference the appropriate information from this program EIR regarding secondary effects, cumulative impacts, broad alternatives and other relevant factors. If the lead agency finds that implementation of a later activity would have no new effects and that no new mitigation measures would be required, that activity would require no additional CEQA review. Where subsequent environmental review is required, such review would focus on project-specific significant effects specific to the project, or its site, that have not been considered in this program EIR (CEQA Guidelines Section 15168).

Section 15151 of the CEQA Guidelines provides the following standards related to the adequacy of an Environmental Impact Report:

> An Environmental Impact Report should be prepared with a sufficient degree of analysis to provide decision-makers with information which enables them to make a decision which intelligently takes account of environmental consequences. An evaluation of the environmental effects of a proposed project need not be exhaustive, but the sufficiency of an EIR is to be reviewed in light of what is reasonably feasible. Disagreement among experts does not make an EIR inadequate, but the EIR should summarize the main points of disagreement among experts. The courts have looked not for perfection; but for adequacy, completeness, and a good faith effort at full disclosure.

Section 15146 of the CEQA Guidelines further provides the following additional standards related to the adequacy of an Environmental Impact Report:

> The degree of specificity required in an EIR will correspond to the degree of specificity involved in the underlying activity which is described in the EIR.
>
> (a) An EIR on a construction project will necessarily be more detailed in the specific effects of the project than will be an EIR on the adoption of a local general plan or comprehensive zoning ordinance because the effects of the construction can be predicted with greater accuracy.
>
> (b) An EIR on a project such as the adoption or amendment of a comprehensive zoning ordinance or a local general plan should focus on the secondary effects that can be expected to follow from the adoption, or amendment, but the EIR need not be as detailed as an EIR on the specific construction projects that might follow.

1.5 Implementation Issues and Future Environmental Review

The proposed 2022 RTP/SCS contains transportation projects that will be implemented over time. Implementation of the proposed 2022 RTP/SCS will follow a schedule based on the funding and demand for individual transportation projects and improvements. Implementation of the SCS component of the proposed 2022 RTP/SCS will require cooperation of the StanCOG member agencies and municipalities in the StanCOG region.

Implementation of the projects addressed in the proposed 2022 RTP/SCS must individually demonstrate compliance with the requirements of CEQA and/or NEPA (for projects requiring federal funding or approvals). As appropriate, individual projects may be required to prepare a project-level analysis to fulfill CEQA and/or NEPA requirements. The lead agency responsible for reviewing these projects would determine the level of review needed, and the scope of that analysis would depend

on the specifics of the particular project. These project environmental documents may, however, use the discussion of impacts in this Program EIR to streamline project-specific reviews, for example as a basis of their assessment of these regional or cumulative impacts. These projects may also be eligible for CEQA streamlining under SB 375, as explained further below.

This Program EIR is a first-tier document that addresses the environmental impacts that may affect the StanCOG region from adoption and implementation of the proposed 2022 RTP/SCS. "Tiering" generally refers to using the analysis of a broader environmental document that covers the general impacts of a program or larger-scale project so that subsequent environmental documents for a related individual project can be narrow and focused on unique or unanalyzed issues. CEQA encourages the use of tiering to reduce the time and excessive paperwork involved in the review process by eliminating repetitive analyses of issues that were addressed in the Program EIR (CEQA Guidelines Section 15168).

SB 375 enables certain qualifying projects consistent with an SCS (Government Code 65080 (b)(2)(H)) to tier from a Program EIR prepared for an RTP/SCS. Tiered documents may consist of initial studies or focused EIRs that may incorporate by reference portions of the Program EIR from which they are tiered. If the environmental effects of subsequent actions are consistent with and adequately addressed by a certified Program EIR, additional environmental analysis may be unnecessary.

If the 2022 RTP/SCS is adopted and the program EIR is certified by StanCOG, the California Air Resources Board (CARB) must then confirm that the RTP/SCS, if implemented, would achieve the greenhouse gas emission reduction targets required by SB 375. Upon making this determination, a number of streamlining benefits may become available to lead agencies that carry out or approve future projects consistent with the 2022 RTP/SCS.

For a lead agency to take advantage of many of the potential streamlining benefits associated with the SCS, it must be considered a Transit Priority Project that is consistent with the general use designation, density, building intensity and applicable policies specified for the project area in the SCS and meets the other statutory requirements outlined in Pub. Res. Code §§ 21155 et seq.

1.5.1 Streamlining Under SB 375

SB 375 provides streamlining benefits for Transit Priority Projects (TPP) and certain mixed-use projects (see PRC Sections 1155 et seq.). A TPP is a project that meets all of the criteria summarized below. For the purposes of this EIR, geographic areas that meet the TPP requirements are referred to as TPAs.

- Consistent with the general land use designation, density, building intensity, and applicable policies specified for the project area in the SCS;
- Located within half a mile of a major transit stop or high-quality transit corridor;
- Comprised of at least 50 percent residential use based on total building square footage, or as little as 26 percent residential use if the project has a floor area ratio of not less than 0.75; and
- Built out with a minimum of 20 dwelling units per acre (PRC § 21155).

For the purposes of this EIR, geographic areas that meet the TPP requirements are referred to as TPAs. One of three potential streamlining benefits may apply to a TPP pursuant to SB 375, as described below.

First, TPPs that meet a detailed list of criteria set forth in PRC Section 21155.1 are termed Sustainable Communities Projects and are statutorily exempt from CEQA. Due to the extensive list of criteria that must be met to achieve this exemption, the exemption may only be available in limited circumstances.

Second, a TPP that does not qualify for the statutory exemption may be eligible to comply with CEQA using a Sustainable Communities Environmental Assessment (SCEA). An SCEA is similar to a streamlined negative declaration or mitigated negative declaration that requires a 30-day public review period (rather than the otherwise available 20-day public review period). In addition, unlike a negative declaration or mitigated negative declaration, a lead agency's decision to approve a TPP based on an SCEA is reviewed, if challenged, by a court under the substantial evidence standard (PRC Section 21155.2(b)(7)).

Third, a TPP that will result in one or more potentially significant impacts after mitigation may be reviewed using a tiered TPP EIR as established by PRC Section 21155.2(c). A tiered TPP EIR is only required to address the significant or potentially significant effects of the TPP on the environment and is not required to include a discussion of (1) growth inducing impacts, (2) any project specific or cumulative impacts from cars and light duty truck trips generated by the project on global warming or the regional transportation network, (3) cumulative effects that have been adequately addressed and mitigated in prior applicable certified EIRs, (4) off-site alternatives, or (5) a reduced density alternative to address effects of car and light truck trips generated by the TPP (PRC Sections 21155.2 (c), 21159.28(a) and (b)).

In addition to the benefits provided for TPPs, SB 375 provides streamlining benefits for residential or mixed use residential projects, as defined in PRC Section 21159.28(d), that are consistent with the use designation, density, building intensity, and applicable policies specified for the project area in the SCS but do not meet the criteria for TPPs. Projects eligible for streamlining must incorporate applicable mitigation measures required by a prior environmental document, such as this EIR if it is certified by StanCOG.

Projects that qualify to use the SB 375 CEQA streamlining benefits would still need to obtain discretionary permits or other approvals from the lead agency and the local jurisdiction, in accordance with local codes and procedures, including any agreements related to zoning, design review, use permits, and other local code requirements. The streamlining only applies to the CEQA processing of a project. Other development projects that do not fall into any of these categories could still use this EIR for other CEQA tiering benefits, as described in Section 1.3.5, *Other Tiering Opportunities*.

1.5.2 Streamlining Under SB 226

In 2011, the legislature enacted SB 226 to establish additional streamlining benefits applicable to infill projects consistent with an SCS that are consistent with the requirements set forth in *State CEQA Guidelines* section 15183.3 (PRC Sections 21094.5 (c), 21094.5.5). Unlike the CEQA streamlining benefits established by SB 375, the benefits created by SB 226 may apply to non-residential projects including qualifying commercial, retail, transit station, school, or public office building projects (*State CEQA Guidelines*, Section 15183.3 (f)(1)).

1.5.3 Streamlining Under SB 743

SB 743 (2013) (PRC Section 21099 and 21555.4) created an exemption from CEQA for certain residential, employment center and mixed use development projects that are consistent with a Specific Plan (see Public Resources Code Section 21155.4.) (A Specific Plan implements a General Plan within a smaller geographic area, such as a downtown core or along a transit corridor; see

Government Code Section 65450 et seq.). The exemption applies if a project meets all of the following criteria:

1. It is a residential, employment center, or mixed use project;
2. It is located within a transit priority area (TPA);
3. The project is consistent with a specific plan for which an environmental impact report was certified; and
4. It is consistent with an adopted SCS or alternative planning strategy.

The exemption cannot be applied if circumstances requiring preparation of a Subsequent or Supplemental EIR occur, for example if the project would cause new or worse significant environmental impacts compared to what was analyzed in the environmental impact report for the specific plan.

SB 743 also specifies that aesthetic and parking impacts of residential, mixed use residential, or employment center uses on infill sites within a TPA shall not be considered significant effects on the environment (see Public Resources Code Section 21099(d).)

1.5.4 Other Tiering Opportunities

Finally, for all other types of projects proposed to be carried out or approved by a lead agency within the region, the lead agency may utilize this EIR for the purposes of other allowed CEQA tiering (PRC Sections 21068.5, 21093-21094, CEQA Guidelines 15152, 15385). Tiering is the process by which general matters and environmental effects in an EIR prepared for a policy, plan, program, or ordinance are relied upon by a narrower second-tier or site-specific EIR (PRC Section 21068.5). Moreover, by tiering from this EIR (if certified by StanCOG), a later tiered EIR would not be required to examine effects that (1) were mitigated or avoided in this EIR, (2) were examined at a sufficient level of detail in this EIR to enable those effects to be mitigated or avoided by site specific revisions, the imposition of conditions, or by other means in connection with the approval of the later project (PRC Section 21094).

1.6 EIR Content and Format

This document includes discussions of environmental impacts related to several issue areas. The analysis of environmental impacts identifies impacts by category: significant and unavoidable, significant but mitigable, less than significant, and no impact or beneficial. It proposes mitigation measures, where feasible, for identified significant environmental impacts to reduce project generated impacts. The responsible agency for each mitigation measure is also identified. It is the responsibility of the lead agency implementing specific projects to conduct the necessary environmental review consistent with CEQA and where applicable, incorporate mitigation measures provided herein and developed specifically for the project to minimize environmental impacts and/or reduce impacts to less than significant.

This Program EIR has been organized into seven sections. These include:

1.0 **Introduction.** Provides the statement of purpose, project background, description of the type of environmental document and CEQA streamlining opportunities, and information about the EIR content and format.

2.0 **Project Description.** Presents and discusses the project objectives, project location and specific project characteristics.

3.0 **Environmental Setting.** Provides a description of the existing physical setting of the project area and an overview of the progress in implementing the 2022 RTP/SCS.

4.0 **Analysis of Environmental Issues.** Describes existing conditions found in the project area and assesses potential environmental impacts that may be generated by implementing the proposed project, including cumulative development in the region. These potential project impacts are compared to "thresholds of significance" in order to determine the nature and severity of the direct and indirect impacts. Mitigation measures, intended to reduce adverse, significant impacts below threshold levels, are proposed where feasible. Impacts that cannot be eliminated or mitigated to less-than-significant levels are also identified.

5.0 **Other CEQA Required Discussions.** Identifies growth inducing impacts that may result from implementation of the proposed project, as well as long-term effects of the project and significant irreversible environmental changes.

6.0 **Alternatives.** Describes alternatives to the proposed project and compares each alternatives environmental impacts to the proposed project.

7.0 **References/Preparers.** Lists all published materials, federal, state, and local agencies, and other organizations and individuals consulted during the preparation of this EIR. It also lists the EIR preparers.

1.7 Public Review and Participation Process

StanCOG is committed to effectively involving the public in the update of the RTP/SCS; and therefore, has conducted an extensive outreach process during the preparation of this Draft EIR to affected agencies, organizations and members of the public interested in the proposed RTP/SCS. StanCOG will continue to provide, opportunities for the public to participate in the development of the RTP/SCS.

StanCOG initiated the EIR scoping process on January 4, 2022, with an initial circulation of a Notice of Preparation (NOP) to public agencies and persons considered likely to be interested in the project and its potential impacts. The NOP provided formal notification to all federal, state and local agencies involved with funding or approval of the project, and to other interested organizations and members of the public, of the preparation of this Draft EIR for the project. A copy of the NOP is provided in Appendix A along with all written responses received. In addition, StanCOG held a Scoping Meeting virtually on January 13, 2022 via Zoom. Table 1-1 summarizes the issue areas from the responses of the NOP circulation, as well as the public comments from the Scoping Meeting.

Table 1-1 NOP and Scoping Meeting Comments

Commenter	Issue Area/Issues Raised	How and Where Addressed in the EIR
Agency Comments		
Native American Heritage Commission	▪ Consultation pursuant to Senate Bill 19 and Assembly Bill 52 ▪ Impacts to Tribal Cultural Resources ▪ Confidentiality of information submitted by a Tribe ▪ Consideration of feasible mitigation	All issues are addressed in Section 4.5 *Cultural Resources* and Section 4.18, *Tribal Cultural Resources.*

Commenter	Issue Area/Issues Raised	How and Where Addressed in the EIR
California Department of Fish and Wildlife	▪ Impacts to special-status species within the project area ▪ Impacts to federally listed species within the project area ▪ Consultation with CDFW regarding lake or streambed alteration	All issues are addressed in Section 4.4, *Biological Resources.*
Stanislaus County Environmental Review Committee	▪ No comment	
Public Comments		
Michael Arnerich	▪ Intersection and roadway safety for bicyclists ▪ Suggests bicyclist review of proposed intersection and roadway changes	All issues are addressed in Section 4.16, *Transportation and Circulation.*
Jeremy Ballard	▪ Impacts of the construction and expansion of job centers to agricultural resources and utilities	Impacts to agricultural resources are addressed in 4.2, *Agricultural and Forestry Resources*. Impacts to utilities are addressed in Section 4.18, *Utilities and Service Systems*.
Craig Lewis	▪ Timeline of proposed project	The timeline of the proposed project is described below under Section 1.6, *Environmental Review Process*.
Individual	▪ Project consistency with greenhouse gas emissions reduction targets	Consistency with applicable greenhouse gas emissions reduction targets are discussed in Section 4.9, *Greenhouse Gas Emissions and Climate Change*.

1.8 Environmental Review Process

The environmental impact review process, as required under CEQA, is summarized below and illustrated in Figure 1-1. The steps are presented in sequential order.

1. **Notice of Preparation (NOP)**. After deciding that an EIR is required, the lead agency (StanCOG) must file a NOP soliciting input on the EIR scope to the State Clearinghouse, other concerned agencies, and parties previously requesting notice in writing (*CEQA Guidelines* Section 15082; Public Resources Code Section 21092.2). The NOP must be posted in the County Clerk's office for 30 days. StanCOG filed the NOP with the County Clerk's Office and the State Clearinghouse on January 4, 2022 for a review period that ended on February 3, 2022.
2. **Draft EIR Prepared.** This Draft EIR contains: a) table of contents or index; b) summary; c) project description; d) environmental setting; e) discussion of significant impacts (direct, indirect, cumulative, growth-inducing and unavoidable impacts); f) a discussion of alternatives; g) mitigation measures; and h) discussion of irreversible changes.
3. **Notice of Availability.** A public notice of Draft EIR availability must be given through at least one of the following procedures: a) publication in a newspaper of general circulation; b) posting on and off the Project site; and c) direct mailing to owners and occupants of contiguous properties. The lead agency must solicit input from other agencies and the public and respond in writing to all comments received (Public Resources Code Sections 21104 and 21253).

4. **Final EIR.** The Final EIR must include: a) the Draft EIR; b) copies of comments received during public review; c) list of persons and entities commenting; and d) responses to comments.
5. **Certification of Final EIR.** Prior to making a decision on the proposed project, StanCOG must certify that: a) the Final EIR has been completed in compliance with CEQA; b) the Final EIR was presented to the decision-making body of the lead agency; and c) the decision making body reviewed and considered the information in the Final EIR prior to approving a project (*CEQA Guidelines* Section 15090).
6. **Lead Agency Project Decision.** StanCOG may a) disapprove the project because of its significant environmental effects; b) require changes to the project to reduce or avoid significant environmental effects; or c) approve the project despite its significant environmental effects, if the proper findings and statement of overriding considerations are adopted (*CEQA Guidelines* Sections 15042 and 15043).
7. **Findings/Statement of Overriding Considerations**. For each significant impact of the project identified in the EIR, StanCOG must find, based on substantial evidence, that either: a) the project has been changed to avoid or substantially reduce the magnitude of the impact; b) changes to the project are within another agency's jurisdiction and such changes have or should be adopted; or c) specific economic, social, or other considerations make the mitigation measures or project alternatives infeasible (*CEQA Guidelines* Section 15091). If an agency approves a project with unavoidable significant environmental effects, it must prepare a written Statement of Overriding Considerations that sets forth the specific social, economic, or other reasons supporting the agency's decision.
8. **Mitigation Monitoring Reporting Program.** If StanCOG is required to make findings on significant effects identified in the EIR, it shall adopt a reporting or monitoring program for mitigation measures that were adopted or made conditions of project approval to mitigate significant effects.
9. **Notice of Determination (NOD).** StanCOG must file a NOD after deciding to approve a project for which an EIR is prepared (*CEQA Guidelines* Section 15094). StanCOG shall file the NOD with the County Clerk. The NOD must be posted for 30 days and sent to anyone previously requesting notice. Posting of the NOD starts a 30 day statute of limitations on CEQA legal challenges (Public Resources Code Section 21167[c]).

1.9 Lead and Responsible Agencies

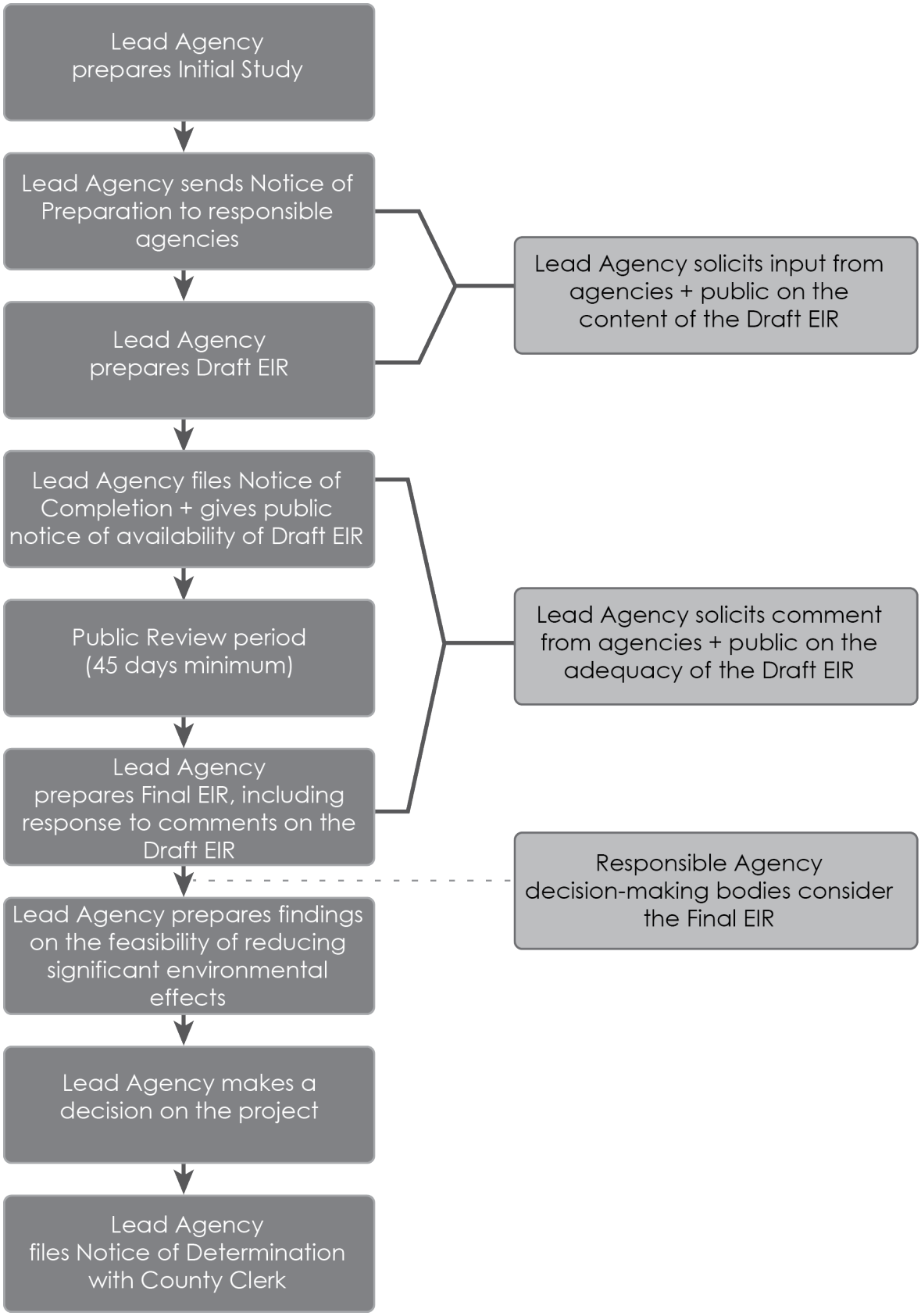
The *CEQA Guidelines* require the identification of lead, responsible, and trustee agencies. StanCOG is the lead agency for the proposed project because it has the principal responsibility for approving the project.

A responsible agency is an agency other than the lead agency that has discretionary approval authority over certain components of a project (the *State CEQA Guidelines* define a public agency as a State or local agency, but specifically exclude federal agencies from the definition). A trustee agency refers to a State agency having jurisdiction by law over natural resources affected by a project which are held in trust for the people of the State of California (for example, the California Department of Fish and Wildlife). While no responsible agencies or trustee agencies are responsible for approvals associated with adoption of the proposed 2022 RTP/SCS, implementation of projects identified in the proposed 2022 RTP/SCS will require permits and approvals from lead, trustee, and responsible agencies, which may include the following:

- Stanislaus County
- City of Ceres
- City of Hughson
- City of Modesto
- City of Newman
- City of Oakdale
- City of Patterson
- City of Riverbank
- City of Turlock
- City of Waterford
- Stanislaus Regional Transit Authority Board
- Turlock Transit
- California Transportation Commission
- California Department of Transportation
- California Department of Fish and Wildlife
- California Department of Conservation
- Central Valley Regional Water Quality Control Board
- San Joaquin Valley Air Pollution Control District

.

Figure 1-1 Environmental Review Process



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2 Project Description

This section describes the proposed project, the 2022 Regional Transportation Plan and Sustainable Communities Strategy (2022 RTP/SCS, or Valley Vision 2046), as well as the project objectives, project location and characteristics, 2022 RTP/SCS transportation projects, the preferred land use scenario selected for the SCS, and discretionary actions needed for approval.

2.1 Lead Agency

Stanislaus Council of Governments (StanCOG)
(Regional Transportation Planning Agency)
1111 I Street, Suite 308
Modesto, California 95354

2.2 Background

The objective of the 2022 RTP/SCS is to comply with the current California Transportation Commission Regional Transportation Plan Guidelines, pursuant to Government Code Section 14522. The guidelines require the preparation of a regional transportation plan, and a long-range transportation planning document which would provide policy guidelines regarding the planning and programming of transportation projects within Stanislaus County through 2046. Further, Government Code Sections 65050, 65400, 65584.01-04, 65587, 65588 and Public Resources Code Section 21155 were amended in January 2009 when Senate Bill (SB) 375 became law, requiring coordinated planning between regional land use and transportation plans to increase efficiency and reduce GHG emissions. The following sections describe the legislative requirements and local objectives associated with the 2022 RTP/SCS.

General Legislative Requirements

Stanislaus Council of Governments (StanCOG), as both the federally designated metropolitan planning organization (MPO) and the State-designated regional transportation planning agency (RTPA) for Stanislaus County, is required by both federal and State law to prepare a long-range (at least 20-year) transportation planning document known as a Regional Transportation Plan (RTP). The RTP is an action-oriented document used to achieve a coordinated and balanced regional transportation system.

StanCOG is also responsible to prepare a Sustainable Communities Strategy (SCS) as part of the RTP, pursuant to the requirements of California Senate Bill 375 as adopted in 2008 (discussed further below). The SCS sets forth a forecasted development pattern for the region, which, when integrated with the transportation network and other transportation measures and policies, is intended to reduce greenhouse gas (GHG) emissions from passenger vehicles and light trucks to achieve the regional light-duty vehicle GHG reduction targets set by the California Air Resources Board (CARB).

The California Transportation Commission's document *2017 California Regional Transportation Plan Guidelines* serves as the guidance for RTP development (CTC 2017). Under both federal and State law, StanCOG must update its RTP every four years.[1] StanCOG adopted its most recent RTP/SCS

[1] 23 C.F.R. §450.322(c); Gov. Code §65080(d)

update in 2018 (2018 RTP/SCS). The 2018 RTP/SCS covered a 25-year period between 2018 and 2042 (StanCOG 2018).

SB 375 Requirements

The Sustainable Communities Strategy and Climate Protection Act, SB 375 (codified at CAL.GOVT CODE §§ 14522.1, 14522.2, 65080.01, 65080, 65400, 65583, 65584.01, 65584.02, 65584.04, 65587, 65588; CAL. PUB. RES. CODE §§2161.3, 21155, 21159.28), is a law passed in 2008 by the California legislature that requires each MPO/RTPA to demonstrate, through the development of an SCS, how its region will integrate transportation, housing, and land use planning to meet the greenhouse gas (GHG) reduction targets set by the State. In addition to creating requirements for MPOs, it also creates requirements for the CTC and CARB. Some of the requirements include the following:

- The CTC must maintain guidelines for the travel demand models that MPOs develop for use in the preparation of their RTPs or MTPs.
- Each MPO must prepare an SCS as part of its RTP to demonstrate how it will meet the regional GHG targets.
- Each MPO must adopt a public participation plan for development of the SCS that includes informational meetings, workshops, public hearings, consultation, and other outreach efforts.
- If an SCS cannot achieve the regional GHG target, the MPO must prepare an Alternative Planning Strategy (APS) showing how it would achieve the targets with alternative development patterns, infrastructure, or transportation measures and policies.
- Each MPO must prepare and circulate a draft SCS at least 55 days before it adopts a final RTP or MTP.
- After adoption, each MPO must submit its SCS to CARB for review.
- CARB must review each SCS to determine whether or not, if implemented, it would meet the GHG targets. CARB must complete its review within 60 days.

CARB set targets for the StanCOG region to maintain or reduce greenhouse gas emissions in 2020 and in 2035. These targets apply to the StanCOG region as a whole for all on-road light-duty trucks and passenger vehicles emissions, and do not apply to individual cities or sub-regions. CARB is required to update 2035 GHG reduction targets every eight years for each region covered by one of the state's MPOs, or by 2026. However, the updated targets are not applicable for this cycle of the RTP/SCS. Therefore, the 2022 RTP/SCS would be subject to the CARB targets established in 2018: a 16 percent reduction in per capita GHG emissions for the planning year 2035, as compared to baseline per capita emissions levels in 2005. StanCOG, through the RTP/SCS, must reduce these levels to meet the 2035 target.

SB 375 specifically states that local governments retain their autonomy to plan local General Plan policies and land uses. The 2022 RTP/SCS provides a regional policy foundation that local governments may build upon, if they so choose. The 2022 RTP/SCS includes and accommodates the quantitative growth projections for the region. SB 375 also requires that forecasted development pattern for the region be consistent with the eight-year regional housing needs as allocated to member jurisdictions through the Regional Housing Needs Allocation (RHNA) process under State housing law. RHNA, itself, is statutorily exempt from CEQA.

In addition, this 2022 RTP/SCS EIR lays the groundwork for the streamlined review of qualifying development projects within Transit Priority Areas.[2] Qualifying projects that meet statutory criteria and are consistent with the 2022 RTP/SCS are eligible for streamlined environmental review pursuant to CEQA. See Section 1, *Introduction*, for a full discussion of CEQA streamlining.

Fixing America's Surface Transportation Act (FAST Act)

The most recent federal transportation legislation is the Fixing America's Surface Transportation (FAST) Act, builds on the changes made by MAP-21. The Moving Ahead for Progress in the 21st Century Act (MAP-21), enacted in 2012, made a number of reforms to the metropolitan and statewide transportation planning processes, including incorporating performance goals, measures, and targets into the process of identifying needed transportation improvements and project selection. The FAST Act includes provisions to support and enhance these reforms. Public involvement remains a hallmark of the planning process.

The FAST Act continues requirements for a long-range plan and a short-term transportation improvement program (TIP). Long-range statewide and metropolitan plans are now required to include facilities that support intercity transportation, including intercity buses. The statewide and metropolitan long-range plans must describe the performance measures and targets that states and MPOs use in assessing system performance and progress in achieving the performance targets. Additionally, the FAST Act requires the planning process to consider projects/strategies to improve the resilience and reliability of the transportation system, address stormwater mitigation, and enhance travel and tourism.

Finally, to engage all sectors and users of the transportation network, the FAST Act requires that the planning process include public ports and private transportation providers, and further encourages MPOs to consult during this process with officials of other types of planning activities, including tourism and natural disaster risk reduction. MAP-21 and the FAST Act also change criteria for MPO officials to provide transit provider representatives with equal authority and allow the representatives to also serve as the representative of a local municipality.

Through the RTP development process, the FAST Act encourages StanCOG to:

- Consult with officials responsible for other types of planning activities that are affected by transportation in the area (including State and local planned growth, economic development, environmental protection, airport operations, and freight movements) or to coordinate its planning process, to the maximum extent practicable, with such planning activities.[3]

Specifically, the FAST Act requires that the RTP planning process considers projects and strategies that will:

- Support the economic vitality of the metropolitan area, especially by enabling global competitiveness, productivity, and efficiency;
- Increase the safety of the transportation system for motorized and non-motorized users;
- Increase the security of the transportation system for motorized and non-motorized users;
- Increase the accessibility and mobility of people and for freight;

[2] A Transit Priority Area is an area within ½-mile of high-quality transit: a rail stop or a bus corridor that provides or will provide at least 15-minute frequency service during peak hours by the year 2035.
[3] 23 U.S.C. §134(g)(3)(A).

- Protect and enhance the environment, promote energy conservation, improve the quality of life, and promote consistency between transportation improvements and State and local planned growth and economic development patterns;
- Enhance the integration and connectivity of the transportation system, across and between modes, for people and freight;
- Promote efficient system management and operation;
- Emphasize the preservation of the existing transportation system.
- Improve the resiliency and reliability of the transportation system and reduce or mitigate stormwater impacts of surface transportation; and
- Enhance travel and tourism.[4]

Planning Final Rule – FAST Act

On May 27, 2016, the Statewide and Nonmetropolitan Transportation Planning and Metropolitan Transportation Planning Final Rule was issued, with an effective date of June 27, 2016, for Title 23 CFR Parts 450 and 771 and Title 49 CFR Part 613. This final rule states, "On or after May 27, 2018, an RTPA may not adopt an RTP that has not been developed according to the provisions of MAP-21/FAST Act as specified in the Planning Final Rule." This rule applies to the StanCOG 2022 RTP/SCS.

Measure L Expenditure Plan

Measure L is the Transportation Ordinance and Expenditure Plan approved by Stanislaus County voters on November 8, 2016. The measure raised the sales tax in Stanislaus County on April 1, 2017, by one-half cent for a total period of 25 years to improve local streets and roads, as well as improve connectivity and reduce congestion. Over the course of the 25-year plan, it is estimated that 960 million dollars will be generated for local transportation improvements. Funds will be used for all phases of project implementation, including planning: environmental, permits, design, right-of-way, and/or construction capital and operations projects. The additional revenues and available funds from Measure L will likely be sourced into funding for projects included in the 2022 RTP/SCS.

Environmental Justice

StanCOG is required to address social equity and environmental justice in the RTP. The legal basis for environmental justice stems from the Civil Rights Act of 1964, along with Executive Order 12898 (February 1994), which states that "each Federal agency shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations." StanCOG must evaluate how the RTP/SCS might impact minority and low-income populations and must ensure that the plan does not have a disproportionate adverse impact on any such populations.

In addition, per 23 C.F.R. Section 450.316(a)(1)(vii), the participation plan that StanCOG must develop and use must describe explicit procedures, strategies, and desired outcomes for "[s]eeking out and considering the needs of those traditionally underserved by existing transportation systems, such as low-income and minority households, who may face challenges accessing employment and other services."

[4] 23 U.S.C. §134(h)(1).

Regional Transportation Plans

As noted, the procedures for developing RTPs are provided in the CTC's Regional Transportation Plan Guidelines (2017). The guidelines identify the purpose of an RTP to be as follows:

- Provide an assessment of current modes of transportation and the potential of new travel options within the region;
- Project/estimate the future needs for travel and goods movement;
- Identify and document specific actions necessary to address the region's mobility and accessibility needs;
- Guide and document public policy decisions by local, regional, state and federal officials regarding transportation expenditures and financing;
- Identify needed transportation improvements in sufficient detail to serve as a foundation for:
  - Development of the Federal Transportation Improvement Program (FTIP) and the Interregional Transportation Improvement Program (ITIP);
  - Facilitation of the National Environmental Protection Act (NEPA)/404 integration process; and
  - Identification of project purpose and need.
- Employ performance measures that demonstrate the effectiveness of the transportation improvement projects in meeting the intended goals.
- Promote consistency between the California Transportation Plan, the regional transportation plan and other transportation plans developed by cities, counties, districts, Native American Tribal Governments and State and Federal agencies in responding to statewide and interregional transportation issues and needs;
- Provide a forum for 1) participation and cooperation, and 2) facilitating partnerships that reconcile transportation issues which transcend regional boundaries; and
- Involve community-based organizations as part of the public, Federal, State and local agencies, Native American Tribal Governments, as well as local elected officials, early in the transportation planning process so as to include them in discussions and decisions on the social, economic, air quality, and environmental issues related to transportation.

RTPs must include long-term horizons (at least 20 years) that reflect regional needs, identify regional transportation issues, and develop and evaluate solutions that incorporate all modes of travel. RTPs must also recommend a comprehensive approach that provides direction for programming decisions to meet the identified regional transportation needs. The RTP must be fully consistent with the requirements of MAP-21, the FAST Act, and other federal regulations, including conformity with the 1990 Clean Air Act Amendments and consistency with the Federal Transportation Improvement Program (FTIP).

In addition, Government Code §§ 65050, 65400, 65584.01-04, 65587, 65588 and Public Resources Code §21155 were amended in January 2009 when SB 375 became law, requiring coordinated planning between regional land use and transportation plans to increase efficiency and reduce GHG emissions.

2.3 Project Objectives

The purpose of the 2022 RTP/SCS is to coordinate and facilitate the programming and budgeting of all transportation facilities and services within Stanislaus County through the year 2046 and demonstrate how the region will integrate transportation and land use planning to meet the GHG reduction targets established by the California Air Resources Board (CARB) and in accordance with other State and Federal regulations. It identifies reasonably available sources of funding for transportation. The 2022 RTP/SCS is a plan for improving the quality of life for residents of Stanislaus County by planning for wise transportation investments and informed land use choices. The RTP/SCS aims to achieve variety and efficiency in travel choices, as well as a safe, secure, and efficient transportation system that would provide improved mobility and access. It includes strategies to generally improve air quality, improve health, and reduce greenhouse gas emissions consistent with SB 375 requirements. The plan achieves its overall objectives by combining transportation investment and policies with integrated land use strategies that reduce per capita vehicle miles traveled (VMT) and emissions. The project objectives are as follows:

- Provide an efficient, integrated, multi-modal transportation system for the movement of people and goods that enhances the physical, economic, and social environment in the Stanislaus County region.
- System Performance: Develop an efficient, maintained, and safe circulation network that maximizes circulation, longevity, and fiscal responsibility while minimizing environmental impacts.
- Transit: Provide a safe, secure, coordinated and efficient public transit system that can reasonably meet the needs of residents.
- Aviation: Support development of a regional system of airports that meets the air commerce and general aviation needs of the county.
- Rail: Promote safe, economical, convenient rail systems and schedules that meet the needs of passenger and freight services in the region.
- Goods Movement: Provide a transportation system that efficiently and effectively transports goods to, from, within, and through Stanislaus County.
- Active Transportation: Improve, enhance, and expand the region’s bicycle and pedestrian systems and connectivity to those systems, while keeping them safe and convenient.
- Regional Roads and Corridors: Preserve and enhance regional transportation roads and corridors.
- Air Quality and Greenhouse Gases: Promote the improvement of air quality and GHG reductions through congestion management, coordination of land use, housing, and transportation systems, provision of alternative modes of transportation, and provision of incentives that reduce vehicle miles traveled.
- Public Health: Promote public health in the region by providing opportunities for residents to bicycle and walk to destinations such as home, work, school, medical facilities, and commercial and service businesses.
- Transportation Systems Management (TSM) Strategies, Transportation Demand Management (TDM) Measures, Transportation Control Measures (TCMs), and Intelligent Transportation Systems (ITS) Programs: Improve transportation mobility and operations by improving and utilizing TSM strategies, TDM measures, TCMS and ITS programs.Environmental Justice: Ensure

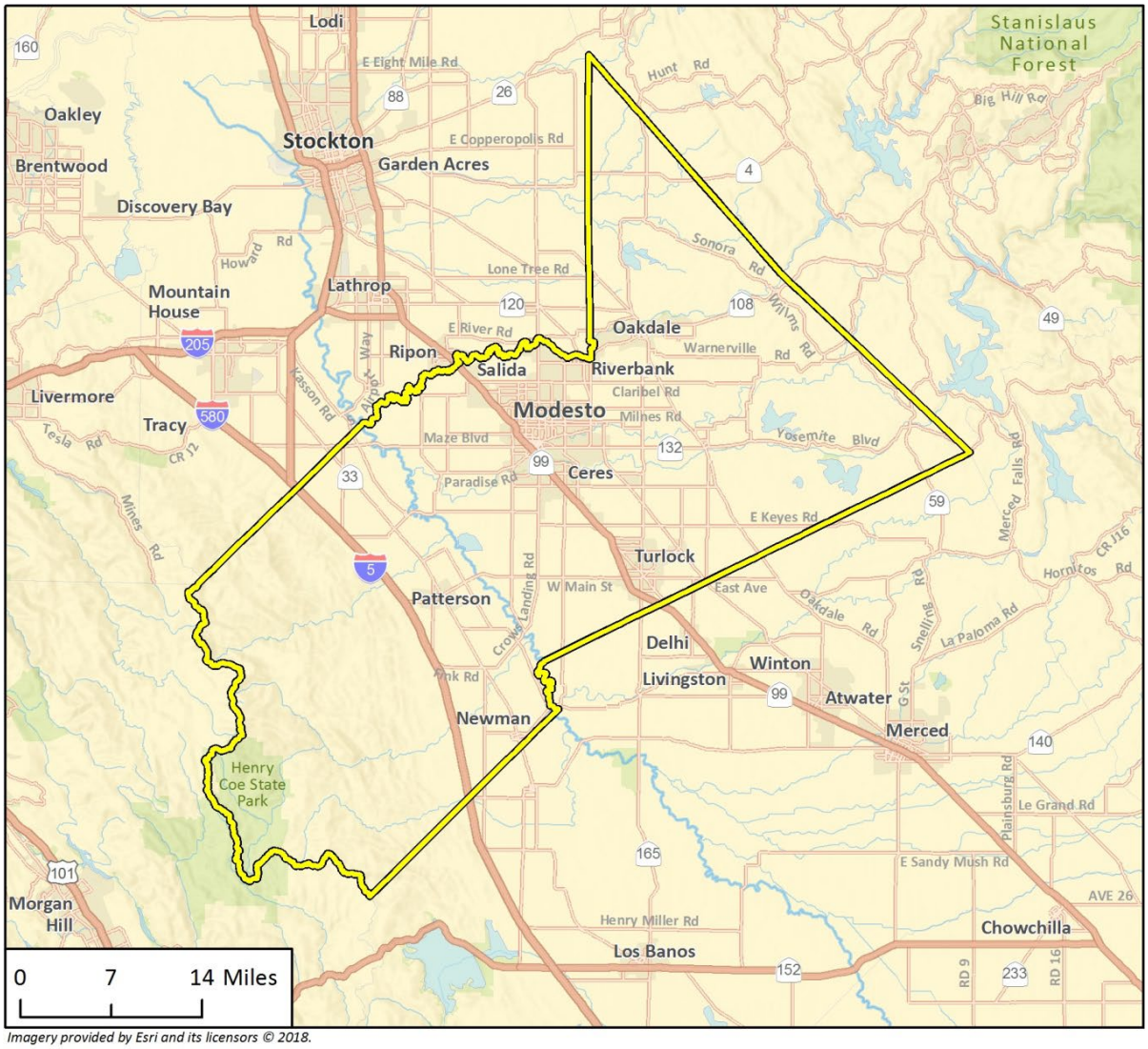
that transportation investments do not discriminate on the basis of race, color, national origin, sex, age or disability.

- Emerging Technologies: Support the development and implementation of emerging technologies in the surface transportation system.
- SCS: Develop an integrated land use plan that meets CARB targets.

2.4 Project Location

The 2022 RTP/SCS covers the entire area of Stanislaus County and includes the cities of Ceres, Hughson, Modesto, Newman, Oakdale, Patterson, Riverbank, Turlock, and Waterford as well as unincorporated areas within the County (see Figure 2-1). In addition, the 2022 RTP/SCS covers the Turlock Municipal Airport to the southeast of Stanislaus County, which is operated by the City of Turlock and the site of proposed aviation projects. Capital improvement projects identified in the 2022 RTP/SCS are located on state highways, county roads and locally owned streets, as well as on airport property, transit district property and public utility lands.

Figure 2-1 Regional Location



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Stanislaus County

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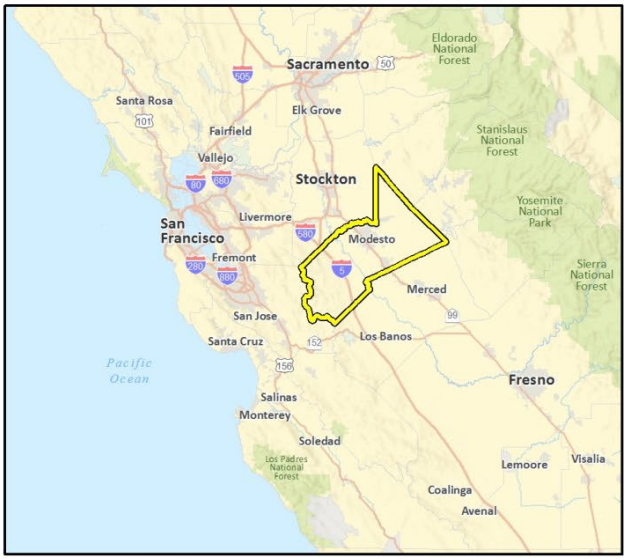


Fig 1 Regional Location

2.5 Project Characteristics

The most recent RTP/SCS was adopted by StanCOG in 2018 (2018 RTP/SCS). This 2022 update is a technical update which reflects changes in planning assumptions, planning lists, legislative requirements, demographics, local land use policies, and resource constraints while preserving the foundational elements of the 2018 RTP/SCS.

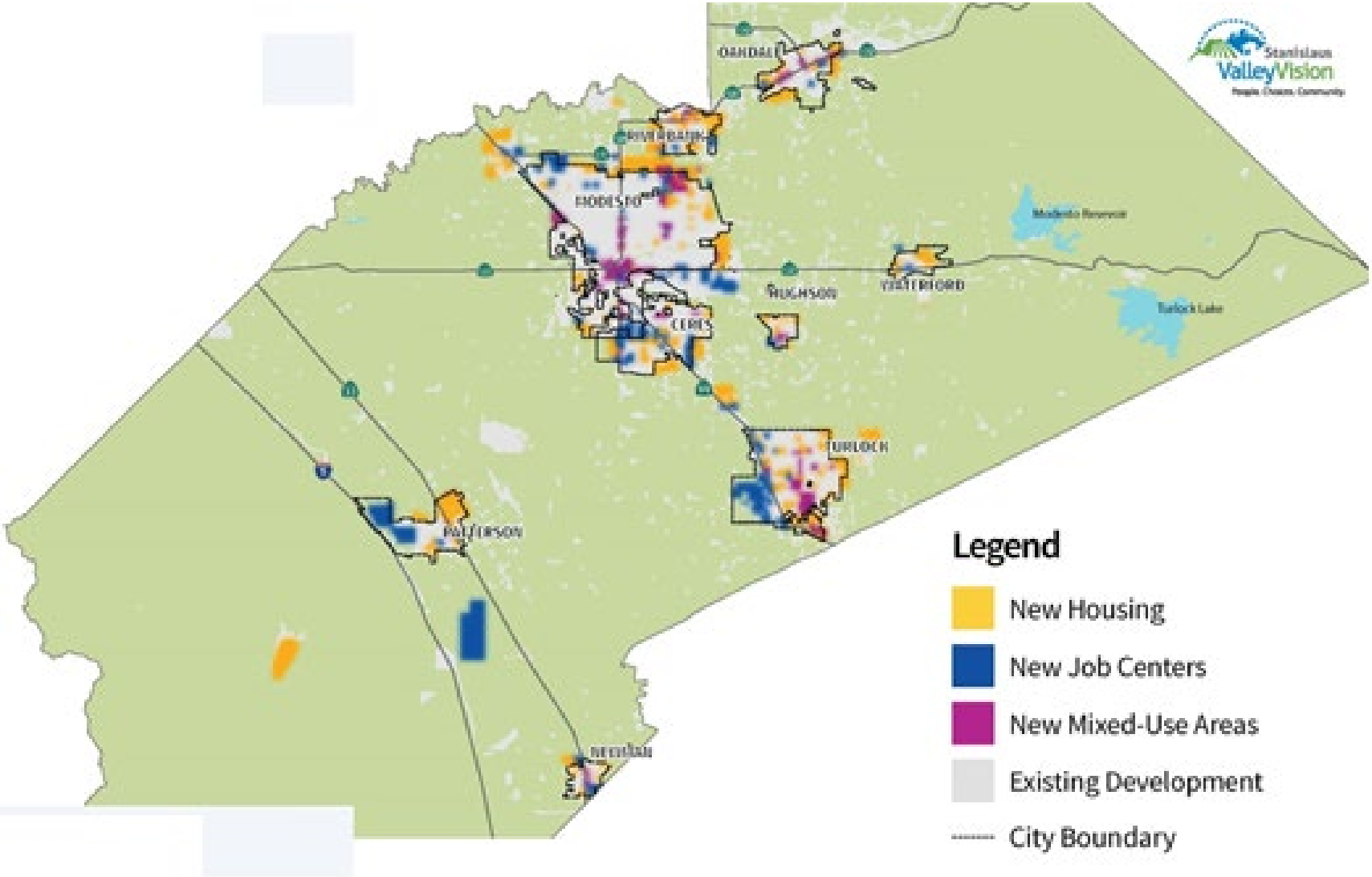
The 2022 RTP/SCS plans how the Stanislaus County Region will meet its transportation needs for the approximately 24-year period from 2022 to 2046, considering existing and projected future land use patterns as well as forecast population and job growth. Continued growth in the region would occur independently with or without implementation of the RTP/SCS. Therefore, the RTP/SCS is intended to accommodate the inevitable growth of the region and distribute growth. The RTP/SCS would not directly increase population; rather, the RTP/SCS intends to provide framework on how to plan for expected growth. The 2022 RTP/SCS plans for approximately $8.6 billion in revenues expected to be available to the region from all transportation funding sources over the course of the planning period. It identifies and prioritizes expenditures of this anticipated funding for transportation projects of all transportation modes: highways, streets and roads, transit, rail, bicycle and pedestrian, as well as transportation demand management measures and intelligent transportation systems.

2022 RTP/SCS Preferred Land Use Scenario

The 2022 RTP/SCS is based on a preferred land use and transportation scenario (Scenario D, also referred as the "Neighborhood Infill" scenario)[5] which defines a pattern of future growth and transportation system investment for the region emphasizing growth within existing neighborhoods and facilitating the transformation of established neighborhoods over time. The preferred land use scenario principally allocates growth in neighborhood infill areas and center and corridor infill areas, and would encourage development of a diverse range of housing types over time. Under this land use scenario, approximately 51 percent of dwelling unit growth would occur in jobs-rich areas, and approximately 75 percent of dwelling unit growth of occur in low vehicle miles traveled (VMT) areas. 84 percent of growth would consist of infill development. This land use scenario would reduce greenhouse gas emissions by approximately 11.7 percent by 2035, with a minimal amount of farmland impacted or converted to non-agricultural use. Figure 2-2 shows the 2022 RTP/SCS envisioned land use scenario.

[5] StanCOG staff presented four possible scenarios or transportation futures for consideration as the foundation of the 2022 RTP/SCS during preliminary planning. The approach to the 2022 RTP/SCS places emphasis on continuation of the goals and strategies from the 2018 plan. The 2018 RTP/SCS has provided a guide for specific policy and funding decisions made by the StanCOG Board and informed by committee recommendations and actions since the adoption of the previous RTP/SCS. The 2022 plan update will continue to serve as the general framework for future Board actions. StanCOG selected Scenario D, the Neighborhood Infill scenario, as the foundational scenario upon which the 2022 RTP/SCS is based and is comprised of a pattern of future growth and transportation system investment for the region emphasizing growth on underutilized land along the region's commercial corridors and downtown areas. The other scenarios are distinguished by varying land use patterns, and investment strategies, which were then modeled for efficiency.

Figure 2-2 2022 RTP/SCS Envisioned Land Use Scenario



2022 RTP/SCS Framework

There are four required elements of the RTP (Policy Element, Sustainable Communities Strategy, Financial Element, and Action Element); all of which must be internally consistent. The goals and strategies in the policy element reflect regional priorities for mobility, which are supported by the assumptions in the SCS, and are further reflected in the funding allocations in the financial element. A scenario represents the potential future interaction of these elements. Each land use scenario has been evaluated through a series of metrics to inform policymakers and the public how the scenario meets regional goals and strategies for improvement over current conditions. Each element's relationship to scenario development is discussed in the subheadings below.

Development Patterns

- Infill within downtowns and mixed-use neighborhoods;
- Limited expansion of existing community boundaries; and
- Greater emphasis on growth in downtowns and mixed-use centers.

Complementary Uses

- Compact development within mixed-use centers and in new traditional neighborhoods;
- Increased mix of housing-type options through increased proportion of multifamily housing; and
- Services, employment and housing in proximity.

Development Density

- Average residential density is 15.9 dwelling units per acre;
- Greater percentage of new multifamily, mixed-use housing and duplex/townhomes within and near downtowns and centers;
- Provide a mix of smaller lot single-family and multifamily housing in new neighborhoods;
- Limited large lot single family development; and
- Development occurs at the upper end of general plan densities.

Transit/Transportation Corridors

- Increased investment and availability of alternative modes of travel; and
- Assumes an ACE station in Modesto

The 2022 RTP/SCS is organized into the following chapters:

Chapter 1: Executive Summary. Includes an overview of the RTP/SCS, the preferred scenario and its performance, an explanation of the planning process, and the allocation of transportation funding.

Chapter 2: Introduction. Discusses legal authority, regulatory setting and planning initiatives, and transportation and land use issues related to controlling growth within Stanislaus County. In addition, the chapter discusses the overall purpose of the RTP/SCS, goals and objectives, and outlines the planning process.

Chapter 3: Regional Transportation System. Describes the overall existing conditions of the planning area, which includes roadways, active transportation infrastructure, public transit, and aviation.

Chapter 4: Future Conditions. The chapter continues to discuss potential future transportation possibilities, including the topic of technology trends (topic of transportation as a service, autonomous vehicles, and car sharing). The chapter also discusses land use patterns, demographics such as existing and forecasted population growth, housing needs, and economic and employment conditions. Lastly, the chapter includes the Investment Plan, which describes how the RTP/SCS allocates and applies existing and new sources of revenue, and fiscal constraints.

Chapter 5: Financing Investment Plan. The RTP provides projections for local, state, and federal funds, and distinguishes between formula and competitive funding sources. Future revenue projections are presented in Chapter 5

Chapter 6: System Preservation.Chapter7: Environmental Justice. Analyzes the effect of the RTP/SCS planning and project implementation process on minority and low-income populations, to ensure that no one population is unfairly burdened or rewarded based on transportation investments.

Chapter 8: Scenario Development. Provides a summary of the RTP/SCS intent and the link between land use and transportation planning. This chapter discusses the different scenarios proposed in the planning process, as well as addresses the transportation performance measures which gauge the performance of the RTP.

Chapter 9: Scenario Evaluation. This section discusses the measures used to gauge performance of each scenario and the selection of the preferred scenario.

Chapter 10: Consultation and Cooperation. The RTP/SCS Public Participation Plan was developed at the outset of the planning effort to establish an approach for public engagement to gather information about the diverse regional transportation needs. This section highlights the public outreach component of the Plan and the efforts taken to engage stakeholders and members of the public.

Of these ten chapters of the 2022 RTP/SCS, the Planning Process, Investment Plan and Transportation Performance Policies (included in Chapters 1, 6, and 8) are the three sections that include provisions with the potential to create physical changes to the environment and will be the primary focus for analysis in this EIR. Policy Element

The Policy Element of the 2022 RTP/SCS has been broadened to include both a regional policy section and a local policy section. The regional policy section includes specific policies for various topical issues and transportation modes (highways and roadways, bicycle, transit, etc.).

INVESTMENT PLAN

The Investment Plan provides details on the available revenue assumptions used to identify proposed transportation projects and transportation management strategies to support the region's long-term growth. The Plan emphasizes rehabilitation and operational improvements, as well as transit and active modes of transportation to a greater degree than past plans to ensure the transportation network supports the region. Particular attention is paid to the movement of goods to ensure continued growth and diversification of the economy.

PERFORMANCE MEASURES/SCENARIO DEVELOPMENT

The Performance Measures portion of the 2022 RTP/SCS delineates the current program of highway, streets and roadways, bicycle and pedestrian, transit, intelligent transportation systems, transportation demand management, railroad and aviation projects. Many of the programmed and planned transportation improvement projects carry over from the 2018 RTP/SCS; however, the

2022 RTP/SCS also includes several new projects. All projects listed in the 2022 RTP/SCS are defined as Tier I improvements. The Tier I list contains short- and long-range projects that are fully fundable from anticipated revenue sources and would likely be programmed during the life of the RTP (by 2046).

The recommended Tier I improvements for each transportation mode type, including roadways, transit, bicycle and pedestrian and aviation, are intended to implement a balanced multimodal circulation system, improve air quality by reducing vehicle miles traveled (VMT) and greenhouse gas (GHG) emissions while accommodating anticipated travel demand. In addition to the typical transportation system improvements such as widening roadways and adding traffic signals to improve congestion and mobility, StanCOG is committed to analyzing alternative strategies such as TSM, TDM, and ITS to increase system efficiencies. The alternative strategies will provide increased opportunities for non-auto travel; thus, reducing VMT and improving overall air quality. The land use scenario envisioned by the 2022 RTP/SCS is shown in Figure 2-2 The locations of new program or plan transportation improvements are shown in Figure 2-3 through Figure 2-7. In addition, Table 2-1 through Table 2-5 at the end of this section list the Tier 1 project by category type. The projects included in those tables comprise the complete program of improvements evaluated within this EIR.

Transportation Projects

Roadway Improvements

Each jurisdiction provides projects for the state highway or local roadway system within its jurisdiction. These are shown in Table 2-1. The projects address current and future roadway needs based on existing traffic conditions and projected traffic increases anticipated based on growth planned in the jurisdictions and General Plans.

The proposed roadway projects include road widenings and extensions, various improvements to interchanges/intersections, bridge replacements, and construction of freeway overcrossings. Road widening, auxiliary lane construction, roadway rehabilitation, railroad crossing improvements and various other improvements including signal installation are programmed or planned along highways and along local arterials in Ceres, Hughson, Modesto, Newman, Oakdale, Patterson, Riverbank, Turlock, Waterford and throughout Stanislaus County.

Transportation demand management (TDM) and intelligent transportation system (ITS) projects involve the use of methods to reduce demands on the roadway system and technologies that allow more efficient use of the existing road network. Proposed TDM and ITS projects are emphasized and include the installation of fiber optic and signal interconnect cables, associated conduit, and closed-circuit television cameras.

Transit Improvements

Proposed new transit improvements for the various transit agencies are listed in Table 2-2. The purchase of new buses as well as various capital improvements is included for each of the four transit operators, including Ceres Area Transit (CAT), Modesto Area Express (MAX), Stanislaus County (StaRT) and Bus Line Service of Turlock (BLaST). New transportation services, such as bus rapid transit (BRT) and express routes are proposed by all four operators. Passenger rail, including construction of a new passenger rail station, is expected in the City of Modesto and Turlock. Various

bus stop enhancements, and other improvements are included, as well improvements to the Altamont Corridor Express (ACE) throughout the County.

Bicycle and Pedestrian Improvements

Bicycle and pedestrian improvements are listed in Table 2-2. Improvements consist of various signage, striping and signal modifications to facilitate multiple use of existing roadway corridors throughout the county; specifically, the City of Modesto is programming the construction of several bicycle paths; the City of Oakdale is programming the construction of several Class I bicycle lanes. Other projects are located in but not limited to the Cities of Ceres, Hughson, and Patterson. Stanislaus County is programming construction of widened shoulders and Class II bicycle paths.

Airport Improvements

Newly proposed aviation projects in the 2022 RTP/SCS are listed in Table 2-3. The 2022 RTP/SCS includes a number of new projects at Modesto City-County Airport, Turlock Airport and Oakdale Airport. These include construction of new entrance road, terminal building, runway extension, fire station, maintenance shop and various other improvements. New projects at Turlock and Oakdale Airports include pavement preservation construction, infrastructure improvements, new runway construction and various other improvements.

Figure 2-3 2022 RTP/SCS Transportation Improvement Projects – StanCOG Region

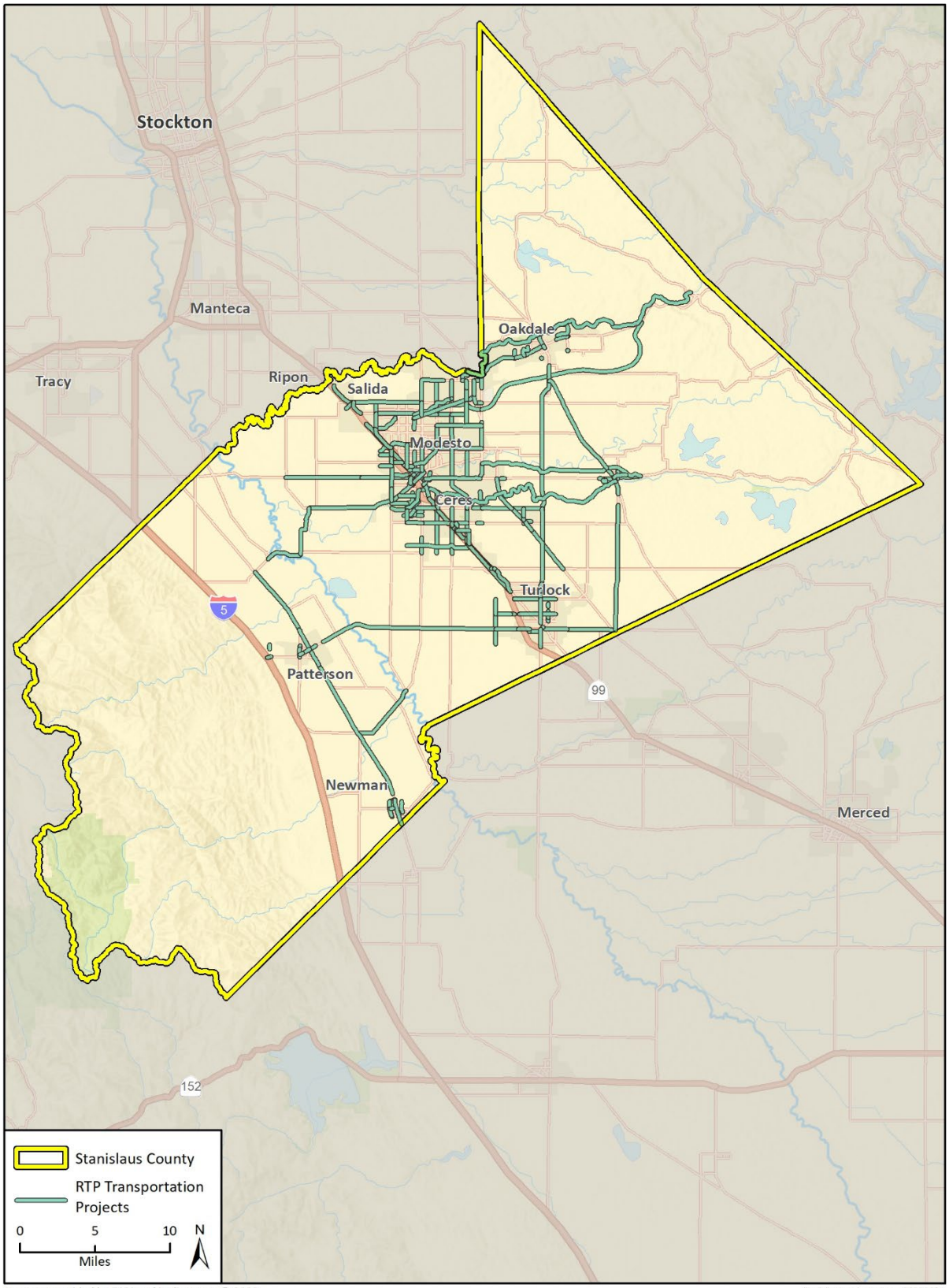


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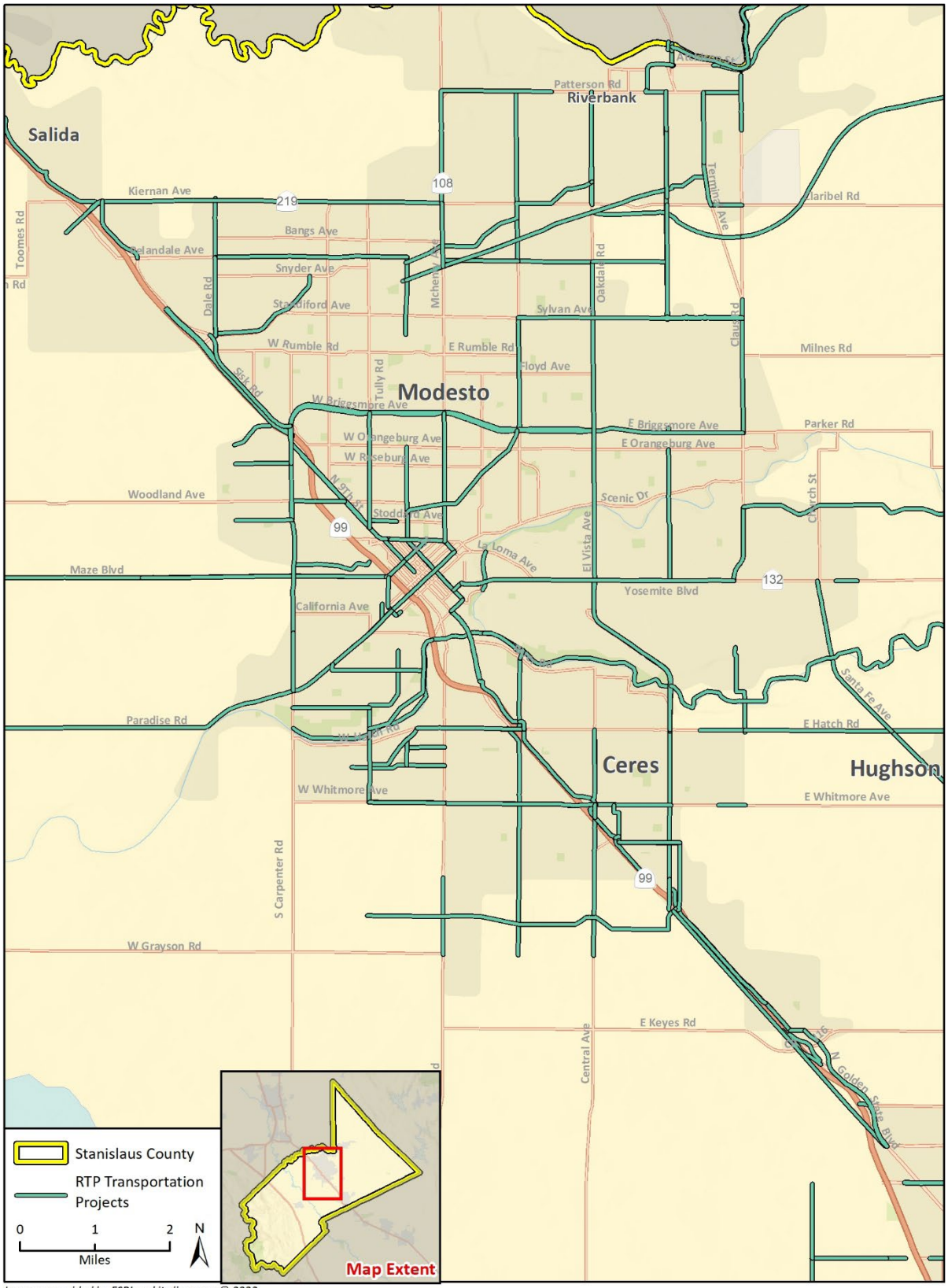
Fig 2 Project Locations_20220331

Figure 2-4 2022 RTP/SCS Transportation Improvement Projects – Modesto/Ceres



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Additional data provided by Farmland Mapping and Monitoring Program, 2018.

Figure 2-5 2022 RTP/SCS Transportation Improvement Projects – Turlock/Hughson/Waterford

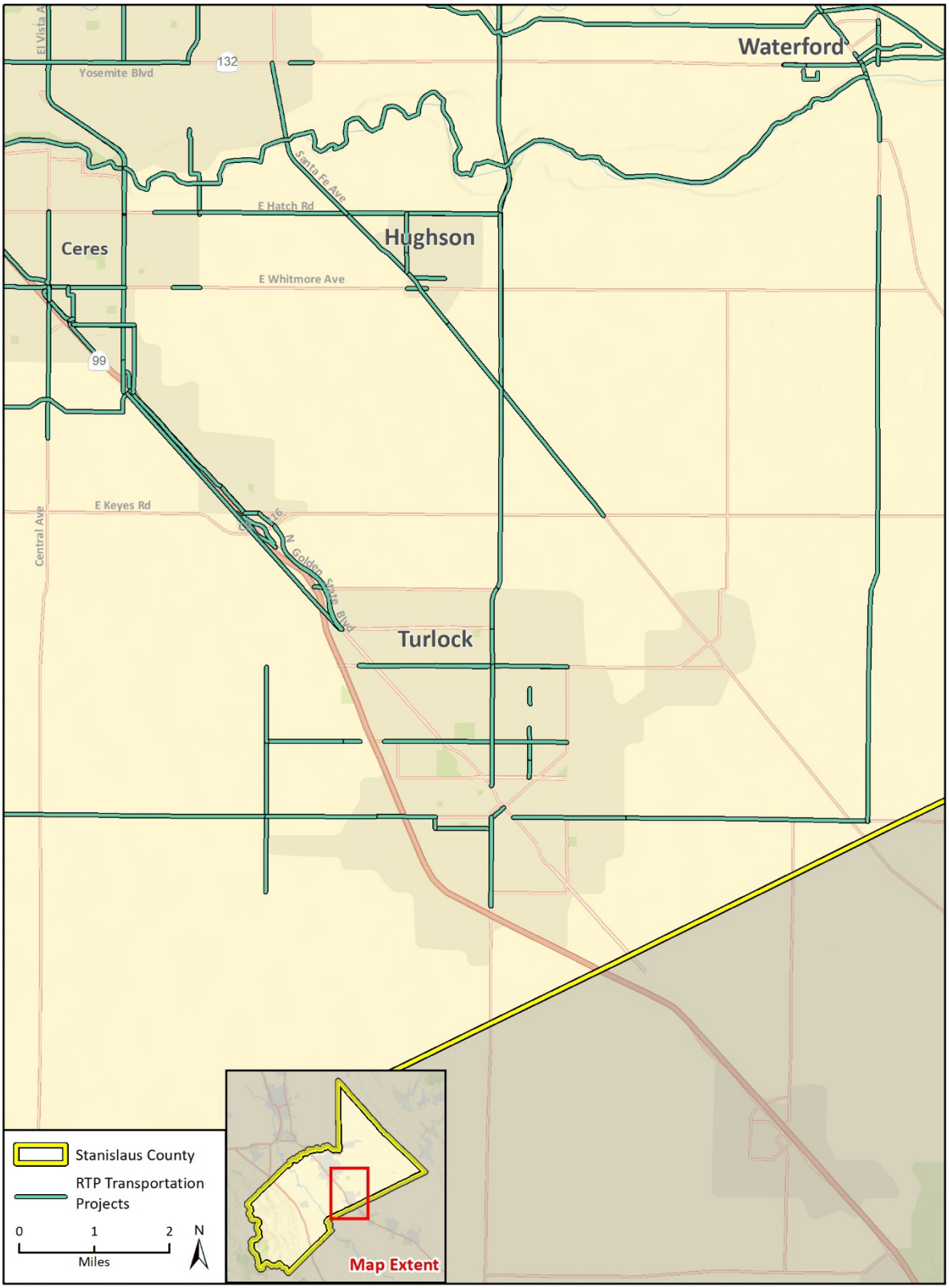

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Figure 2-6 2022 RTP/SCS Transportation Improvement Projects – Patterson/Newman

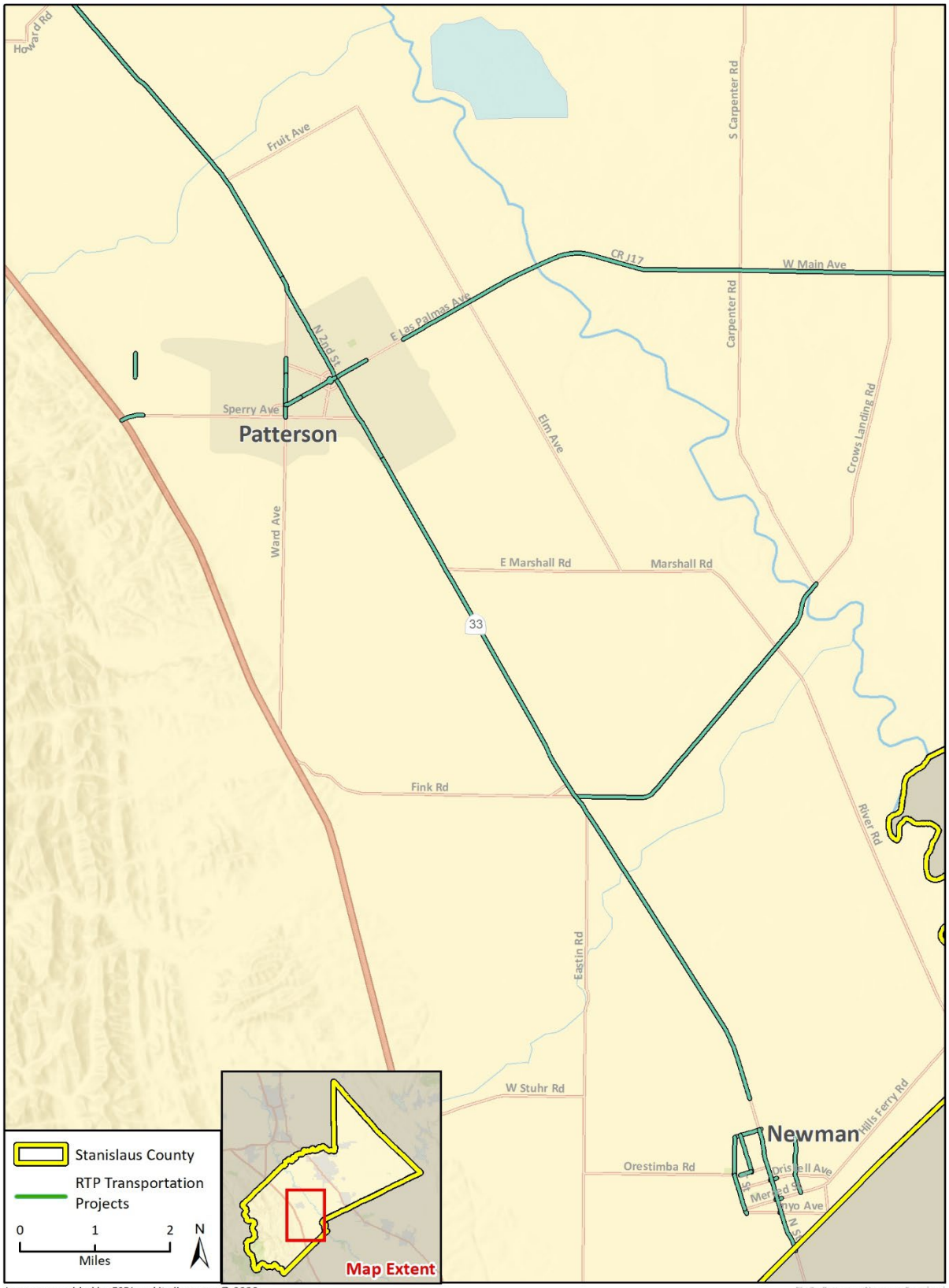

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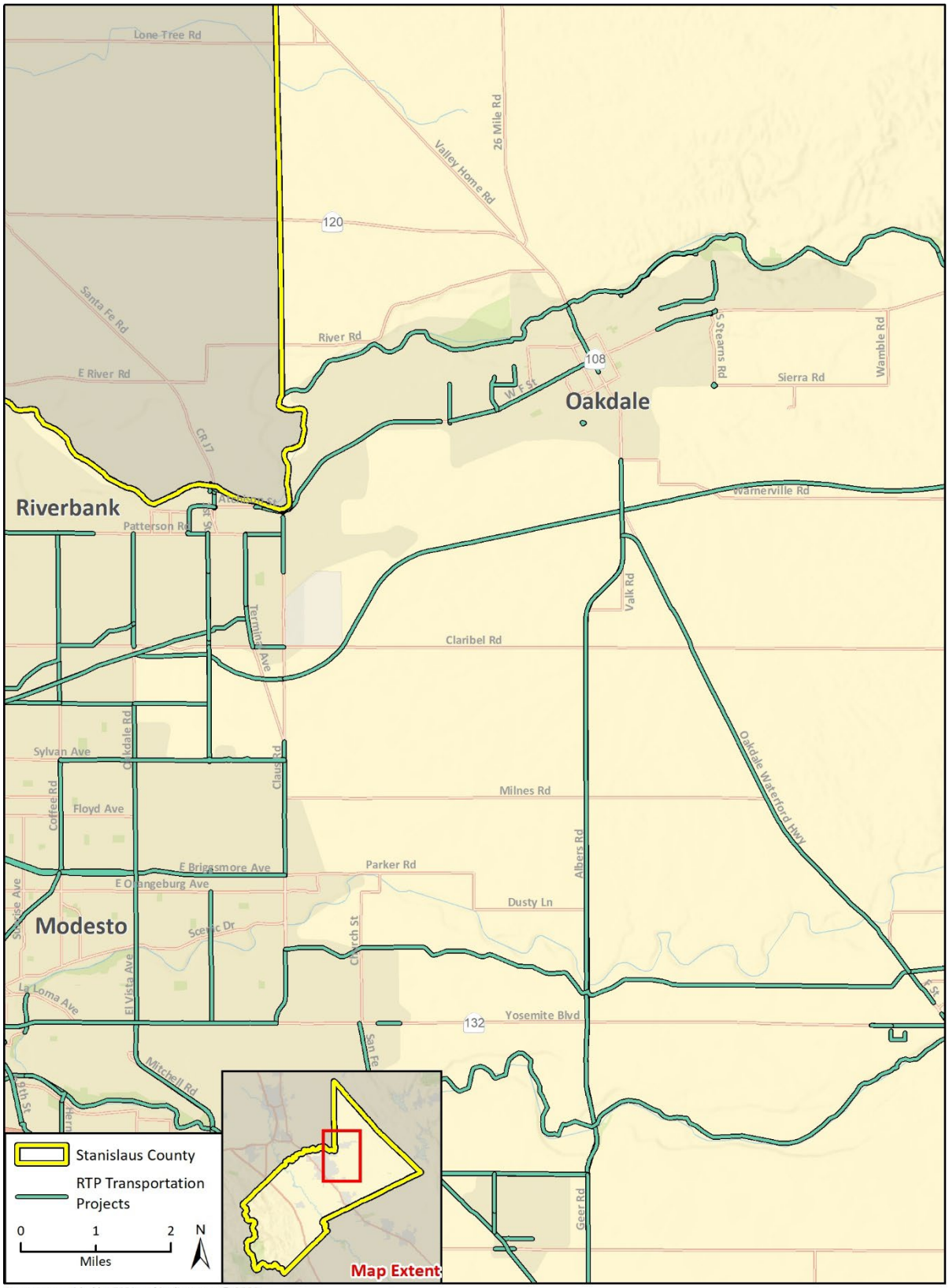
Fig 3c Patterson Newman Farmland

Figure 2-7 2022 RTP/SCS Transportation Improvement Projects – Riverbank/Oakdale



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2.6 Intended Use of the EIR

2.6.1 Agencies Expected to Use EIR in Decision-making

The *CEQA Guidelines* (Section 15124(d)) require EIRs to identify the agencies that are expected to use the EIR in their decision-making, and the approvals for which the EIR will be used. StanCOG will use this Program EIR as part of its review and approval of the 2022 RTP/SCS. The sponsor agencies for projects analyzed in this program EIR may use it as the basis for cumulative analysis of specific project impacts, together with the projected growth in the region. Cities and the county may use information in this EIR in their future housing elements. In addition, for projects that may be eligible for CEQA Streamlining, applicable mitigation measures from this EIR shall be incorporated into those projects as appropriate. Project-specific environmental documents may adjust these mitigation measures as necessary to respond to site-specific conditions. It is the intent of StanCOG that member agencies and others use the information contained within the Program EIR in order to "tier" subsequent environmental documentation of projects in the region. Information from this document may also be incorporated in future County Congestion Management Programs and associated environmental documents, as applicable.

The 2022 RTP/SCS is intended to meet the changing socioeconomic, transportation infrastructure, financial, technological, and environmental conditions of the region. Individual projects are preliminarily identified in the 2022 RTP/SCS; however, this Program EIR is programmatic in nature and does not specifically analyze these projects. Project-level analysis will be prepared by implementing agencies on a project-by-project basis. Project-specific planning and implementation undertaken by each implementing agency will depend on a number of issues, including: policies, programs and projects adopted at the local level; restrictions on federal, state and local transportation funds; the results of feasibility studies for particular corridors; and further environmental review of proposed projects.

This EIR is also intended to help activate the CEQA streamlining benefits of SB 375 for local jurisdictions and private development, described in Section 1.3.1, *CEQA Streamlining*.

2.6.2 Required Permits and Approvals

Approval of the 2022 RTP/SCS is at the discretion of StanCOG. It should be noted that additional environmental review will have to be conducted by the project sponsor, as the lead agency for the individual projects contained within the proposed 2022 RTP/SCS, prior to project implementation. Depending on the location of the project, future approvals for individual transportation projects identified in the 2022 RTP/SCS would have to be completed by one or more of the following agencies:

- Stanislaus Council of Governments
- California Department of Transportation (Caltrans) – Roadway and Aviation
- California Public Utilities Commission's Rail Crossings Engineering Section (RCES)
- Cities of: Ceres, Hughson, Modesto, Newman, Oakdale, Patterson, Riverbank, Turlock, and Waterford
- County of Stanislaus
- Ceres Area Transit (CAT)
- Modesto Area Express (MAX)

- Stanislaus Regional Transit (StaRT)
- Bus Line Service of Turlock (BLST)
- Modesto City-County Airport
- Turlock Airport
- Oakdale Airport

Caltrans is a Responsible Agency for all projects planned within its rights-of-way. Any public agencies or private developers contemplating work within a Caltrans right-of-way are required to obtain an approved encroachment permit from Caltrans prior to beginning that work. The relationship of this EIR to future environmental review of individual transportation projects is further discussed in Section 1, *Introduction*.

Individual projects may also require permits from the following State agencies, which may use the EIR in their environmental reviews and consultations:

- California Department of Fish and Wildlife
- Central Valley Regional Water Quality Control Board
- San Joaquin Valley Air Pollution Control District

2.7 Relationship with Other Plans and Programs

The2022 RTP/SCS provides a sound basis for the allocation of state and federal transportation funds for transportation projects within Stanislaus County over the subsequent 25-years. The plan follows guidelines established by the State of California Transportation Commission (STC 2017) to:

- Describe the transportation issues and needs facing the County;
- Identify goals and policies for how StanCOG will meet those needs;
- Identify the amount of money that will be available for identified projects; and
- Include a list of prioritized transportation projects to serve the county's long-term needs consistent with the funds allocated while considering environmental impacts and planning for future land use.

The 2022 RTP/SCS Program EIR builds on the analysis and mitigation contained in the 2018 RTP/SCS Program EIR. The 2022 RTP/SCS project list is similar to the project list for the 2018 RTP/SCS, although some of the transportation projects from the 2014 RTP/SCS are now under construction. The 2022 RTP/SCS evaluates the most recent projects, policies and the most recently selected preferred land use scenario in the SCS and provides more direct comparisons between current conditions and expected future Plan conditions. In addition, the RTP/SCS has been evaluated for consistency with the goals, policies and objectives currently being implemented by municipal and county planning agencies within the county as well as the Local Agency Formation Commissions (LAFCO) for Stanislaus County.

Table 2-1 Tier I Roadway Projects

Project ID	Location	Description
City of Ceres		
C01	Service Rd & Morgan Rd	Install Traffic Signal
C02	Mitchell Rd/Service Rd	Construct New Interchange - Phase I
C03	7th St to Grayson Rd	Widen from 2 to 4 lanes
C04	Eastgate Blvd to Faith Home	Widen from 2 to 4 lanes
C05	Crows Landing Rd & A Street	Install Traffic Signal
C06	Ustick Rd to Blaker Rd	Widen from 2 to 4 lanes
C07	Hatch Rd & Faith Home Rd	Install Traffic Signal
C08	Hatch Rd to Grayson Rd	Widen from 2 to 4 lanes
C09	River Rd to Service Rd	Widen to 6 lanes
C10	Crows Landing Rd & Grayson Rd	Install Traffic Signal
C11	Service Road & Ustick	Install Traffic Signal
C12	Whitmore Ave. @ E Street	Install Traffic Signal
C13	Whitmore Ave & Boothe Rd	Install Traffic Signal
C14	Whitmore Ave. @ Knox Rd	Install Traffic Signal
C15	Herndon Rd to Faith Home Rd	Install Complete Street Improvements
C16	Moore Rd to Central Rd	Install Complete Street Improvements
C17	Crows Landing Rd & B Street	Install Traffic Signal
C18	Ustick Rd & F Street	Install Traffic Signal
C19	Whitmore Ave. and Ustick Rd	Install Traffic Signal
C20	Various Locations	Signal & ITS Improvements
C21	Various Locations	Reconstruct Major Streets (Annual Basis)
C22	Service Rd to Grayson Rd	Widen from 2 to 4 lanes
C23	Ustick Rd & C Street	Install Traffic Signal
C24	Whitmore Ave & Faith Home Rd	Install Traffic Signal
C25	Ustick Rd & G Street	Install Traffic Signal
C26	Ustick Rd to Central Ave	Widen from 2 to 4 lanes
C27	Service Rd., Central Ave. & Don Pedro Rd.	ITS Signal Synchronization Phase III
C28	Crows Landing Rd. Whitmore Rd.	ITS Signal Synchronization Phase IV
C29	Various Locations	Reconstruct Local Streets (Annual Basis)
C30	Various Locations	Preventive Maintenance Local Streets (Annual Basis)
C31	Various Locations	Traffic Signal Optimization
C32	El Camino Ave at North St	Surface Parking and undercrossing to ACE station traffic mitigation
C33	Railroad Ave, Central Ave, Hackett Rd	Overflow Parking ACE Station
C34	Develop a Lighted Park and Ride Lot	Near Whitmore Overpass
C35	Develop a lighted Park and Ride 2nd Lot	Near Freeway/ACE Station

Project ID	Location	Description
C36	Bridge 38C0222 and 200 feet each direction on Service Rd. and Moore Rd.	Replace bridge for safety, widen lanes to meet Caltrans standards, add bike/pedestrian facility
Caltrans		
CA01	18.5/20.9	Install Ramp Metering, Add HOV Lanes, and Mixed Flow Lanes. Modify Onramp & Ramp Intersections
CA02	PM 4.9	Newman Intersection Oversight
CA03	22.56/24.75	Construction HOV lanes
CA04	Kasson/River Rd	Lenghten EB and WB two lanes transition
CA05	Crows Landing Rd/Fink Rd	Construct Traffic Signal or Roundabout
CA06	On SR 99 from Keyes Rd to Taylor Rd	Construct auxiliary lane
CA07	Near Patterson, from Fink Road Undercrossing No. 38-0114L to Khaksa Road Undercrossing No. 38-0127L/R at various locations. Rehabilitate bridge decks with concrete overlay, replace joint seals and/or approach slabs.	Rehabilitate bridge decks with concrete overlay, replace joint seals and/or approach slabs.
CA08	In Stanislaus and San Joaquin Counties, on various routes at various locations.	Install Transportation Management System (TMS) elements, and enhance highway worker safety.
CA09	Near Westley, at the Westley Safety Roadside Rest Area (SRRA).	Replace SRRA buildings.
CA10	In and near Ceres and Modesto, at various locations from Mitchell Road to Kansas Avenue; also in Merced County, on Route 59 near the city of Merced, at Childs Avenue (PM 14.0).	Upgrade drainage pump plants.
CA11	In Modesto, near Zeff Road Undercrossing.	Construct stormwater Best Management Practices (BMPs).
CA12	PM 3.63 to 4.10	Construct NB and SB SR-99 auxilliary lanes between Monte Vista rd to Taylor Rd
CA13	In Waterford, from Reinway Avenue to F Street.	Upgrade pedestrian facilities to make compliant with the Americans with Disabilities Act (ADA) standards.
CA14	Bridge replacement in Stanislaus County on State Route 4 at Hoods Creed Bridge (#38 0041)	Bridge Replacement
CA15	Pavement Class I in Stanislaus County Route 5	Pavement Class I in Stanislaus County Route 5
CA16	Intersection SR 33/Frank Cox Road, north of city of Patterson	Install Left-Turn Channelization for southbound and northbound traffic
CA17	Repair or replace old signals in District10 (D10) in Stanislaus & Merced Counties	Repair or replace old signals in District10 (D10) in Stanislaus & Merced Counties
CA18	Stanislaus County SR 99 at Modesto Mtce Station Yard (Facility #38M5715)	Modesto Maintenance Station Rehabilitation

Project ID	Location	Description
CA19	On SR 99 in the city of Modesto in Stanislaus county at Briggsmore Avenue, Standiford Avenue, Beckwith Road.	Collision Severity Reduction
CA20	Repair or replace old signals in Stanislaus county 108 PM 23.08 to 38.24	Repair or replace old signals in Stanislaus county 108 PM 23.08 to 38.24
CA21	Intersection SR 120/Wamble Road, east of the city of Oakdale.	Install Left-Turn Channelization for eastbound and westbound traffic.
CA22	Stanislaus 120 PM15.04	Bridge Replacement to address Fish Passage Priority.
CA23	NB & SB from Lander Ave (SR-165) to W Main Street	Construct NB & SB auxiliary lanes
CA24	Charity Way	Construct Traffic Signal or Roundabout
CA25	Howard Rd/Grayson Rd	Construct Traffic Signal or Roundabout
CA26	Between Codoni Rd and C & D Streets	Construct Two-Way Left Turn Lane
CA27	Between Carpenter Rd and Beckwith Rd	Construct NB & SB auxiliary lanes
CA28	Between Hatch Rd and Crows Landing Rd	Construct NB & SB auxiliary lanes
CA29	Between Whitmore Ave and Hatch Rd	Construct NB & SB auxiliary lanes
CA30	In Stanislaus and San Joaquin Counties, on various routes at various locations.	Install Transportation Management System (TMS) elements, and enhance highway worker safety.
City of Hughson		
H01	Hatch Rd to Whitmore Ave	Install Complete Street Improvements
H02	Whitmore Ave to Santa Fe Ave	Improve to 2-lane Major Collector
H03	7th Street and Santa Fe Avenue	Roadway Realignment Project
H04	Various Locations	Various Intersection Improvements
H05	Whitmore Avenue to S City Limit	Improve to 2-lane Major Collector (Goods Movement)
H06	Various Locations	Roadway Rehabilitation
H07	Fox Road to Santa Fe	Improve to 2-lane Minor Collector
City of Modesto		
M01	Oakdale Rd to Roselle Ave	Construct new 2 lane roadway
M02	J St. to Morton Blvd	Street Improvements and Pedestrian & Bicycle Enhancements
M03	Needham to 9th Street	Pedestrian & Bike Enhancements
M04	McHenry Ave to Coffee Rd	Widen from 2 to 6-lane Expressway
M05	Coffee Rd. to Oakdale Rd	Widen from 2 to 6-lane Expressway
M06	Pelandale Ave to Kiernan Ave	Widen from 4 to 6 lanes
M07	Pelandale Ave to Standiford Ave	Widen from 4 to 6 lanes

Project ID	Location	Description
M08	Briggsmore to Sylvan	Widen from 2 to 4 lanes
M09	SR 99 to 9th Street	Various improvements
M10	Sylvan Ave to Claratina Ave	Widen from 3 to 6 lanes
M11	Floyd Ave to Sylvan Ave	Complete Street Improvements
M12	Sylvan Ave to Claratina Rd	Widen from 2 to 4 lanes
M13	Various Locations	Roadway Rehabilitation
M14	Various Locations	Various intersection Improvements
M15	SR 99/Pelandale Interchange (Phase 2)	Widen Sisk Rd/Pelandale Intersection to the south-west corner of the intersection, construct a second left-turn lane from EB Pelandale to NB Sisk Rd, a third dedicated through lane on EB Pelandale, and a dedicated right-turn lane from EB Pelandale to SB Sisk Rd.
M16	State Route 99 to Dakota Ave Phase 1 (2-lane expressway)	Construct a two-lane expressway from N. Dakota Ave to the Needham St. Overcrossing. (Phase 1 of ultimate build-out of SR132 West Freeway/Expressway Project) (Reference: 2014 RTP Project ID - RE01).
M17	State Route 99 to Dakota Ave (Phase 2 Ultimate 4 lane facility with SR-99 connections)	Construct a four lane freeway from N. Dakota Ave to the Needham St. Overcrossing.
M18	Briggsmore Interchange	Reconstruct to 8 Lane Interchange
M19	Standiford/Beckwith Interchange	Reconstruct to 8 Lane Interchange
M20	Various Locations	Intelligent Transportation System Upgrades
M21	SR-99 to Hatch Rd.	Complete Street Improvements
M21	Neece Ave. to Paradise Rd.	Complete Street Improvements
M22	1st St. to Carpenter Rd.	Complete Street Improvements
City of Newman		
N01	Highway 33 to Canal School Rd	Install Collector Street improvements
N02	Inyo Ave to South City limits	Install 4 Lane Arterial Roadway Improvements
N03	Highway 33/Sherman Parkway	Install Traffic Signal
N04	Highway 33 to Canal School Rd	Install Collector Street improvements
N05	Yolo St to Sherman Pkwy	Install 4 Lane Arterial Roadway Improvements
N06	Sherman Pkwy to Stuhr Road	Install 4 Lane Arterial Roadway Improvements
N07	CCID Canal to Highway 33	Install 2 Lane Arterial Roadway Improvements
N08	Yolo Avenue to Inyo Avenue	Install 4 Lane Arterial Roadway Improvements
N09	Mariposa to Stephens, including	Pavement Rehabilitation, Maintenance
N10	Merced to Inyo and Yolo to Kern	Pavement Rehabilitation, Maintenance
N11	Main Street to T Street	Pavement Rehabilitation, Maintenance
N12	Main Street to T Street	Pavement Rehabilitation, Maintenance
N13	Main Street to T Street	Pavement Rehabilitation, Maintenance
N14	Merced to Inyo Avenue	Pavement Rehabilitation, Maintenance
N15	Driskell to Rgodeo Grounds Way	Realign Canal School Road to meet the Driskell Ave and Hills Ferry Road Intersection.

Project ID	Location	Description
N16	Inyo Ave to Yolo Ave	Roadway rehabilitation, maintenance, pedestrian, and complete streets improvements
N17	SR33 to Hills Ferry Road	Pavement Rehabilitation and Maintenance
N18	Merced County line northward to Yolo Avenue	Highway and pedestrian safety improvements
N19	Driskell to Sherman Parkway	Pavement Rehabilitation, Maintenance, and complete streets improvements
N20	Driskell to Sherman Parkway	Pavement Rehabilitation, Maintenance, and complete streets improvements
N21	Upper Rd to Prince Street	Pavement Rehabilitation, Maintenance, and complete streets improvements
N22	Merced St to Sherman Parkway	Roadway rehabilitation, maintenance, pedestrian, and complete streets improvements
N23	SR33 to Hardin Rd	Roadway rehabilitation, widening, intersection improvements, pedestrian, and complete streets improvements
N24	Various Locations	Pavement Rehabilitation and Maintenance
N25	From Inyo Ave to Yolo St	Roadway rehabilitation, maintenance, pedestrian, and complete streets improvements
N26	From T Street to Hills Ferry Road	Roadway rehabilitation, maintenance, pedestrian, and complete
N27	From Hills Ferry Road to City Limits	Roadway rehabilitation, maintenance, pedestrian, and complete streets improvements
City of Oakdale		
O01	Maag Ave to Stearns Rd	Widen Roadway to 5-lanes with full frontage improvements. Existing section includes 3 lanes with no frontage improvements.
O02	Lee Ave to Stanislaus Ave/Wood Ave	Widen Roadway to 5-lanes, including realignment of existing sidewalk and frontage improvements infill on the North side of the street
O03	Orsi Road to Stearns Road	Install Complete Street Improvements. No existing roadway, will include full frontage improvements with sidewalk and Class 1 Bikeway and 3 lanes.
O04	F Street to Pontiac	Widen Roadway to 4-lanes from existing 2 lane road. Includes full frontage improvements.
O05	Sierra Rd to F St	Install Complete Street Improvements with full frontage improvements.
O06	Maag Ave to Stearns Rd	Install Complete Street Improvements with full frontage improvements on the north side of the road.
O07	F St to Sierra Rd	Install Complete Street Improvements to include 2 lanes, median, 2 bike lanes, and full frontage improvements.
O08	Intersection	Improve intersection to include traffic signal pole relocation, modify signal, and restriping.
O09	Intersection	Project will include removal of existing median, paving, restriping, and traffic light reconfiguration.
O10	Intersection	Install Signal & Intersection Improvements
O11	Intersection	Install Signal & Intersection Improvements
O12	Intersection	Striping & Signage to include a 3-way stop, turn lanes for traveling North on Maag.

Project ID	Location	Description
O13	Intersection	Install Signal & Intersection Improvements
O14	Various Locations	Install Traffic Signals and Various Intersection Improvements
O15	Various Locations	Roadway Rehabilitation
O16	Oakdale / County	Intersection Improvements at Rodeo Intersection Improvements at Rodeo Stearns and F (SR 108/120 and Stearns Road intersection)
City of Patterson		
P01	Baldwin Road to Rogers Road	Install Complete Street Improvements, widen to four lanes.
P02	I-5 to Rogers Road	Signal and Off-Ramp Improvements at interchange. Widen Sperry Ave to 4 Lanes between Rogers Road and I-5.
P03	Delta Mendota to Keystone Pacific Park Way	Widen from 2 to 4 lanes.
P04	Various Locations	Install Traffic Signals.
P05	Various Locations	Roadway Rehabilitation.
P06	Raines Rd to I-5	Construct New Interchange at I-5.
P07	Sperry Ave/State Route 33	Signal at intersection, adding a left turn to each approach.
P08	Roger Rd/ Keystone Pacific	Signalizing the intersection, adding a left-lane to each approach,
P09	Rogers Road/Zacharias Rd	Signalizing the intersection, adding a left-lane to each approach,
P10	Ward Av/ East-West Connection	Signalizing the intersection, install two Northbound left-turn
P11	SR-33/ Ward Ave	Signalize intersection; add a northbound left turn lane.
P12	Salado Av and Ward Av	Signalize intersection
P13	Las Palmas Av and Poplar Av	Signalize intersection and Lane improvement
P14	Ward Av to SR-33	Widen from 2 to 4 lanes.
P15	Sperry Av to American Eagle Way	Widen from 2 to 4 lanes.
P16	American Eagle Way to SR-33	Widen from 2 to 4 lanes.
P17	Sperry Av to Marshall Rd	Widen from 2 to 4 lanes.
P18	SR 33 to Sycamore Av	adding center turn lane
City of Riverbank		
R01	Various Locations	Roadway Rehabilitation
R02	Various Locations	Preventative Maintenance
R03	First Street to Claus Rd	Install Complete Street Improvements
R04	Patterson to Claribel	Install Complete Street Improvements
R05	California to Claribel	Widen roadway from 2-4 lanes
R06	Patterson at Third	Signal improvements
R07	Claus at California	Signal improvements
R08	Patterson at Eighth	Signal improvements
R09	Roselle at Morrill	Intersection Improvements
R10	SR-108 at Claus	Install signal light at Claus & SR-108 and Install congestion Management Improvements at First Street & SR-108
R11	First Street north of Patterson Road	Railroad crossing improvements
R12	Third Street north of Patterson Road	Railroad crossing improvements

Project ID	Location	Description
R13	Eighth Street north of Patterson Road	Railroad crossing improvements
R14	Snedigar Road north of Patterson Road	Railroad crossing improvements
R15	Patterson Road west of Terminal Avenue	Railroad crossing improvements
R16	SR-108 at First Street	Install Congestion Management improvements
Stanislaus County		
S01	SR-99 to Interstate 5	Improve 22 miles to Expressway standards
S02	SR-99 Interchange with Crows Landing Road	Reconstruct interchange
S03	I-5 Interchange with Fink Road	Reconstruct interchange
S04	SR-99 Interchange with Hammett Road	Reconstruct interchange
S21	Various Locations	Roadway Rehabilitation
S24	Milnes Road to Claribel Road	Widen to 3 lanes
S25	San Joaquin River Bridge	Seismic Bridge Replacement - 3-lane Bridge
S26	Hickman Rd @ Tuolumne River	Seismic Bridge Replacement
S27	Hills Ferry Rd @ San Joaquin River	Seismic Bridge Replacement
S29	Seventh St @ Tuolumne River Bridge	Seismic Bridge Replacement; 4 lane bridge with pedestrian access
S30	Crows Landing Rd & Keyes Rd	Intersection improvements
S31	Crows Landing Rd & Fulkerth Ave	Intersection Improvements
S32	Kilburn Rd @ Orestimba Creek Bridge	Replace Bridge (Critical)
S33	Crows Landing Rd & Carpenter Rd	Intersection Improvements
S34	Carpenter Rd & Grayson Rd	Intersection Improvements
S35	Carpenter Rd & Keyes Rd	Intersection Improvements
S36	Carpenter Rd & W. Main St	Intersection Improvements
S38	W. Main St & Central Ave	Intersection Improvements
S42	Golden State Blvd & Golf Rd / Berkeley Ave	Intersection Improvements
S43	Keyes Road & SR 99 Exit/Entrance Ramps	Ramp Signalization
S44	Santa Fe Ave & East Ave	Intersection Improvements
S45	Santa Fe Ave & Keyes Rd	Intersection Improvements; Upgrade Railroad Crossing Equipment
S46	Santa Fe Ave & Main St	Intersection Improvements; Upgrade Railroad Crossing Equipment
S47	Santa Fe Ave & Service Rd	Intersection Improvements; Upgrade Railroad Crossing Equipment
S56	Carpenter Rd to River Rd/ Marshall Rd	Widen to 3 lanes
S57	River Rd/Marshall Rd to SR-33	Widen to 3 lanes

Project ID	Location	Description
S65	San Joaquin River to Carpenter Rd	Widen to 3 lanes
S66	Carpenter Rd to Crows Landing Rd	Widen to 3 lanes
S67	Crows Landing Rd to Mitchell Rd	Widen to 3 lanes
S68	Mitchell Rd to Washington Rd	Widen to 3 lanes
S69	SR-99 to McHenry Ave	Widen to 6-lanes
S70	Cooperstown Road at Gallup Creek	Bridge Replacement - Off System Bridge Toll Credits
S71	Cooperstown Road at Rydberg Creek	Bridge Replacement - Off System Bridge Toll Credits
S72	Crabtree Road at Dry Creek	Bridge Replacement - Off System Bridge Toll Credits
S74	Pleasant Valley Road at South San Joaquin Main Canal	Bridge Replacement - Off System Bridge Toll Credits
S76	St. Francis Ave at MID Main Canal	Bridge Replacement - Off System Bridge Toll Credits
S78	Tim Bell Road at Dry Creek	Bridge Replacement - Off System Bridge Toll Credits
S79	Las Palmas Ave over San Joaquin River	Bridge Rehabilitation Preventative Maintenance
S80	Milton Road over Rock Creek Tributary	Bridge Replacement - Off System Bridge Toll Credits
S81	Sonora Road over Martells Creek	Scour Countermeasure
S82	Claribel Road to Warnerville Road	Widen to 5 lanes
S84	Over Claribel Bridge Lateral	Replace Bridge
S85	Over Lone Tree Creek	Bridge Rehabilitation
S86	Over Lone Tree Creek	Replace Bridge
S88	Over Hood Creek	Replace Bridge
S89	Over T.I.D. Main Canal	Replace Bridge
S90	Over Main Canal @ Dallas Rd	Replace Bridge
S101	SR 132 Dakota Avenue to Gates Road	Construct 2 or 4-lane divided expressway or freeway (County)
S103	Hatch Road to Garner Road	2-Lane Expressway
S104	Ladd Rd to the south end of the McHenry Bridge	Widen to 5 Lanes
S106	Over TID Upper Lateral #3	Replace Bridge
S107	Eastin Road & Orestimba Creek	Low water crossing - bridge or culvert construction
S108	Catfish Camp to 1,200' southwest	Raise Road profile
S109	Geer Road and Santa Fe Avenue	Intersection Improvements - curb, gutter, SD improvements @ NW corner
S110	W. Main St & Faith Home Rd	Intersection Improvements
S111	Faith Home Road @ Whitmore Avenue	Intersection Improvements
S112	Faith Home Road @ Roeding Road	Intersection Improvements

Project ID	Location	Description
S113	Faith Home Road @ Service Road	Intersection Improvements
S114	Claribel Road @ Langworth Road	Intersection Improvements
S115	Dakota Road @ Beckwith Road	Intersection Improvements
S116	Grayson Road @ Vivian Road	Intersection Improvements
S117	Crows Landing Road @ Marshall Road/River Road	Intersection Improvements
S118	Pirrone Road @ Sisk Road	Intersection Improvements
S119	Pirrone Road - Gateway Drive to Hammett Road	Roadway Realignment
S120	A Street @ 3rd Street	Intersection Improvements
S121	Various Locations	ITS/Traffic Operations Improvements
S122	Various Locations	Roadway Safety Improvements
S123	Bell Road to SR 33	Widen to County Standard
S124	Fink Road to W. Ike Crow Road	Widen to County Standard
S125	Fink Road to CLIBP West Entrance	Widen to County Standard
S126	Ward Avenue to CLIBP Entrance	Widen to County Standard
S127	Sperry Avenue @ SR 33	Intersection Improvements
S128	W. Ike Crow Road @ SR 33	Intersection Improvements
S129	Fink Road @ Bell Road	Intersection Improvements
S130	Fink Road @ CLIBP Entrance	Intersection Improvements
S131	Oakdale Road to Claus Road	Construct 4-lane Expressway
S132	Claus Road to Albers Road	Construct 4-lane Expressway
S133	Albers Road to SR 120	Construct 4-lane Expressway
S134	Tully Road to Coffee Road	Construct 6-lane Freeway
S135	SR 99 Interchange with Keyes Road	Reconstruct interchange
S136	SR 99 to Dakota Avenue	Widen to 4-Lane Highway
City of Turlock		
T01	Tegner Rd to Dianne Dr	Widen from 2-lane to 4-lane Arterial with Class II bike facility and transit
T02	Olive Ave to Berkeley Ave	Install Median; Add one (1) lane with Class II bike facility
T03	Washington Rd to Tegner Rd	Widen from 2-lane to 4-lane Arterial with Class II bike facility
T04	Linwood Ave to Fulkerth Rd	Widen from 2-lane to 4-lane Arterial with Class II bike facility and transit
T05	Linwood Ave to W. Main St	Construct new 2-lane Industrial Collector with Class II bike facility
T06	SR-99 to Tegner Rd	Construct new 2-lane Collector with Class I bike facility
T07	Tuolumne Rd to Tornell Rd	Widen from 2-lane to 4-lane Arterial with Class II bike facility
T08	Canal Dr to Wayside Rd	Widen from 2-lane to 4-lane Arterial with Class II bike facility and transit
T09	Wayside Dr to North Ave	Widen from 2-lane to 4-lane Arterial with Class II bike facility and transit

Project ID	Location	Description
T10	Walnut Rd to Lander Ave	Widen from 2-lane to 3-lane Collector with Class II bike facility and transit (West Ave. South to Lander)
T11	Walnut Rd to Washington Rd	Widen from 2-lane to 3-lane Collector with Class II bike facility
T12	Washington Rd to Kilroy Rd	Construct new 2-lane Collector with Class I bike facility
T13	Golden State Blvd to Daubenberger Rd	Widen from 2-lane to 4-lane Arterial with Class III bike facility from Minaret to S. Berkeley/Class II from S. Berkeley to Daubenberger and transit from Oak to S. Johnson
T14	Taylor Rd to Monte Vista Ave	Complete 6-lane Boulevard with Class II bike facility and transit from Christoffersen to Monte Vista
T15	Monte Vista Ave to Fulkerth Rd	Complete 6-lane Boulevard with Class II bike facility
T16	W. Main St to W. Canal Dr	Construct new Collector
T17	Monte Vista Ave to Fulkerth Rd	Complete 2-lane Industrial Collector
T18	Fulkerth Rd to north of Pedretti Park	Construct new 2-lane Industrial Collector
T19	Tegner Rd to Golden State Blvd	Widen from 2-lane to 4-lane Collector with Class II bike facility
T20	Spengler Way to W. Linwood Ave	Construct new Industrial Collector
T21	Golden State Blvd to SR-99	Widen from 2-lane to 4-lane Arterial with Class II bike facility
T22	W. Main St to Fulkerth Rd	Construct new 2-lane Industrial Collector with Class II bike facility
T23	Various Locations	Install Traffic Signals and Various Intersection and Synchronization Improvements
T24	Lander Ave (SR-165) to S. City Limits	Construct New Interchange
T25	W. Main St	Construct New Interchange
T26	Taylor Rd	Reconstruct existing Interchange
T27	Tuolumne Rd	Construct New Overpass
T28	Fulkerth Rd to Monte Vista Ave	Construct 4-lane Expressway with Class II bike facility and transit
T29	Golden State Blvd & Taylor Rd	Widen Intersection from 2 to 4 lanes with bike improvements
T30	Various Locations	Construct an Intelligent Transportation System (ITS) Transportation Management Center with related equipment and services
T31	Various Locations	Roadway Rehabilitation
Waterford		
W01	Bentley St to Church St	Pavement Rehabilitation
W02	Yosemite to Dorsey	Pavement Rehabilitation
W03	Yosemite to Church	Curb, Gutter & Sidewalk Infill from Bentley to Dorsey on East side of road, Pavement grind and overlay with widening
W04	Loop	Pavement Grind and Overlay, Replace Ex Curb Returns
W05	Western Ave to Yosemite Blvd.	Curb, Gutter & Sidewalk Infill on North, east and west side of Riverside, Pavement Rehabilitation
W06	Various Locations	Traffic Signals, intersection improvements and other transportation enhancements
W07	Various Locations	Roadway Rehabilitation
W08	Western City Limit to the Eastern City Limit	Widen Yosemite Blvd to 4 Lane Arterial Standard as defined in the City of Waterford Vision 2025 General Plan

Project ID	Location	Description
W09	Northern City Limit to Southern City Limit	Widen Reinway to 2 Lane Collector Standard as defined in the City of Waterford Vision 2025 General Plan
W10	Reinway Avenue to Pasadena Ave	Widen Washington to 2 Lane Local Road Standard as defined in the City of Waterford Vision 2025 General Plan
W11	Washington to Yosemite	Widen Pasadena to 2 Lane Local Road Standard as defined in the City of Waterford Vision 2025 General Plan

Table 2-2 Transit Projects

Project ID	Jurisdiction	Location	Description
ACE			
A01	SJRRC	UPRR Fresno Subdivision MP 103.98 to MP 107	Construct new rail bridge over the Stanislaus River, second main track, and modify at-grade crossings.
A02	SJRRC	UPRR Fresno Subdivision MP 107 to MP 113.69	Construct side loading station platforms, pedestrian overcrossing, trackwork, parking, and modify at-grade crossings.
A03	SJRRC	UPRR Fresno Subdivision MP 113.69 to MP 114.63	Construct new rail bridge over the Stanislaus River and second main track and modify at-grade crossing at 7th Street/B Street.
A04	SJRRC	UPRR Fresno Subdivision MP 114.63 to MP 117.6	Construct center loading station platform, pedestrian undercrossing, trackwork, layover track, on street parking, and modify at-grade crossings.
A05	SJRRC	UPRR Fresno Subdivision MP 117.6 to MP 128.7	Construct center loading station platform, pedestrian overcrossing, on street parking and sidewalks
A06	SJRRC	UPRR Fresno Subdivision MP 117.6 to MP 128.7	Construct trackwork and modify at-grade crossings
A07	SJRRC	Stanislaus County	Operations to extend service to Modesto and Ceres in 2023, Merced in 2027, and Turlock in 2030.
A08	SJRRC	Stanislaus County	UPRR Capital Access Fees to extend service to Modesto and Ceres in 2023, Merced in 2027, and Turlock in 2030.
A09	SJRRC	Stanislaus County	UPRR Capitalized Maintenance Fees to extend service to Modesto and Ceres in 2023, Merced in 2027, and Turlock in 2030.
A10	SJJPA	BNSF Stockton Subdivision	Construct new bridge over Stanislaus River and 2.5 miles of second main track
A11	SJJPA	BNSF Stockton Subdivision	Construct 3.3 miles of second main track
A12	SJJPA	BNSF Stockton Subdivision	Construct 0.45 miles of second main track and two bridges
A13	SJJPA	BNSF Stockton Subdivision	Construct 6.1 miles of second main track and one bridge
A14	SJJPA	BNSF Stockton Subdivision	Construct 6.6 miles of second main track and three bridges
A15	Caltrans DRMT	BNSF Stockton Subdivision	Construct second platforms at each station
City of Modesto			
M80	Modesto		Phase II Fleet Maintenance Facility for Light and Heavy Equipment

Project ID	Jurisdiction	Location	Description
M81	StanRTA		Preventative Maintenance
M82	StanRTA		Purchase Buses (Expansion)
M83	StanRTA		Support Equipment/Tools
M84	StanRTA		Training/Education
M85	StanRTA		Transit Center Improvements
M86	StanRTA		Implement Bus Rapid Transit and Operate Service (Various Locations)
M87	StanRTA		Rideshare Program
M88	StanRTA		Operation of Fixed Routes
M89	StanRTA		Operation of Paratransit
M90	StanRTA		Upgrade Fareboxes
M91	StanRTA		Short/Long Term Transit Planning
M92	StanRTA		Purchase Buses (Replacement)
M93	StanRTA		Electrification Study
M94	StanRTA		Various construction projects
M95	StanRTA		Transit facilities amenities: Bus Stop Shelters/Facilities with amenities & Solar lighting
M96	StanRTA		Install and implement Intelligent Transportation Systems with Traffic (TSP) Traffic Signal Priority in StaRT's service area
Stanislaus Regional Transit Authority			
S92	Stanislaus County	Region	Various construction projects
S95	Stanislaus County	Region	Transit facilities amenities: Bus Stop Shelters/Facilities with amenities & Solar lighting
S96	Stanislaus County	Region	Install and implement Intelligent Transportation Systems with Traffic (TSP) Traffic Signal Priority in StanRTA's service area
StanCOG			
RE18	StanCOG	Countywide	MOVE
City of Turlock			
T47	Turlock		Various Construction Projects
T49	Turlock	Northern portion of Corporation Yard	Bus parking lot with fueling infrastructure and operations building
T50	Turlock		Capital Purchases (Busses, Bus Stop and Station Improvements, Support Equipment, etc.)
T51	Turlock		Acquisition of zero emission transit buses and related fueling infrastructure
T52	Turlock		Maintenance on Vehicles and Facilities
T53	Turlock		Upgrades to fareboxes, AVL systems, GIS enhancements, computer systems and other technology improvements
T54	Turlock		Operating and Transit Costs

Project ID	Jurisdiction	Location	Description
T55	Turlock		Improvements to reduce transit headways
T56	Turlock		Implement commuter bus service
T57	Turlock		Improvements to improve transit headway
T58	Turlock	1418 North Golden State Blvd.	Construct facility improvements at Roger K. Fall Transit Center

Table 2-3 Bicycle/Pedestrian Projects

Project ID	Location	Description
City of Ceres		
C37	Service Rd to Southern City Limits	Mitchell Rd Bike/Ped Project - Phase V
C38	Whitmore Ave to Service Rd	Signage/Striping
C39	Joyce Rd to Whitmore Ave	Signage/Striping or widening
C40	Bystrum Rd to Herndon Rd	Signage/Striping
C41	East Gate Blvd. to Faith Home Rd	Hatch Rd TID Bike/Ped Project - Phase IV
C42	Mitchell Rd to Blaker Rd	Signage/Striping
C43	300' w/o Morgan Rd to Crows Landing Rd	Signage/Striping or widening
C44	Ceres Main Canal to 6th St	Signage/Striping
C45	Various Locations	Misc. Bike/Pedestrian Facility Projects
C46	Hatch Rd to Tenaya Rd	Signage/Striping or widening
C47	Mitchell Rd to Esmar Rd	Signage/Striping
C48	Esmar Rd to Nunes Rd	Signage/Striping or widening
C49	Morgan Rd to Herndon Rd	Construct Bike/Ped Facility (3 phase project)
C50	Ustick Rd to Mitchell Rd	Bicycle/Pedestrian Facility
C51	Herndon Ave., El Camino Ave. & Eastgate Blvd.	Bike lane facilities
C52	Roeding Rd to Frontage Rd	Class 1 Path. Pave path adjacent to irrigation canal. StanCOG Non- Motorized Transportation Master Plan Project ID: CER-1
C53	Moore Rd to 6th St	Bicycle Boulevard (Class 3) and pedestrian improvements. (Non- Motorized Transportation Plan Top 25: Route 13)
C54	5th Street (Whitmore Ave to Magnolia St) and 5th Street (Magnolia St to Roeding Rd)	Bicycle Boulevard (Class 3) and pedestrian improvements. (Non- Motorized Transportation Plan Top 25: Route 14)
C55	El Camino Ave to 6th Street	Class 2 Bicycle Lane. Parking removal. StanCOG Non-Motorized Transportation Master Plan Project ID: CER-4
C56	North Central Ave to Park St	Class 2 Bicycle Lane. Lane narrowing. StanCOG Non-Motorized Transportation Master Plan Project ID: CER-5
C57	El Camino Ave to East Whitmore Ave	Class 2 Bicycle Lane. Parking removal. StanCOG Non-Motorized Transportation Master Plan Project ID: CER-6
C58	East Hatch Rd to East Whitmore Ave	Class 4 Separated Bike Lane. Lane narrowing, parking removal (both sides). StanCOG Non-Motorized Transportation Master Plan Project ID: CER-7

Project ID	Location	Description
C59	Crows Landing Rd to Central Ave	Class 4 Separated Bike Lane. Lane narrowing. StanCOG Non-Motorized Transportation Master Plan Project ID: CER-8A
C60	Ustick Rd to Crows Landing Rd	Class 1 Path. New construction. StanCOG Non-Motorized Transportation Master Plan Project ID: CER-8B
C61	Faith Home Rd to Boothe Rd	Class 1 Path. Paved existing path. StanCOG Non-Motorized Transportation Master Plan Project ID: CER-9
C62	East Hatch Rd to Joyce Ave	Class 4 Separated Bike Lane. New construction, south side of roadway. StanCOG Non-Motorized Transportation Master Plan Project ID: CER-10
City of Hughson		
H08	Santa Fe Ave to Euclid Ave	Construct Multi-Use Trail
H09	E of Tully Road to Charles Street	Construction Sidewalk and pedestrian improvements (across railroad tracks)
H10	Various Locations	Construct Bikeway and Pedestrian Improvements (Per Non-Motorized Plan)
H11	Santa Fe Avenue to 7th Street	Construct Sidewalk In-Fill and Streetscape Improvements (ADA)
H12	Various Locations	Construct Sidewalk In-Fill and Streetscape Improvements (ADA)
H13	Fox Road to Santa Fe Ave	Bicycle Lane (Class 2), Bicycle boulevard (Class 3), and pedestrian improvements. (Non-Motorized Transportation Plan Top 25: Route 20A)
H14	Santa Fe Ave. to Geer Rd	Path (Class I) and pedestrian improvements. (Non-Motorized Transportation Plan Top 25: Route 20B)
H15	East Hatch to 7th St	Class 3.5 Bicycle Route with Wide Shoulders. Widen shoulder to at least 4 feet, wider preferred. StanCOG Non-Motorized Transportation Master Plan Project ID: HU-3
City of Modesto		
M24	Various Locations	Non-Motorized Improvements
M25	Various Locations	Safe Routes to School projects
M26	Semallon Dr to Riverbank	Class I Trail Improvements
M27	Yosemite to Orangeburg	Class I Bike path/Ped Bike Bridge
M28	Woodrow to Pelandale	Bike/Ped facility including overcrossings
M29	Virginia Corridor to Dry Creek	Class IV Bike Path
M30	Kewin to Beardbrook Park	Class I Bike Path Connecting Trails
M31	MID Lateral Nos. 3,4 and 7	Construct Class 1 Trail along MID Lateral Nos. 3, 4 and 7
M31	Carver to Virginia Corridor	Class I Bike Path along MID
M31	Campus Way to Tully Rd	MJC Class I Bike Path Phase 3
M32	Briggsmore to Sylvan	Class I Bike Path along Claus Rd.
M33	Mitchell Rd to Carpenter Rd	Remaining Trail Improvements
M34	Dale Road to Virginia Corridor	Class I bike path
M35	Various Locations	Pedestrian/ADA modifications
M36	Various Locations	Class II Bicycle Improvements (Class II - Signage/Striping, Curb, Gutter & Sidewalk)

Project ID	Location	Description
M37	Paradise from Sheridan to 1st, S. Jefferson from Paradise to Vine, 1st from Vine to Sierra and G St from Sierra to 2nd	Pedestrian and Bicycle Safety Improvements around Modesto High School
M38	Various Locations	Class II Bicycle Improvements(Class II - Signage/Striping, Curb, Gutter & Sidewalk)
M39	Paradise from Sheridan to 1st, S. Jefferson from Paradise to Vine, 1st from Vine to Sierra and G St from Sierra to 2nd	Pedestrian and Bicycle Safety Improvements around Modesto High School
M40	Various Locations	Non-Motorized Improvements
M41	Carpenter Road to J Street	Complete Streets/Bike Trail Improvements
M42	Various Locations	Rectangular Rapid Flashing Beacons
M43	Ustick Rd to Golden State Highway	Class 1 Path. New construction, south side of roadway. StanCOG Non-Motorized Transportation Master Plan Project ID: MOD-1
M44	W. Whitmore Ave to South Ave	Path (Class 1) and Bicycle Boulevard (Class 3), and pedestrian improvements. (Non-Motorized Transportation Plan Top 25: Route 5)
M45	Sutter Ave to South Carpenter Rd	Class 3 Bicycle Boulevard. Traffic calming, signage, and crossing treatments. StanCOG Non-Motorized Transportation Master Plan Project ID: MOD-3
M46	Paradise Ave to W. Briggsmore Ave	Separated Bike Lane (Class 4) and pedestrian improvements. (Non- Motorized Transportation Plan Top 25: Route 6)
M47	Paradise Ave to Tuolumne Creek	Bicycle Boulevard (Class 3) and pedestrian improvements. (Non- Motorized Transportation Plan Top 25: Route 4)
M48	1st St to 17th St	Class 4 Separated Bike Lane (Class 4). (Non-Motorized Transportation Plan Top 25: Route 9)
M49	1st St to South Carpenter Rd	Class 2 Buffered Bicycle Lane. Lane removal (currently planned project). StanCOG Non-Motorized Transportation Master Plan Project ID: MOD-7
M50	South Washington St to Sierra Drive	Class 3 Bicycle Boulevard. Install traffic calming, signage, and crossing treatments. StanCOG Non-Motorized Transportation Master Plan Project ID: MOD-8
M51	1st St to Maze Blvd	Class 4 Separated Bike Lane. Parking removal (one side). StanCOG Non-Motorized Transportation Master Plan Project ID: MOD-9
M52	9th St to 5th St	Class 4 Separated Bike Lane. Travel lane removal (4 to 3). StanCOG Non-Motorized Transportation Master Plan Project ID: MOD-10A
M53	9th St to Needham St	Class 2 Buffered Bicycle Lane. Lane removal. StanCOG Non-Motorized Transportation Master Plan Project ID: MOD-10B
M54	H St to Needham St	Class 4 Separated Bike Lane. Lane removal. StanCOG Non-Motorized Transportation Master Plan Project ID: MOD-11
M55	Downey Ave to College Ave	Class 4 Separated Bike Lane. Parking lane removal (both sides) StanCOG Non-Motorized Transportation Master Plan Project ID: MOD-12
M56	D St to B St	Class 3 Bicycle Route. Wayfinding. StanCOG Non-Motorized Transportation Master Plan Project ID: MOD-13A

Project ID	Location	Description
M57	D St to Virginia Ave	Class 4 Separated Bike Lane. Lane narrowing. StanCOG Non-Motorized Transportation Master Plan Project ID: MOD-13B
M58	9th St to 12 St	Class 2 Buffered Bicycle Lane. Lane narrowing. StanCOG Non- Motorized Transportation Master Plan Project ID: MOD-14
M59	Latimer Ave to B St	Class 4 Separated Bike Lane. Lane narrowing. StanCOG Non-Motorized Transportation Master Plan Project ID: MOD-15
M60	14th St to 12th St	Class 4 Separated Bike Lane. Parking lane removal (both sides) or a 4-3 road diet with one lane parking lane removal (one side). StanCOG Non-Motorized Transportation Master Plan Project ID: MOD-16
M61	D St to Garner Rd	Class 4 Separated Bike Lane. Parking lane removal (both sides). StanCOG Non-Motorized Transportation Master Plan Project ID: MOD-17
M62	SR-132 to Garst Rd	Multi-Use Path (Class 1) and pedestrian improvements. (Non- Motorized Transportation Plan Top 25: Route 8)
M63	Sylvan Ave to SR-132	Separated Bike Lane (Class 4) and pedestrian improvements. (Non- Motorized Transportation Plan Top 25: Route 2)
M64	Coffee Rd to Claus Rd (Proposed)	Class 4 Separated Bike Lane. Lane narrowing, lane removal. StanCOG Non-Motorized Transportation Master Plan Project ID: MOD-20
M65	East Briggsmore Ave to Sylvan Ave	Class 4 Separated Bike Lane. Lane removal, lane narrowing. StanCOG Non-Motorized Transportation Master Plan Project ID: MOD-21
M66	Sisk Rd to Claus Rd	Multi-Use Path (Class 1); Separated Bike Lane (Class 4) and pedestrian improvements. (Non-Motorized Transportation Plan Top 25: Route 1)
M67	Standiford Ave to W Briggsmore Ave	Separated Bike Lane (Class 4) and pedestrian improvements. (Non- Motorized Transportation Plan Top 25: Route 3)
M68	Pelandale Ave to Sisk Rd	Class 4 Separated Bike Lane. Lane removal, lane narrowing. StanCOG Non-Motorized Transportation Master Plan Project ID: MOD-24
M69	West Briggsmore Ave to North 9th Street	Class 4 Separated Bike Lane. Travel lane removal, add vertical elements to existing buffered bike lanes. StanCOG Non-Motorized Transportation Master Plan Project ID: MOD-25
M70	Tully Rd to Terminal Ave	Class 3 Bicycle Boulevard. Install traffic calming, signage, and crossing treatments. StanCOG Non-Motorized Transportation Master Plan Project ID: MOD-26
M71	East Briggsmore Ave to Virginia Ave	Class 1 Path. Pave side of existing irrigation canal. StanCOG Non- Motorized Transportation Master Plan Project ID: MOD-27
M72	North Carpenter Rd to Poust Rd	Class 4 Separated Bike Lane. Lane narrowing. StanCOG Non-Motorized Transportation Master Plan Project ID: MOD-28
M73	West Briggsmore Ave to J St	Class 4 Separated Bike Lane. Travel lane removal, parking removal (both sides). StanCOG Non-Motorized Transportation Master Plan Project ID: MOD-29

Project ID	Location	Description
M74	Nellie Ave to 10th St	Class 3 Bicycle Route. Wayfinding. StanCOG Non-Motorized Transportation Master Plan Project ID: MOD-30A
M75	Tully Rd to Nellie Ave	Class 4 Separated Bike Lane. Lane removal. StanCOG Non-Motorized Transportation Master Plan Project ID: MOD-30B
M76	Sylvan Ave to Santa Fe Ave (Proposed)	Class 3.5 Bicycle Route with Wide Shoulders. Lane narrowing. StanCOG Non-Motorized Transportation Master Plan Project ID: MOD-31
M77	Tuolumne River Bike Trail to River Rd	Class 1 Path. New construction. StanCOG Non-Motorized Transportation Master Plan Project ID: MOD-32
M78	Mercy Ave to N Carpenter Rd	Class 3 Bicycle Boulevard. Traffic calming, wayfinding. StanCOG Non-Motorized Transportation Master Plan Project ID: MOD-33
M79	N Carpenter Rd to N 9th Street	Class 2 Bicycle Lane. Lane narrowing, add markings/signage. StanCOG Non-Motorized Transportation Master Plan Project ID: MOD-34
City of Newman		
N28	Various Locations	Bicycle and Pedestrian Improvements
N29	Canal School Road/Hills Ferry From Driskell to City LID Project	Class I Multiuse Path
N30	Intersections of SR33 and Kern St	Install bicycle detector loops
N31	Intersection of SR33 and Merced St	Install bicycle detector loops
N32	Intersections of SR33 and Inyo Ave	Install bicycle detector loops
N33	At City Parks	Bike Parking facilities at City Parks
N34	At City Schools	Bike Parking facilities at City Schools
N35	At Jensen Road and N Street Along Sherman Parkway At Orestimba Road and T Street At Inyo Avenue and Upper Road At Inyo Avenue and T Street At Inyo Avenue and P Street/Prince Street At Merced Street and Barrington Avenue At Hills Ferry Road and Canal School Road	Install bicycle crossing warning signs at unsignalized intersections
N36	Merced St at Railroad	Pedestrian RR Crossing Improvements
N37	Sherman Pkwy at Railroad	Pedestrian RR Crossing Improvements
N38	Driskell Ave at Railroad	Pedestrian RR Crossing Improvements
N39	T Street from Inyo Ave to Orestimba High School	Class I Multiuse Path, pedestrian and bicycle improvements
N40	SR33 to Hardin	Class I Multiuse Path, pedestrian and bicycle improvements
N41	Various Locations	Construct Bicycle Parking Facilities and Bus Shelters (Figure 4-4 in Non-motorized Transportation Plan)
N42	Merced St to Sherman Parkway	Bicycle and Pedestrian Improvements
N43	Yolo St to Jensen Rd	Bicycle and Pedestrian Improvements
N44	Yolo St to Jensen Rd	Bicycle and Pedestrian Improvements

Project ID	Location	Description
N45	Yolo St to Merced St	Buffered Bicycle Lane (Class 2) and pedestrian improvements. (Non-Motorized Transportation Plan Top 25: Route 18)
N46	S St to Q St	Class 2 Bicycle Lane. Lane narrowing. StanCOG Non-Motorized Transportation Master Plan Project ID: NEW-2
N47	Jensen Rd to Merced County Line	Class 2 Bicycle Lane. Lane narrowing, widen shoulder to at least 4'. StanCOG Non-Motorized Transportation Master Plan Project ID: NEW-3
City of Oakdale		
O17	South of Kerr Park to A Street	Construct Class I Bike Lane to connect to the D Street multi use trail.
O18	North of Kerr Park to Valley View Park	Construct Class I Bike Lane along Stanislaus River to connect to the existing Valley View Trail.
O19	Various Locations	Install Sidewalks, upgrade ADA-compliant ramps, install and/or enhance crosswalks
O20	Various Locations	Pedestrian/Bicycle Infrastructure Improvements
O21	F Street (SR-108) to Oakdale City Limits North of Pontiac St	Bicycle Boulevard (Class 3) and pedestrian improvements. (Non- Motorized Transportation Plan Top 25: Route 16A)
O22	Yosemite Ave to Crane Rd	Separated Bicycle Lane (Class 4) and pedestrian improvements. (Non-Motorized Transportation Plan Top 25: Route 16B)
O23	North Yosemite Ave to Stanislaus River Trail (Proposed)	Class 4 Separated Bike Lane. Lane removal. StanCOG Non-Motorized Transportation Master Plan Project ID: OAK-3
City of Patterson		
P19	Various Locations	Roadway Rehabilitation and complete street improvements.
P20	Various Locations	Construct & Rehabilitate Class I and Class II bike lanes
P21	Bartch Ave to Eucalyptus Ave	Class 3.5 Bicycle Route with Wide Shoulders. Widen shoulder to at least 4 feet, wider preferred. StanCOG Non-Motorized Transportation Master Plan Project ID: PAT-1
P22	Ward Ave to South 2nd St	Class 2 Bicycle Lane. Lane narrowing. StanCOG Non-Motorized Transportation Master Plan Project ID: PAT-1
P23	Ward Ave to South 2nd St	Bicycle Lane (Class 2) and pedestrian improvements. (Non-Motorized Transportation Plan Top 25: Route 17A)
P24	N St to Sperry Ave	Multi-Use Path (Class 1), Bicycle Lane (Class 2), Separated Bike Lane (Class 4) and pedestrian improvements. (Non-Motorized Transportation Plan Top 25: Route 17B)
P25	North 2nd St to South Hartley St	Class 2 Bicycle Lane. Lane narrowing. StanCOG Non-Motorized Transportation Master Plan Project ID: PAT-4
City of Riverbank		
R17	Patterson Rd to Claribel Ave	Bicycle Lanes
R18	Various Locations	Pedestrian/Bicycle Infrastructure Improvements
R19	Various Locations	ADA/Sidewalk Improvements
R20	Various Locations	School Traffic Safety Project
R21	Hetch Hetchy Trail	Install trail system improvements
R22	Jacob Myer Park Bridge	Install trail system bridge

Project ID	Location	Description
R23	Various Locations	Rails with Trails
R24	Bicycle/Pedestrian/Traffic Management Improvements	Install Bicycle & Pedestrian infrastructure improvements
R25	Roselle Avenue Patterson to Pocket	Sidewalk & ADA Improvements, Drainage and ROW
R26	Patterson Rd to Claribel Rd	Bicycle Lane Striping and Road Improvements
R27	Pedestrian Access over MID Canal	Installation of Sidewalk over MID Canal
R28	Terminal to Claus Road	Bicycle/Pedestrian Path along BNSF Railroad
R29	Crawford Road to Sylvan Avenue	Bicycle/Pedestrian Path w/ ADA
R30	7th St to 8th St	Class 4 Separated Bike Lane. Lane narrowing. StanCOG Non-Motorized Transportation Master Plan Project ID: RB-1
R31	1st St to Patterson Rd	Class 4 Separated Bike Lane. Pave shoulder, lane removal, or lane narrowing. StanCOG Non-Motorized Transportation Master Plan Project ID: RB-2
R32	Railroad Ave to 40 ft SW of Callander Ave	Class 2 Bicycle Lane. Lane narrowing, parking removal (one side).StanCOG Non-Motorized Transportation Master Plan Project ID: RB-3
R33	Morrill Rd to Railroad Ave	Class 2 Buffered Bicycle Lane. Lane narrowing, parking lane removal (one side). StanCOG Non-Motorized Transportation Master Plan Project ID: RB-4A
R34	Blacksand Creek Path (Near Claribel Rd) to Morril Rd	Separated Bicycle Lane (Class 4) and pedestrian improvements. (Non-Motorized Transportation Plan Top 25:Route 15
R35	Van Dusen Ave to Patterson Rd	Class 2 Bicycle Lane. Parking lane removal (one side), widen shoulder to at least 4'. StanCOG Non-Motorized Transportation Master Plan Project ID: RB-5
R36	Santa Fe St to Kentucky Ave (Santa Fe Ave changed to St)	Buffered Bicycle Lane (Class 2) and Bicycle Route with wide Shoulders (Class 3.5) and pedestrian improvements. (Non-Motorized Transportation Plan Top 25: Route 23)
R37	Atchison St to Orange Ave	Class 2 Bicycle Lane. Lane narrowing. StanCOG Non-Motorized Transportation Master Plan Project ID: RB-7A
R38	San Joaquin County Line to Orange Ave	Class 3 Bicycle Route. Wayfinding, share the road signs. StanCOG Non-Motorized Transportation Master Plan Project ID: RB-7B
Stanislaus County		
S137	East Ave. to City Limit	Shoulders Widenning - Class 2 Bikepath
S138	Keyes Rd to SR132	Shoulder Widening - Class 2 Bikepath
S139	Hammett Rd to SR-219/Sisk inc. MCS	Shoulder Widening - Class 2 Bikepath
S140	Santa Fe to Patterson Rd.	Shoulder Widening - Class 2 Bikepath
S141	Claratina Ave to Ladd Rd	Shoulder Widening - Class 2 Bikepath
S142	Daubenberger to Hickman	Shoulder Widening - Class 2 Bikepath
S143	Hwy 33 to Carpenter Road	Shoulder Widening - Class 2 Bikepath
S144	Sycamore to Washington	Shoulder Widening - Class 2 Bikepath
S145	Carpenter Rd to Hays St	Pedestrian Improvements
S146	Glenn Ave, Las Vegas St, Butte Ave	Pedestrian Improvements

Project ID	Location	Description
S147	Various Locations	Pedestrian Improvements
S148	Various Locations	Pedestrian Improvements
S149	Various Locations	Construct Bicycle and Pedestrian Improvements (Class I Bikeways/Sidewalk, etc.)
S150	North Yosemite Ave to 1st St	Class 1 Path. New Construction. StanCOG Non-Motorized Transportation Master Plan Project ID: STAN-1A
S151	North Yosemite Ave (Proposed) to Orange Blossom Rd	Class 1 Path. New Construction. StanCOG Non-Motorized Transportation Master Plan Project ID: STAN-1B
S152	630 ft NE of Stanislaus River Court/Stanislaus River Drive to Sonora Rd	Class 1 Path. New Construction. StanCOG Non-Motorized Transportation Master Plan Project ID: STAN-1C
S153	270 ft E of Brady Rd/CA 108 to 8th St	Class 3.5 Bicycle Route with Wide Shoulders. Parking removal (both sides). StanCOG Non-Motorized Transportation Master Plan Project ID: STAN-2
S154	SR-108 to Riverbank City Limits (Near Oakdale Rd)	Multi-Use Path (Class 1) and pedestrian improvements. (Non- Motorized Transportation Plan Top 25: Route 22)
S155	Virginia Corridor Bike Path to Terminal Ave	Class 1 Path. New Construction. StanCOG Non-Motorized Transportation Master Plan Project ID: STAN-4
S156	Kiernan Ave to 390 ft W of Hot Springs Ln/Patterson Rd	Class 3.5 Bicycle Route with Wide Shoulders. Widen shoulders to at least 4', lane narrowing. StanCOG Non-Motorized Transportation Master Plan Project ID: STAN-5A
S157	Hetch Hetchy Canal (Proposed) to Kiernan Ave	Class 4 Separated Bike Lane. Parking removal (both sides). StanCOG Non-Motorized Transportation Master Plan Project ID: STAN-5B
S158	Van Dusen Ave to Claribel Rd	Class 3.5 Bicycle Route with Wide Shoulders. Widen shoulder to at least 4 feet, wider preferred. StanCOG Non-Motorized Transportation Master Plan Project ID: STAN-6
S159	Claus Rd to Terminal Ave (Proposed)	Class 1 Path. New Construction. StanCOG Non-Motorized Transportation Master Plan Project ID: STAN-7
S160	Bartch Ave to 70 ft N of CA 33/East Stuhr Rd/West Stuhr Rd	Class 3.5 Bicycle Route with Wide Shoulders. Widen shoulder to at least 4 feet, wider preferred. StanCOG Non-Motorized Transportation Master Plan Project ID: STAN-8
S161	Sycamore Ave to S. Washington Rd	Class 3.5 Bicycle Route with wide shoulders and pedestrian improvements. (Non-Motorized Transportation Plan Top 25: Route 24)
S162	Howard Rd to Eucalyptus Ave	Class 3.5 Bicycle Route with Wide Shoulders. Widen shoulder to at least 4 feet, wider preferred. StanCOG Non-Motorized Transportation Master Plan Project ID: STAN-10
S163	Shiloh Rd to River Rd	Class 1 Path. Widen shoulder to at least 4', bridge construction. StanCOG Non-Motorized Transportation Master Plan Project ID: STAN-11
S164	West Grayson Rd to Paradise Rd	Class 3.5 Bicycle Route with Wide Shoulders. Widen shoulder to at least 4', wider preferred. StanCOG Non-Motorized Transportation Master Plan Project ID: STAN-12
S165	Shiloh Rd to South Carpenter Rd	Class 3.5 Bicycle Route with Wide Shoulders. Widen shoulder to at least 4', wider preferred. StanCOG Non-Motorized Transportation Master Plan Project ID: STAN-13

Project ID	Location	Description
S166	East Taylor Rd to 7th St	Class 3.5 Bicycle Route with Wide Shoulders. Widen shoulder to at least 4', wider preferred. StanCOG Non-Motorized Transportation Master Plan Project ID: STAN-14
S167	Faith Home Rd to Santa Fe Rd	Class 1 Path. Pave existing path along canal. StanCOG Non-Motorized Transportation Master Plan Project ID: STAN-15
S168	180 ft E of Lucas Rd/Mitchell Rd to North Golden State Blvd	Class 1 Path. New Construction. StanCOG Non-Motorized Transportation Master Plan Project ID: STAN-16
S169	Hickman Rd to Mitchell Rd	Class 1 Path. New Construction. StanCOG Non-Motorized Transportation Master Plan Project ID: STAN-17
S170	Oakdale-Waterford Highway to Claus Rd	Class 1 Path. New Construction. StanCOG Non-Motorized Transportation Master Plan Project ID: STAN-18
S171	Lateral Number Two Path (Proposed) to 1180 ft E of East Hatch Rd/Euclid Ave	Class 3.5 Bicycle Route with Wide Shoulders. Widen shoulder to at least 4', wider preferred. StanCOG Non-Motorized Transportation Master Plan Project ID: STAN-19
S172	Moore Rd to W. Christofferson Pkwy	Bicycle Lane (Class 2), Buffered Bicycle Lane (Class 2), Bicycle Route with wide shoulders (Class 3.5), Separated Bike lane (Class 4), and pedestrian improvements. (Non-Motorized Transportation Plan Top 25: Route 25)
S173	Yosemite Blvd to East Hatch Rd	Class 4 Separated Bike Lane. Lane narrowing. StanCOG Non-Motorized Transportation Master Plan Project ID: STAN-21
S174	Lateral Number One Trail (Proposed) to Herndon Rd	Class 1 Path. Pave path along irrigation canal, Class 1 bridge over Golden State Highway. StanCOG Non-Motorized Transportation Master Plan Project ID: STAN-22
S175	Ustick Rd to W. Hatch Rd	Multi-Use Path (Class 1) and pedestrian improvements. (Non- Motorized Transportation Plan Top 25: Route 7)
S176	Crater Ave to West Whitmore Ave	Class 3 Bicycle Boulevard. Traffic calming, signage, and crossing treatments. StanCOG Non-Motorized Transportation Master Plan Project ID: STAN-24
S177	I St to Claus Rd	Class 4 Separated Bike Lane. Lane narrowing, shoulder widening, parking removal. StanCOG Non-Motorized Transportation Master Plan Project ID: STAN-25
S178	Leek Rd to I St	Class 3.5 Bicycle Route with Wide Shoulders. Widen shoulder to at least 4', wider preferred. StanCOG Non-Motorized Transportation Master Plan Project ID: STAN-26
S179	Sequoia St to Sisk Rd	Class 4 Separated Bike Lane. Lane narrowing in some areas, convert angled to parallel parking (both sides). StanCOG Non- Motorized Transportation Master Plan Project ID: STAN-27
S180	Pelandale Ave to Kiernan Ave	Separated Bicycle Lane (Class 4) and pedestrian improvements. (Non-Motorized Transportation Plan Top 25: Route 21)
S181	River Rd to Joyce Ave	Class 3 Bicycle Boulevard. Wayfinding, traffic calming, crossing improvements. StanCOG Non-Motorized Transportation Master Plan Project ID: STAN-29
S182	Herndon Rd to South 9th St	Class 2 Bicycle Lane. Wayfinding, traffic calming, crossing improvements. StanCOG Non-Motorized Transportation Master Plan Project ID: STAN-30
S183	Albers Rd to MID Main Canal (Waterford)	Class 3.5 Bicycle Route with Wide Shoulders. Widen shoulder to at least 4', wider preferred, add markings and

Project ID	Location	Description
		signage. StanCOG Non- Motorized Transportation Master Plan Project ID: STAN-31
S184	East Hatch Rd to Yosemite Blvd	Class 2 Bicycle Lane. Widen shoulder to at least 4', add markings. StanCOG Non-Motorized Transportation Master Plan Project ID: STAN-32
S185	Lake Rd to F St Bridge	Class 2 Bicycle Lane. Add shoulder (4 feet min), add markings, and signage. StanCOG Non-Motorized Transportation Master Plan Project ID: STAN-33
S186	Proposed Canal Path North of Yosemite Blvd to Warnerville Rd	Class 3.5 Bicycle Route with Wide Shoulders. Improve shoulder, add markings. StanCOG Non-Motorized Transportation Master Plan Project ID: STAN-34
S187	E F St to E H St	Class 2 Bicycle Lane. Lane removal. StanCOG Non-Motorized Transportation Master Plan Project ID: STAN-35
S188	Claribel Rd to Sylvan Ave	Class 2 Bicycle Lane. Widen shoulder, add markings. StanCOG Non- Motorized Transportation Master Plan Project ID: STAN-36
S189	Santa Fe Ave to E Hatch Rd	Class 3.5 Bicycle Route with Wide Shoulders. Improve shoulder, add markings. StanCOG Non-Motorized Transportation Master Plan Project ID: STAN-37
City of Turlock		
T32	Various Locations	Construct Class I Bike Paths
T33	Various Locations	Construct Class II Bike Lanes and Class III Bike Pathes
T34	Various Locations	ADA/Pedestrian Improvements
T35	Various Locations	Implement bike share program
T36	Various Locations	Curb, Gutter, Sidewalk and Bike/Pedestrian Improvements
T37	N. Berkeley Ave to Countryside Dr.	Separated Bicycle Lane (Class 4) and pedestrian improvements. (Non-Motorized Transportation Plan Top 25: Route 10)
T38	East Christoffersen Parkway to West Taylor Rd	Class 4 Separated Bike Lane. Lane narrowing. StanCOG Non-Motorized Transportation Master Plan Project ID: TUR-3A
T39	N. Golden St. Blvd to E. Christofferson Pkwy	Bicycle Route with wide shoulders (Class 3.5), Separated Bike lane (Class 4), and pedestrian improvements. (Non-Motorized Transportation Plan Top 25: Route 12)
T40	North Berkeley Ave to Countryside Drive	Class 4 Separated Bike Lane. Lane narrowing, lane removal. StanCOG Non-Motorized Transportation Master Plan Project ID: TUR-4
T41	North Golden State Blvd to Lander Ave	Class 3 Bicycle Boulevard. Wayfinding. StanCOG Non-Motorized Transportation Master Plan Project ID: TUR-5
T42	40 ft W of East Glenwood Ave/Lander Ave to West Main St	Class 4 Separated Bike Lane. Lane narrowing and possible median narrowing, lane removal. StanCOG Non-Motorized Transportation Master Plan Project ID: TUR-6
T43	South Soderquist Rd to A St	Class 3 Bicycle Boulevard. Traffic calming, wayfinding, crossing treatments. StanCOG Non-Motorized Transportation Master Plan Project ID: TUR-7A
T44	West Main St to High St	Class 2 Bicycle Lane. Lane narrowing, parking removal (one side). StanCOG Non-Motorized Transportation Master Plan Project ID: TUR-7B

Project ID	Location	Description
T45	South Kilroy Rd to South Soderquist Rd	Class 4 Separated Bike Lane. Lane removal. StanCOG Non-Motorized Transportation Master Plan Project ID: TUR-8A
T46	North Washington Rd to South Kilroy Rd	Class 3.5 Bicycle Route with Wide Shoulders. Widen shoulder to at least 4', wider preferred. StanCOG Non-Motorized Transportation Master Plan Project ID: TUR-8B
City of Waterford		
W12	Main St to Bonnie Brae Ave	Pavement widening (parking lanes on both sides) with curb, gutter & sidewalk infill on both the East and West sides of the road.
W13	Reinway to West City Limits	Pavement widening with curb, gutter & sidewalk infill on the North side of the roadway.
W14	Reinway (from Washington to 620' N), Washington (from Reinway to Pasadena) and Pasadena (from Washington to 500' N)	Pavement widening (8' parking lane) with curb, gutter & sidewalk infill on the East side of Reinway, North side of the Washington, and West side of Pasadena.
W15	Welch to Yosemite Blvd.	Pavement widening (parking lanes on both sides) with curb, gutter & sidewalk infill on both the East and West sides of the road.
W16	Various Locations	Curb, Gutter, Sidewalk and Bike/Pedestrian Improvements
W17	Oakdale-Waterford Highway to Yosemite Blvd	Class 1 Path. New Construction. StanCOG Non-Motorized Transportation Master Plan Project ID: WF-1
W18	Bentley St to F St	Class 3 Bicycle Boulevard. Traffic calming, wayfinding, crossing treatments. StanCOG Non-Motorized Transportation Master Plan Project ID: WF-2
W19	Hickman St to Main St	Bicycle Boulevard (Class 3) and pedestrian improvements
W20	Lateral Number Two Path (Proposed) to Dorsey St	Class 4 Separated Bike Lane. Parking removal (one side), lane narrowing. StanCOG Non-Motorized Transportation Master Plan Project ID: WF-4A
W21	Bentley St to Hickman Rd	Class 4 Separated Bike Lane. Lane narrowing. StanCOG Non-Motorized Transportation Master Plan Project ID: WF-4B
W22	F St to 960 ft S of F St/Hickman Rd/Yosemite Blvd	Class 1 Path. Widen shoulder to at least 4', wider preferred. StanCOG Non-Motorized Transportation Master Plan Project ID: WF-4C

Table 2-4 Aviation Projects

Project ID	Location	Description
Modesto		
M97	Modesto City-County Airport	Design - Reconstruction of Taxiway C
M98	Modesto City-County Airport	Reconstruction of Taxiway C
M99	Modesto City-County Airport	Design - Reconstruction of Taxiway E
M100	Modesto City-County Airport	Reconstruction of Taxiway E
M101	Modesto City-County Airport	Design - Reconstruction of Taxiway D
M102	Modesto City-County Airport	Reconstruction of Taxiway D
M103	Modesto City-County Airport	Airfield Electrical Improvements
M104	Modesto City-County Airport	Airfield Slurry Seal - Design/Construct
M105	Modesto City-County Airport	Computer Base Airfield Drivers Education Program
M106	Modesto City-County Airport	Construct Entrance Road
M107	Modesto City-County Airport	Construct New Airport Fire Station
M108	Modesto City-County Airport	Construct New Airport Maintenance Shop
M109	Modesto City-County Airport	Construct Terminal Building
M110	Modesto City-County Airport	Engineering & Contingencies
M111	Modesto City-County Airport	Environmental Planning Studies
M112	Modesto City-County Airport	Equipment Replacement
M113	Modesto City-County Airport	Expand Airport Apron
M114	Modesto City-County Airport	Extend RW/TX 500'
M115	Modesto City-County Airport	Land Acquisition - Phase 1
M116	Modesto City-County Airport	Land Acquisition - Phase 2
M117	Modesto City-County Airport	Land Acquisition - Phase 3
M118	Modesto City-County Airport	Masterplan Update
M119	Modesto City-County Airport	Obstruction Removal - Tree Trimming
M120	Modesto City-County Airport	Realign Airport Way
M121	Modesto City-County Airport	Relocate Localizer
M122	Modesto City-County Airport	Relocate Perimeter Road
M123	Modesto City-County Airport	Remove old terminal
M124	Modesto City-County Airport	Replace VASI with PAPI, RW10L/28R
M125	Modesto City-County Airport	Runway 28R Extension - NEPA/CEQA
M126	Modesto City-County Airport	Taxiway E Re-alignment
M127	Modesto City-County Airport	Terminal Complex - NEPA/CEQA
City of Oakdale		
O24	Oakdale Municipal Airport	Airport Layout Plan
O25	Oakdale Municipal Airport	Runway Safety Area/Drainage Environ
O26	Oakdale Municipal Airport	Pavement Preservation Construction, Phase II
O27	Oakdale Municipal Airport	Pavement Preservation Construction, Phase III
O28	Oakdale Municipal Airport	Pavement Preservation Construction, Phase IV
O29	Oakdale Municipal Airport	Pavement Preservation Construction, Phase V

Project ID	Location	Description
O30	Oakdale Municipal Airport	Pavement Preservation Construction, Phase VI
O31	Oakdale Municipal Airport	Pavement Maintenance and Management Plan (PMMP)
City of Turlock		
T59	Turlock Municipal Airport	Widen Runway 12-30, RSA & Infrastructure Improvements Including Airfield Electrical Upgrades.
T60	Turlock Municipal Airport	Rehabilitate/Reconstruct Apron A1; Relocate Wind Indicator & Segmented Circle (Construction)
T61	Turlock Municipal Airport	Extend Parallel Taxiway "A"; Construct new runway/taxiway connector. (Design Only)
T62	Turlock Municipal Airport	Extend Parallel Taxiway "A"; Construct new runway/taxiway connector. Construction.
T63	Turlock Municipal Airport	Update Airport Master Plan
Stanislaus County		
S190	Crows Landing Industrial Park-Phase 1-A.	Restore Airport to support Industrial Development. The 1,528-acre property is bound by Marshall Road and State Route 33 to the north, Fink Road to the south, Bell Road to the east, and Davis Road to the west.

Table 2-5 Tier 1 Regional Study Projects

Project ID	Jurisdiction	Location	Description
City of Ceres			
RE19	StanCOG	County Line to County Line	Regional Concept of Traffic Operations Study: SR-99 8-lane Widening with ICM
RE20	StanCOG	Countywide	Transportation Technology Strategy for Stanislaus County
RE22	Stanislaus County	SR 132 to SR 99	Project Initiation and Corridor Study
RE23	Stanislaus County	Turlock City Limits to Interstate 5	Preliminary Engineering 2-6 Lane Expressway on new alignment
RE24	Stanislaus County	Stanislaus County Limits	Project Initiation and Corridor Study
RE25	StanCOG	Countywide	Alternative Fuel and Emissions Reduction Program (Electric Vehicle Charging Incentive Program and Countywide VMT Mitigation Bank Program)

3 Environmental Setting

This section provides a general overview of the environmental setting for the proposed 2022 RTP/SCS. More detailed descriptions of the environmental setting for each environmental issue area can be found in Section 4, *Environmental Impact Analysis*.

3.1 Regional Setting

The StanCOG region includes all of Stanislaus County and the incorporated cities therein. Stanislaus County is located in the San Joaquin Valley of California. It is bounded by San Joaquin County to the northwest, Calaveras and Tuolumne Counties to the northeast, Mariposa County to the east, Merced County to the southeast, Santa Clara County to the southwest, and Alameda County to the west. The geographic center of the county is about 80 miles east of San Francisco and 75 miles south of Sacramento.

The majority of Stanislaus County is located on the San Joaquin Valley floor and has an elevation of approximately 100 feet above sea level. To the west of Interstate 5 (I-5), the Valley floor gives way to the foothills and mountains of the Coast Range. In the eastern part of the County, as the landscape approaches the foothills of the Sierra Nevada Mountains, elevations gradually increase to 150 feet above sea level and higher.

Although the StanCOG region is primarily rural and agricultural, it is home to nine incorporated cities. The three most populous cities (Modesto, Turlock, and Ceres) are located along the State Route (SR) 99 corridor, which runs on a northwest axis through the center of the County. Together, these cities account for approximately 62 percent of the County's population. Modesto is the largest city accounting for approximately 39 percent of the county's population (California Department of Finance [DOF] 2021). The cities of Newman and Patterson are located on the western side of the county, along the SR 33 corridor and in proximity to I-5. The cities of Riverbank and Oakdale are located in the northeast part of the County along the Stanislaus River. The City of Waterford is situated along the Tuolumne River on the east side of the Valley. The City of Hughson is located east of Ceres.

3.2 Regional Transportation System

3.2.1 Highways and Roadways

The County's regional transportation system consists of state highways, and all levels of roadways, bikeways, several rail lines, and three airports – one with commercial passenger service. Regional transportation within the San Joaquin Valley depends heavily on SR 99 and I-5. I-5 is a four-lane freeway that runs along the west side of Stanislaus County and the San Joaquin Valley adjacent to the Coast Ranges. It runs entirely in the unincorporated areas of county with interchanges that provide access to the cities and communities in western Stanislaus County, including the cities of Newman and Patterson, and the unincorporated communities of Westley, Grayson, and Crows Landing. SR 99 is a six-lane freeway in Stanislaus County, and connects the largest urban areas in the County to other metropolitan areas in the San Joaquin Valley. The three largest cities in the County (Modesto, Turlock, and Ceres) are located in the SR 99 corridor, along with the unincorporated communities of Keyes and Salida.

The principal east-west corridor in the county is SR 132, which runs through Modesto and Waterford. Other important routes that connect urban areas of Stanislaus County include SRs 108, 33 and 99. A number of arterial and major roadways in Stanislaus County are vital for regional travel. These roadways provide connectivity between the incorporated cities and unincorporated communities within the County. Most of these are signed County J-Routes, and include Santa Fe Avenue (County Route J7), Geer/Albers Road (J14), Howard/Grayson Road (J16), Keyes Road (J16), West Main Street/Las Palmas Avenue (J17), Crows Landing Road, and a portion of McHenry Avenue (J6).

3.2.2 Transit and Rail Services

The Stanislaus County region offers local, regional, and intercounty transit services provided by the newly consolidated the Stanislaus Regional Transit Authorit (StanRTA), which is providing a more streamlined and integrated transit service connecting Stanislaus County communities.Additionally, the San Joaquin Regional Transit District provides bus service from Lodi to Ripon, and Merced County Transit Authority's "The Bus" has one fixed-route that connects Turlock with Merced County cities along the SR 99 corridor.

Amtrak provides intercity passenger rail service connecting Stanislaus County to major metropolitan areas in California. Amtrak California's San Joaquin Route travels through Stanislaus County along the Burlington Northern/Santa Fe Railroad with stations in Modesto and Denair/Turlock (approximately three miles northeast of central Turlock). The San Joaquin Route provides scheduled daily service from Stanislaus County to Sacramento, the San Francisco Bay Area, and Bakersfield. Stanislaus County does not have any direct commuter rail service; however, StanRTA connects to the Lathrop/Manteca train station, where the Altamont Commuter Express (ACE) train provides commuter service to the San Joaquin Valley and Livermore, Pleasanton, Fremont and the Santa Clara Valley. The ACE provides an alternative means of reaching the Bay Area by offering commuter rail service through the Altamont Pass. ACE currently operates four westbound trains each morning and four returning eastbound trains Monday through Friday between Stockton in San Joaquin County and San Jose and may extend service from Stockton to Modesto and Turlock.

Railroad freight operators in Stanislaus County include the Union Pacific Railroad (UPRR), Burlington Northern and Santa Fe (BNSF) Railway, Modesto and Empire Traction (M&ET) Company Railroad, Sierra Railroad, and the Tidewater Southern Railroad, which is a subdivision of the UPRR. The UPRR operates mainline service through Salida, Modesto, Ceres, Keyes, and Turlock. UPRR also operates the California Northern Railroad line, which passes through Westley, Patterson, Crows Landing, and Newman on the west side of the County. The BNSF Railway operates mainline service through Riverbank, Hughson, Empire, and Denair. BNSF also operates a branch line which connects the mainline at Riverbank with the Sierra Railroad in Oakdale.

The M&ET Company is a short-line railroad that connects switching operations between the UPRR in Modesto and the BNSF Railway in Empire. The Sierra Railroad operates between Oakdale and Standard, which is near Sonora in Tuolumne County. Union Pacific and BNSF operate freight trains on the line approximately three times per week. Passenger trips travel between Oakdale and the eastern Stanislaus County Line, and include entertainment-style railroad travel roughly three to five times per week. The Tidewater Southern Railroad is a branch line operation of the UPRR. The line runs generally north-south through Stanislaus County, from the City of Stockton in San Joaquin County to North Modesto, and from the City of Turlock to South Modesto.

3.2.3 Airports

The Modesto City-County Airport (MOD) is the largest public airport in Stanislaus County, and the only facility in the County with regularly scheduled commercial air passenger service. The airport is located east of SR 99 and south of SR 132 near the Tuolumne River and Mitchell Road in Modesto. The Oakdale Municipal Airport (O27) is owned by the City of Oakdale. The 117-acre facility is located three miles southeast of the City of Oakdale off Sierra Road. The airport is a general aviation facility. The Turlock Municipal Airport is located in the northeastern part of Merced County, but it is owned by the City of Turlock, which is located in Stanislaus County.

3.2.4 Active Transportation/Complete Streets

The 2022 RTP/SCS is committing significant investment in the bicycle and pedestrian network for the StanCOG region by enhancing multimodal travel opportunities throughout the County by investing more in the countywide transit, bicycle, and pedestrian systems. Availability of viable alternative and active transportation options, including bicycle and pedestrian options, is integral to achieving a successful regional transportation network in the StanCOG region. StanCOG's transportation demand management (TDM) program, called Dibs makes it easier for residents of Stanislaus County to get around locally and to adjacent counties with walking and biking as part of their transportation routine. The Dibs program works directly with commuters, employers, member agencies, and community organizations to promote smart travel options such as carpooling, vanpooling, transit, and biking and walking. Program elements include a comprehensive on-line trip planning tool, community outreach and presentations, vanpool subsidies, Emergency Ride Home (ERH), San Joaquin Valley Air Pollution Control District Rule 9410 implementation assistance, and coordination of employer and community events. The StanCOG region's alternative transportation network consists of trails and on-street bicycle routes. Most major streets have sidewalks and partner agencies have developed, or are developing, active transportation plans to identify and close gaps in the active transportation network. In 2013, StanCOG adopted a Non-Motorized Transportation Plan to guide the future development of bicycle and pedestrian facilities in Stanislaus County. In 2021, StanCOG updated the Non-Motorized Transportation Plan (NMTP) to support the development of a regional non-motorized transportation network. In agricultural areas, the County provides adequate striping and paving in accordance with Caltrans and American Association of State Highway and Transportation Officials (AASHTO) standards to safely accommodate bicycle travel whenever a roadway is widened and where adequate right-of-way exists. Development standards for jurisdictions within Stanislaus County typically require proposed residential and commercial developments located in the urban areas to construct curb, gutter, and sidewalk improvements along the development's frontage on a public street.

3.3 Mitigation Approach, EIR Baseline, Approach for Direct and Cumulative Analysis

3.3.1 Mitigation Approach

This EIR includes proposed mitigation measures to reduce impacts and identifies agencies for implementation of those mitigation measures. StanCOG as the lead agency has authority to enforce mitigation measures for projects for which they have discretionary authority. However, StanCOG does not have authority to require recommended mitigation measures be implemented by other implementing agencies (e.g., Caltrans, the County, cities, transit agencies, etc.). These agencies are

responsible agencies for this 2022 RTP/SCS EIR but will be lead agencies for future transportation and land use development projects. While StanCOG cannot mandate that sponsoring agencies implement the mitigation measures, ongoing interagency consultation during project specific environmental review process would ensure that mitigation contained herein is considered and implemented where applicable. It is the responsibility of the lead agency implementing specific 2022 RTP/SCS projects to conduct project–level environmental review consistent with CEQA and where applicable, incorporate mitigation measures provided herein and developed specifically for the project to reduce impacts. Project-specific environmental documents may adjust the mitigation measures identified in this EIR as necessary to respond to site-specific conditions.

3.3.2 EIR Baseline

Under CEQA, the impacts of a proposed project must be evaluated by comparing expected environmental conditions after project implementation to conditions at a point in time referred to as the baseline. State CEQA Guidelines Section 15125 states that an EIR should describe physical environmental conditions of the project as they exist at the time the Notice of Preparation (NOP) is published, or if no NOP is published, at the time environmental analysis is commenced, from both a local and regional perspective. This environmental setting will normally constitute the baseline physical conditions by which a lead agency determines whether an impact is significant.

As the State CEQA Guidelines Section 15125 states, ordinarily the appropriate baseline will be the actual environmental conditions existing at the time of CEQA analysis, typically when NOP is published. However, the CEQA Guidelines also contemplate times when a deviation from the use of the NOP date to establish the baseline is appropriate to present an accurate description of the expected environmental impacts of a proposed project.

This EIR evaluates potential impacts against existing conditions at the time of the release of the NOP (January 2022), where information is available, for issue areas that would not be substantially influenced by future regional growth that would occur with or without implementation of the proposed 2022 RTP/SCS. It was determined that for these issues a comparison to current, existing baseline conditions would provide the most relevant information for the public, responsible agencies, and StanCOG decision-makers. For air quality, greenhouse gas emissions, noise, and transportation, this EIR evaluates potential impacts against both (1) a forecast future baseline condition and (2) current, existing baseline conditions, controlling for impacts caused by population growth and other factors that would occur whether or not the RTP/SCS is adopted. The RTP/SCS is a long-term, approximately 24 year plan that organizes transportation projects and land use patterns to the year 2046. It is important to emphasize that population growth, urbanization, and volume of average daily traffic generated in the StanCOG region will increase by 2046, with or without implementation of the RTP/SCS, as a result of a range of demographic and economic factors independent of policy and land use decisions by StanCOG and its member agencies. Therefore, this Program EIR evaluates potential impacts to air quality, greenhouse gas emissions, noise, and transportation against both a future baseline and a current baseline standard. All other impacts are assessed based on the current baseline, 2022.

3.3.2.1 Interim Timeframes

2046 is the horizon year of the proposed 2022 RTP/SCS. While the proposed 2022 RTP/SCS would be implemented gradually over the planning period, this EIR does not analyze interim time frames because the four-year update cycle of the RTP/SCS prepared by StanCOG already requires short-term adjustments to the Plan. The one exception to this approach is in Section 4.9, *Greenhouse Gas*

Emissions and Climate Change, which discusses years 2020, 2035, and 2050, as well as a comparative baseline of 1990 and 2005, to satisfy statutory requirements and address state goals related to GHG emissions, such as SB 375 (Health & Safety Code, § 38551(b)). A summary of the scenarios considered in the GHG analysis is provided in Section 4.9.2 in Section 4.9, *Greenhouse Gas Emissions and Climate Change.* As previously noted, StanCOG has modeled GHG emissions for 2020 for illustrative purposes, though no aspect of the proposed 2022 RTP/SCS can influence the achievement or lack of achievement of target year 2020 GHG emissions.

3.3.3 Approach for Direct Impact Analysis

The programmatic nature of the proposed 2022 RTP/SCS necessitates a general approach to the evaluation of existing conditions and impacts associated with the project. As a program document, this EIR presents a regionwide assessment of the impacts of the proposed 2022 RTP/SCS. These impacts are examined for both transportation network improvements and the regional growth and land use changes forecasted. Because the EIR is a long-term document intended to guide actions over 20 years into the future, program-level and qualitative evaluation is involved. Quantitative analyses are provided where applicable with available information. During future stages in planning and implementation of specific projects envisioned by the proposed 2022 RTP/SCS, including land development resulting from regional growth and transportation improvements identified in the proposed 2022 RTP/SCS, project-specific CEQA documents would be prepared by the appropriate project implementation agency.

3.3.4 Approach for Cumulative Analysis

CEQA defines cumulative impacts as “two or more individual effects which, when considered together, are considerable, or which can compound or increase other environmental impacts.” Section 15130 of the *CEQA Guidelines* requires that an EIR evaluate environmental impacts that are individually limited but cumulatively considerable. These impacts can result from the proposed project alone, or together with other projects. The *CEQA Guidelines* state: “The cumulative impact from several projects is the change in the environment which results from the incremental impact of the project when added to other closely related past, present and reasonably foreseeable probable future projects” (*CEQA Guidelines*, Section 15355). Cumulative impacts can result from individually minor but collectively significant projects taking place over a period of time.

CEQA Guidelines Section 15130 requires a discussion of the cumulative impacts of a project when the project’s incremental contribution to a significant cumulative effect is “cumulatively considerable.” This means that the project’s incremental effects are considerable when viewed in connection with the effects of past, current, and probable future projects. CEQA does not require an analysis of incremental effects that are not cumulatively considerable nor is there a requirement to discuss impacts which do not result in part from the project evaluated in the EIR.

3.3.4.1 Cumulative Impact Methodology

The project integrates transportation investments with land use strategies for an entire region of the state that shares, or is connected by, common economic, social, and environmental characteristics. This Program EIR contains detailed analysis of regional cumulative impacts, which are differentiated from localized impacts that may occur at the city level.

The 2022 RTP/SCS addresses cumulative conditions by design. The 2022 RTP/SCS covers the entire area of Stanislaus County and includes nine cities as well as the unincorporated County. It integrates

transportation investments with land use strategies for the County. However, StanCOG and neighboring agencies San Joaquin Council of Governments (SJCOG) and the Merced County Association of Governments (MCAG) share, or are connected by, common economic, social and environmental characteristics. As such, the environmental analysis of the 2022 RTP/SCS presented throughout this Draft EIR is a cumulative analysis consistent with CEQA policies. Furthermore, this Draft EIR contains detailed analysis of regional (cumulative) impacts, which are differentiated from localized impacts that may occur at the county level.

When evaluating cumulative impacts, CEQA allows the use of either a list of past, present, and probable future projects, including projects outside the control of the lead agency, or a summary of projections in an adopted planning document, or a combination of the two approaches. Although the RTP/SCS analysis is cumulative by design, additional cumulative analysis has been provided by taking into account future regional growth and development in the surrounding counties combined with the regional growth in the StanCOG region. The cumulative analysis presented below primarily uses a projections-based approach [see State *CEQA Guidelines* Section 15130(B)(1)]. Under the projections-based approach, land use and growth projections for the region, which are the subject of analysis throughout this Program EIR, are combined with the growth and VMT projections for the adjoining counties. Adjoining counties include Merced, San Joaquin, Tuolumne, Calaveras, Alameda, Santa Clara, and Mariposa (described below). The cumulative impact analysis in this Program EIR considers the impacts of planned growth and increased VMT in these adjoining counties.

- **Merced County**. Merced County is located south of the plan area in the San Joaquin Valley. The county spans from coastal ranges to the foothills of the Sierra Nevada and includes six incorporated cities: Atwater, Dos Palos, Gustine, Livingston, Los Banos, and Merced. Approximately 21,128 acres, or 1.9 percent of the total county land area, lies within these cities (County of Merced 2013).
- **San Joaquin County**. San Joaquin County is located north of the plan area and encompasses nearly 920,000 acres (1,440 square miles) of agricultural lands. The foothills of the Diablo Range define the southwest corner of the county and the foothills of the Sierra Nevada lie along the county's eastern boundary. The county includes 11 incorporated cities, the largest being the City of Stockton located in the center of the county (County of San Joaquin 2016).
- **Tuolumne County**. Tuolumne County is located to the northeast of the plan area along the western slope of the Sierra Nevada mountain range. Tuolumne County encompasses 2,274 total square miles and includes diverse terrain and land uses. The County includes one incorporated city, the City of Sonora, which serves as the county seat (County of Tuolumne 2018).
- **Calaveras County**. Calaveras County is located to the northeast of the plan area in California's Sierra Nevada region. The County is made up of small communities, surrounded by agricultural lands, working forests, wildlands, and large expanses of publicly managed forests and recreation lands. San Andreas is the seat of Calaveras County and the City of Angels Camp, is the only incorporated city in the County (County of Calaveras 2016).
- **Alameda County**. Alameda County is located to the west of the plan area and is a 735 square mile metropolitan county, where the majority of the flatter portions of the County are committed to urban and industrial uses. The County is located on the east side of the southern portion of the San Francisco Bay and has a diverse combination of land forms ranging from salt water marshes along the bay to moderately high uplands and intermontane valleys (County of Alameda 2014).
- **Santa Clara County**. Santa Clara County is located to the west of the plan area and encompasses 1,300 square miles at the southern end of the San Francisco Bay. The County constitutes about

one fourth of the Bay Area's total population and is a major employment center for the region, providing more than a quarter of all jobs in the Bay Area. The northern portion is extensively urbanized, housing approximately 90 percent of the county's residents, and 13 of the County's 15 incorporated cities are located in the Northern Valley. The southern portion is predominantly rural with the exception of the cities of Gilroy and Morgan Hill (County of Santa Clara 1994).

- **Mariposa County**. Mariposa County is located southeast of the plan area in the western foothills of the Sierra Nevada mountains. Mariposa is the county seat and there are no incorporated cities. The county has a total area of 1,463 square miles and includes extensive acres of forest lands (including portions of Sierra National Forest and Stanislaus National Forest) as well as recreation lands that are a part of Yosemite National Park (County of Mariposa 2006).

The area that includes Stanislaus County and the above-referenced adjoining counties is referred to in this analysis as the "cumulative impact analysis area." The population for the cumulative impact analysis area is projected to grow from approximately 5.4 million people to 6.3 million by 2046 (DOF 2021). The StanCOG travel demand model accounts for travel in this cumulative region. It has external stations at the end of the model that represents roadway connections on County's border. At these stations, an average distance is estimated based on travel surveys and other data such as from Big Data on the ultimate destination for the trips crossing the County border using each respective roadway. The model is set up to generate and distribute trips based on a pre-defined number of trips by trip purpose for each external station. Analysis of the cumulative effects of the 2022 RTP/SCS for each environmental issue area is presented at the ends of Sections 4.1 through 4.18.

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4 Environmental Impact Analysis

This section discusses the possible environmental effects of the 2022 RTP/SCS for the specific issue areas that were identified through the scoping process as having the potential to experience significant effects. "Significant effect" is defined by the *CEQA Guidelines* Section 15382 as:

> "…a substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project including land, air, water, minerals, flora, fauna, ambient noise, and objects of historic or aesthetic significance. An economic or social change by itself shall not be considered a significant effect on the environment, but may be considered in determining whether the physical change is significant."

The assessment of each issue includes a discussion of the setting for that issue and an analysis of the project's impact. Within the impact analysis, the first subsection identifies the methodologies used and the "significance thresholds," which are those criteria that are adopted by StanCOG, its member agencies, or other agencies, are universally recognized, or have been developed specifically for this analysis to determine whether potential effects are significant. The next subsection describes each potential impact of the proposed project, mitigation measures for significant impacts, and the level of significance after mitigation. Each potential effect under consideration for an issue area is separately listed in bold text, with the discussion of the effect and its significance following. Each bolded impact listing also contains a statement of the significance determination for the environmental impact as follows:

- **Significant and Unavoidable.** An impact that cannot be reduced to below the threshold level given reasonably available and feasible mitigation measures. Such an impact requires a Statement of Overriding Considerations to be issued if the project is approved per §15093 of the CEQA Guidelines.
- **Less than Significant with Mitigation Incorporated.** An impact that can be reduced to below the threshold level given reasonably available and feasible mitigation measures. Such an impact requires findings under §15091 of the CEQA Guidelines.
- **Less than Significant.** An impact that may be adverse, but does not exceed the threshold levels and does not require mitigation measures. However, mitigation measures that could further lessen the environmental effect may be suggested if readily available and easily achievable.
- **No Impact.** The proposed project would have no effect on environmental conditions or would reduce existing environmental problems or hazards.

Following each environmental impact discussion is a list of mitigation measures and the residual effects or level of significance remaining after implementation of the measure(s). In cases where the mitigation measure for an impact could have an environmental impact in another issue area, this impact is discussed and evaluated as a secondary impact.

Many sections conclude with a screening-level discussion of specific proposed 2022 RTP/SCS transportation projects that may result in identified impacts. The impact analysis concludes with a discussion of cumulative effects, which are defined and discussed in detail in Section 3, *Environmental Setting*.

EIR Scope, Content, and Format

This EIR includes discussions of environmental impacts related to several topic areas. The analysis of environmental impacts identifies impacts by category: significant and unavoidable, less than significant with mitigation incorporated, less than significant, and no impact. It proposes mitigation measures, where feasible, for identified significant environmental impacts. Environmental topic areas that are addressed in this EIR include:

- Aesthetics
- Agriculture and Forestry Resources
- Air Quality
- Biological Resources
- Cultural Resources
- Energy
- Environmental Justice
- Geology and Soils
- Greenhouse Gases and Climate Change
- Hazards and Hazardous Materials
- Hydrology and Water Quality
- Land Use
- Noise
- Population and Housing
- Transportation
- Tribal Cultural Resources
- Wildfire

The *Executive Summary,* of this EIR, summarizes all impacts and mitigation measures that apply to the proposed Project.

4.1 Aesthetics

This section evaluates potential impacts to visual resources from development facilitated by the proposed 2022 RTP/SCS.

4.1.1 Setting

a. Environmental Setting

The aesthetic value of an area can be generally defined by the measure of its visual character and quality, combined with the viewer response to the area. Scenic quality can best be described as the overall impression that an individual viewer retains after driving through, walking through, or flying over an area. Viewer response is a combination of viewer exposure and viewer sensitivity. Viewer exposure is a function of the number of viewers, number of views seen, distance of the viewers, and viewing duration. Viewer sensitivity relates to the extent of the public's concern for a particular viewshed.

StanCOG's planning area is predominantly rural, with urban development focused near the center of the County, with more rural areas east, west, and in between the major cities. The specific characteristics that contribute to and define the aesthetic value of the StanCOG region are described below.

Visual Character of the Region

Located in the San Joaquin Valley and one of the most productive farming regions in the world, visual character of the StanCOG region is primarily agricultural. To the west of Interstate 5 (I-5), flat plains transition to gently rolling hillsides and then into mountainous areas that are part of California's Coastal Range. Within the County boundary, sparse development occurs west of I-5 due to the geography and physical terrain of the California Coastal Range. Aerially viewed, agricultural land uses begin eastward of I-5 and surround the denser urban development in the cities. In the eastern portion of StanCOG region, near the border with Tuolumne County, the landscape gradually transitions to the foothills of the Sierra Nevada Mountains. The region's geography varies substantially from the agriculturally dominant San Joaquin Valley towards the western mountains. Elevations range from approximately 100 feet above sea level across the Valley to more than 3,800 feet above sea level at Mount Stakes on the western border with Santa Clara County.

The three main rivers in the StanCOG region occupy meandering, shallow channels on the floor of the San Joaquin Valley. The Tuolumne and Stanislaus Rivers flow west, carrying waters from the Sierra Nevada Mountains to the confluence with the San Joaquin River which flows north and west to the Sacramento-San Joaquin River Delta.

The StanCOG region is largely rural and agricultural in character. The City of Modesto is the only city in the County with more than 100,000 residents, with the City of Turlock second, at nearly 75,000 residents (California Department of Finance [DOF] 2021). Major urban areas are concentrated along State Route (SR) 99, with large agricultural areas to the east and west. Similarly, the cities of Modesto and Waterford are located along SR 132. Smaller and more rural communities are located along SR 33, parallel and east of I-5.

Scenic Views/Resources

Scenic resources in the County are primarily comprised of parks, open space areas and agricultural land, as well as rivers, creeks, and riparian habitat.

As mentioned above, the landform of the County and surrounding areas is generally characterized by a flat valley floor that is dominated with agricultural and dairy production. Agricultural land in the region is planted predominantly with orchard and row crops. These fields offer expansive views that extend over the valley floor to the east and Diablo Range to the west (when haze is at a minimum). These landscape views are strongly characteristic of the Central Valley and contribute to the regional identity.

State, regional, and some local parks are scenic resources that provide views of natural vegetation, wildlife and wildlife habitat, or open space areas otherwise less disturbed by anthropologic activities, such as farming. Some of the larger parks in the region include Henry W. Coe State Park, San Joaquin River National Wildlife Refuge, Turlock Lake State Recreation Area, Kerr Park, Woodward Reservoir Park, and Frank Raines Park.

The Sacramento-San Joaquin River Delta (Delta), northwest of the County, is an integral part of the region's visual character. Connected to the Delta are many rivers, creeks, sloughs, and bays that strongly influence local land use patterns. Many of these rivers, creeks, and sloughs are scenic resources in the County, including the San Joaquin River, Stanislaus River, Tuolumne River, Martells Creek, Duck Creek, and the Delta-Mendota Canal, as well as smaller irrigation ditches and sloughs. Additionally, there are numerous lakes in the County that are scenic resources, such as Turlock Lake and Modesto Reservoir. The riparian vegetation associated with these waterbodies is also considered a scenic resource in the County.

Affected viewers in the County include residential, recreational, industrial, institutional, and commercial viewers and viewers on local freeways, highways, and smaller arterials. Viewer sensitivity would range from low to high depending on location in the landscape relative to the specific project, and presence or absence of various viewer groups.

Scenic Highways and Roadways

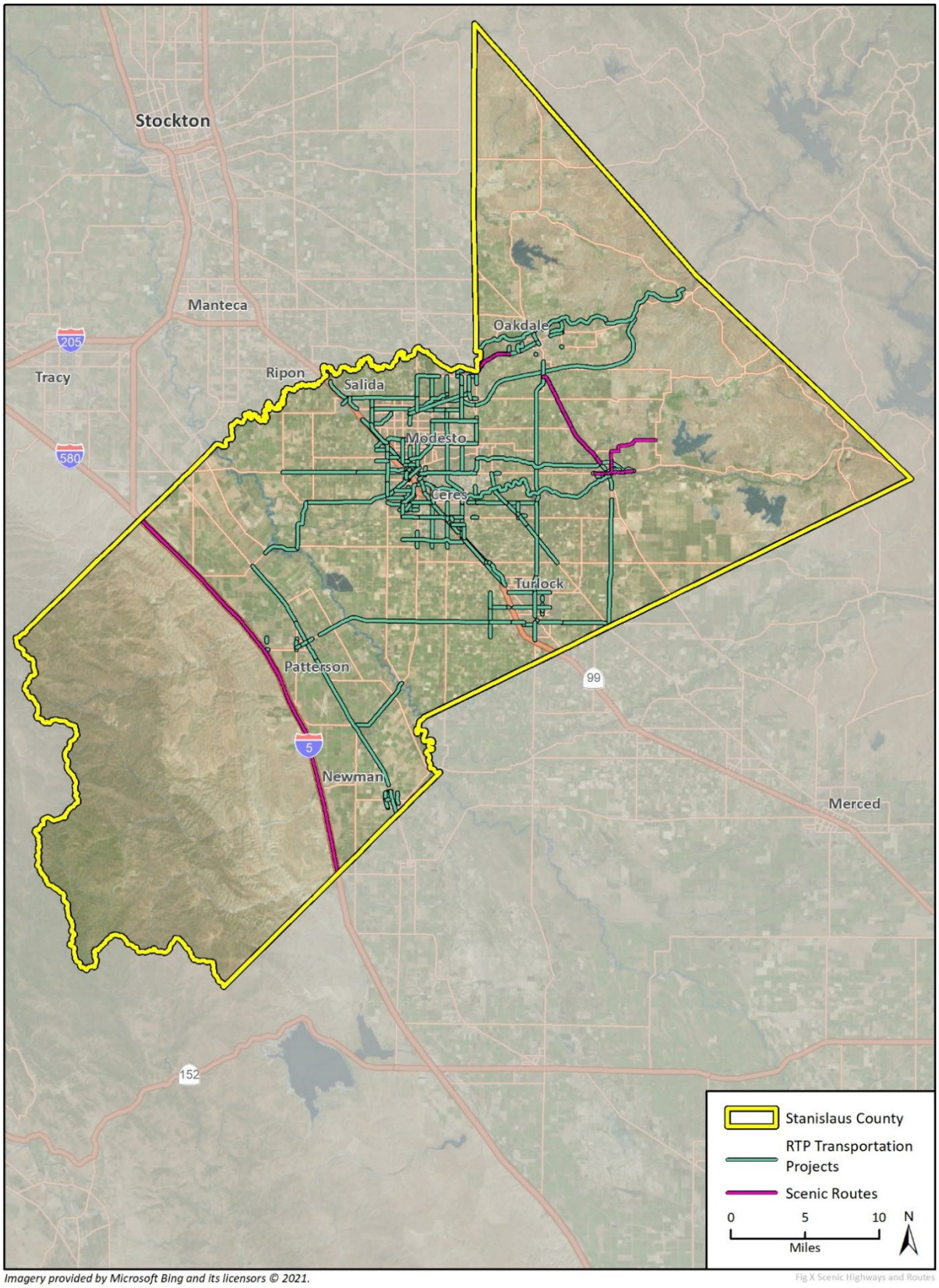
The State has designated I-5 as a scenic highway across Stanislaus County from the Merced County line to the San Joaquin County line (California Department of Transportation [Caltrans] 2011). This is the only State-designated route in the StanCOG region. When traveling on I-5, views consist of open agricultural fields to the east and rolling hills to the west.

In addition to State designated I-5, the following roadways are locally designated as scenic routes:

- SR 108 between the cities of Riverbank and Oakdale (City of Riverbank 2009)
- SR 132 within the city limits of Waterford (City of Waterford 2006)
- Tim Bell Road from the Modesto Irrigation District Main Canal to its intersection with Hazeldine Road (City of Waterford 2006)
- Oakdale/Waterford Highway, from Tuolumne River to Dry Creek (City of Waterford 2006)

No other State highways within the StanCOG region are in the State's master plan of highways eligible for designation as scenic highways (Caltrans 2011). The aforementioned scenic highways and roadways are shown in Figure 4.1-1, along with the location of the transportation projects included in the 2022 RTP/SCS.

Figure 4.1-1 RTP/SCS Projects and StanCOG Region Scenic Highways/Routes



Imagery provided by Microsoft Bing and its licensors © 2021.
Additional data provided by Stanislaus County, 2018.

Fig X Scenic Highways and Routes

Wild and Scenic Rivers

Federal agencies have jurisdiction, under the Wild and Scenic Rivers Act, to designate rivers or river sections to "be preserved in free-flowing condition and protected for the benefit and enjoyment of present and future generations." Currently, no rivers in the StanCOG region are designated under the National Wild and Scenic Rivers System (Wild and Scenic Rivers Council n.d.).

4.1.2 Regulatory Setting

Federal Laws, Regulations, and Policies

National Scenic Byway Program

The National Scenic Byway Program was established to preserve and protect the nation's scenic and less-traveled roads in an effort to promote tourism. For designation as a National Scenic Byway a road must have one of the following six intrinsic qualities: scenic, natural, historic, cultural, archeological, or recreational. Within California, there are eight federally designated byways (FHWA 2021).

U.S. Department of Transportation Act, Section 4(f)

Section 4(f) of the Department of Transportation Act (DOT Act) of 1966 (49 U.S.C. § 303) was enacted to preserve the natural beauty of the countryside and public park and recreation lands, wildlife and waterfowl refuges and historic sites. Section 4(f) requires a comprehensive evaluation of all environmental impacts resulting from federal-aid transportation projects administered by the Federal Highway Administration (FHWA), Federal Transit Administration (FTA) and Federal Aviation Administration (FAA) that involve the use, or interference with use, of the following types of land:

- Public park lands;
- Recreation areas;
- Wildlife and waterfowl refuges; and
- Publicly- or privately-owned historic properties of federal, state, or local significance.

This evaluation, called the Section 4(f) statement, must be sufficiently detailed to permit the U.S. Secretary of Transportation to determine that:

- There is no feasible and prudent alternative to the use of such land;
- The program includes all possible planning to minimize harm to any park, recreation area, wildlife and waterfowl refuge, or historic site that would result from the use of such lands; or
- If there is a feasible and prudent alternative, a proposed project using Section 4(f) lands cannot be approved the by Secretary; or if there is no feasible and prudent alternative, the proposed project must include all possible planning to minimize harm to the affected lands.

Detailed inventories of the locations and likely impacts on resources that fall into the Section 4(f) category are required in project-level environmental assessments.

In August 2005, Section 4(f) was amended to simplify the process for approval or projects that have only minimal impacts on lands affected by Section 4(f). Under the new provisions, the U.S. Secretary of Transportation may find such a minimal impact if consultation with the State Historic Preservation Officer (SHPO) results in a determination that a transportation project will have no

adverse effect on the historic site or that there will be no historic properties affected by the proposed action. In this instance, analysis of avoidance alternatives is not required, and the Section 4(f) evaluation process is complete.

State Laws, Regulations, and Policies

California Scenic Highway Program

Recognizing the value of scenic areas and view from roads in such areas, the State Legislature established the California Scenic Highway Program in 1963. This legislation preserves and protects scenic highway corridors from changes that would diminish the aesthetic value of lands adjacent to highways. The goal of the Scenic Highway Program is to preserve and enhance the natural beauty of California. Under this program, a number of State Routes have been designated as eligible for inclusion as scenic routes. Once the local jurisdiction through which the roadway passes have established a corridor protection program and the Departmental Transportation Advisory Committee recommends designation of the roadway, the State may officially designate roadways as scenic routes. Interstate highways, State Routes, and county roads may be designated as scenic under the program. The Master Plan of State Highways Eligible for Official Scenic Highway Designation maps designated highway segments, as well as those that are eligible for designation. Changes to the map require an act of the State Legislature.

As noted, a corridor protection program must be adopted by the local governments with land use jurisdiction over the area through which the roadway passes as the first step in moving a road from "eligible" to "designated" status. Each designated corridor is monitored by the State and designation may be revoked if a local government fails to enforce the provisions of the corridor protection program. While there are no restrictions on scenic highway projects, local agencies and Caltrans must act together to coordinate transportation and development projects and ensure the protection of the corridor's scenic value to the greatest extent possible, including undergrounding all visible electric distribution and communication utilities within 1,000 feet of a Scenic Highway. In some cases, local governments have their own land use and site planning regulations in place to protect scenic values along a designated corridor. At a minimum, each corridor protection program must include:

- Regulation of land use and density of development,
- Detailed land and site planning,
- Control of outdoor advertising devices,
- Control of earthmoving and landscaping, and
- Regulation of the design and appearance of structures and equipment.

The Master Plan of State Highways Eligible for Official Scenic Highway Designation requires that proposed realignments and route improvements be evaluated for their impact on the scenic qualities of the corridor.

California Building Energy Efficiency Standards

California Code of Regulations Title 24, Part 6 contains California's Energy Efficiency Standards for Residential and Non-residential Buildings. California Building Energy Efficiency Standards were established by CEC in 1978 in response to a legislative mandate to create uniform building codes to reduce California's energy consumption and provide energy efficiency standards for residential and

nonresidential buildings. The 2019 Energy Code contains standards to reduce energy consumption for outdoor lighting application in residential and non-residential developments. Mandatory measures for outdoor lighting and glare are specified in §110.9, §130.0, and §130.2 of the 2019 Energy Code.

Caltrans Adopt-a-Highway Program

To improve and maintain the visual quality of California highways, Caltrans administers the Adopt-a-Highway program, which was established in 1989. The program provides an avenue for individuals, organizations, or businesses to help maintain sections of roadside within California's State Highway System. Groups have the option to participate as volunteers or to hire a maintenance service provider to perform the work on their behalf. Adoptions usually span a two-mile stretch of roadside, and permits are issued for five-year periods. Since 1989, more than 120,000 California residents have kept 15,000 shoulder miles of state roadways clean by engaging in litter removal, tree and flower planting, graffiti removal and vegetation removal.

Local Laws, Regulations, and Policies

County and City General Plans

The general plans and zoning ordinances of the County and cities within the StanCOG region regulate design and the built environment within those communities, while the general plan for the County performs the same function within unincorporated areas. In all cases, the general plans and zoning typically prescribe visual resource policies and, in some cases, require design review of projects. In general, little direction is provided regarding the design of roadways, which are typically subject to adopted Caltrans or local engineering standards related to safety and capacity, rather than aesthetics. Outlined below are the policies for Stanislaus County and major cities within the StanCOG region.

STANISLAUS COUNTY

The Stanislaus County General Plan, Conservation/Open Space Element (Chapter 3) includes visual goals and policies in an effort to preserve the visual characteristics of the County. Relevant goals and policies to the proposed 2022 RTP/SCS EIR include the following (Stanislaus County 2015):

- Goal 1: Encourage the protection and preservation of natural and scenic areas throughout the County.
- Policy 2: Assure compatibility between natural areas and development.
  - Implementation Measure 5: Consider adoption of scenic corridors to protect and preserve natural scenic vistas located throughout the County.

CITY OF MODESTO

The City of Modesto's Environmental Resources, Open Space, and Conservation Element of the General Plan includes policies to protect views of natural landscapes, protect views for travelers along the County's roads and highways, and plan development to protect the scenic qualities of natural landscapes (City of Modesto 2019). The City's General Plan Community Development Policies also provide a framework to guide future land use decisions and development in Modesto, while also enhancing community character.

CITY OF TURLOCK

The City of Turlock's Conservation Element and City Design Element of the General Plan include policies to protect visual character, attractiveness, and integrity, for both the natural and built environment (City of Turlock 2012). The City's General Plan Land Use and Economic Development Element also provides a framework to guide future land use decisions and development in Turlock, while also maintaining Turlock's small-town character.

4.1.3 Impact Analysis

a. Methodology and Significance Thresholds

Methodology

Environmental assessment of a proposed project's impacts to the aesthetic and visual resources of a site begins with identification of the existing visual resources on and off that site, including the site's physical attributes, its relative visibility, and its relative uniqueness. The assessment of aesthetic impacts involves qualitative analysis that is inherently subjective in nature. Different viewers react to viewsheds and aesthetic conditions differently. This evaluation measures the existing visual resource against the proposed action, analyzing the nature of the anticipated change.

It is important to distinguish between public and private views. Private views are those views seen from privately-owned land, including views from private residences, and are typically enjoyed by individuals. Public views are experienced by the collective public. These include views of significant landscape features such as the Coastal Range and the Sierra Nevada foothills, as seen from public viewing space, not privately-owned properties. California Environmental Quality Act (CEQA) (PRC §21000 et seq.) case law has established that only public views, not private views, need be analyzed under CEQA. For example, in *Association for Protection etc. Values v. City of Ukiah (1991) 2 Cal. App. 4th 720 [3 Cal. Rptr.2d 488]* the court determined that "we must differentiate between adverse impacts upon particular persons and adverse impacts upon the environment of person in general." As recognized by the court in *Topanga Beach Renters Assn. v. Department of General Services (1976) 58 Cal. App.3d 188 [129 Cal. Rptr. 739]*: "[A]ll government activity has some direct or indirect adverse effect on some persons. The issue is not whether [the project] will adversely affect particular persons but whether [the project] will adversely affect the environment of persons in general." Therefore, for this analysis, only public views will be considered when analyzing the visual impacts of implementing the 2022 RTP/SCS.

Significance Thresholds

Appendix G of the State *CEQA Guidelines* identifies the following criteria for determining whether development facilitated by the proposed 2022 RTP/SCS would have a significant impact on visual resources, namely an analysis of whether or not the 2022 RTP/SCS would:

1) Have a substantial adverse effect on a scenic vista
2) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway
3) In non-urbanized areas, substantially degrade the existing visual character or quality of the site or its surroundings. If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality

4) Create a new source of substantial light or glare that would adversely affect day or nighttime views in the area

b. Project Impacts and Mitigation Measures

The following section discusses potential impacts and mitigation measures that may be associated with transportation projects and the land use scenario contained within the proposed 2022 RTP/SCS. Section 4.1.3.c summarizes the impacts associated with capital improvement projects in the proposed 2022 RTP/SCS. Due to the programmatic nature of the proposed 2022 RTP/SCS, a precise, project-level analysis of the specific impacts associated with individual transportation and land use projects is not possible at this time. In general, however, implementation of proposed transportation improvement projects and future projects under the land use scenario envisioned by the proposed 2022 RTP/SCS could result in the impacts as described in the following section.

Threshold 1:	Have a substantial adverse effect on a scenic vista
Threshold 2:	Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway

Impact AES-1 THE PROPOSED TRANSPORTATION PROJECTS AND LAND USE PROJECTS ENVISIONED UNDER THE PROPOSED 2022 RTP/SCS WOULD HAVE A SUBSTANTIAL ADVERSE EFFECT ON SCENIC VISTAS AND SUBSTANTIALLY DAMAGE SCENIC RESOURCES WITHIN HIGHWAYS IDENTIFIED TO HAVE HIGH SCENIC QUALITIES OR DESIGNATED BY THE STATE AS ELIGIBLE SCENIC HIGHWAYS. IMPACTS WOULD BE SIGNIFICANT AND UNAVOIDABLE.

The only State-designated scenic route in the StanCOG region is I-5 from the Merced County line to the San Joaquin County line. Construction of the proposed transportation improvements along scenic highways or locally designated scenic routes could potentially create significant, but short-term, visual impacts. As listed in Table 4.1-1, there are several projects included in the 2022 RTP/SCS that would be located along designated state or local scenic routes throughout the County. Although these projects are located along scenic routes, only one proposed project in the 2022 RTP/SCS would affect a scenic corridor: a reconstruction of the Sperry Road interchange on I-5, a State-designated scenic highway, at the western edge of the City of Patterson. This project could result in temporary impacts related to blockage of westward views of the foothills of the Coast Range by construction equipment and staging areas, disruption of views by temporary signage, and exposure of slopes and removal of vegetation. These effects would be temporary during the construction phase.

In the long-term, implementation of the 2022 RTP/SCS would generally result in modification of existing transportation facilities within existing highway, roadway, or railroad rights-of-way. Many of the proposed projects are at-grade with the surrounding environment. As such, most of the road and highway improvements are not likely to result in massive obstructions or blockages of surrounding views nor modify or substantially alter existing scenic resources viewed from a scenic vista or identified scenic highway.

With regard to long-term aesthetic impacts to scenic corridors, implementation of the Sperry Road interchange project would result in a modification of existing transportation facilities within existing highway and roadway rights-of-way. As with the other four improvement projects in scenic corridors, this project is not likely to result in major additional obstructions or blockages of views of surrounding rural areas. Nevertheless, the proposed Sperry Road interchange project may result in

moderate intrusions on the aesthetics of the I-5 scenic corridor. By modifying the interchange to accommodate a greater capacity of vehicular traffic, the project could involve construction of a more massive roadway structure which, from the perspective of motorists on I-5 or Sperry Road, may partially obstruct views of rural areas to the west. Such impacts would be potentially significant.

The future land use scenario envisioned by the 2022 RTP/SCS is intended to encourage transit-oriented and infill development. This type of development would help to avoid the loss of scenic resources along I-5 and locally designated scenic routes by concentrating development within existing urbanized areas when compared to a future scenario without the 2022 RTP/SCS. However, when compared to existing conditions, this land use scenario would intensify the built environment within existing urban areas through planned infill development. In addition, this land use scenario would concentrate development near transportation corridors, which would further increase the visibility of future infill and transit-oriented development and potentially impact views of background scenic resources.

Changes to both land use patterns and transportation improvements have the potential to change the view of the middle ground or background elements of broad viewsheds through the conversion of open space uses to transportation use and/or urban use, or through the removal of visually important resources (such as trees, rocks, or historic buildings). The 2022 RTP/SCS transportation projects could include features, such as sound walls, substantial grading, or structures (for example bridges, elevated passenger/commercial rail tracks) that could disrupt views.

Changes in land use patterns would introduce a variety of urban uses to existing open space land and increase density in existing urban areas. Changes in land use patterns and individual 2022 RTP/SCS transportation projects could cause intermittent interruption in views to users of the highways, roadways, and rail system. Such changes to views would result in significant impacts. In some cases, impacts to visual resources can be reduced to less than significant levels by avoiding certain high-profile improvements and/or by minimizing alterations, and/or designing new structures so that they do not impede the scenic landscape and/or view.

Not all projects and development included in 2022 RTP/SCS would be infill projects in urbanized areas, and some projects would inevitably be located in rural and other areas in the StanCOG region. Therefore, the 2022 RTP/SCS could result in a substantial adverse effect on a scenic vista or substantially damage scenic resources within an eligible scenic highway or a locally identified scenic highway in rural areas of the StanCOG region. Impacts would be significant.

Mitigation Measures

For transportation projects under their jurisdiction, StanCOG shall implement, and transportation project sponsor agencies can and should implement, the following mitigation measures. These mitigation measures have been developed for the 2022 RTP/SCS program where applicable for transportation projects that would potentially degrade views from scenic corridors and/or within a state scenic highway. Stanislaus County and cities in the StanCOG region can and should implement these measures, where relevant to land use projects when implementing the 2022 RTP/SCS. Project-specific environmental documents may adjust these mitigation measures as necessary to respond to site-specific conditions.

AES-1(a) Discouragement of Architectural Features that Block Scenic Views

The implementing agency shall, or can and should, design projects to minimize contrasts in scale and massing between the project and surrounding natural forms and development. Setbacks and acoustical design of adjacent structures shall be preferentially used as mitigation for potential noise impacts arising from increased traffic volumes associated with adjacent land development. The use of sound walls, or any other architectural features that could block views from the scenic highways or other view corridors, shall be discouraged to the extent possible. Where use of sound walls is found to be necessary, walls shall incorporate offsets, accents, and landscaping to prevent monotony. In addition, sound walls shall be complementary in color and texture to surrounding natural features.

AES-1(b) Tree Protection and Replacement

The implementing agency for new roadways, extensions, and widenings of existing roadways, trails and facility improvements shall, or can and should, avoid the removal of existing mature trees to the extent possible consistent with adopted local City and County policies as applicable. The implementing agency of a particular 2022 RTP/SCS project shall replace any trees lost at a minimum 2:1 basis and incorporate them into the landscaping design for the roadway when feasible. The implementing agency also shall ensure the continued vitality of replaced trees through periodic maintenance.

IMPLEMENTATION AGENCIES AND TIMING

Implementing agencies for transportation projects are StanCOG and transportation project sponsor agencies. Implementing agencies for land use projects are cities and the County. These mitigation measures shall, or can and should, be applied during permitting and environmental review and implemented during construction where appropriate.

Significance After Mitigation

Although identified mitigation would help reduce impacts related to state-designated scenic highway corridors and scenic resources, individual transportation infrastructure projects as well as land use development included in 2022 RTP/SCS could still result in obstructions to scenic vistas as seen from public viewing areas. As this EIR evaluates impacts at the programmatic level, all project circumstances are not foreseeable, and these mitigation measures may not be feasible or effective for some projects. Therefore, given the extent of planned land use development and the potential for site-specific visual obstructions from future land use and transportation projects, impacts related to the obstruction of scenic vistas from public viewing areas and impacts to state-designated scenic highway corridors and scenic resources would be significant and unavoidable. No additional mitigation measures to reduce this impact to less-than-significant levels are feasible.

Threshold 3:	In non-urbanized areas, substantially degrade the existing visual character or quality of the site or its surroundings. If the project is in an urbanized area, conflict with applicable zoning and other regulations governing scenic quality

IMPACT AES-2 THE PROPOSED TRANSPORTATION PROJECTS AND LAND USE PATTERNS ENVISIONED BY THE PROPOSED 2022 RTP/SCS WOULD IN NON-URBANIZED AREAS, SUBSTANTIALLY DEGRADE THE EXISTING VISUAL CHARACTER OR QUALITY OF PUBLIC VIEWS OF THE SITE OR ITS SURROUNDINGS, AND IN AN URBANIZED AREA, WOULD CONFLICT WITH APPLICABLE ZONING AND OTHER REGULATIONS GOVERNING SCENIC QUALITY. IMPACTS WOULD BE SIGNIFICANT AND UNAVOIDABLE.

Non-Urbanized Areas

Some of the proposed transportation improvements in the 2022 RTP/SCS would introduce visual features that would alter the existing rural or semi-rural character of the area in which they are proposed. New roadways at the outskirts of urbanized areas in the StanCOG region, or traversing unincorporated areas to connect cities, would intrude into agricultural lands.

The 2022 RTP/SCS would include new road and highway facilities such as new interchanges, new roadways and overcrossings, and road extensions. Most road and highway projects would occur in areas where transportation infrastructure is already a dominant feature of the landscape. Such transportation projects would not likely degrade the existing visual character of the region because transportation infrastructure is already a dominant feature of the landscape in those areas. In less developed areas of the region, adding new transportation infrastructure would add an element of urban character to previously undeveloped lands. New and extended roadways, such as the widening projects in Newman, Oakdale, and Riverbank, would alter the character of agricultural areas. This change in character is primarily due to conversion of farmland and introducing paved surfaces. Ancillary features constructed along new or existing roads (such as lighting, bus shelters, and signs) would further contribute to the trend toward a more urban or suburban visual character. Depending on the design and siting of transportation projects, this could be considered a substantial degradation of the visual character or quality of an area. A complete listing of transportation projects with potential to alter the rural character of the StanCOG region is included in Table 4.1-1.

Urbanized Areas

The 2022 RTP/SCS envisions infill development and development near existing transportation corridors, which are generally located in urbanized areas of cities and unincorporated communities. Infill development can be favorable in terms of visual character, as it occurs in areas already designated for and receiving growth and precludes growth in undeveloped and/or agricultural and rural areas. Infill development, in general, does not significantly change the existing visual character or quality at the regional level, but rather adds to it while preserving the undeveloped character and quality in the agricultural and rural areas.

However, when compared to existing conditions, the 2022 RTP/SCS land use scenario would intensify the built environment within existing urban areas through the implementation of infill and mixed-use development projects, thereby resulting in an overall change in the character of existing urbanized areas to a denser development pattern. In addition, land use projects that do occur in rural or agricultural areas would introduce urban development to areas that were previously undeveloped. Depending on the design and siting of these projects, the resulting change would degrade the visual character or quality of their surroundings. However, new development facilitated

under the 2022 RTP/SCS would be required to comply with applicable zoning standards or acquire an approved zoning amendment.

Projects implemented under the 2022 RTP/SCS would be subject to existing regulations that would help to minimize impacts to visual character. For example, in visually sensitive areas, local land use agencies would apply development standards and guidelines to maintain compatibility with surrounding natural areas, including site coverage, building height and massing, building materials and color, landscaping, and site grading. Nevertheless, even with compliance with these standards, the overall visual effect of planned roadway projects and envisioned land use patterns would contribute to an incremental, and over time, substantial transformation in visual character from rural or semi-rural to more urban or suburban throughout the StanCOG region. Impacts would be potentially significant and unavoidable.

Mitigation Measures

For transportation projects under their jurisdiction, StanCOG shall implement, and transportation project sponsor agencies can and should implement, the following mitigation measures, along with Mitigation Measures AES-1(a) and AES-1(b), discussed above for Impact AES-1. These mitigation measures have been developed for the 2022 RTP/SCS program where applicable for transportation projects that would potentially degrade views from scenic corridors and/or within a state scenic highway. Stanislaus County and cities in the StanCOG region can and should implement these measures, where relevant to land use projects when implementing the 2022 RTP/SCS. Project-specific environmental documents may adjust these mitigation measures as necessary to respond to site-specific conditions.

AES-2(a) Recontouring for Adjacent Landforms

Where a particular 2022 RTP/SCS project affects adjacent landforms, the local jurisdiction in which the project is located should ensure that recontouring provides a smooth and gradual transition between modified landforms and existing grade. This requirement can be accomplished through the placement of conditions on the project by the implementing agency during the project specific environmental review.

AES-2(b) Landscaping for Landform Variation

The local jurisdiction in which a particular project is located should ensure that associated landscape materials and design enhance landform variation, provide erosion control and blend with the natural setting. This requirement can be accomplished through the placement of conditions on the project by the local jurisdiction during individual environmental review. To ensure compliance with approved landscape plans, the implementing agency should provide a performance security equal to the value of the landscaping/irrigation installation.

AES-2(c) Design Measures for Visual Compatibility

The implementing agency shall, or can and should, require measures that minimize contrasts in scale and massing between the project and surrounding natural forms and developments. Strategies to achieve this include:

- Siting or designing projects to minimize their intrusion into important viewsheds;
- Avoiding large cuts and fills when the visual environment (natural or urban) would be substantially disrupted;

- Ensuring that re-contouring provides a smooth and gradual transition between modified landforms and existing grade;
- Developing transportation systems to be compatible with the surrounding environments (e.g., colors and materials of construction material; scale of improvements);
- Designing and installing landscaping to add natural elements and visual interest to soften hard edges, as well as to restore natural features along corridors where possible after widening, interchange modifications, re-alignment, or construction of ancillary facilities. The implementing agency shall provide a performance security equal to the value of the landscaping/irrigation installation to ensure compliance with landscaping plans; and
- Designing new structures to be compatible in scale, mass, character, and architecture with existing structures.

IMPLEMENTATION AGENCIES AND TIMING

Implementing agencies for transportation projects are StanCOG and transportation project sponsor agencies. Implementing agencies for land use projects are cities and the County. These mitigation measure shall, or can and should, be applied during permitting and environmental review and implemented during construction where appropriate.

Significance After Mitigation

Implementation of Mitigation Measures AES-2(a) through AES-2(c) would reduce project-specific impacts to the extent feasible. Mitigation Measures AES-1(a) and AES-1(b), discussed above for Impact AES-1, would also reduce impacts associated with visual character. Nevertheless, the alteration of current rural or semi-rural character to a more suburban environment is considered a significant and unavoidable impact because mitigation measures may not be feasible for all projects. Additionally, while these mitigation measures may reduce impacts from urban and infill development, some project-specific impacts may be unavoidable. No additional mitigation measures to reduce this impact to less than significant levels are feasible.

Threshold 4:	Create a new source of substantial light or glare that would adversely affect day or nighttime views in the area?

IMPACT AES-3 DEVELOPMENT OF PROPOSED TRANSPORTATION PROJECTS AND LAND USE PATTERNS ENVISIONED UNDER THE PROPOSED 2022 RTP/SCS WOULD CREATE A NEW SOURCE OF SUBSTANTIAL LIGHT OR GLARE THAT WOULD ADVERSELY AFFECT DAYTIME OR NIGHTTIME VIEWS IN THE AREA. IMPACTS ARE SIGNIFICANT AND UNAVOIDABLE.

New or intensified lighting from land use development envisioned in the 2022 RTP/SCS, which is focused on compact, infill and mixed-use development, would be concentrated in areas with existing sources of light and glare. In these infill areas, such increases may not adversely affect nighttime views because existing sources of light, glare, and shadow are already a dominant feature of the urban landscape. However, the intensity of light and glare in these urban areas could increase as a result of infill and mixed-use projects under the 2022 RTP/SCS, depending on site-specific conditions and lighting design associated with new structures/roadways. Because of the potential for increased lighting affecting nighttime views, impacts from land use development would be potentially significant.

Improvements to existing roadways and highways would not significantly increase the amount of light and glare in an area, as these improvements would take place on existing facilities that have

existing sources of light and glare. Increases in light and glare from new reflective signage, streetlights, intersection control devices and other improvements would be relatively minor compared to existing conditions. However, the expansion and widening of existing roadways or construction of new roadways would allow a greater volume of vehicles to travel through a given segment of roadway or highway throughout the day, or introduce vehicles into a new area, which would have the potential to introduce new or additional vehicle headlights as new light sources. In addition, some of the new transportation facilities included in the 2022 RTP/SCS would directly introduce light, including: replacement and/or improvement of existing lighting at the Modesto Municipal Airport associated with airport expansion, construction of pedestrian lighting along various city streets, and installation of lighting along bike paths in the StanCOG region. The introduction of light and glare could adversely affect day or nighttime views.

Overall, light and glare impacts from transportation improvements and projects envisioned under the 2022 RTP/SCS would be significant because there would be new sources of substantial light or glare.

Mitigation Measures

For transportation projects under their jurisdiction, StanCOG shall implement, and transportation project sponsor agencies can and should implement, the following mitigation measures for transportation projects that would result in light and glare impacts. Stanislaus County and cities in the StanCOG region can and should implement these measures, where relevant to land use projects implementing the 2022 RTP/SCS. Project-specific environmental documents may adjust these mitigation measures as necessary to respond to site-specific conditions.

AES-3(a) Roadway and Project Lighting

The implementing shall, or can and should, minimize roadway lighting to the extent possible, consistent with safety and security objectives, and shall not exceed the minimum height requirements of the local jurisdiction in which the project is proposed. This may be accomplished through the use of back shields, hoods, low intensity lighting, and using as few lights as necessary to achieve the goals of the project.

As part of planning, design, and engineering for projects, project sponsors shall ensure that projects proposed near light-sensitive uses avoid substantial spillover lighting. Potential design measures include, but are not limited to, the following:

- Lighting shall consist of cutoff-type fixtures that cast low-angle illumination to minimize incidental spillover of light into adjacent properties and undeveloped open space. Fixtures that project light upward or horizontally shall not be used.
- Lighting shall be directed away from habitat and open space areas adjacent to the project site.
- Light mountings shall be downcast, and the height of the poles minimized to reduce potential for backscatter into the nighttime sky and incidental spillover of light onto adjacent private properties and undeveloped open space. Light poles will be 20 feet high or shorter. Luminary mountings shall have non-glare finishes.
- Exterior lighting features shall be directed downward and shielded in order to confine light to the boundaries of the subject project. Where more intense lighting is necessary for safety purposes, the design shall include landscaping to block light from sensitive land uses, such as residences.

AES-3(b) Glare Reduction Measures.

Implementing agencies shall, or can and should, minimize and control glare from transportation and infill development projects near glare-sensitive uses through the adoption of project design features such as:

- Planting trees along transportation corridors to reduce glare from the sun;
- Creating tree wells in existing sidewalks;
- Adding trees in new curb extensions and traffic circles;
- Adding trees to public parks and greenways;
- Landscaping off-street parking areas, loading areas, and service areas;
- Limiting the use of reflective materials, such as metal;
- Using non-reflective material, such as paint, vegetative screening, matte finish coatings, and masonry;
- Screening parking areas by using vegetation or trees;
- Using low-reflective glass; and
- Complying with applicable general plan policies, municipal code regulations, city or local controls related to glare
- Tree species planted to comply with this measure shall provide substantial shade cover when mature. Utilities shall be installed underground along these routes wherever feasible to allow trees to grow and provide shade without need for severe pruning.

IMPLEMENTATION AGENCIES AND TIMING

Implementing agencies for transportation projects are StanCOG and transportation project sponsor agencies. Implementing agencies for land use projects are cities and the County. Thrdr mitigation measures shall, or can and should, be applied during permitting and environmental review and implemented during construction where appropriate.

Significance After Mitigation

In the absence of regulations specifically addressing light and glare impacts, the aforementioned mitigation measures would limit the use of reflective building materials and the potential spillage of light both upward and onto adjacent properties from exterior lighting fixtures. However, mitigation measures maybe not be feasible for all projects. Therefore, this impact would remain significant and unavoidable.

c. Specific Projects That May Result in Impacts

Table 4.1-1 identifies examples of transportation projects with the potential to cause or contribute to direct or indirect impacts to aesthetics and visual resources such as those discussed above. These projects are representative and were selected based on their potential scope and likelihood to result in the impacts identified above. Additional specific analysis would be required as individual projects are implemented to determine the project specific magnitude of impact. Mitigation discussed above would apply to these specific projects.

Table 4.1-1 2022 RTP/SCS Projects That May Result in Impacts to Scenic Routes

Project #	Location	Project Description	Potential Impact
Stanislaus County			
UNINC - 2	270 ft E of Brady Rd/CA 108 to 8th St	Class 3.5 Bicycle Route with Wide Shoulders. Parking removal (both sides). StanCOG Non-Motorized Transportation Master Plan Project ID: STAN-2	AES-1
UNINC - 3	SR-108 to Riverbank City Limits (Near Oakdale Rd)	Multi-Use Path (Class 1) and pedestrian improvements. (Non-Motorized Transportation Plan Top 25: Route 22)	AES-1
UNINC - 18	Oakdale-Waterford Highway to Claus Rd	Class 1 Path. New Construction. StanCOG Non-Motorized Transportation Master Plan Project ID: STAN-18	AES-1
S69	SR-99 to McHenry Ave	Widen to 6-lanes	AES-2, AES-3
S101	SR 132 Dakota Avenue to Gates Road	Construct 2 or 4-lane divided expressway or freeway (County)	AES-2, AES-3
S103	Hatch Road to Garner Road	2-Lane Expressway	AES-2, AES-3
S01	Oakdale Road to Claus Road	Construct 4-lane Expressway	AES-2, AES-3
S02	Claus Road to Albers Road	Construct 4-lane Expressway	AES-2, AES-3
S03	Albers Road to SR 120	Construct 4-lane Expressway	AES-2, AES-3
S04	SR 99 to Dakota Avenue	Widen to 4-Lane Highway	AES-2, AES-3
S95	Stanislaus County	Transit facilities amenities: Bus Stop Shelters/Facilities with amenities & Solar lighting	AES-2, AES-3
Caltrans			
C24	7th St to Grayson Rd	Widen from 2 to 4 lanes	AES-2, AES-3
C25	Eastgate Blvd to Faith Home	Widen from 2 to 4 lanes	AES-2, AES-3
C27	Ustick Rd to Blaker Rd	Widen from 2 to 4 lanes	AES-2, AES-3
C30	Hatch Rd to Grayson Rd	Widen from 2 to 4 lanes	AES-2, AES-3
C31	River Rd to Service Rd	Widen to 6 lanes	AES-2, AES-3
C46	Service Rd to Grayson Rd	Widen from 2 to 4 lanes	AES-2, AES-3
Modesto			
M52	McHenry Ave to Coffee Rd	Widen from 2 to 6-lane Expressway	AES-2, AES-3
M53	Coffee Rd. to Oakdale Rd	Widen from 2 to 6-lane Expressway	AES-2, AES-3
M54	Pelandale Ave to Kiernan Ave	Widen from 4 to 6 lanes	AES-2, AES-3
M55	Pelandale Ave to Standiford Ave	Widen from 4 to 6 lanes	AES-2, AES-3
M56	Briggsmore to Sylvan	Widen from 2 to 4 lanes	AES-2, AES-3
M58	Sylvan Ave to Claratina Ave	Widen from 3 to 6 lanes	AES-2, AES-3
M60	Sylvan Ave to Claratina Rd	Widen from 2 to 4 lanes	AES-2, AES-3
M82	State Route 99 to Dakota Ave Phase 1 (2-lane expressway)	Construct a two-lane expressway from N. Dakota Ave to the Needham St. Overcrossing. (Phase 1 of ultimate build-out of SR132 West Freeway/Expressway Project) (Reference: 2014 RTP Project ID - RE01).	AES-2, AES-3
M83	State Route 99 to Dakota Ave (Phase 2 Ultimate 4	Construct a four lane freeway from N. Dakota Ave to the Needham St. Overcrossing.	AES-2, AES-3

Project #	Location	Project Description	Potential Impact
	lane facility with SR-99 connections)		
M34	Oakdale Rd to Roselle Ave	Construct new 2 lane roadway	AES-2, AES-3
Oakdale			
OAK -1	F Street (SR-108) to Oakdale City Limits North of Pontiac St	Bicycle Boulevard (Class 3) and pedestrian improvements. (Non-Motorized Transportation Plan Top 25: Route 16A)	AES-1
O14	Maag Ave to Stearns Rd	Widen Roadway to 5-lanes with full frontage improvements. Existing section includes 3 lanes with no frontage improvements.	AES-2, AES-3
O15	Lee Ave to Stanislaus Ave/Wood Ave	Widen Roadway to 5-lanes, including realignment of existing sidewalk and frontage improvements infill on the North side of the street	AES-2, AES-3
O17	F Street to Pontiac	Widen Roadway to 4-lanes from existing 2 lane road. Includes full frontage improvements.	AES-2, AES-3
Patterson			
P05	Delta Mendota to Keystone Pacific Park Way	Widen from 2 to 4 lanes.	AES-2, AES-3
PAT - 3.3, PAT - 3.2, PAT - 3.1	N St to Sperry Ave	Multi-Use Path (Class 1), Bicycle Lane (Class 2), Separated Bike Lane (Class 4) and pedestrian improvements. (Non-Motorized Transportation Plan Top 25: Route 17B)	AES-1
Riverbank			
R20	California to Claribel	Widen roadway from 2-4 lanes	AES-2, AES-3
Turlock			
T16	Tegner Rd to Dianne Dr	Widen from 2-lane to 4-lane Arterial with Class II bike facility and transit	AES-2, AES-3
T18	Washington Rd to Tegner Rd	Widen from 2-lane to 4-lane Arterial with Class II bike facility	AES-2, AES-3
T19	Linwood Ave to Fulkerth Rd	Widen from 2-lane to 4-lane Arterial with Class II bike facility and transit	AES-2, AES-3
T22	Tuolumne Rd to Tornell Rd	Widen from 2-lane to 4-lane Arterial with Class II bike facility	AES-2, AES-3
T23	Canal Dr to Wayside Rd	Widen from 2-lane to 4-lane Arterial with Class II bike facility and transit	AES-2, AES-3
T24	Wayside Dr to North Ave	Widen from 2-lane to 4-lane Arterial with Class II bike facility and transit	AES-2, AES-3
T28	Golden State Blvd to Daubenberger Rd	Widen from 2-lane to 4-lane Arterial with Class III bike facility from Minaret to S. Berkeley/Class II from S. Berkeley to Daubenberger and transit from Oak to S. Johnson	AES-2, AES-3
T36	Golden State Blvd to SR-99	Widen from 2-lane to 4-lane Arterial with Class II bike facility	AES-2, AES-3
T43	Fulkerth Rd to Monte Vista Ave	Construct 4-lane Expressway with Class II bike facility and transit	AES-2, AES-3
T49	701 S. Walnut Rd.	Bus parking lot with fueling infrastructure and operations building	AES-2, AES-3

Project #	Location	Project Description	Potential Impact
Waterford			
WF - 1	Oakdale-Waterford Highway to Yosemite Blvd	Class 1 Path. New Construction. StanCOG Non-Motorized Transportation Master Plan Project ID: WF-1	AES-1
San Joaquin Regional Rail Commission			
A01	Stanislaus River Bridge and 2nd Main Track to Salida	Construct new rail bridge over the Stanislaus River, second main track, and modify at-grade crossings.	AES-2, AES-3
A02	Modesto Station Platform and Salida to Tuolumne River Bridge Trackwork	Construct side loading station platforms, pedestrian overcrossing, trackwork, parking, and modify at-grade crossings.	AES-2, AES-3
A03	Tuolumne River Bridge and Trackwork between 7th Street/B Street and SR 99 Overcrossing	Construct new rail bridge over the Stanislaus River and second main track, and modify at-grade crossing at 7th Street/B Street.	AES-2, AES-3
A04	Ceres Station, Layover & Trackwork between SR 99 Overcrossing and south of Pine Street Overcrossing	Construct center loading station platform, pedestrian undercrossing, trackwork, layover track, on street parking, and modify at-grade crossings.	AES-2, AES-3
A05	Turlock Station	Construct center loading station platform, pedestrian overcrossing, on street parking and sidewalks	AES-2, AES-3
A06	Ceres to Stanislaus County Line Trackwork	Construct trackwork and modify at-grade crossings	AES-2, AES-3
San Joaquin Joint Powers Authority			
	CP East Escalon to CP West Riverback	Construct new bridge over Stanislaus River and 2.5 miles of second main track	AES-2, AES-3
	CP East Riverbank to Modesto Station	Construct 3.3 miles of second main track	AES-2, AES-3
	Modesto Station to CP West Modesto Empire	Construct 0.45 miles of second main track and two bridges	AES-2, AES-3
	CP East Modesto Empire to CP West Denair	Construct 6.1 miles of second main track and one bridge	AES-2, AES-3
	CP East Denair to CP West Ballico	Construct 6.6 miles of second main track and three bridges	AES-2, AES-3
	Modesto Amtrak Station and Turlock/Denair Amtrak Station	Construct second platforms at each station	AES-2, AES-3

4.1.4 Cumulative Impacts

The cumulative impact analysis area for visual resources consists of the StanCOG region and adjoining counties (including San Joaquin, Calaveras, Tuolumne, Mariposa, Merced, Santa Clara, and Alameda counties). Information regarding these adjoining counties can be found in Section 3.3.4, *Environmental Setting*. Future development in this region that could impact visual resources is considered in the analysis. This cumulative extent is used to evaluate potential direct and indirect, and permanent and temporary impacts to scenic vistas, scenic resources, and existing visual character within the context of regional diminishment of these resources.

Some types of impacts to aesthetic resources are localized and not cumulative in nature. For example, the creation of glare or shadows at one location is not worsened by glare or shadows created at another location. Rather, these effects are independent and the determination as to

whether they are adverse is specific to the project and location where they are created. Projects that block a view or affect the visual quality of a site also result in localized impacts. The impact occurs specific to a site or area and remains independent from another project elsewhere that may block a view or degrade the visual environment of a specific site. However, from some vantage points, such as mountain ridges or open valley floors, the viewshed can span for miles. Because development may be seen from distances or into the distance from some locations, the cumulative impact analysis area for aesthetics includes the StanCOG region and adjoining counties

There are two types of aesthetic impacts that may be additive in nature and thus cumulative: night sky lighting and overall changes in the visual environment as the result of increasing urbanization of large areas. As development in one geographic area, such as a relatively large city adjoining agricultural land like Modesto, increases and connects with development in an adjoining ex-urban area, the effect of night sky lighting experienced outside of the region may increase in the form of larger and/or more intense nighttime glow in the viewshed. Although growth envisioned in the 2022 RTP/SCS is primarily focused on infill areas, development outside of those areas with long-distance views may result in nighttime lighting becoming more visible, covering a larger area and/or appearing in new areas as a result of projected development under the 2022 RTP/SCS.

With regard to the visual environment experienced throughout the cumulative impact analysis area, as planned cumulative development occurs over time the overall visual environment will change. The combination of forecasted development in the StanCOG region and planned development in neighboring counties would result in a different visual environment than currently exists. The cumulative impacts associated changes in the visual environment (including scenic vistas and scenic resources) and night sky lighting and are considered significant and the contribution of the proposed 2022 RTP/SCS to these impacts is cumulatively considerable. Mitigation measures described earlier in this section would reduce impacts to aesthetics; however, even with implementation of those mitigation measures, impacts of the proposed 2022 RTP/SCS would remain cumulatively considerable.

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4.2 Agriculture and Forestry Resources

This section evaluates impacts on agriculture and forestry resources from implementation of the 2022 RTP/SCS, including direct impacts associated with the conversion of agricultural land to non-agricultural use, the conversion of forest land to non-forest use, and potential indirect impacts to adjacent agricultural operations.

4.2.1 Setting

a. Overview of Regional Agriculture and Forestry

Agricultural Lands

The StanCOG region is located in California's San Joaquin Valley, one of the richest agricultural areas in the world, and contains 961,838 acres of productive farmland. The StanCOG region contributed $3.48 billion in 2020 to the California economy (Stanislaus County Agricultural Commissioner 2020); the agricultural industry is vitally important to both the County's industry and the nation's food supply.

The StanCOG region is among California's leaders in the production of chickens, turkeys, and almonds. In 1984, approximately 414,800 acres of land in the StanCOG region were classified as "agricultural land", according to the California Department of Conservation. Of this land, 189,754 acres were classified as "Prime Farmland". In 2004, the StanCOG region contained 843,603 acres of agricultural land and 262,045 acres of Prime Farmland; the total area increased due to completion of soil survey data for the northeastern section of the County (DOC 2018). However, since 2004, the amount of Prime Farmland in the StanCOG region has been declining due to conversion to other or nonagricultural uses.

Agriculture has deep roots in the region's history and future. The 2020 crop year's gross value of all agricultural commodities produced in the StanCOG region was $3,476,093,000. This represented a decrease (3 percent) from the 2019 crop value ($3,598,404,000).

Since 2004, there has been a Countywide decline of agricultural lands. From 2004 to 2018 there was a loss of 11,625 acres of Prime Farmland, but a net gain of 3,295 and 51,793 acres of Farmland of Statewide Importance and Unique Farmland, respectively. During the same period, Urban and Built-Up Land had a net total increase of 5,135 acres, Farmland of Local Importance had a net total decrease of 11,992 acres, and Grazing Land had a net total decrease of 46,083 acres (DOC 2018).

The land use pattern throughout the StanCOG region is characterized by relatively compact urban centers surrounded by agricultural lands that produce a wide range of commodities. Table 4.2-1 shows the 2019 and 2020 values of major crop groupings in the StanCOG region. The largest decrease in crop values from 2019 to 2020 were in the fruit and nut crops and field crops groupings. This decrease could be attributed to the pandemic year that changed markets and disrupted the production chain, the historic fire season that burned rangeland on the west side of the County, or the dry fall that cause little rain in mid-December (Stanislaus County Agricultural Commissioner 2020).

Table 4.2-1 Stanislaus County Annual Agricultural Crop Report

Crop Grouping	2019 Crop Value	2020 Crop Value
Apiary Products	109,523,000	105,638,000
Field Crops	214,113,000	172,816,000
Fruit and Nut Crops	1,484,057,000	1,365,573,000
Livestock & Poultry	636,561,000	608,798,000
Livestock & Poultry Products	659,186,000	782,421,000
Nursery Products	227,537,000	210,746,000
Organic Products	61,415,000	37,528,000
Other Agriculture	25,018,000	29,047,000
Vegetable Crops	180,994,000	163,526,000
Total	**3,598,404,000**	**3,476,093,000**

Source: Stanislaus County Agricultural Commissioner 2020

Important Farmlands

To characterize the environmental baseline for agricultural resources, Important Farmland Maps produced by the California Department of Conservation's (DOC) Farmland Mapping and Monitoring Program (FMMP) were reviewed. Unless otherwise expressed, the future use of "Important Farmland" in this EIR specifically includes the following definitions provided by the DOC (DOC 2019a):

Prime Farmland

Land which has the best combination of physical and chemical characteristics to produce crops. It has the soil quality, growing season and moisture supply needed to produce sustained high yields of crops when treated and managed, including water management, according to current farming standards.

Farmland of Statewide Importance

Land that is like Prime Farmland but with minor shortcomings, such as greater slopes or less ability to hold and store moisture.

Unique Farmland

Land of lesser quality soils is typically used to produce specific high economic value crops. It has the special combination of soil quality, location, growing season and moisture supply needed to produce sustained high quality or high yields of a specific crop when treated and managed according to current farming methods. It is usually irrigated but may include non-irrigated orchards or vineyards as found in some climatic zones in California. Examples of crops include oranges, olives, avocados, rice, grapes and cut flowers.

Figure 4.2-1 illustrates the location of Important Farmland in the StanCOG region. Table 4.2-2 illustrates the conversion of Important Farmland in the StanCOG region from 2016 to 2018. As shown therein, the amount of Important Farmland within the StanCOG region increased by approximately 0.7 percent (3,072 acres) between 2016 and 2018.

Table 4.2-2 Important Farmland Conversion in Stanislaus County

	Total Acreage Inventoried		2016-2018 Acreage Changes			
Land Use Category	2016	2018	Acres Lost (-)	Acres Gained (+)	Total Acreage Changed	Net Acreage Changed
Important Farmland[1]	425,378	428,450	5,681	8,753	14,434	+3,072

[1]Within this table, Important Farmland includes Prime Farmland, Farmland of Statewide Importance, and Unique Farmland,.

Source: DOC 2019b

Williamson Act Lands

The California Land Conservation Act of 1965, Sections 51200 et seq. of the California Government Code, commonly referred to as the "Williamson Act", enables local governments to restrict the use of specific parcels of land to agricultural or related open space use. In 2020, Stanislaus County established nine new Williamson Act contracts, totaling 781.3 acres (Stanislaus County Department of Planning and Community Development 2019). In 2021, the County established nine new Williamson Act contracts, totaling 457.6 acres (Stanislaus County Department of Planning and Community Development 2020).

Forest and Timber Lands

The Stanislaus County General Plan and County Zoning Ordinance do not specify any land in the County as designated or zoned for forestland or timberland. Additionally, the California Department of Forestry and Fire Protection (CAL FIRE) maintains a statewide record of Timber Harvesting Plans (THP), which does not display any THPs within Stanislaus County (CAL FIRE 2021).

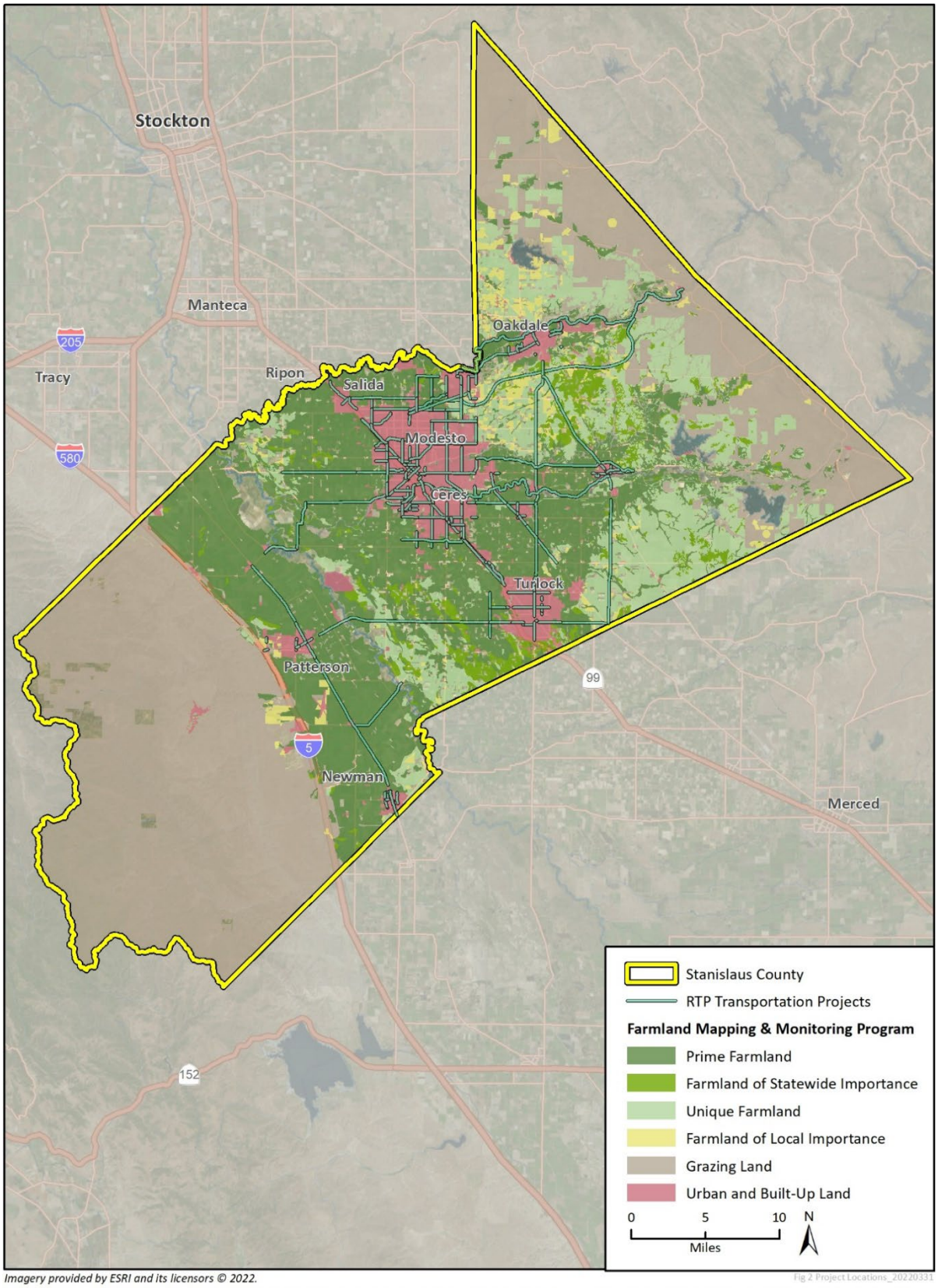
b. Agricultural/Urban Interface

According to the Stanislaus County General Plan, land use change threatens the continued productivity of agricultural land. Rapid growth at the edge of urban areas is converting Important Farmland to developed uses. The slow reduction of agricultural parcel sizes has also threatened the economic viability of the industry. As urban areas encroach on agricultural land, conflicts can result between growers and urban uses. Potential agricultural/urban land use conflicts can arise from the following activities, among others:

Potential Concerns for Urban Neighbors

- Use of pesticides/dust problems in vicinity of residential neighborhoods, particularly near schools.
- Odors and health concerns associated with fertilizer/pesticide application and livestock.
- Noise related to farming equipment or farm worker activities.
- Agricultural worker parking.

Figure 4.2-1 Important Farmland in Stanislaus County



Imagery provided by ESRI and its licensors © 2022.
Additional data provided by Stanislaus County, 2018; California Department of Conservation, Division of Land Resource Protection, Farmland Mapping and Monitoring Program, 2018.

Potential Concerns for Agricultural Interests

- Restrictions on activity arising from neighbor concerns/complaints.
- Inability to move road equipment between farm areas as roadway capacity is increased.
- Loss of revenue and competitiveness.
- Competition for water and land.
- Fragmentation of tracts of agricultural land such that farming becomes inefficient.
- Inability to continue flood irrigation systems.
- Pilferage, trespassing, and littering.
- Dust from adjacent construction activity.

4.2.2 Regulatory Setting

Federal Laws, Regulations, and Policies

Federal Farmland Protection Act (FFPA)

The FPPA is intended to minimize the impact Federal programs have on the unnecessary and irreversible conversion of farmland to nonagricultural uses. It assures that to the extent possible federal programs are administered to be compatible with state, local units of government, and private programs and policies to protect farmland. Projects are subject to FPPA requirements if they may irreversibly convert farmland (directly or indirectly) to nonagricultural use and are completed by a Federal agency or with assistance from a Federal agency (Natural Resources Conservation Service n.d.).

Federal Farm and Ranchland Protection Program

The Federal Farm and Ranchland Protection Program (FRPP) is a voluntary easement purchase program that helps farmers and ranchers keep their land in agriculture. Pursuant to sections 1539 to 1549 of the FPPA of 1981, the Secretary of Agriculture is directed to establish and carry out a program to "minimize the extent to which federal programs contribute to the unnecessary and irreversible conversion of farmland to nonagricultural uses, and to the extent practicable, will be compatible with state, unit of local government, and private programs and policies to protect farmland." (7 USC 4201-4209 & 7 USC 658). The program provides matching funds to state, tribal, or local governments and nongovernmental organizations with existing farmland protection programs to purchase conservation easements or other interests in land. The FRPP was re-authorized in the Farm Security and Rural Investment Act of 2002 (Farm Bill). The NRCS manages the program, and the Technical Committee awards funds to qualified entities to conduct their farmland protection programs. Although a minimum of 30 years is required for conservation easements, priority is given to applications with perpetual easements.

Federal Forest Legacy Program

The Federal Forest Legacy Program was a part of the 1990 Farm Bill. Its purpose is to identify and protect environmentally important forestlands that are threatened by present or future conversion to non-forest uses. The program provides conservation easements and gives priority to lands that can be effectively protected and managed, as well as lands that have significant scenic, recreational, timber, riparian, fish, and wildlife, threatened and endangered species, and other cultural or environmental values. Properties that are "working forests," whereby the forestland is managed for the production of forest products, are also eligible under this program. Involvement in this program by private landowners is voluntary.

United States Forest Service (USFS)

The United States Forest Service (USFS) is a Federal agency that manages public lands in national forests and grasslands. The Forest Service is also the largest forestry research organization in the world, and provides technical and financial assistance to state and private forestry agencies. The purpose of USFS is to provide the greatest amount of good for the greatest amount of people in the long run (USFS n.d.).

State Laws, Regulations, and Policies

Farmland Mapping and Monitoring Program

The DOC, under the Division of Land Resource Protection, developed the FMMP to monitor the conversion of the state's farmland to and from agricultural use. Data is collected at the county level to produce a series of maps identifying eight land use classifications using a minimum mapping unit of 10 acres. The program also produces a biannual report on the amount of land converted from agricultural to non-agricultural use. The program maintains an inventory of state agricultural land and updates the "Important Farmland Series Maps" every two years (DOC 2019c).

Land Conservation Act/Williamson Act

The California Land Conservation Act of 1965, Sections 51200 et seq. of the California Government Code, commonly referred to as the "Williamson Act", enables local governments to restrict the use of specific parcels of land to agricultural or related open space use. Landowners enter into contracts with participating cities and counties and agree to restrict their land to agriculture or open space use for a minimum of ten years. In return, landowners receive property tax assessments that are much lower than normal because they are based upon farming and open space uses as opposed to full market (speculative) value. Local governments receive an annual subvention of forgone property tax revenues from the state via the Open Space Subvention Act of 1971 (DOC 2019d).

The Right to Farm Act of 1981

The Right to Farm Act of 1981 (Civ. Code, § 3482.5) is meant to protect commercial agricultural operations from nuisance complaints that may occur when agricultural operations are conducting business in a "manner consistent with proper and accepted customs." The code states operations that have been in business for three or more years and not nuisances upon commencement of operation shall not be considered a nuisance because of new land use.

California Farmland Conservancy Program Act

The California Farmland Conservancy Program Act of 2010 formed the California Farmland Conservancy Program (CFCP) and provides grants for agricultural conservation easements. Agricultural conservation easements are created to support agriculture and prevent development on the subject parcels. Easements funded by the CFCP must be suitable for commercial agriculture.

Timberland Production Zones

The Z'berg-Warren-Keene-Collier Forest Taxation Reform Act of 1976 requires counties to enable zoning of land used for growing and harvesting timber as Timberland Preserve Zones (TPZ). A TPZ is a 10-year restriction on the use of timberland. Similar to the relationship between the Williamson Act and agricultural land, Timberland Preserve Zones are limited to growing and harvesting timber and other similar uses.

California Timberland Productivity Act of 1982

The California Timberland Productivity Act (CTPA) of 1982 describes the powers and duties of local government in protecting timberlands. The law is designed to maintain an optimum amount of timberland, ensuring its current and continued availability by establishing TPZ on all qualifying timberland, which restrict land use to growing and harvesting timber and other compatible uses. The Act discourages premature or unnecessary conversion of timberland to urban or other uses and expansion of urban services into timberland and encourages investment in timberlands based on reasonable expectation of harvest. The CTPA also provides that timber operations conducted in accordance with California forest practice rules shall not be restricted or prohibited due to land uses in or around the location of the timber operations.

Regional and Local Laws, Regulations, and Policies

Agriculture Preservation Policy

The Stanislaus County Local Agency Formation Commission (LAFCO) is established under the Cortese-Knox-Hertzberg Local Government Reorganization Act of 2000 (Government Code Section 56000, et seq.). The job of the commission is to "review and approve with or without amendment, wholly, partially, or conditionally, or disapprove proposals for changes of organization or reorganization, consistent with written policies, procedures, and guidelines adopted by the commission." (Government Code Section 56375). This gives the commission exclusive power to consider city incorporations, city annexations, as well as the creation of or addition to special districts. Government Code Section 56377 requires the commission to minimize impacts on open space lands, including agricultural lands, as follows:

- In reviewing and approving or disapproving proposals which could reasonably be expected to induce, facilitate, or lead to the conversion of existing open-space lands to uses other than open-space uses, the commission shall consider all of the following policies and priorities:
  A. Development or use of land for other than open-space uses shall be guided away from existing prime agricultural lands in open-space use toward areas containing nonprime agricultural lands, unless that action would not promote the planned, orderly, efficient development of an area.
  B. Development of existing vacant or nonprime agricultural lands for urban uses within the existing jurisdiction of a local agency or within the sphere of influence of a local agency should be encouraged before any proposal is approved which would allow for or lead to the development of existing open-space lands for non-open-space uses which are outside of the existing jurisdiction of the local agency or outside of the existing sphere of influence of the local agency.

The Stanislaus Local Agency Formation Commission has adopted an Agricultural Preservation Policy that provides evaluation standards for review of proposals that could induce or lead to the conversion of agricultural lands. The Policy requires that applicants prepare a Plan for Agricultural Preservation that details the impacts on agricultural resources and identifies the method or strategy selected to minimize the loss of agricultural lands. The Policy sets forth three agricultural preservation strategies that the Commission encourages: 1:1 mitigation (that can also be achieved through in-lieu fees), reduction of an existing sphere of influence that contains agricultural lands, and voter-approved urban growth boundaries. In recognition of the County's requirements that 1:1 mitigation applies to conversion of agricultural lands to residential uses; LAFCO's Policy also allows for 1:1 mitigation to be focused on similar conversions.

Stanislaus County General Plan

The Stanislaus County General Plan includes an Agricultural Element to promote and protect local agriculture. Under Section 65303 of the California Government Code, optional elements of the general plan are authorized but not mandated by the state legislature. The Agricultural Element is coordinated with several other elements of the general plan and consistent with the entire general plan. It interacts primarily with the agriculture-related policies of the Land Use, Conservation/Open Space, and Housing Elements. The Agricultural Element's policies have the same legal status as any other element of the general plan.

City General Plans and Regulations

CITY OF CERES GENERAL PLAN

The City of Ceres General Plan contains several policies in the Agricultural and Natural Resources Element that pertain to the preservation and protection of agricultural land and minimize potential conflicts with farming in the City (City of Ceres 2018). For example, Policy 4.A.2, *Urban Expansion in Agricultural Areas*, states that the City of Ceres shall ensure that new development and public works projects do not encourage expansion of urban uses outside the Planning Area into areas designated for agriculture. Policy 4.A.5, *Land Use Compatibility,* of the General Plan requires development adjacent to designated agricultural areas to minimize conflicts with the adjacent agricultural uses.

CITY OF HUGHSON GENERAL PLAN

The Hughson General Plan contains several policies in the Conservation and Open Space Element that pertain to the preservation and protection of agricultural land and minimize potential conflicts with farming in the City of Hughson (City of Hughson 2005). For example, Policy COS-1.3 states that the City of Hughson will support Stanislaus County in its efforts to maintain agricultural lands in viable farming units for those areas not currently designated for urban uses. Policy COS-1.6 states that the City will work cooperatively with land trusts to preserve agricultural land, and Policy COS-1.7 states that the City will minimize conflicts between agriculture and urban uses.

CITY OF MODESTO GENERAL PLAN

The City of Modesto Urban Area General Plan establishes a Baseline Developed Area and Redevelopment Area within the City in which development is encouraged to prevent more than minimal impacts to agricultural land (City of Modesto 2008). The General Plan also establishes the Planned Urbanizing Areas. Policies in the Environmental Resources and Open Space Element of the General Plan have been developed to minimize impacts and conflicts on agriculture land and uses in the Planned Urbanizing Areas. For example, policies state that the City shall support the continuation of agricultural uses on lands designated for urban uses in the Planned Urbanizing Areas until urban development is imminent. For any subsequent project that is adjacent to an existing agricultural use, the project proponent may incorporate measures to reduce the potential for conflicts with the agricultural use.

CITY OF NEWMAN GENERAL PLAN

The City of Newman 2030 General Plan contains several policies in the Natural Resources Element that pertain to the preservation and protection of agricultural land and minimize potential conflicts with farming in the City (City of Newman 2007). For example, Policy NR-1.4 states that new development at the edge of the City shall minimize potential incompatibilities between agricultural and urban uses through the location of land uses, the layout of roads, parks and public facilities, density controls and

transfers, and design guidelines for buildings and public and private improvements. Policy NR-1.7 states that the City shall maintain and continue to enforce the City's right-to-farm ordinance that protects owners of agricultural land at the urban fringe from unwarranted nuisance suits brought by surrounding landowners and provides for resolution of urban-agricultural disputes.

CITY OF OAKDALE GENERAL PLAN

The Oakdale 2030 General Plan contains several policies in the Natural Resources Element that pertain to the preservation and protection of agricultural land and minimize potential conflicts with farming in the City (City of Oakdale 2013). For example, Policy NR-2.1 directs the City to work with Stanislaus County and other applicable agencies to protect viable agriculture within and adjacent to the City of Oakdale Planning Area. Policy NR-2.4 requires that new development along the planned edge of the City to provide buffer treatments, as appropriate, to protect the ongoing viability of adjacent agriculture. Policy NR-2.5 directs the City to condition new residential development located adjacent to agricultural uses to record the City's right-to-farm disclosure statement.

CITY OF PATTERSON GENERAL PLAN

The City of Patterson 2010 General Plan contains several policies in the Natural Resources Element that pertain to the preservation and protection of agricultural land and minimize potential conflicts with farming in the City (City of Patterson 2010). For example, Policy NR-2.1 states that undeveloped lands that are State-designated as Prime Farmland, Farmland of Statewide Importance, or Unique Farmland shall be preserved, to the greatest extent feasible, for open space or agricultural use. Policy NR-2.2 states that the City of Patterson shall encourage infill development within existing urbanized areas of the City in order to minimize pressure to convert agricultural lands to urban uses.

CITY OF RIVERBANK GENERAL PLAN

The City of Riverbank General Plan 2005-2025 contains several policies in the Conservation and Open Space Element that pertain to the preservation and protection of agricultural land and minimize potential conflicts with farming in the City (City of Riverbank 2009). For example, Policy CONS-3.2 states that ongoing agricultural practices on fertile lands in the western portion of the City of Riverbank Planning Area shall be protected from encroachment of urban use through the use of buffers. The buffer shall be designed to protect the feasibility of ongoing agricultural activities on nearby lands and reduce the effects of noise, dust, and the application of agricultural chemicals on residential development. The width of the buffer shall be 300 feet, except that the width of the buffer may be reduced where a project applicant demonstrates that a narrower buffer would protect the feasibility of ongoing agricultural activities on nearby lands and reduce the effects of noise, dust, and the application of agricultural chemicals on residential development.

CITY OF TURLOCK GENERAL PLAN

The Turlock General Plan contains several policies in the Land Use Element and Conservation Element that pertain to the preservation and protection of agricultural land and minimize potential conflicts with farming in the City (City of Turlock 2012). For example, Policy 7.2-a of the Conservation Element directs the City to promote the preservation and economic viability of agricultural land adjacent to the City of Turlock. Policy 7.2-b of the Conservation Element directs the City to retain its agricultural setting by limiting urban expansion to designated areas and minimizing conflicts between agriculture and urban activities. Additionally, pursuant to Policy 7.2-e, the City is directed to require development at densities

higher than typical in recent years in order to limit conversion of agricultural land and minimize the urban/agricultural interface.

CITY OF WATERFORD GENERAL PLAN

The Waterford Vision 2025 General Plan contains policies in the Open Space and Conservation Element that pertain to the preservation and protection of agricultural land and minimize potential conflicts with farming in the City (City of Waterford 2007). Policy OS-B-1 directs the City to protect agricultural areas outside the City's urban growth area from urban impacts. Policy OS-B-2 directs the City to relieve pressures on converting areas containing large concentrations "prime" agricultural soils to urban uses by providing adequate urban development land within the Waterford urban growth area.

Voter Action

In 1983, Stanislaus County sought to ensure the continued economic vitality of farmland by adopting a minimum parcel size requirement of 40 acres for the majority of agriculturally zoned land.

Stanislaus County voters passed Measure E in November 2007. Under Measure E, land that is designated as agricultural or open space in the Land Use Element cannot be amended to residential or rezoned to residential without the approval of a majority of county voters. Because Measure E amended the county general plan, it affects unincorporated lands that are under the county's jurisdiction. Under California law, a general plan amendment that is adopted by voter-approved initiative can be changed only by approval of another initiative.

The intent of Measure E is to direct residential growth into the incorporated cities, which are more capable of serving such growth, and limit the potential for residential growth to convert agricultural land within the unincorporated areas. Its immediate effect is to restrict future residential developments within the unincorporated county to those areas that are currently designated and zoned for residential development (e.g., Salida and Diablo Grande). Measure E will remain in effect until December 31, 2036, unless it is otherwise amended by a future voter initiative.

4.2.3 Impact Analysis

a. Methodology and Significance Thresholds

Agricultural impacts were evaluated based upon review of DOC Important Farmland classifications, regulatory requirements that apply to the various agricultural lands within the county, and the potential of future development to create agricultural/urban interface. For analysis purposes, "Important Farmland" include the following DOC classifications: Prime Farmland, Farmland of Statewide Importance, and Unique Farmland.

Appendix G of the State *CEQA Guidelines* identifies the following criteria for determining whether development facilitated by the proposed 2022 RTP/SCS would have a significant impact on agriculture and forestry resources, namely an analysis of whether or not the 2022 RTP/SCS would:

1. Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland) to nonagricultural use?
2. Conflict with existing zoning for agricultural use, or a Williamson Act contract?
3. Conflict with existing zoning for, or cause rezoning of, forest land, timberland, or timberland zoned Timberland Production?
4. Result in the loss of forest land or conversion of forest land to non-forest use?

5. Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?

b. Project Impacts and Mitigation Measures

The following section describes generalized agricultural resource impacts associated with the projects included in and the land use scenario envisioned by the 2022 RTP/SCS. Table 4.2-3 summarizes the specific 2022 RTP/SCS transportation projects that could result in the types of agricultural resource impacts discussed below. Due to the programmatic nature of the 2022 RTP/SCS, a precise, project-level analysis of the specific impacts associated with individual transportation and land use projects is not possible. In general, however, implementation of proposed transportation improvements and future projects under the land use scenario envisioned by the 2022 RTP/SCS could result in the impacts as described in the following section.

Threshold 1:	Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to nonagricultural use
Threshold 2:	Conflict with existing zoning for agricultural use, or a Williamson Act contract
Threshold 5:	Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use

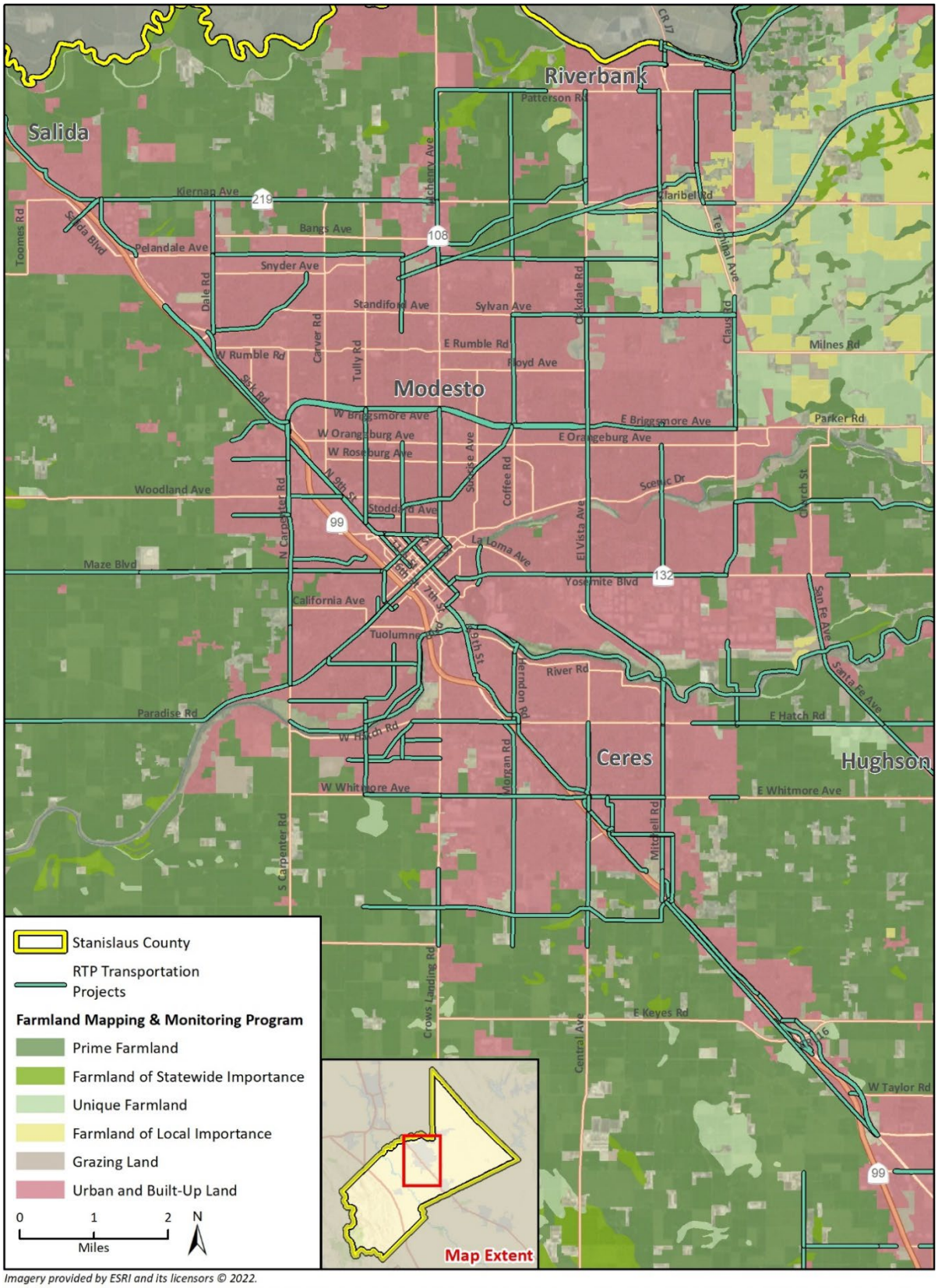
Impact AG-1 THE PROPOSED TRANSPORTATION IMPROVEMENTS AND LAND USE SCENARIO ENVISIONED BY THE 2022 RTP/SCS COULD RESULT IN THE CONVERSION OF IMPORTANT FARMLAND TO NON-AGRICULTURAL USES, OR CONFLICT WITH EXISTING ZONING FOR AGRICULTURE OR A WILLIAMSON ACT CONTRACT. THIS WOULD BE A SIGNIFICANT AND UNAVOIDABLE IMPACT.

The most recent FMMP data from the DOC has identified 428,450 acres of land as Important Farmland in the StanCOG region (refer to Table 4.2-2). In addition, the StanCOG region has agricultural lands under Williamson Act contract. Figure 4.2-2 through Figure 4.2-5 illustrate the location of Important Farmland in relation to transportation projects included in the 2022 RTP/SCS.

The 2022 RTP/SCS emphasizes infill development and development near existing transportation corridors, which are generally located in urbanized areas of cities and unincorporated communities. Such land use development within urbanized areas would not be likely to result in agricultural resource impacts since they would be located within existing urban areas. Because the 2022 RTP/SCS land use pattern emphasizes infill development in conjunction with mixed use and transit-oriented development within existing urbanized areas along transportation corridors, the majority of this Important Farmland would remain available for agricultural use.

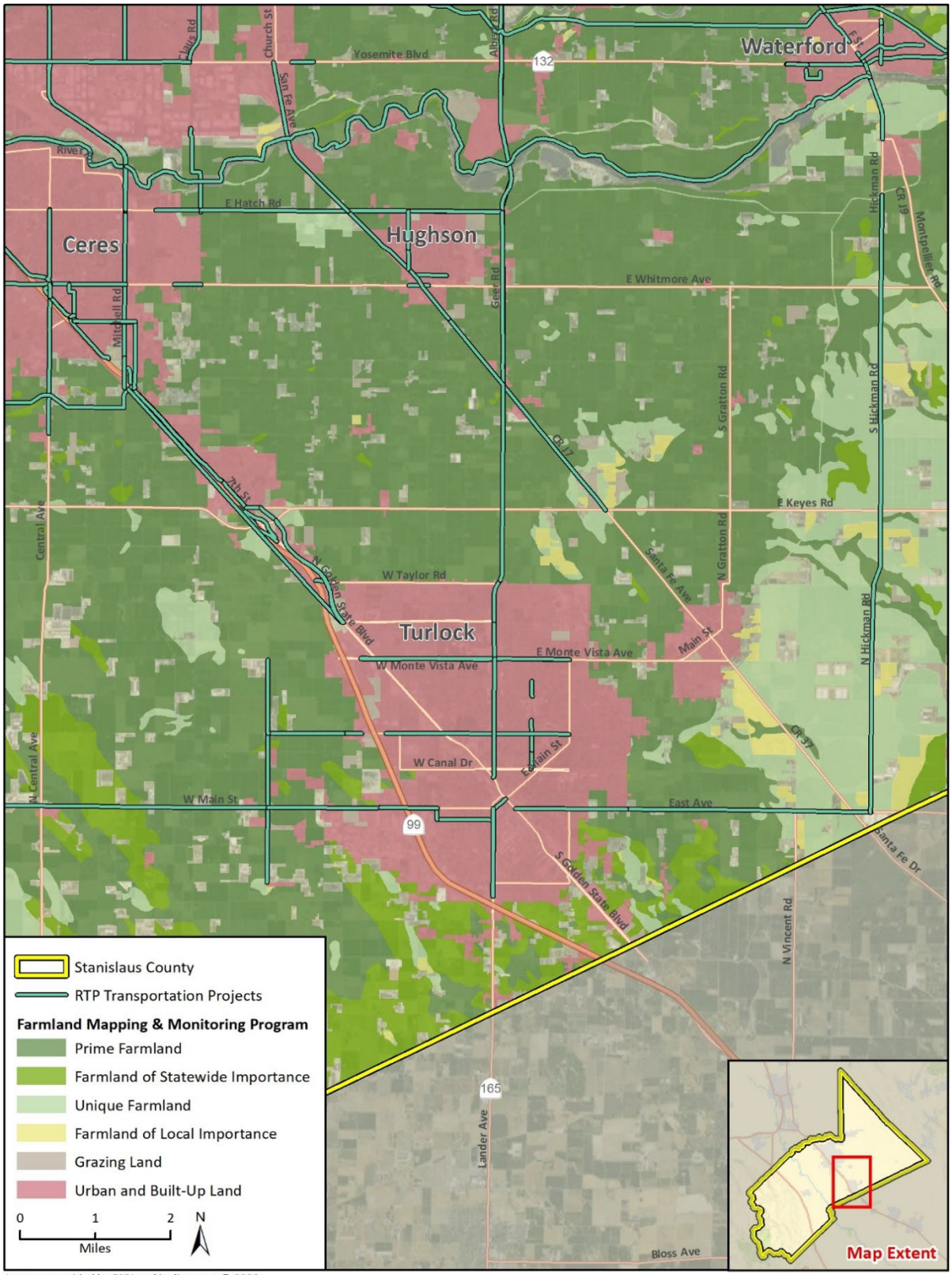
Transportation improvement projects under the 2022 RTP/SCS adjacent to agricultural areas, particularly those requiring new rights-of-way, could also convert Important Farmland to non-agricultural use, or conflict with agricultural zoning and/or Williamson Act contracts as described in Threshold 5 through the involvement of other changes in the existing environment which, due to their location or nature, could result in conversion of farmland, to a non-agricultural use. Although incorporated cities in the StanCOG region are fairly urbanized, many cities border agriculture, including FMMP-designated Important Farmland. Transportation improvement projects that involve roadway widening have the potential to affect narrow segments of agricultural land located immediately along

Figure 4.2-2 FMMP Designations and 2022 RTP/SCS Projects – Modesto and Ceres



Imagery provided by ESRI and its licensors © 2022.
Additional data provided by Stanislaus County, 2018; California Department of Conservation, Division of Land Resource Protection, Farmland Mapping and Monitoring Program, 2018.

Figure 4.2-3 FMMP Designations and 2022 RTP/SCS Projects – Turlock, Hughson, and Waterford



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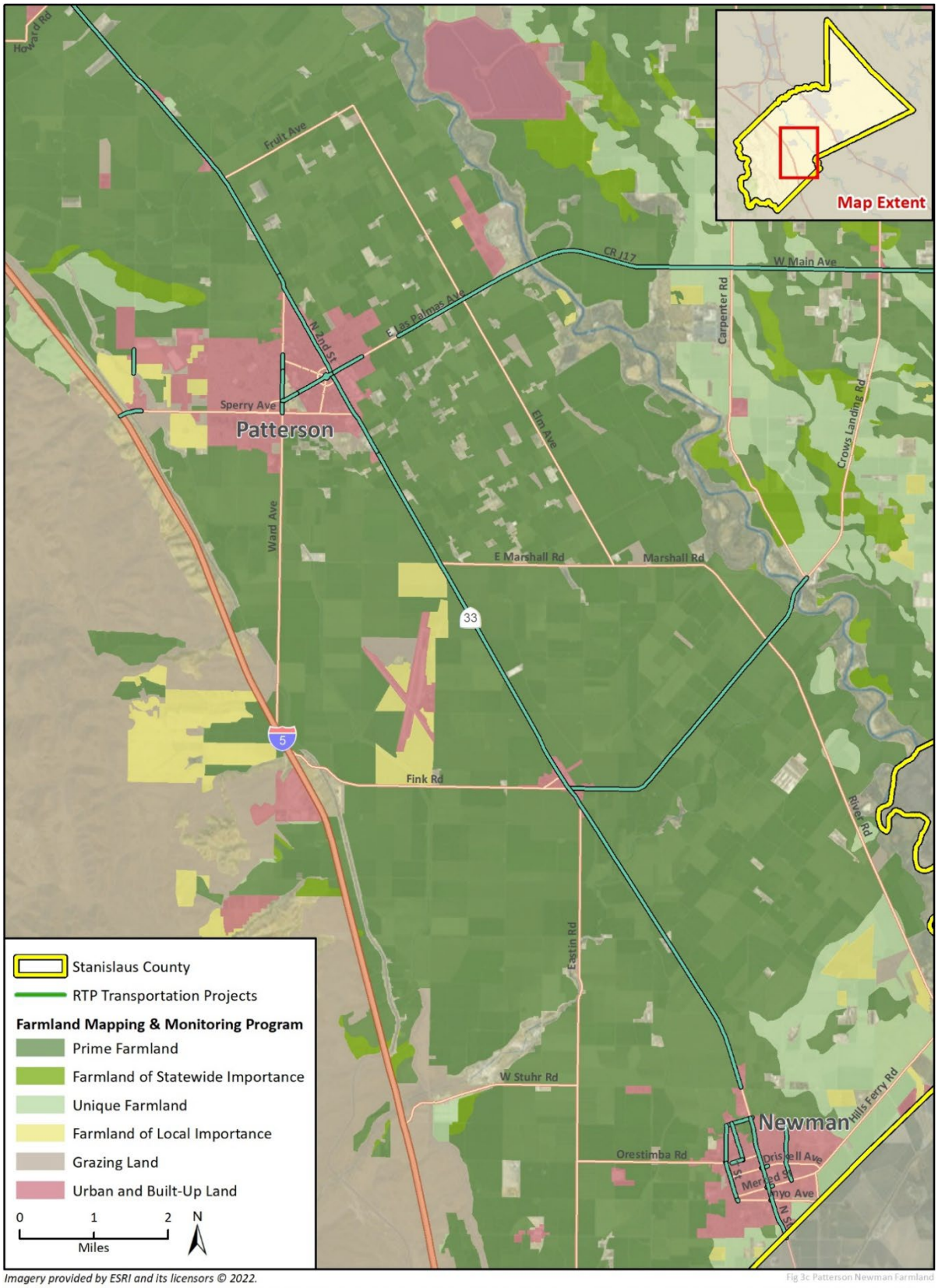
Additional data provided by Stanislaus County, 2018; California Department of Conservation, Division of Land Resource Protection, Farmland Mapping and Monitoring Program, 2018.

Figure 4.2-4 FMMP Designations and 2022 RTP/SCS Projects – Patterson and Newman



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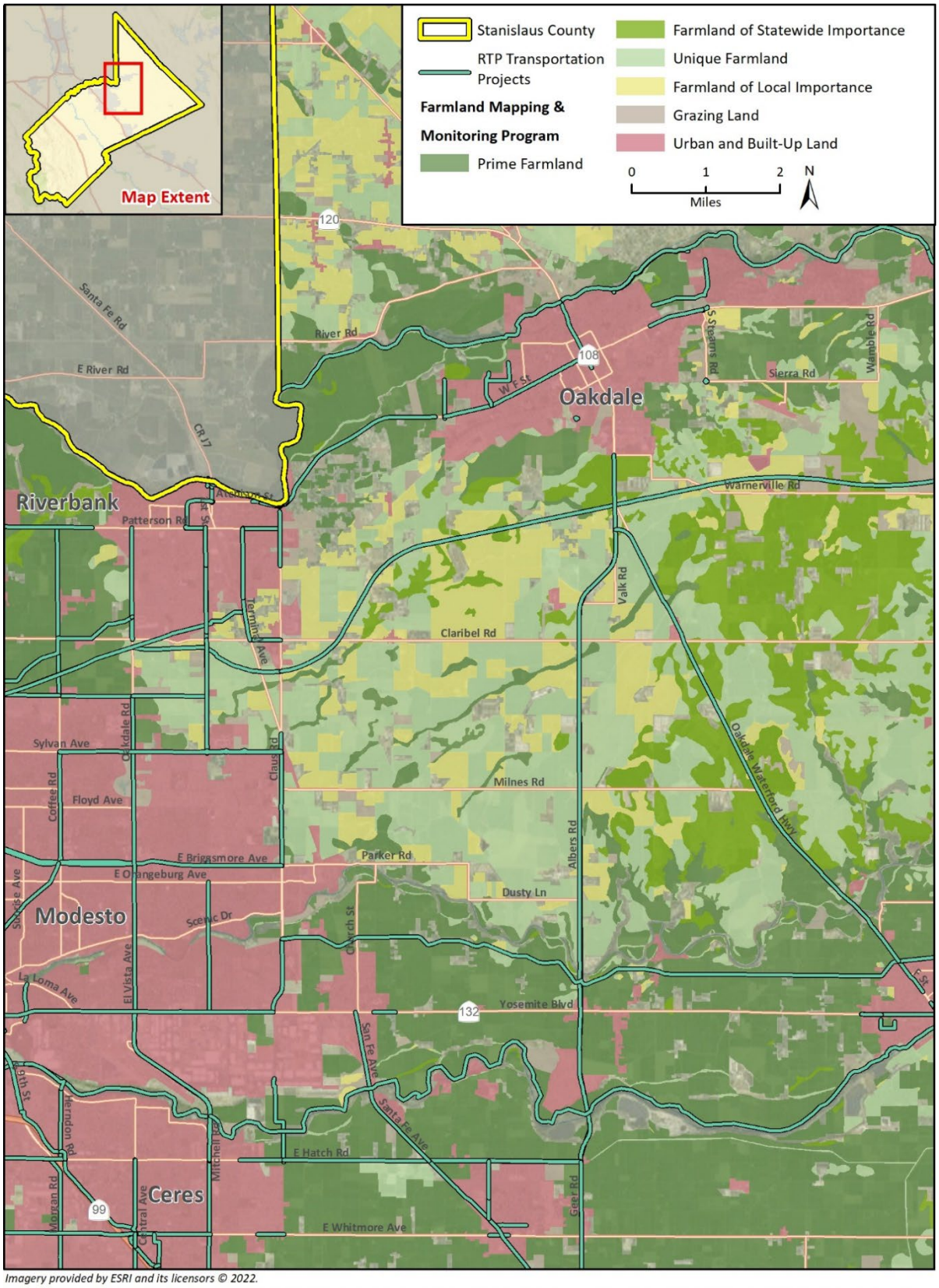
Additional data provided by Stanislaus County, 2018; California Department of Conservation, Division of Land Resource Protection, Farmland Mapping and Monitoring Program, 2018.

Fig 3c Patterson Newman Farmland

Figure 4.2-5 FMMP Designations and 2022 RTP/SCS Projects – Riverbank and Oakdale



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Additional data provided by Stanislaus County, 2018; California Department of Conservation, Division of Land Resource Protection, Farmland Mapping and Monitoring Program, 2018.

the existing right-of-way of proposed improvements. For example, the widening of State Route 33 through the StanCOG region would have the potential to impact agricultural lands immediately adjacent to both sides of the roadway. In addition, improving, expanding, and extending existing roadways, along with the installation of new roadways, could remove some barriers to development taking place on the urban edge as the region's connectivity and access improves from these projects. Additionally, construction of projects adjacent to agricultural fields could result in introduction of invasive species or weeds, which could out compete agricultural crops. It is important to note that for federally funded projects, implementing and local agencies are required to follow the rules and regulations of the Farmland Protection Policy Act (FPPA) including determining the impact by completing the Farmland Conversion Impact Rating form (AD-1006). The FPPA assures that to the extent possible, federal programs are administered to be compatible with state and local programs and policies to protect farmland.

The 2022 RTP/SCS would also relieve traffic congestion in urban areas and in the spheres of influence around cities in the StanCOG region, which could potentially change which communities are located within a city's periphery. This could change which communities are closest to agricultural land, and some new residents may be sensitive to the noise, pesticide use, and dust generated by farming practices, resulting in pressure to change zoning or other laws related to those farming activities. According to the County's Right-to-Farm Ordinance (Section 9.32.050 of the Stanislaus County Code), the County would condition discretionary permits for special uses and residential development within or adjacent to agricultural upon recording a Right-to-Farm Notice. Thus, residents moving into these areas in the vicinity of existing agricultural activities should be prepared to experience discomfort or inconveniences arising from typical agricultural operations, and that an established agricultural operation shall not be considered a nuisance due to changes in the surrounding area. The right-to-farm ordinance promotes understanding and cooperation between urban residents and agricultural operators.

A determination of the impacts to Important Farmland, agricultural zoning and conflicts with Williamson Act contracts would be made on a case-by-case basis as individual projects are implemented. Many individual projects would likely not create significant impacts, particularly those that involve only minor widening along existing rights-of-way or would be located in urbanized areas zoned for development. Nevertheless, because implementation of the 2022 RTP/SCS may directly result in conversion of Important Farmland and conflict with agricultural zoning and Williamson Act contracts, this is a significant impact.

Mitigation Measures

For transportation projects under their jurisdiction, StanCOG shall, and transportation project sponsor agencies can and should, implement the following mitigation measures developed for the 2022 RTP/SCS program, where applicable, for transportation projects that would result in impacts to Important Farmland. Stanislaus County and cities in the StanCOG region can and should implement these measures, where relevant to land use projects implementing the 2022 RTP/SCS. Project-specific environmental documents may adjust these mitigation measures as necessary to respond to site-specific conditions.

AG-1 Agricultural Land Impact Avoidance and Minimization

Implementing agencies shall, or can and should, implement measures, where feasible based on project- and site-specific considerations that include, but are not limited to those identified below.

- Require project relocation or corridor realignment, where feasible, to avoid Important Farmland, agriculturally zoned land and/or land under Williamson Act contract;
- Compensatory mitigation at a minimum 1:1 (impacted: replaced) acreage ratio with Important Farmland of equivalent or better quality;
- Require acquisition of conservation easements on land at least equal in quality and size as mitigation for the loss of Important Farmland through an appropriate land trust (e.g., Central Valley Farmland Trust); and/or
- Institute new protection of farmland in the project area or elsewhere through the use of long-term restrictions on use, such as 20-year Farmland Security Zone contracts (Government Code Section 51296 et seq.) or 10-year Williamson Act contracts (Government Code Section 51200 et seq.).

IMPLEMENTING AGENCIES AND TIMING

Implementing agencies for transportation projects are StanCOG and transportation project sponsor agencies. Implementing agencies for land use projects are Stanislaus County and incorporated cities within the County. This mitigation measure shall, or can and should, be applied during project permitting and environmental review and implemented during construction, as applicable.

Significance After Mitigation

If the implementing agency adopts these mitigation measures, impacts from the 2022 RTP/SCS would be reduced, although not to a less than significant level. Because this document evaluates impacts at the programmatic level, all project circumstances are not foreseeable and therefore, even with implementation of Mitigation Measure AG-1, impacts could remain significant and unavoidable. In addition, impacts remain significant and unavoidable due to the irreversible effects of land conversion. Further, as described in Section 3.3.1, *Mitigation Approach*, StanCOG does not have the authority to require other implementing agencies (e.g., Caltrans, counties, cities, transit agencies, etc.) that are responsible agencies for this 2022 RTP/SCS and EIR, but that will be the lead agency for future transportation and land use development projects, to implement these mitigation measures. This impact remains significant and unavoidable.

Threshold 3:	Conflict with existing zoning for, or cause rezoning of, forest land, timberland, or timberland zoned Timberland Production
Threshold 4:	Result in the loss of forest land or conversion of forest land to non-forest use

Impact AG-2 THE PROPOSED TRANSPORTATION IMPROVEMENTS AND LAND USE PROJECTS ENVISIONED BY THE 2022 RTP/SCS WOULD NOT CONFLICT WITH EXISTING ZONING FOR FOREST LAND, TIMBERLAND, OR TIMBERLAND PRODUCTION, NOR CONVERT FOREST LAND TO NON-FOREST USES. IMPACTS WOULD BE LESS THAN SIGNIFICANT.

The Stanislaus County General Plan and County Zoning Ordinance do not specify any land in the StanCOG region as designated or zoned for forestland or timberland. The 2022 RTP/SCS and County and city polices focus development in areas that do not include forest land or timberland, as defined by statutes. As such, the 2022 RTP/SCS would not conflict with existing zoning for forest land, timberland, or timber production, nor convert forest land to non-forest use.

Because land use strategies contained within the 2022 RTP/SCS would help to encourage growth in developed areas, and forest lands and timber areas are located outside the StanCOG region, impacts on

conversion of forest land or conflicts with land zoned for forest land, timberland, or timberland production would be less than significant.

Mitigation Measures

No mitigation is required.

c. Specific RTP/SCS Projects That May Result in Impacts

Table 4.2-3 identifies examples of transportation projects with the potential to cause or contribute to direct or indirect impacts to agricultural resources such as those discussed above. These projects are representative and were selected based on their potential scope and likelihood of disturbing agricultural lands. Additional specific analysis would be required as individual projects are implemented to determine the project specific magnitude of impact. Mitigation discussed above would apply to these specific projects.

Table 4.2-3 2022 RTP/SCS Projects that May Result in Agricultural Impacts

Project #	Location	Project Description	Potential Impact
Caltrans			
CA06	On SR 99 from Keyes Rd to Taylor Rd	Construct auxiliary lane	AG-1
City of Ceres			
C23	Mitchell Rd/Service Rd	Construct New Interchange - Phase I	AG-1
C25	Eastgate Blvd to Faith Home	Widen from 2 to 4 lanes	AG-1
C27	Ustick Rd to Blaker Rd	Widen from 2 to 4 lanes	AG-1
C46	Service Rd to Grayson Rd	Widen from 2 to 4 lanes	AG-1
City of Modesto			
M34	Oakdale Rd to Roselle Ave	Construct new 2 lane roadway	AG-1
M52	McHenry Ave to Coffee Rd	Widen from 2 to 6-lane Expressway	AG-1
M53	Coffee Rd. to Oakdale Rd	Widen from 2 to 6-lane Expressway	AG-1
M54	Pelandale Ave to Kiernan Ave	Widen from 4 to 6 lanes	AG-1
M58	Sylvan Ave to Claratina Ave	Widen from 3 to 6 lanes	AG-1
M60	Sylvan Ave to Claratina Rd	Widen from 2 to 4 lanes	AG-1
M82	State Route 99 to Dakota Ave Phase 1 (2-lane expressway)	Construct a two-lane expressway from N. Dakota Ave to the Needham St. Overcrossing. (Phase 1 of ultimate build-out of SR132 West Freeway/Expressway Project) (Reference: 2014 RTP Project ID - RE01).	AG-1
City of Oakdale			
O14	Maag Ave to Stearns Rd	Widen Roadway to 5-lanes with full frontage improvements. Existing section includes 3 lanes with no frontage improvements.	AG-1
City of Patterson			
P05	Delta Mendota to Keystone Pacific Park Way	Widen from 2 to 4 lanes.	AG-1
P08	Raines Rd to I-5	Construct New Interchange at I-5.	AG-1
P16	Ward Av to SR-33	Widen from 2 to 4 lanes.	AG-1

Project #	Location	Project Description	Potential Impact
P17	Sperry Av to American Eagle Way	Widen from 2 to 4 lanes.	AG-1
P18	American Eagle Way to SR-33	Widen from 2 to 4 lanes.	AG-1
P19	Sperry Av to Marshall Rd	Widen from 2 to 4 lanes.	AG-1
Stanislaus County			
S02	SR-99 Interchange with Crows Landing Road	Reconstruct interchange	AG-1
S03	I-5 Interchange with Fink Road	Reconstruct interchange	AG-1
S04	SR-99 Interchange with Hammett Road	Reconstruct interchange	AG-1
S24	Milnes Road to Claribel Road	Widen to 3 lanes	AG-1
S56	Carpenter Rd to River Rd/ Marshall Rd	Widen to 3 lanes	AG-1
S57	River Rd/Marshall Rd to SR-33	Widen to 3 lanes	AG-1
S65	San Joaquin River to Carpenter Rd	Widen to 3 lanes	AG-1
S66	Carpenter Rd to Crows Landing Rd	Widen to 3 lanes	AG-1
S67	Crows Landing Rd to Mitchell Rd	Widen to 3 lanes	AG-1
S68	Mitchell Rd to Washington Rd	Widen to 3 lanes	AG-1
S69	SR-99 to McHenry Ave	Widen to 6-lanes	AG-1
S82	Claribel Road to Warnerville Road	Widen to 5 lanes	AG-1
S131	Oakdale Road to Claus Road	Construct 4-lane Expressway	AG-1
S132	Claus Road to Albers Road	Construct 4-lane Expressway	AG-1
S133	Albers Road to SR 120	Construct 4-lane Expressway	AG-1
S134	Tully Road to Coffee Road	Construct 6-lane Freeway	AG-1
S136	SR 99 to Dakota Avenue	Widen to 4-Lane Highway	AG-1
City of Turlock			
T39	Lander Ave (SR-165) to S. City Limits	Construct New Interchange	AG-1
T41	Taylor Rd	Reconstruct existing Interchange	AG-1
T43	Fulkerth Rd to Monte Vista Ave	Construct 4-lane Expressway with Class II bike facility and transit	AG-1

4.2.4 Cumulative Impacts

The cumulative impact analysis area for agriculture and forestry resources consists of the StanCOG region and adjoining counties (including San Joaquin, Calaveras, Tuolumne, Mariposa, Merced, Santa Clara, and Alameda counties). Information regarding these adjoining counties can be found in Section 3.3.3.1, *Environmental Setting, Cumulative Impact Methodology*. Future development in this region that could impact farmland or forestry and is considered in the analysis. This cumulative extent is used to evaluate potential loss/conversion of farmland and forest land within the context of regional diminishment of these resources.

Future development within the cumulative impact analysis area would convert agricultural land to non-agricultural uses and may result in conflicts with agricultural zoning and Williamson Act contracts. In addition, future development adjacent to agricultural land has the potential to result in a loss of farmland due to land use conflicts, which adds to the cumulative conversion of agricultural lands,

including areas designated as Important Farmland by the FMMP. Cumulative impacts to agricultural resources would be significant.

Implementation of Mitigation Measure AG-1 would reduce the contribution of the proposed 2022 RTP/SCS to cumulative agricultural land impacts. However, the mitigation would not ensure that the future land use development pattern and transportation projects could feasibly relocate or realign to avoid impacts, and impacts would remain significant and unavoidable. The contribution of the proposed 2022 RTP/SCS to cumulative impacts to agricultural and Williamson Act lands would therefore remain cumulatively considerable post-mitigation.

In the cumulative impact analysis area, forestland and timber resources are primarily located in Calaveras County and Mariposa County. Specifically, the Sierra National Forest and Stanislaus National Forest are located within Mariposa County, and Calaveras County contains large expanses of publicly managed forests. National forests are protected by Federal law and greatly restrict any type of urban development that can occur in these areas. Thus, future development within the cumulative impact analysis area would not convert forestland to non-forest uses and thus would not result in conflicts with forest zoning. Cumulative impacts to forestland and timber resources would therefore be less than significant. The contribution of the proposed 2022 RTP/SCS to cumulative impacts to forestland and timber resources would not be cumulatively considerable.

4.3 Air Quality

This section evaluates the air quality impacts resulting from implementation of the 2022 RTP/SCS. Both temporary impacts relating to construction activities and long-term impacts associated with population and employment growth and associated growth in vehicle traffic and energy consumption are discussed. Greenhouse gas emissions are analyzed in Section 4.9, G*reenhouse Gas Emissions and Climate Change.*

4.3.1 Setting

a. Climate and Meteorology

Air quality is affected by the rate and location of pollutant emissions and by climatic conditions that influence the movement and dispersion of pollutants. Atmospheric conditions, such as wind speed, wind direction and air temperature gradients, along with local and regional topography, mediate the relationship between air pollutant emissions and air quality.

The StanCOG region is located within the San Joaquin Valley Air Basin (SJVAB), which includes San Joaquin, Stanislaus, Merced, Madera, Fresno, Kings, Tulare, and western Kern County counties. The SJVAB is approximately 250 miles long and 35 miles in width (on average) and is bordered by the Coast Range Mountains on the west, the Sierra Nevada Mountains on the east, and the Tehachapi Mountains to the south. On the valley floor, the SJVAB is open only to the north, which heavily influences prevailing winds. Northwesterly winds are common during summer months, and air masses are often channeled towards the southeastern end of the San Joaquin Valley. Winds are often weaker in the winter, which contribute to stagnation events in which transport of pollutants is very limited (San Joaquin Valley Air Pollution Control District [SJVAPCD] 2015a).

The SJVAB is generally considered to have a Mediterranean climate, characterized by sparse rainfall and hot, dry summers. With an average of over 260 sunny days per year, the SJVAB provides favorable conditions for ozone formation. While precipitation and fog during the winter sometimes block sunlight and reduce ozone concentrations, wintertime fog provides favorable conditions for the formation of particulate matter (SJVAPCD 2015a).

Local climate conditions for the StanCOG region are shown in Table 4.3-1. As summarized therein, the warmest month of the year is July, and the coldest month of the year is December. The annual average maximum temperature is 76 degrees Fahrenheit (°F), while the annual average minimum temperature is 51°F.

Table 4.3-1 Stanislaus County Climate Conditions

Temperature Parameter or Metric	Condition
Average annual rainfall	16 inches
Average annual maximum temperature	76°F
Average annual minimum temperature	51°F
Warmest month	July
Coolest month	December
Average annual mean temperature	62°F
Average wind speed	6.6 miles per hour

Temperature Parameter or Metric	Condition
Predominant wind direction	northwest

°F = degrees Fahrenheit
Note: Averages are based on the period of record from January 1980 to December 2016.
Source: WeatherSpark 2016; Iowa Environmental Mesonet 2021

b. Sources of Air Pollution

Air pollutant emissions in the SJVAB are generated primarily by stationary and mobile sources. Stationary sources can be divided into two major subcategories:

- Point sources occur at a specific location and are often identified by an exhaust vent or stack. Examples include boilers or combustion equipment that produce electricity or generate heat.
- Area sources are widely distributed and include such sources as residential and commercial water heaters, painting operations, lawn mowers, agricultural fields, landfills, and some consumer products.

Mobile sources refer to emissions from motor vehicles, including tailpipe and evaporative emissions, and can also be divided into two major subcategories:

- On-road sources may be legally operated on roadways and highways.
- Off-road sources include aircraft, ships, trains, and self-propelled construction equipment.

Air pollutants can also be generated by the natural environment, such as when high winds suspend fine dust particles.

c. Air Pollutants of Primary Concern

The federal and State Clean Air Acts mandate the control and reduction of certain air pollutants. Under these laws, the U.S. Environmental Protection Agency (U.S. EPA) and the California Air Resources Board (CARB) have established the National Ambient Air Quality Standards (NAAQS) and the California Ambient Air Quality Standards (CAAQS) for "criteria pollutants" and other pollutants. Some pollutants are emitted directly from a source (e.g., vehicle tailpipe, an exhaust stack of a factory, etc.) into the atmosphere, including carbon monoxide, volatile organic compounds (VOC)/reactive organic gases (ROG),[1] nitrogen oxides (NO_X), particulate matter with diameters of up to ten microns (PM_{10})[2] and up to 2.5 microns ($PM_{2.5}$), sulfur dioxide, and lead. Other pollutants are created indirectly through chemical reactions in the atmosphere, such as ozone, which is created by atmospheric chemical and photochemical reactions primarily between ROG and NO_X. Secondary pollutants include oxidants, ozone, and sulfate and nitrate particulates (smog). The characteristics, sources and effects of criteria pollutants are discussed in the following subsections. The following subsections describe the characteristics, sources, and health and atmospheric effects of air pollutants of primary concern.

[1] CARB defines VOC and ROG similarly as, "any compound of carbon excluding carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates, and ammonium carbonate," with the exception that VOC are compounds that participate in atmospheric photochemical reactions. For the purposes of this analysis, ROG and VOC are considered comparable in terms of mass emissions, and the term ROG is used in this EIR.
[2] A micron is unit of length equal to one millionth of a meter.

Ozone

Ozone is produced by a photochemical reaction triggered by sunlight between nitrogen oxides (NO_X) and ROG. ROG are composed of non-methane hydrocarbons (with some specific exclusions), and NO_X is composed of different chemical combinations of nitrogen and oxygen, mainly nitric oxide and nitrogen dioxide. NO_X are formed during the combustion of fuels, while ROG are formed during combustion and evaporation of organic solvents. As a highly reactive molecule, ozone readily combines with many different components of the atmosphere. Consequently, high levels of ozone tend to exist only while high ROG and NO_X levels are present to sustain the ozone formation process. Once the precursors have been depleted, ozone levels rapidly decline. Because these reactions occur on a regional rather than local scale, ozone is considered a regional pollutant. In addition, because ozone requires sunlight to form, it mostly occurs in concentrations considered serious between the months of April and October. Ozone is a pungent, colorless, toxic gas with direct health effects on humans, including changes in breathing patterns, reduction of breathing capacity, increased susceptibility to infections, inflammation of lung tissue, and some immunological changes (U.S. EPA 2021a). Groups most sensitive to ozone include children, the elderly, people with respiratory disorders, and people who exercise strenuously outdoors.

Carbon Monoxide

Carbon monoxide is a localized pollutant that is found in high concentrations only near its source. The major source of carbon monoxide, a colorless, odorless, poisonous gas, is the incomplete combustion of petroleum fuels by automobile traffic. Therefore, elevated concentrations are usually only found near areas of high traffic volumes. Other sources of carbon monoxide include the incomplete combustion of petroleum fuels at power plants and fuel combustion from wood stoves and fireplaces during the winter. The health effects of carbon monoxide are related to its affinity for hemoglobin in the blood. Carbon monoxide causes a number of health problems, including aggravation of some heart diseases (e.g., angina), reduced tolerance for exercise, impaired mental function, and impaired fetal development. At high levels of exposure, carbon monoxide reduces the amount of oxygen in the blood, leading to mortality (U.S. EPA 2021a). Carbon monoxide tends to dissipate rapidly into the atmosphere; consequently, violations of the NAAQS and/or CAAQS for carbon monoxide are generally associated with localized carbon monoxide “hotspots” that can occur at major roadway intersections during heavy peak-hour traffic conditions.

Nitrogen Dioxide

Nitrogen dioxide is a by-product of fuel combustion; the primary sources are motor vehicles and industrial boilers and furnaces. The principal form of NO_X produced by combustion is nitric oxide, but nitric oxide reacts rapidly to form nitrogen dioxide, creating the mixture of nitric oxide and nitrogen dioxide commonly called NO_X. Nitrogen dioxide is an acute irritant that can aggravate respiratory illnesses and symptoms, particularly in sensitive groups (U.S. EPA 2021a). A relationship between nitrogen dioxide and chronic pulmonary fibrosis may exist, and an increase in bronchitis in young children at concentrations below 0.3 parts per million (ppm) may occur. Nitrogen dioxide absorbs blue light, gives a reddish-brown cast to the atmosphere, and reduces visibility (U.S. EPA 2021a). It can also contribute to the formation of PM_{10} and acid rain.

Sulfur Dioxide

Sulfur dioxide is included in a group of highly reactive gases known as “oxides of sulfur.” The largest sources of sulfur dioxide emissions are from fossil fuel combustion at power plants (73 percent) and

other industrial facilities (20 percent). Smaller sources of sulfur dioxide emissions include industrial processes such as extracting metal from ore and the burning of fuels with a high sulfur content by locomotives, large ships, and off-road equipment. Sulfur dioxide is linked to a number of adverse effects on the respiratory system, including aggravation of respiratory diseases, such as asthma and emphysema, and reduced lung function (U.S. EPA 2021a).

Particulate Matter

Suspended atmospheric PM_{10} and $PM_{2.5}$ is comprised of finely divided solids and liquids such as dust, soot, aerosols, fumes, and mists. Both PM_{10} and $PM_{2.5}$ are directly emitted into the atmosphere as by-products of fuel combustion and wind erosion of soil and unpaved roads. Particulate matter is also created in the atmosphere through chemical reactions. The characteristics, sources, and potential health effects associated with PM_{10} and $PM_{2.5}$ can be very different. PM_{10} is generally associated with dust mobilized by wind and vehicles while $PM_{2.5}$ is generally associated with combustion processes as well as formation in the atmosphere as a secondary pollutant through chemical reactions. $PM_{2.5}$ is more likely to penetrate deeply into the lungs and poses a health threat to all groups, but particularly to the elderly, children, and those with respiratory problems (CARB 2021a). More than half of $PM_{2.5}$ that is inhaled into the lungs remains there. These materials can damage health by interfering with the body's mechanisms for clearing the respiratory tract or by acting as carriers of an absorbed toxic substance (South Coast Air Quality Management District 2005). Suspended particulates can also reduce lung function, aggravate respiratory and cardiovascular diseases, increase mortality rates, and reduce lung function growth in children (U.S. EPA 2021a).

Lead

Lead is a metal found naturally in the environment, as well as in manufacturing products. The major sources of lead emissions historically have been mobile and industrial sources. However, as a result of the U.S. EPA's regulatory efforts to remove lead from gasoline, atmospheric lead concentrations have declined substantially over the past several decades. The most dramatic reductions in lead emissions occurred prior to 1990 due to the removal of lead from gasoline sold for most highway vehicles. Lead emissions were further reduced substantially between 1990 and 2008, with reductions occurring in the metals industries at least in part as a result of national emissions standards for hazardous air pollutants. As a result of phasing out leaded gasoline, metal processing currently is the primary source of lead emissions. The highest level of lead in the air is generally found near lead smelters. Other stationary sources include waste incinerators, utilities, and lead-acid battery manufacturers. The health impacts of lead include behavioral and hearing disabilities in children and nervous system impairment (U.S. EPA 2021a).

Toxic Air Contaminants

Toxic air contaminants (TACs) are a diverse group of air pollutants that may cause or contribute to an increase in deaths or serious illness, or that may pose a present or potential hazard to human health. TACs include both organic and inorganic chemical substances that may be emitted from a variety of common sources, including gasoline stations, motor vehicles, dry cleaners, industrial operations, painting operations, and research and teaching facilities. One of the main sources of TACs in California is diesel engine exhaust that contains solid material known as diesel particulate matter (DPM). More than 90 percent of DPM is less than one micron in diameter (about $1/70^{th}$ the diameter of a human hair) and thus is a subset of $PM_{2.5}$. Because of their extremely small size, these

particles can be inhaled and eventually trapped in the bronchial and alveolar regions of the lungs (CARB 2021a).

TACs are different than criteria pollutants because ambient air quality standards have not been established for TACs. TACs occurring at extremely low levels may still cause health effects and it is typically difficult to identify levels of exposure that do not produce adverse health effects. TAC impacts are described by carcinogenic risk and by chronic (i.e., long duration) and acute (i.e., severe but of short duration) adverse effects on human health.

d. Current Air Quality

California is divided geographically into 15 air basins for managing the air resources of the state on a regional basis. Areas within each air basin are considered to share the same air masses and, therefore, are expected to have similar ambient air quality. Depending on whether the federal and State standards are met or exceeded, the local air basin is classified as in "attainment" or "non-attainment." Once a nonattainment area has achieved the air quality standards for a particular pollutant, it may be redesignated to an attainment area for that pollutant. The SJVAPCD is required to monitor air pollutant levels to assure the standards are met and, if they are not, to develop strategies to meet these standards.

Monitoring of ambient air pollutant concentrations is conducted by CARB, SJVAPCD, and the United States National Park Service. Some monitors are operated specifically for use in determining attainment status, while others are operated for other purposes, such as generating daily air quality forecasts. In total, SJVAPCD utilizes data from monitors operating at 29 sites in the SJVAB, two of which are in the StanCOG region. Figure 4.3-1 shows the locations of all monitoring stations in the SJVAB, including those in Stanislaus County that were in operation in 2021. The SJVAB is classified as a nonattainment area for the federal 8-hour ozone and $PM_{2.5}$ standards and State ozone, PM_{10} and $PM_{2.5}$ standards. The SJVAB is classified as in attainment (or unclassifiable/attainment) for all other State and federal standards (U.S. EPA 2021b). Table 4.3-2 presents a ten-year summary of the days that the SJVAB exceeded NAAQS and CAAQS for ozone, $PM_{2.5}$, and PM_{10}. Table 4.3-3 presents the observed number of days Stanislaus County exceeded NAAQS and CAAQS for ozone, NO_2, $PM_{2.5}$, and PM_{10}.

Table 4.3-2 Ten-Year SJVAB Air Quality Summary (2010-2019) for Days Over the Ozone, $PM_{2.5}$, and PM_{10} NAAQS and CAAQS

Year	Ozone 1-Hour CAAQS	Ozone 8-Hour NAAQS	Ozone 8-Hour CAAQS	$PM_{2.5}$ 24 Hour NAAQS	PM_{10} 24 Hour NAAQS	PM_{10} 24 Hour CAAQS
2011	70	130	131	65	0	116
2012	72	131	134	39	0	89
2013	41	111	112	69	4	122
2014	48	122	128	53	8	139
2015	47	97	99	53	0	121
2016	51	112	113	34	0	158
2017	48	122	126	47	8	146
2018	42	111	112	61	10	164
2019	24	96	100	28	16	130

Year	Ozone 1-Hour CAAQS	Ozone 8-Hour NAAQS	Ozone 8-Hour CAAQS	$PM_{2.5}$ 24 Hour NAAQS	PM_{10} 24 Hour NAAQS	PM_{10} 24 Hour CAAQS
2020	50	119	121	80	40	157

CAAQS = California Ambient Air Quality Standard; NAAQS = National Ambient Air Quality Standard; PM_{10} = particulate matter with a diameter of 10 microns or less

* Insufficient data available to determine the value

Note: No measurement data available post-2020

Source: CARB 2022

Table 4.3-3 Ambient Air Quality in Stanislaus County

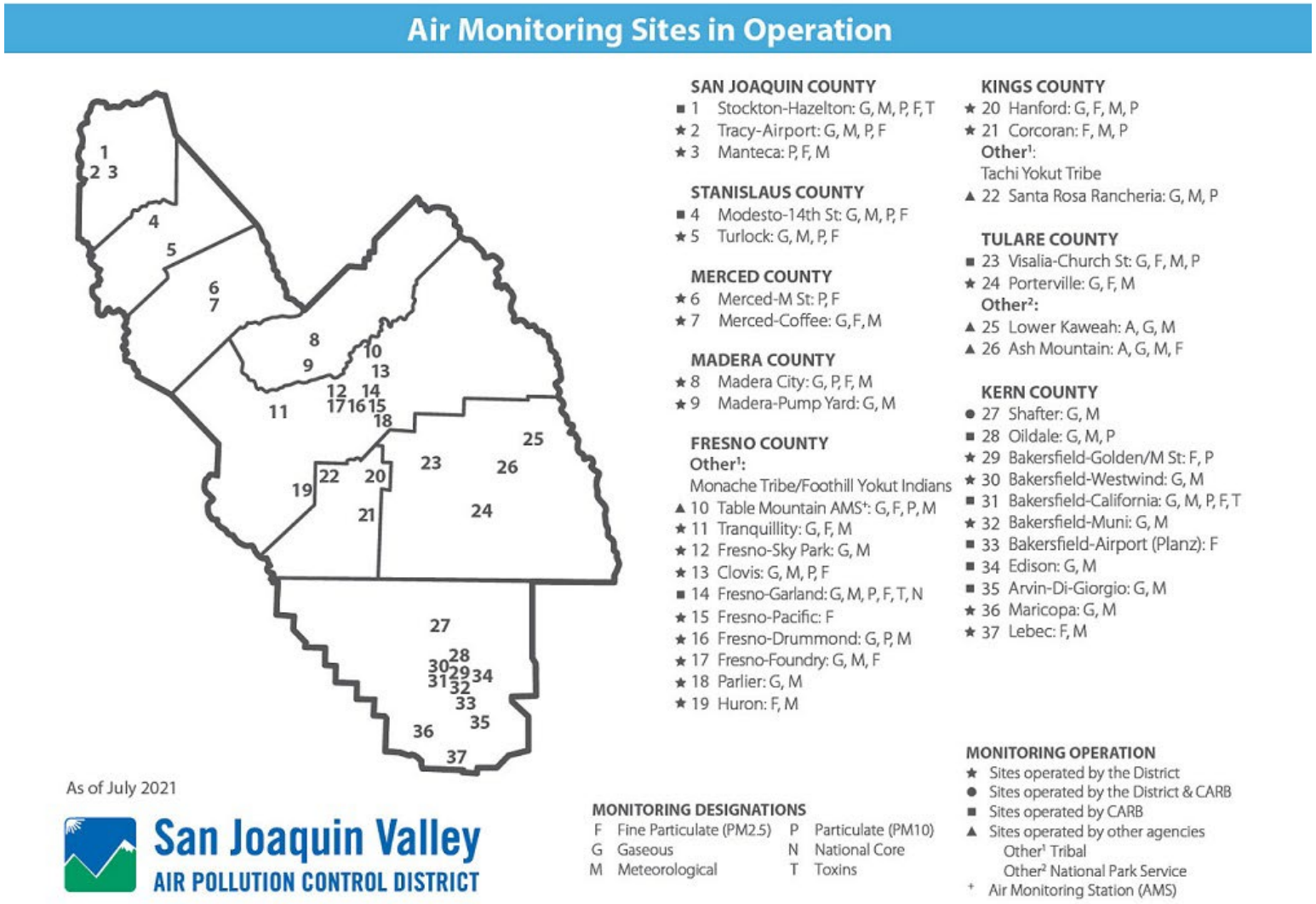
Pollutant	2018	2019	2020
Ozone (ppm), Eight-Hour Average	0.095	0.083	0.086
Number of days of state exceedances (>0.070 ppm)	28	13	13
Number of days of federal exceedances (>0.070 ppm)	27	14	14
Ozone (ppm), Worst Hour	0.108	0.102	0.104
Number of days of state exceedances (>0.09 ppm)	7	1	3
Nitrogen Dioxide (ppm), Worst Hour	0.0672	0.0591	0.0520
Number of days of state exceedances (>0.18 ppm)	0	0	0
Particulate Matter <10 microns ($\mu g/m^3$), Worst 24 Hours[1]	224.9	309.1	333.0
Number of days of state exceedances (>50 $\mu g/m^3$)	44	41	80
Number of days of federal exceedances (>150 $\mu g/m^3$)	4	1	7
Particulate Matter <2.5 microns ($\mu g/m^3$), Worst 24 Hours[1]	189.8	40.7	118.5
Number of days of federal exceedances (>35 $\mu g/m^3$)	26	8	33

ppm = parts per million

[1] Countywide Data not available. Data obtained from the Modesto – 14th Street Station.

Source: CARB 2022

Figure 4.3-1 SJVAB Air Quality Monitoring Stations (2021)



Source: SJVAPCD 2021a

4.3.2 Regulatory Setting

a. Federal Laws, Regulations, and Policies

Clean Air Act

The federal Clean Air Act (CAA) governs air quality in the United States and is administered by the U.S. EPA at the federal level. Air quality in California is also governed by regulations under the California Clean Air Act, which is administered by CARB at the state level. At the regional and local levels, local air districts such as SJVAPCD typically administer the federal and California Clean Air Acts.

The U.S. EPA is responsible for enforcing the federal CAA, which defines non-attainment areas as geographic regions designated as not meeting one or more of the national ambient air quality standards (NAAQS) that are required under the 1977 CAA and subsequent amendments. The federal CAA requires that a State Implementation Plan (SIP) be prepared for each non-attainment area and a maintenance plan be prepared for each former non-attainment area that subsequently demonstrated compliance with the standards. A SIP is a compilation of a state's air quality control plans and rules, approved by the U.S. EPA. Section 176(c) of the CAA provides that federal agencies cannot engage, support, or provide financial assistance for licensing, permitting, or approving any project unless the project conforms to the applicable SIP. The State and the U.S. EPA's goals are to eliminate or reduce the severity and number of violations of the NAAQS and to achieve expeditious attainment of these standards.

Table 4.3-4 summarizes the NAAQS and California Ambient Air Quality Standards (CAAQS). The CAAQS are more restrictive than the NAAQS for several pollutants, including the one-hour standard for carbon monoxide, the 24-hour standard for sulfur dioxide, and the 24-hour standard for PM_{10}.

Table 4.3-4 Current Federal and State Ambient Air Quality Standards

Pollutant	Averaging Time	Federal Primary Standards	California Standards
Ozone	1-Hour	–	0.09 ppm
	8-Hour	0.070 ppm	0.070 ppm
Carbon Monoxide	8-Hour	9.0 ppm	9.0 ppm
	1-Hour	35.0 ppm	20.0 ppm
Nitrogen Dioxide	Annual	0.053 ppm	0.030 ppm
	1-Hour	0.10 ppm	0.18 ppm
Sulfur Dioxide	Annual	–	–
	24-Hour	–	0.04 ppm
	1-Hour	0.075 ppm	0.25 ppm
PM_{10}	Annual	–	20 µg/m^3
	24-Hour	150 µg/m^3	50 µg/m^3
PM_{25}	Annual	12 µg/m^3	12 µg/m^3
	24-Hour	35 µg/m^3	–
Lead	30-Day Average	–	1.5 µg/m^3
	3-Month Average	0.15 µg/m^3	–

Pollutant	Averaging Time	Federal Primary Standards	California Standards
Visibility Reducing Particles	8-Hour	–	Extinction of 0.23 per kilometer[1]
Sulfates	24-Hour	–	25 µg/m^3
Hydrogen Sulfide	1-Hour	–	0.03 ppm (42 µg/m^3)
Vinyl Chloride	24-Hour	–	0.01 ppm 0.02 (26 µg/m^3)

ppm = parts per million; µg/m^3 = micrograms per cubic meter

[1] In 1989, CARB converted both the general statewide 10-mile visibility standard and the Lake Tahoe 30-mile visibility standard to instrumental equivalents, which are "extinction of 0.23 per kilometer" and "extinction of 0.07 per kilometer" for the statewide and Lake Tahoe Air Basin standards, respectively.

Source: CARB 2016

1990 Amendments to the Federal Clean Air Act

The 1990 amendments to the federal Clean Air Act included a provision to address air toxics. Under Title III of the federal Clean Air Act, the U.S. EPA establishes and enforces National Emission Standards for Hazardous Air Pollutants, which are national uniform standards oriented toward controlling particular hazardous air pollutants. Section 112(b) of the federal Clean Air Act identifies 189 "Air Toxics" (hazardous air pollutants), directs U.S. EPA to identify sources of the 189 pollutants, and establishes a 10-year time period for the U.S. EPA to issue technology-based emissions standards for each source category. Title III of the federal Clean Air Act provides for a second phase under which the U.S. EPA is to assess residual risk after the implementation of the first phase of standards and impose new standards, when appropriate, to protect public health.

Safer Affordable Fuel-Efficient Vehicles Rule

In August 2018, the U.S. EPA and NHTSA issued a proposed ruling to roll back some of the fuel economy and GHG standards for medium- and heavy-duty trucks. The new ruling proposed by the U.S. EPA and NHTSA, the Safer Affordable Fuel-Efficient (SAFE) Vehicle Rules, would replace the CAFE standards set for model year 2022-2025 passenger car and light trucks, while the 2021 model year vehicles will maintain the CAFE standards. The ruling is split into two parts.

Part One, "One National Program" (84 FR 51310), revokes a waiver granted by U.S. EPA to the State of California under Section 209 of the CAA to enforce more stringent emission standards for motor vehicles than those required by U.S. EPA for the explicit purpose of GHG reduction, and indirectly, criteria air pollutants and ozone precursor emission reduction. This revocation became effective on November 26, 2019, potentially restricting the ability of CARB to enforce more stringent GHG emission standards for new vehicles and set zero emission vehicle mandates in California.

Part Two addresses CAFE standards for passenger cars and light trucks for model years 2021 to 2026. This rulemaking proposes new CAFE standards for model years 2022 through 2026 and would amend existing CAFE standards for model year 2021. The proposal would retain the model year 2020 standards (specifically, the footprint target curves for passenger cars and light trucks) through model year 2026. The proposal addressing CAFE standards was jointly developed by NHTSA and U.S. EPA, with U.S. EPA simultaneously proposing tailpipe CO_2 standards for the same vehicles covered by the same model years.

In September 2019, U.S. EPA and the National Highway Traffic Safety Administration issued the Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule Part One: One National Program, which revoked California's authority to set its own GHG emissions standards and zero-emission vehicle mandates in

California (84 Federal Register 51310). In April 2020, the federal agencies issued the SAFE Vehicles Rule Part Two for Model Years 2021–2026 Passenger Cars and Light Trucks, which relaxed federal GHG emissions and fuel economy standards (85 Federal Register 24174). On February 8, 2021, the incoming federal administration issued a stay in regard to the legal challenges by California and other states to the revocation of California's waiver (JDSupra 2021). On December 21, 2021, the National Highway Traffic Safety Administration (NHTSA) published its Corporate Average Fuel Economy (CAFE) Preemption rule, which finalizes its repeal of 2019's SAFE Rule Part One. On March 31, 2022, the NHTSA finalized new CAFE Standards for model years 2024 through 2026 that would increase federal CAFE standards compared to the SAFE Rule Part Two (NHTSA 2022).

a. State Laws, Regulations, and Policies

AB 32

Assembly Bill (AB) 32, also known as the Global Warming Solutions Act of 2006 (Nunez), expanded CARB's role to development and oversight of California's main GHG reduction programs. These include cap and trade, the Low Carbon Fuel Standard, and the zero-emission vehicle programs. With the passage of additional laws (such as Senate Bill [SB] 32 in 2016 and AB 398 in 2017), CARB continues to map out how these programs and others can help California reach its next statutory target: reducing GHG emissions an additional 40 percent below 1990 levels by 2030. Reductions in GHG emissions are tied to improvements in air quality.

California Clean Air Act

The California Clean Air Act (CCAA) was enacted in 1988 (California Health & Safety Code Section 39000 et seq.) and amended in 1992. The CAAQS are generally more stringent than the corresponding federal standards and incorporate additional standards for sulfates, hydrogen sulfide, vinyl chloride and visibility reducing particles (see Table 4.3-4). Air basins or areas that exceed the CAAQS are designated non-attainment until compliance is disclosed in an attainment plan. In California, CARB is responsible for meeting the State requirements of the federal CAA, administering the California CAA, and establishing the California ambient air quality standards (CAAQS). The California CAA, as amended in 1992, requires all air districts in the State to endeavor to achieve and maintain the CAAQS. CARB oversees the functions of local air pollution control districts and air quality management districts, which in turn administer air quality activities at the regional and county level.

Senate Bill 656 (Chapter 738, Statues of 2003)

In 2003, the California Legislature enacted Senate Bill (SB) 656 (Chapter 738, Statutes of 2003), codified as Health and Safety Code Section 39614, to reduce public exposure to PM_{10} and $PM_{2.5}$. SB 656 required that, by January 1, 2005, CARB, in consultation with local air pollution control and air quality management districts (air districts), must develop and adopt a list of the most readily available, feasible, and cost-effective control measures that could be employed by CARB and the air districts to reduce PM_{10} and $PM_{2.5}$ (collectively referred to as PM). The legislation established a process for achieving near-term reductions in PM throughout California ahead of federally required deadlines for $PM_{2.5}$ and provided new direction on PM reductions in those areas not subject to federal requirements for PM. Measures adopted as part of SB 656 complement and support those required for federal $PM_{2.5}$ attainment plans, as well as for State ozone plans. This ensures continuing

focus on PM reduction and progress toward attaining California's more health protective standards. This list of air district control measures was adopted by CARB on November 18, 2004.

Toxic Air Contaminant Identification and Control Act of 1983

The Toxic Air Contaminant Identification and Control Act (Assembly Bill 1807) created California's program to reduce exposure to air toxics. The program involves a two-step process: risk identification and risk management. In the risk identification step, and upon CARB's request, the Office of Environmental Health Hazard Assessment evaluates the health effects of substances other than pesticides and their pesticidal uses. Substances with the potential to be emitted or that are currently being emitted into the ambient air may be identified as a TAC. In the risk management step, once a substance is identified as a TAC, and with the participation of local air districts, industry, and interested public, CARB prepares a report that outlines the need and degree to regulate the TAC through a control measure.

Assembly Bill 2588: Air Toxics "Hot Spots" Information and Assessment Act of 1987

The Air Toxics "Hot Spots" Information and Assessment Act (Assembly Bill 2588) was enacted in 1987 to require stationary sources to report the types and quantities of substances identified as having a localized health risk. This act aims to ascertain health risks, notify nearby residents of significant risks, and reduce significant risks to acceptable levels. The California Office of Environmental Health Hazard Assessment (OEHHA) is the lead agency for the assessment of health risks posed by environmental contaminants. OEHHA, which is an office within the California Environmental Protection Agency, aims to protect human health and the environment through scientific evaluation of risks posed by hazardous substances. In addition, OEHHA develops health-protective exposure levels for contaminants in air, water, and soil as guidance for regulatory agencies and the public. These include public health goals for contaminants in drinking water and both cancer potency factors and non-cancer reference exposure levels for the Air Toxics Hot Spots Program.

Executive Order N-79-20

In 2021, Governor Newsom signed Executive Order N-79-20 which calls for the elimination of new internal combustion passenger vehicles by 2035. The Executive Order establishes a target for the transportation sector that helps put the State on a path to carbon neutrality by 2045. Furthermore, the Executive Order provides momentum for providers of charging and refueling infrastructure, electric utilities, and others to plan for and support the increasing consumer demand for these vehicles (CARB 2021b).

CARB Air Quality and Land Use Handbook and 2017 Technical Advisory

CARB's *Air Quality and Land Use Handbook: A Community Health Perspective* recommends that local agencies avoid siting new, sensitive land uses within specific distances of potential sources of TACs, such as freeways and high-traffic roads, distribution centers, railroads, and ports (CARB 2005). Specifically, CARB recommends that local agencies avoid siting new, sensitive land uses within 500 feet of a freeway. The primary concern is the effect of diesel exhaust particulate on sensitive uses.

CARB's *Strategies to Reduce Air Pollution Exposure Near High-Volume Roadways* technical advisory (2017) identifies effective strategies that planners and other land use decision-makers can

implement locally and in the near-term to reduce exposure to near-roadway pollution from increased infill development while also protecting public health. These strategies complement the State's many efforts to reduce air pollution from all sources, including cars and trucks.

Diesel Risk Reduction Program

In August 1998, CARB identified particulate emissions from diesel-fueled engines (diesel PM) as TACs, based on data linking diesel PM emissions to increased risks of lung cancer and respiratory disease. Following the identification process, CARB was required to determine if there was a need for further control, which led to creation of the Diesel Advisory Committee to assist in the development of a risk management guidance document and risk reduction plan. In September 2000, CARB adopted the Diesel Risk Reduction Plan, which recommends control measures to reduce the risks associated with diesel PM and achieve a goal of 75 percent diesel PM reduction by 2010 and 85 percent by 2020. Specific statewide regulations designed to further reduce diesel PM emissions from diesel-fueled engines and vehicles are continuing to be evaluated and developed. The goal of these regulations is to make diesel engines as clean as possible by establishing state-of-the-art technology requirements or emission standards to reduce diesel PM emissions.

Airborne Toxic Control Measures

Under the California Health and Safety Code, Division 26 (Air Resources), CARB is authorized to adopt regulations to protect public health and the environment through the reduction of TACs and other air pollutants with adverse health effects. CARB has promulgated several mobile and stationary source airborne toxic control measures (ATCMs) pursuant to this authority. For instance, effective as of July 2003, CARB approved an ATCM that limits school bus idling and idling at or near schools to only when necessary for safety or operational concerns (13 California Code of Regulations [CCR] Chapter 10, Section 2480). This ATCM is intended to reduce diesel PM and other TACs and air pollutants from heavy-duty motor vehicle exhaust. It applies to school buses, transit buses, school activity buses, youth buses, general public paratransit vehicles, and other commercial motor vehicles. This ATCM focuses on reducing public exposure to diesel PM and other TACs, particularly for children riding in and playing near school buses and other commercial motor vehicles who are disproportionately exposed to pollutants from these sources. In addition, effective February 2005, CARB approved an ATCM to limit the idling of diesel-fueled commercial motor vehicles with gross vehicular weight ratings of greater than 10,000 pounds, regardless of the state or country in which the vehicle is registered (13 CCR Chapter 10, Section 2485).

Drayage Truck Regulation

CARB established the Drayage Truck Regulation as part of its ongoing efforts to reduce PM and NO_X emissions from diesel-fueled engines and improve air quality associated with goods movement. The purpose of this regulation is to reduce emissions and public exposure to diesel PM, NO_X, and other air contaminants by setting emission standards for in-use, heavy-duty diesel-fueled vehicles.

Starting January 1, 2023, drayage trucks will be subject to the provisions of 13 CCR Section 2025, the Regulation to Reduce Emissions of Diesel Particulate Matter, Oxides of Nitrogen and Other Criteria Pollutants from In-Use Heavy Duty Diesel-Fueled Vehicles, which requires that all not otherwise exempt in-use on-road diesel vehicles, including drayage trucks, have a 2010 model year emissions equivalent engine by January 1, 2023 (13 CCR Section 2027).

Proposition 1B: Goods Movement Emission Reduction Program

The $1 billion Proposition 1B Goods Movement Emission Reduction Program is a partnership between CARB and local agencies, air districts, and seaports to quickly reduce air pollution emissions and health risk from freight movement along California's trade corridors. Local agencies apply to CARB for funding. Then those agencies offer financial incentives to owners of equipment used in freight movement to upgrade to cleaner technologies. Projects funded under this program must achieve early or extra emission reductions not otherwise required by law or regulation.

b. Regional Laws, Regulations, and Policies

San Joaquin Valley Air Pollution Control District

Air Quality Management Plans

The Federal Clean Air Act Amendments of 1990 set a schedule for the attainment of the NAAQS. States are required to prepare a State Implementation Plan (SIP) to develop strategies to bring about attainment of the standards. In addition, the California Clean Air Act of 1988 requires areas that exceed the California ambient air quality standards to plan for the eventual attainment of the CAAQS. SJVAPCD monitors and regulates local air quality in the SJVAB and implements Air Quality Management Plans (AQMPs). Since 1992, SJVAPCD has adopted numerous attainment plans to reduce ozone and particulate emissions.

The 2016 Ozone Plan is the most recent ozone attainment plan adopted by SJVAPCD. Implementation of each of the plans has contributed to the adoption of over 600 rules and amendments aimed at reducing air pollution concentrations. These measures have substantially reduced ozone precursor pollutants, which include NO_X and ROG. SJVAPCD is mandated under federal Clean Air Act requirements to develop a new attainment plan for the revised ozone standard by 2022, which is currently in progress. Ozone precursor emissions in the SJVAB are at historically low levels, with an approximately 80 percent reduction in NO_X stationary sources emissions since 1990 (SJVAPCD 2016).

The 2018 Plan for the 1997, 2006, and 2012 $PM_{2.5}$ Standards is the most recent attainment plan for particulate matter adopted by SJVAPCD (SJVAPCD 2018b). On August 19, 2021, the SJVAPCD's Governing Board approved the *Attainment Plan Revision for the 1997 Annual $PM_{2.5}$ Standard* to establish a new attainment target for the 1997 annual $PM_{2.5}$ standard. The Valley would have met this standard by the projected attainment target of 2020, but for the significant wildfire impacts and data collection issues at the air monitoring site in Bakersfield (operated by CARB). Based on implementation of the control strategy in the 2018 $PM_{2.5}$ Plan, it is estimated that the SJVAB will attain the 1997 annual $PM_{2.5}$ standard by 2023 (SJVAPCD 2021b).

Rules and Regulations

SJVAPCD has adopted numerous rules and regulations directed at improving regional air quality. The following SJVAPCD rules would be applicable to individual projects:

- **Rule 4102 Nuisance:** A person shall not discharge from any source whatsoever such quantities of air contaminants or other materials which cause injury, detriment, nuisance or annoyance to any considerable number of persons or to the public or which endanger the comfort, repose, health or safety of any such person or the public or which cause or have a natural tendency to cause injury or damage to business or property.

- **Rule 8021 Earthmoving Activities:** Requires construction, demolition, excavation, extraction, and other earthmoving activities to include implementation of measures designed to limit fugitive dust emissions.
- **Rule 8041 Carryout and Trackout:** Requires owners and operators to sufficiently prevent or cleanup carryout and trackout as described in SJVAPCD Regulation VIII. The use of blower devices, or dry rotary brushes or brooms, for removal of carryout and trackout on public roads is expressly prohibited. The removal of carryout and trackout from paved public roads does not exempt an owner/operator from obtaining state or local agency permits which may be required for the cleanup of mud and dirt on paved public roads.
- **Rule 8061 Paved and Unpaved Roads:** Requires implementation of control measures and design criteria to limit fugitive dust emissions from any new or existing public or private paved or unpaved road, road construction project, or road modification project.
- **Rule 9510 Indirect Source Review (ISR):** Requires new developments expected to create a substantial amount of air pollution to incorporate on-site mitigation or emission reducing designs and practices into the project.

e. Local Laws, Regulations, and Policies

City and county general plans within the StanCOG region contain policies to protect air quality. Listed below are the policies from the County of Stanislaus and cities in the StanCOG region applicable to air quality. Cities in the region have generally similar policies, and examples are provided in more detail below.

County of Stanislaus

The County of Stanislaus has established several goals related to air quality in the 2015 Stanislaus County General Plan Circulation and Conservation/Open Space Elements (Stanislaus County 2015). Applicable goals related to air quality are as follows:

- **Circulation Element Goal 1:** Provide and maintain a transportation system throughout the County for the movement of people and goods that also meets land use and safety needs for all modes of transportation.
- **Circulation Element Goal 2:** Maintain a safe, balanced, and efficient transportation system that facilitates inter-city and interregional travel and goods movement.
- **Conservation/Open Space Element Goal 6:** Improve air quality.
- **Conservation/Open Space Element Goal 11:** Conserve resources through promotion of waste reduction, reuse, recycling, composting, ride-share programs and alternative energy sources such as mini-hydroelectric plants and transformational facilities such as waste-to-energy plants.

Cities within the StanCOG region contain similar policies related to air quality in their General Plans. For example, the Transportation Element of the Modesto General Plan (2019) contains the following policies:

- **Policy V.A.1:** Identify gaps in the pedestrian and bicycle transportation systems and plan facilities to close those gaps.
- **Policy V.A.3:** Prepare and maintain a citywide transportation improvement program for all modes of travel, considering the development context when selecting capital improvements.

- **Policy V.B.1:** Design roadways and roadway connections to: provide a grid street system featuring short blocks and frequent connections to collectors and arterials to improve connectivity and accessibility for all modes; increase route choice; better accommodate public transit services; and reduce trip lengths, traffic congestion, and pollution.

Similarly, the City of Turlock includes policies relating to air quality in the Air Quality and Greenhouse Gases Element of its General Plan (2012). Some of the policies include:

- **Policy 8.1-d Transportation and Residential Density:** Designate residential land uses to be higher density than in the past in order to meet population demand and reduce total vehicle miles travelled
- **Policy 8.1-e Establish Land Use Pattern That Supports Trip Reduction:** Establish land use pattern that enables alternatives to automobile use and reduces trip lengths, including transit oriented, mixed use development and neighborhood commercial areas.

The City of Ceres General Plan Agriculture and Natural Resources Element (2014) also contains policies that pertain to air quality, including the following:

- **Policy 4.G.1** Cooperate with the SJVAPCD and other agencies in the SJVAB to meet regional air quality goals and achieve a consistent and effective approach to regional air quality planning and management. Coordinate with other jurisdictions and other regional agencies in the San Joaquin Valley to establish parallel air quality programs and implementation measures.
- **Policy 4.G.2** Support the SJVAPCD in its development of improved ambient air quality monitoring capabilities and the establishment of standards, thresholds, and rules to adequately address the air quality impacts of new development.
- **Policy 4.G.3** Require major new development projects to submit an air quality analysis for review and approval, with mitigation measures to be required as determined by the City.
- **Policy 4.G.5** Emphasize transit-oriented, walkable, compact development patterns to reduce total vehicle miles traveled.
- **Policy 4.G.6** Avoid the siting of sensitive receptors within 500 feet of SR 99 to protect sensitive receptors from toxic air emissions from highway traffic. For those projects permitted within 500 feet from the highway, require site-specific project design improvements to reduce public health risks associated with poor air quality in these locations.
- **Policy 4.G.14** Require mitigation measures as a condition of obtaining permits to minimize dust and air emissions impacts from construction. Require contractors to implement dust suppression measures during excavation, grading, and site preparation activities.

Other cities within the StanCOG region include Hughson, Newman, Oakdale, Patterson, Riverbank, and Waterford. The General Plans of these cities include goals and policies pertaining to air quality that are similar to those outlined above.

4.3.3 Impact Analysis

a. Methodology and Significance Thresholds

This analysis uses the guidance and methodologies recommended in the SJVAPCD's 2015 *Guide for Assessing and Mitigating Air Quality Impacts* (GAMAQI) to determine whether the 2022 RTP/SCS impacts exceed the thresholds identified in CEQA Guidelines Appendix G.

Significance Thresholds

Based on Appendix G of the CEQA Guidelines, the 2022 RTP/SCS would have a significant impact on air quality if it would:

1. Conflict with or obstruct the implementation of the applicable air quality plan
2. Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under an applicable federal or state ambient air quality standard
3. Expose sensitive receptors to substantial pollutant concentrations
4. Result in other emissions (such as those leading to odors adversely affecting a substantial number of people)

The GAMAQI does not provide guidance applicable to a program of projects. However, the SJVAPCD's GAMAQI includes significance criteria for evaluating construction and operational emissions associated with individual projects. SJVAPCD recommends the use of quantitative thresholds to determine if a project would significantly contribute to a nonattainment designation based on the emissions generated. These thresholds are shown in Table 4.3-5. SJVAPCD Rule 9510, Indirect Source Review, and Regulation VIII, Fugitive PM_{10} Prohibitions, would apply to individual projects under the 2022 RTP/SCS as appropriate.

Table 4.3-5 SJVAPCD Air Quality Significance Thresholds

Pollutant	NO_X	ROG	PM_{10}	$PM_{2.5}$	SO_X	CO
Construction and Operation Thresholds (Tons Per Year)	10	10	15	15	27	100

NO_X = nitrogen oxides; ROG = reactive organic gases; PM_{10} = particulate matter with a diameter of 10 microns or less; $PM_{1.5}$ = particulate Matter with a diameter of 2.5 microns or less

Source: SJVAPCD 2015a

In addition to the annual thresholds outlined above, SJVAPCD has published the *Ambient Air Quality Analysis Project Daily Emissions Assessment* guidance, which is summarized in Section 8.4.2, *Ambient Air Quality Screening Tools*, of the SJVAPCD's GAMAQI (2015). The *Ambient Air Quality Screening Tools* guidance provides a screening threshold of 100 pounds per day for NO_X, ROG, PM_{10}, $PM_{2.5}$, SO_X, and CO. SJVAPCD recommends that an ambient air quality analysis be performed for all criteria pollutants when emissions of any criteria pollutant resulting from project operational activities exceed the 100 pounds-per-day screening level, after compliance with Rule 9510 requirements and implementation of all enforceable mitigation measures.

Short-Term Emissions Methodology

Emissions from construction activities represent temporary impacts that are typically short in duration, depending on the size, phasing and type of project. Air quality impacts can nevertheless be acute during construction periods, resulting in significant localized impacts to air quality. Construction-related emissions are speculative at the RTP/SCS level because such emissions are dependent on the characteristics of individual development projects. However, because construction of projects under the 2022 RTP/SCS would generate temporary criteria pollutant emissions, primarily due to the operation of construction equipment and truck trips, a qualitative analysis is provided.

Long-Term Emissions Methodology

The methodology for determining the significance of air quality impacts compares baseline conditions in 2022 to the future 2046 conditions, as required in CEQA Guidelines Section 15126.2(a). State and federal clean air laws require that emissions of pollutants for which NAAQS or CAAQS are violated be reduced from current levels. Therefore, the project's long-term impacts to air quality would be considered significant if the 2022 RTP/SCS would result in mobile source emissions that exceed existing levels. In this case, the pollutants of concern are ozone precursors (NO_x and ROG) and fine particulate matter as these are the primary pollutants associated with vehicle transportation.

Projected air emissions from mobile sources were calculated using the EMFAC2021 model with data for vehicle miles traveled (VMT) from the RTP/SCS transportation analysis completed by StanCOG. For the purposes of this analysis, Induced Demand VMT is included in the total VMT used for modeling. Induced demand is demand that has been realized by improvements made to transportation infrastructure. For example, a road-widening project may generate increased traffic because the roadway is perceived by drivers to be a more viable travel route (see Appendix A for detailed calculations). Projected vehicle emissions for the year 2046 under the 2022 RTP/SCS were compared to 2022 existing conditions.

Health Impacts

Short-term and long-term exposure to criteria pollutants and TACs may result in adverse health effects, based on the information presented in Section 4.3.1(c), *Air Pollutants of Primary Concern*. As discussed in that section, these effects may include: aggravated asthma, increases in respiratory symptoms like coughing and difficult or painful breathing, chronic bronchitis, decreased lung function, increased cancer risk, heart attack, and premature death.

The NAAQS and CAAQS are health-based standards. Therefore, in this impact analysis, if the proposed 2022 RTP/SCS would result in cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under an applicable federal or State ambient air quality standard, it would also contribute to these adverse health effects.

The SJVAPCD has determined thresholds of significance for TAC emissions from the operation of both permitted and non-permitted sources. The significance threshold for long-term public health risk is set at 20 excess cancer cases in a million for cancer risk. For non-cancer risk (i.e., chronic or acute risk), the significance threshold is set at a hazard index of greater than 1.0. The health impacts of TACs are discussed separately under Impact AQ-4.

b. Project Impacts and Mitigation Measures

This section discusses impacts and mitigation measures associated with transportation projects and the land use scenario contained within the 2022 RTP/SCS. Specific projects may generate air quality impacts during construction and operation. Section 4.3.3(c) summarizes the impacts associated with transportation projects in the 2022 RTP/SCS. Due to the programmatic nature of the 2022 RTP/SCS, a precise, project-level analysis of the specific impacts associated with individual transportation and land use projects is not possible at this time. In general, however, implementation of proposed transportation improvement projects and future projects under the land use scenario envisioned by the 2022 RTP/SCS could result in the impacts as described in the following sections.

Threshold 1: Conflict with or obstruct implementation of the applicable air quality plan.

IMPACT AQ-1 THE PROPOSED 2022 RTP/SCS WOULD CONFLICT WITH SJVAPCD'S 2018 $PM_{2.5}$ PLAN. IMPACTS WOULD BE SIGNIFICANT AND UNAVOIDABLE.

To accommodate future growth in the region while reducing emissions, the strategy of the 2022 RTP/SCS is to develop an efficient circulation network with multi-modal transportation in addition to promoting congestion management; coordinating land use, housing, and transportation systems; and providing incentives that reduce vehicle miles traveled. Implementation of these strategies would result in incremental VMT reductions, but overall VMT would remain higher than baseline (2022) conditions. VMT reductions from RTP/SCS strategies would generally reduce regional criteria air pollutant emissions and TAC emissions from mobile sources; however, the extent to which emissions are reduced by such strategies cannot be feasibly quantified at this time.

As shown in Table 4.3-6 under Impact AQ-3, the policies and land use patterns facilitated by the 2022 RTP/SCS are projected to reduce emissions of ozone precursors below 2022 baseline levels; however, $PM_{2.5}$ emissions are projected to increase. Although VMT would increase under the 2022 RTP/SCS as compared to baseline levels, emissions of ozone precursor and $PM_{2.5}$ exhaust emissions would decrease due to increasingly fuel-efficient vehicles, improving emissions control technology, and an increased share of electric vehicle adoption. In addition, proposed transportation improvements and land use projects envisioned by the 2022 RTP/SCS, among other strategies, would improve alternative transportation options and circulation. The reduction in ozone precursor emissions is consistent with the goals and policies of SJVAPCD's 2016 Ozone Plan. Nevertheless, overall $PM_{2.5}$ emissions would increase as compared to baseline conditions because increased VMT would increase tire wear and brake wear $PM_{2.5}$ emissions such that the decrease in exhaust $PM_{2.5}$ emissions would not be sufficient to offset the increased tire wear and brake wear emissions (for detailed assumptions and calculations, refer to Appendix A). Consistency with the 2018 $PM_{2.5}$ Plan is contingent upon demonstrating a net decrease in $PM_{2.5}$ emissions. Therefore, the increase in overall $PM_{2.5}$ emissions would be inconsistent with the 2018 $PM_{2.5}$ Plan. Therefore, implementation of 2022 RTP/SCS would conflict with implementation of the AQMP, and this impact would be significant.

Mitigation Measures

Implementation of Mitigation Measures T-2(a) and T-2(b) as described under Section 4.15, *Transportation,* would be required.

Significance After Mitigation

If implementing agencies adopt and require Mitigation Measures T-2(a) and T-2(b), impacts would be reduced because less VMT would be added to the StanCOG region, and a reduction in vehicle trip lengths would reduce emissions from tire wear, break ware, and roadway dust. However, it is unlikely that implementation of these measures would result in a decrease in daily PM emissions to below baseline conditions by 2046. This is due to factors unrelated to discretionary approvals, such as population growth in the region. No additional feasible mitigation measures are available that would reduce daily emissions below the 2022 baseline and demonstrate consistency with the 2018 $PM_{2.5}$ Plan. Therefore, this impact would remain significant and unavoidable.

Threshold 2:	Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or State ambient air quality standard (construction).

Impact AQ-2 CONSTRUCTION ACTIVITIES ASSOCIATED WITH TRANSPORTATION IMPROVEMENTS AND LAND USE PROJECTS ENVISIONED BY THE 2022 RTP/SCS WOULD RESULT IN A CUMULATIVELY CONSIDERABLE NET INCREASE IN CRITERIA POLLUTANTS FOR WHICH THE PROJECT REGION IS IN NON-ATTAINMENT UNDER AN APPLICABLE FEDERAL OR STATE AMBIENT AIR QUALITY STANDARD. THIS IMPACT WOULD BE SIGNIFICANT AND UNAVOIDABLE.

There are three primary sources of short-term emissions that would be generated by construction of future transportation projects under 2022 RTP/SCS. These sources include:

- Operation of construction vehicles (i.e., scrapers, loaders, dump trucks);
- The creation of fugitive dust during clearing and grading; and
- The use of asphalt or other oil- based substances during the final construction phases, which also generate nuisance odors.

The significance of daily emissions, particularly ROG and NO_X emissions, generated by construction equipment utilized to build RTP/SCS transportation improvements would depend on the quantity of equipment used and the hours of operation. The significance of fugitive dust ($PM_{2.5}$ and PM_{10}) emissions would depend upon the following factors:

- The areal extent of disturbed soils;
- The length of disturbance time;
- Whether existing structures are demolished;
- Whether excavation is involved (including the potential removal of underground storage tanks); and
- Whether transport of excavated materials offsite is necessary.

Intersection improvements, such as signalization or signal coordination, are small-scale projects and are not expected to generate significant short-term emissions. However, other RTP/SCS projects as well as future development facilitated by the SCS land use scenario may involve grading and paving, or the construction of permanent facilities. For example, substantial grading and paving would be required for roadway widening, interchange construction, and other large improvements on State Routes and regional roadways (see Appendix K of the proposed 2022 RTP/SCS). The precise quantity of emissions would need to be determined at the time of proposed construction of a given transportation improvement or development project. When project-specific CEQA documents are prepared, these emissions would be compared to SJVAPCD's construction thresholds, as listed in Section 4.3.3(a), *Methodology and Significance Thresholds*. Although any individual transportation improvement or development project may not generate significant short-term emissions, it is probable that several projects would be under construction simultaneously, generating cumulative construction emissions that could impact air quality.

SJVAPCD construction emissions thresholds listed in Section 4.3.3(a) would be used to determine whether construction impacts of individual projects are significant. In addition, construction equipment would be subject to the rules and regulations adopted by the U.S. EPA and CARB to reduce criteria pollutant and hazardous emissions limits from on-road vehicles and off-road equipment. For example, CARB has promulgated the In-Use Off-Road Diesel-Fueled Fleets

Regulation to reduce particulate matter and NO_X from off-road heavy-duty diesel vehicles from various industries including air travel, manufacturing, and landscaping. In addition, U.S. EPA and CARB both have ignition diesel engine standards for non-road portable equipment, such as diesel generators and air compressors, which require the non-road equipment engines to be rated a cleaner tier by specific years, which will result in reduced emissions (CARB 2021c, U.S. EPA 2016).

Even though these regulations exist, it cannot be assumed that projects under the 2022 RTP/SCS would be constructed using the latest and lowest-emitting construction equipment. Therefore, short-term impacts would be significant because construction emissions could exceed SJVAPCD significance thresholds and result in a cumulatively considerable net increase of a criteria pollutant or pollutants for which the StanCOG region is non-attainment. Implementation of mitigation measures for individual projects would reduce PM and ozone precursor emissions. Mitigation Measures AQ-2(a) through AQ-2(c) would reduce the impact. However, this impact would remain significant and unavoidable.

Mitigation Measures

For transportation projects under their jurisdiction, StanCOG shall implement, and transportation project sponsor agencies can and should implement, the following mitigation measures developed for the 2022 RTP/SCS program, where applicable for transportation projects that result in fugitive dust and ozone precursor emissions. The County of Stanislaus and cities in the StanCOG region can and should implement these measures, where relevant to land use projects implementing the 2022 RTP/SCS. Project-specific environmental documents may adjust these mitigation measures as necessary to respond to site-specific conditions.

AQ-2(a) Application of SJVAPCD Feasible Mitigation Measures

For all projects, the implementing agency shall incorporate the most recent SJVAPCD feasible mitigation measures and/or technologies for reducing inhalable particles based on analysis of individual sites and project circumstances. Additional and/or modified measures may be adopted by the SJVAPCD prior to implementation of individual projects under the 2022 RTP/SCS; therefore, the most current list of feasible mitigation measures at the time of project implementation shall be used. The current SJVAPCD feasible mitigation measures include the following (SJVAPCD 2015b):

- All disturbed areas, including storage piles, which are not being actively utilized for construction purposes, shall be effectively stabilized of dust emissions using water, chemical stabilizer/suppressant, and/or covered with a tarp or other suitable cover or vegetative ground cover.
- All land clearing, grubbing, scraping, excavation, land leveling, grading, cut and fill, and demolition activities shall be effectively controlled of fugitive dust emissions utilizing application of water or by presoaking.
- When materials are transported off-site, all material shall be covered, or effectively wetted to limit visible dust emissions, and at least six inches of freeboard space from the top of the container shall be maintained.
- Following the addition of materials to, or the removal of materials from, the surface of outdoor storage piles, said piles shall be effectively stabilized of fugitive dust emissions utilizing sufficient water or chemical stabilizer/suppressant.

- An owner/operator of any site with 150 or more vehicle trips per day, or 20 or more vehicle trips per day by vehicles with three or more axles shall implement measures to prevent carryout and trackout.
- The hours of operation of heavy duty equipment and/or the amount of equipment in use shall be limited to the minimum amount necessary to complete the project.

AQ-2(b) Diesel Equipment Emissions Standards

The implementing agency shall ensure, to the maximum extent feasible, that diesel construction equipment meeting CARB Tier 4 emission standards for off-road heavy-duty diesel engines is used. If use of Tier 4 equipment is not feasible, diesel construction equipment meeting Tier 3 (or if infeasible, Tier 2) emission standards shall be used. These measures shall be noted on all construction plans, and the implementing agency shall perform periodic site inspections.

AQ-2(c) Electric Construction Equipment

The implementing agency shall ensure that, to the extent feasible, construction equipment utilizes electricity from power poles rather than temporary diesel power generators and/or gasoline power generators.

IMPLEMENTING AGENCIES AND TIMING

Implementing agencies for transportation projects are StanCOG and transportation project sponsor agencies. Implementing agencies for land use projects are cities and the County. These mitigation measures shall, or can and should, be applied during permitting and environmental review and implemented during construction where appropriate.

Significance After Mitigation

Implementation of Mitigation Measures AQ-2(a) through AQ-2(c) would reduce short-term construction emissions from individual projects and thus reduce the severity of impacts by requiring best practices for dust and exhaust emissions via readily available, lower-emitting diesel equipment, and/or equipment powered by alternative cleaner fuels (e.g., propane) or electricity, as well as on-road trucks using particulate exhaust filters. To the extent that an implementing agency requires an individual project to implement all feasible mitigation measures described above, individual project impacts may be reduced to a less than significant level. Implementation of Mitigation Measure GHG-1 would also reduce construction emissions from the proposed 2022 RTP/SCS. However, these mitigation measure may not be feasible or effective for all projects. Therefore, this impact would remain significant and unavoidable. No additional mitigation measures to reduce this impact to less than significant levels are feasible at the programmatic level.

Threshold 2:	Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or State ambient air quality standard (Operation).

Impact AQ-3 OPERATION OF THE PROPOSED TRANSPORTATION IMPROVEMENTS AND LAND USE PROJECTS ENVISIONED BY THE 2022 RTP/SCS WOULD RESULT IN A CUMULATIVELY CONSIDERABLE NET INCREASE OF $PM_{2.5}$. IMPACTS WOULD BE SIGNIFICANT AND UNAVOIDABLE.

Transportation Emissions

Projected on-road vehicle emissions on the StanCOG transportation network for year 2046 under 2022 RTP/SCS conditions were compared to existing (2022) conditions. Table 4.3-6 shows the results of the long-term emissions analysis based on existing and projected annual VMT for the StanCOG region.

Table 4.3-6 Regional Air Pollutant Emissions – StanCOG Region

Scenario	VMT	ROG (tons/day)	NO_X (tons/day)	$PM_{2.5}$ (tons/day)[1]	PM_{10} (tons/day)[1]
2022 Baseline	11,459,828	2.626	5.228	0.170	0.412
2046 with 2022 RTP/SCS	14,922,100	1.288	2.918	0.174	0.477
Net Change from 2022 Baseline	**3,462,272**	**(1.338)**	**(2.310)**	**0.004**	**0.065**

( ) denotes a negative number

[1] $PM_{2.5}$ and PM_{10} includes tire wear and brake wear emissions

Notes: The on-road mobile source criteria pollutant emissions estimates for 2022 RTP/SCS were calculated using CARB's EMFAC2021 emission inventory model. VMT data was provided by StanCOG.

Source: See Appendix A for EMFAC2021 modeling results

As previously noted, Stanislaus County is currently in nonattainment for federal and State $PM_{2.5}$ and ozone standards and State PM_{10} standards. As shown in Table 4.3-6, emissions of ROG and NO_X under the 2022 RTP/SCS would decrease as compared to the 2022 baseline. However, total PM_{10} and $PM_{2.5}$ emissions from on-road mobile sources would increase compared to the 2022 baseline.

The decrease in ROG and NO_X emissions is consistent with the statewide downward trend for these pollutants as a result of CARB rules designed to reduce emissions from cars and trucks. NO_X emissions are primarily generated by trucks and are expected to decrease over time due in part to the impact of CARB rules designed to reduce NO_X emissions from diesel trucks and buses. ROG emissions are primarily due to gasoline vehicles and are lower due to improvements in vehicle emission rates. Additionally, the transportation improvements and future land use scenario envisioned by the 2022 RTP/SCS, which encourages improved circulation and efficiency, are intended to increase residential and commercial land use capacity within existing transit corridors, shifting a greater share of future growth to these corridors and ultimately increasing density, improving circulation and multi-modal connections, and leading to lower per capita VMT, which would have a beneficial effect on air quality.

However, total PM_{10} and $PM_{2.5}$ emissions from on-road mobile sources would increase by approximately 0.065 ton per day and 0.004 ton per day, respectively, compared to the 2022 baseline. This represents an approximately 15.8 percent increase in PM_{10} emissions and an approximately 2.4 percent increase in $PM_{2.5}$ emissions (see Appendix A). The increase can be attributed to an increase in tire and brake wear emissions (i.e., fugitive emissions). There are no

statewide regulations to reduce PM_{10} and $PM_{2.5}$ emissions from tire and brake wear, but CARB is conducting research to better characterize and reduce these emissions (CARB 2021d). Given this increase in PM_{10} and $PM_{2.5}$ emissions, long-term operational impacts would be significant because they would result in a cumulatively considerable net increase in a criteria pollutant for which the project region is non-attainment.

The 2022 RTP/SCS includes several policies that would contribute to a reduction of air pollutants. Below is a summary of the 2022 RTP/SCS goals and policies that promote improvements to air quality:

- **Goal 1:** Improve the ability of people and goods to move between desired locations, and provide a variety of transportation choices.
- **Goal 3:** Provide a mix of land uses and compact development patterns and direct development towards existing infrastructure.
- **Goal 5:** Consider the environmental impacts when making transportation investments, and minimize direct and indirect impacts on clean air and natural resources.
- **Goal 6:** Improve the health of residents by improving air quality and providing more transportation options.
- **Goal 7:** Maintain the transportation system in a state of good repair, and protect the region's transportation investments by maximizing usefulness of existing facilities.

The criteria air pollutant emissions shown in Table 4.3-6 are modeled emissions based on VMT. The results do not account for some of the proposed VMT reduction strategies, such as a transportation demand management plan, telecommuting, and transit service enhancements, because these strategies are off-model reductions that cannot be included in EMFAC. However, mobile PM_{10} and $PM_{2.5}$ emissions from the proposed 2022 RTP/SCS are conservatively assumed to increase because emissions reductions from the inclusion of these VMT reduction strategies are excluded from this analysis. Implementation of Mitigation Measure AQ-1, as discussed under Impact AQ-1, would reduce particulate matter emissions to the extent feasible. However, long-term operational impacts would be significant and unavoidable.

Other Land Use Emissions

In addition to the transportation-related air pollutant emissions shown in Table 4.3-6, land use projects envisioned by the land use scenario in the proposed 2022 RTP/SCS would also result in criteria air pollutant emissions due to sources such as architectural coatings, consumer products, fireplaces, landscaping equipment, and natural gas usage. Over the planning period, per capita emissions associated with consumer products, architectural coatings, fireplaces, landscaping equipment, and natural gas consumption are anticipated to decline, primarily as a result of increasingly stringent CARB and SJVAPCD rules and regulations. In addition, the proposed 2022 RTP/SCS would reduce per capita transportation related air pollutant emissions associated with future land use development, which would contribute to an overall reduction in per capita air pollutant emissions associated with future (2046) land use development as compared to 2022 baseline conditions. Nevertheless, the proposed land use scenario would most likely increase countywide ROG, PM_{10}, and $PM_{2.5}$ emissions based on growth forecasts, which would increase the likelihood that Stanislaus County continues to exceed the federal and State $PM_{2.5}$ and ozone standards and State PM_{10} standards for which Stanislaus County is currently in non-attainment. Also, individual land use projects could exceed the SJVAPCD operational significance thresholds as listed in Section 4.3.3(a), *Methodology and Significance Thresholds* under Threshold 2(b). Therefore,

because the operational emissions generated by the proposed 2022 RTP/SCS land use scenario would contribute to existing non-attainment conditions in the SJVAB, impacts would be significant. Mitigation Measure AQ-3 would reduce this impact to the extent feasible.

Mitigation Measures

For land use projects under their jurisdiction, the cities and County in the StanCOG region can and should implement Mitigation Measure AQ-3 to reduce ozone, $PM_{2.5}$, PM_{10} emissions, where relevant to land use projects implementing the proposed 2022 RTP/SCS. Project-specific environmental documents may adjust these mitigation measures as necessary to respond to site-specific conditions.

AQ-3 Long-term Regional Operational Emissions

Implementing agencies can and should implement long-term operational emissions reduction measures. Such reduction measures include the following:

- Require that all interior and exterior architectural coatings for all developments utilize coatings following SJVAPCD Rule 4601, *Architectural Coatings*.
- Increase building envelope energy efficiency standards in excess of applicable building standards and encourage new development to achieve zero net energy use.
- Install energy-efficient appliances, interior lighting, and building mechanical systems. Encourage installation of solar panels for new residential and commercial development.
- Locate sensitive receptors more than 500 feet of a freeway, 500 feet of urban roads with 100,000 vehicles/day, or rural roads with 50,000 vehicles/day.
- Locate sensitive receptors more than 1,000 feet of a major diesel rail service or railyards. Where adequate buffer cannot be implemented, implement the following:
  - Install air filtration (as part of mechanical ventilation systems or stand-alone air cleaners) to indoor reduce pollution exposure for residents and other sensitive populations in buildings that are close to transportation network improvement projects.
  - Use air filtration devices rated MERV-13 or higher.
- Plant trees and/or vegetation suited to trapping roadway air pollution and/or sound walls between sensitive receptors and the pollution source. The vegetation buffer should be thick, with full coverage from the ground to the top of the canopy Install higher efficacy public street and exterior lighting.
- Use daylight as an integral part of lighting systems in buildings.
- Use passive solar designs to take advantage of solar heating and natural cooling.
- Install light colored “cool” roofs, cool pavements.
- Install solar and tankless hot water heaters.
- Exclude wood-burning fireplaces and stoves.
- Incorporate design measures and infrastructure that promotes safe and efficient use of alternative modes of transportation (e.g., neighborhood electric vehicles, bicycles) pedestrian access, and public transportation use. Such measures may include incorporation of electric vehicle charging stations, bike lanes, bicycle-friendly intersections, and bicycle parking and storage facilities.

- Incorporate design measures that promote ride sharing programs (e.g., by designating a certain percentage of parking spaces for ride sharing vehicles, designating adequate passenger loading and unloading and waiting areas for ride sharing vehicles, and providing a web site or message board for coordinating rides).

IMPLEMENTING AGENCIES AND TIMING

Implementing agencies for land use projects are cities and the County. This mitigation measure shall, or can and should, be applied during permitting and environmental review and implemented during operation where appropriate.

Significance After Mitigation

If implementing agencies adopt and require the mitigation described above, emission impacts would be reduced because said measures encourage the use of cleaner vehicles and reduce vehicle trips. Implementation of Mitigation Measures GHG-4(a) and GHG-4(b) would also reduce operational emissions from the proposed 2022 RTP/SCS. However, since the implementation is not project- or site-specific, reductions cannot be estimated and cannot be guaranteed on a project-by-project basis. Therefore, this impact would remain significant and unavoidable. No additional feasible mitigation measures are available that would reduce emissions such that emissions would not contribute to existing nonattainment conditions in the SJVAB.

Threshold 3: Expose sensitive receptors to substantial pollutant concentrations.

Impact AQ-4 THE PROPOSED TRANSPORTATION IMPROVEMENTS AND LAND USE PROJECTS ENVISIONED BY THE 2022 RTP/SCS WOULD EXPOSE SENSITIVE RECEPTORS TO SUBSTANTIAL PARTICULATE MATTER POLLUTANT CONCENTRATIONS. IMPACTS WOULD BE SIGNIFICANT AND UNAVOIDABLE.

Re-entrained dust refers to roadway dust that is “kicked up” by moving vehicles on paved and unpaved roadways. This type of dust would be generated by roadway activity under the proposed 2022 RTP/SCS. In addition, dust from construction activity, albeit temporary, would add to regional dust levels. The synergistic effects of road dust (typically measured as PM_{10}) with ozone and the hazardous constituents of re-entrained road dust itself (carcinogens, irritants, pathogens) may affect human heath by contributing to respiratory illnesses such as asthma and allergies. Although motor vehicle emission control advances have allowed vehicle tailpipe emissions of some pollutants to decrease over the last 20 years, the number of vehicles in use and the amount of vehicle activity has continued to increase. This would suggest that re-entrained road dust has increased as well, as the amount of re-entrained dust is related to the number of vehicles on a road.

Table 4.3-7 compares total particulate emissions for existing (2022) conditions and future 2046 conditions with implementation of the 2022 RTP/SCS.

Table 4.3-7 On-Road Mobile Source Particulate Matter Comparison

Scenario	PM_{10} Emissions (tons/day)	$PM_{2.5}$ Emissions (tons/day)
2022 Baseline	0.412	0.170
2046 with Proposed 2022 RTP/SCS	0.477	0.174
Net Change from 2022 Baseline	**0.065**	**0.004**

( ) denotes a negative number.
Source: Appendix A.

As shown in Table 4.3-7, total particulate emissions would increase with implementation of the 2022 RTP/SCS as compared to existing conditions. Despite emission control advances, particulate matter emissions would be higher within the StanCOG region due to the projected increase in VMT. Implementation of Mitigation Measures T-2(a) and T-2(b) (outlined in Section 4.15, *Transportation*) would reduce mobile source PM emissions by requiring implementation of VMT reducing initiatives. Such mitigation would reduce PM emissions from brake and tire wear because VMT would be reduced. However, it cannot be determined whether such measures would be sufficient to prevent exposure of sensitive receptors to substantial concentrations of $PM_{2.5}$ and PM_{10}. Therefore, the 2022 RTP/SCS would expose sensitive receptors to substantial pollutant concentrations associated with re-entrained road dust, and impacts would be potentially significant.

Mitigation Measures

Implementation of Mitigation Measures T-2(a) and T-2(b) as described under Impact AQ-1 would be required.

Significance After Mitigation

As stated under Impact AQ-1, it is unlikely that implementation of the above mitigation measures would result in a decrease in daily PM emissions to below baseline conditions by 2046. This is due to factors unrelated to discretionary approvals, such as population growth in the region. Therefore, this impact would remain significant and unavoidable. No additional feasible mitigation measures are available that would reduce daily emissions below the 2022 baseline.

Threshold 3: Expose sensitive receptors to substantial pollutant concentrations

Impact AQ-5 THE TRANSPORTATION IMPROVEMENTS AND LAND USE PROJECTS ENVISIONED BY THE PROPOSED 2022 RTP/SCS WOULD EXPOSE SENSITIVE RECEPTORS TO SUBSTANTIAL TAC CONCENTRATIONS. IMPACTS WOULD BE SIGNIFICANT AND UNAVOIDABLE.

As described in Section 4.3.1, *Setting*, TACs are air pollutants that pose a potential hazard to human health by causing or contributing to an increase in mortality or serious illness. Common sources of TAC include high traffic freeways and roads, gas dispensing facilities, industrial facilities, and diesel engines. DPM is classified as the primary airborne carcinogen in California. CARB reports that DPM represents about 70 percent of the potential cancer risk from vehicle travel on a typical urban freeway. To protect people from TACs and reduce exposure, CARB recommends avoiding siting new sensitive land uses, such as residences, schools, daycare centers, playgrounds, or medical facilities, within 500 feet of a freeway, urban roads with 100,000 vehicles/day, or rural roads with 50,000 vehicles/day (CARB 2005).

According to the SJVAPCD GAMAQI, sensitive receptors are defined as people that have an increased sensitivity to air pollution or environmental contaminants. Sensitive receptor locations include schools, parks and playgrounds, day care centers, nursing homes, hospitals, and residential dwelling unit(s). The location of sensitive receptors is needed to assess toxic impacts on public health.

Within the StanCOG region, the sensitive receptors residing close to freeways or busy roadways may experience adverse health effects beyond those typically found in urban areas. Because exposure to TACs is primarily based on local parameters (e.g., average daily traffic on local roadway segments and wind direction in relation to source and receptor), health risks adjacent to high volume roadways and transportation facilities would remain higher than regional averages.

As discussed above, the SJVAPCD significance threshold for long-term public health risk is set at 20 excess cancer cases in a million for cancer risk. For non-cancer risk (i.e., chronic or acute risk), the significance level is set at a hazard index of greater than 1.0. If a formal health risk assessment shows that a significant impact results, mitigation measures to reduce the predicted levels of toxic air pollutants from the facility to a less-than-significant level may be imposed by the lead agency.

To assess the impact of diesel emissions resulting from implementation of the proposed 2022 RTP/SCS, an analysis of on-road mobile source diesel $PM_{2.5}$ and PM_{10} emissions (primary) and diesel NO_X, SO_X, and CO (as surrogates for secondary PM_{10}) is shown in Table 4.3-8. This table compares existing (2022) conditions with 2046 conditions with implementation of the 2022 RTP/SCS. Projected emissions for 2046 with implementation of the 2022 RTP/SCS would result in reductions of diesel NO_X, diesel $PM_{2.5}$, and diesel PM_{10} emissions. Because on-road diesel emissions with implementation of the 2022 RTP/SCS would decrease compared to existing (2022) conditions, impacts related to diesel particulate matter exposure and associated health risks and nuisance odors at the regional level would be less than significant.

Table 4.3-8 On-Road Mobile Source Diesel Toxics Comparison

Scenario	Diesel $PM_{2.5}$ (tons/day)	Diesel PM_{10} (tons/day)	Diesel NO_X (tons/day)
2022 Baseline	0.04	0.04	3.43
2046 with the Proposed 2022 RTP/SCS	0.03	0.03	2.31
Net Change from 2022 Baseline	**(0.01)**	**(0.01)**	**(1.12)**

Diesel SO_X and diesel CO emissions would increase with implementation of the proposed RTP/SCS. However, overall SO_X and CO emissions from all on-road mobile sources would decrease (see Appendix A). Because diesel SO_X and diesel CO are subsets of overall SO_x and CO, and overall emissions of these pollutants would decrease, it can be determined that diesel SO_X and diesel CO would not contribute to sensitive receptor exposure to substantial concentrations of these pollutants. Therefore, impacts related to diesel SO_X and diesel CO are not of concern for this analysis.

Additionally, exposure to TACs is primarily based on local parameters such as average daily traffic (ADT) on local roadway segments, or wind direction in relation to source and receptor. As such, the health risks and nuisance odors adjacent to heavily trafficked roadways and transportation facilities (e.g., Interstate 5 and State Routes 99 and 132) would remain higher than regional averages.

The population residing close to freeways or busy roadways may experience adverse health effects beyond those typically found in urban areas. In the *Air Quality and Land Use Handbook: A Community Health Perspective* (2005), CARB recommends avoiding siting new sensitive land uses, such as residences, schools, daycare centers, playgrounds, or medical facilities, within 500 feet of a freeway, urban roads with more than 100,000 vehicles per day, or rural roads with more than 50,000 vehicles per day. Examples of high capacity urban or rural roadways in the StanCOG region include Interstate 5 and State Routes 33, 99, 108, 132, and 165. California freeway studies show about a 70 percent drop-off in particulate pollution levels at 500 feet (CARB 2005). As discussed above, proximity to freeways increases cancer risk and exposure to particulate matter. Similarly, proximity to heavily travelled transit corridors and intersections would expose residents to higher levels of DPM, NO_X, SO_X, and CO.

As discussed in Chapter 2, *Project Description*, as a result of 2022 RTP/SCS policies and the proposed land use scenario, the anticipated growth pattern would facilitate improved circulation and expanded roadway networks, which could result in more people being exposed to elevated health risks and nuisance odors as compared to areas of the region more distant from such activities. The location and pattern of the proposed 2022 RTP/SCS growth would influence travel behavior. An efficient and well-maintained circulation network facilitates a reduction in individual vehicle trips and associated congestion (refer to Section 4.15, *Transportation).* Reduced congestion and vehicle trips are directly linked to reduced regional criteria air pollutant emissions and toxic air emissions from mobile sources.

Other factors contribute to the decline in contaminant emissions compared to existing conditions, including vehicle technology, cleaner fuels and fleet turnover. However, to achieve the greatest VMT reductions from an efficient circulation network, development also must necessarily be in proximity to public transit and major roadway corridors. Although the precise location and density of such development is not known at this time, the 2022 RTP/SCS could result in new sensitive receptors sited close to existing and new TAC sources, potentially resulting in the exposure of sensitive receptors to substantial TAC concentrations and objectionable odors. Therefore, impacts related to TAC emissions would be potentially significant.

Mitigation Measures

Transportation project sponsor agencies can and should implement the following mitigation measures developed for the 2022 RTP/SCS where applicable for transportation projects. In addition, the County of Stanislaus and cities in the StanCOG region can and should implement these measures, where relevant to land use projects implementing the 2022 RTP/SCS. Project-specific environmental documents may adjust these mitigation measures as necessary to respond to site-specific conditions.

AQ-4 Health Risk Reduction Measures

Transportation project sponsor agencies shall implement the following measures:

- During project-specific design and CEQA review, the potential localized particulate (PM_{10} and $PM_{2.5}$) impacts and their health risks shall be evaluated for individual projects. Localized particulate matter concentrations shall be estimated using procedures and guidelines consistent with U.S. EPA 2015's *Transportation Conformity Guidance for Quantitative Hot-Spot Analyses in $PM_{2.5}$ and PM_{10} Nonattainment and Maintenance Areas*. If required based on the project-level hotspot analysis, project-specific mitigation shall be added to the project design concept or scope to ensure that local particulate (PM_{10} and $PM_{2.5}$) emissions would not reach a concentration at any location that would cause estimated cancer risk to exceed the SJVAPCD threshold of 20 in one million. Per the U.S. EPA guidance (2015), potential mitigation measures to be considered may include but shall not be limited to: providing a retrofit program for older higher emitting vehicles, anti-idling requirements or policies, controlling fugitive dust, routing traffic away from populated zones and replacing older buses with cleaner buses. These measures can and should be implemented to reduce localized particulate impacts as needed.
- Retain a qualified air quality consultant to prepare a health risk assessment (HRA) in accordance with CARB and OEHHA requirements to determine the exposure of nearby residents to TAC concentrations.

- If impacts result in increased risks to sensitive receptors above significance thresholds, plant trees and/or vegetation suited to trapping TACs and/or sound walls between sensitive receptors and the pollution source.

In addition, consistent with the general guidance contained in CARB's *Air Quality and Land Use Handbook* (2005) and Technical Advisory *on Strategies to Reduce Air Pollution Exposure Near High-Volume Roadways* (2017), appropriate and feasible measures shall be incorporated into project building design for land use projects including residential, school and other sensitive uses located within 500 feet (or other appropriate distance as determined by the lead agency) of freeways, heavily travelled arterials, railways and other sources of diesel particulate matter, including roadways experiencing significant vehicle delays. The appropriate measures shall include one or more of the following methods, as appliable and as determined by a qualified professional. The implementing agency shall incorporate health risk reduction measures based on an analysis of individual sites and project circumstances. These measures may include:

- Avoid siting new sensitive land uses within 500 feet of a freeway or railway.
- Require development projects for new sensitive land uses to be designed to minimize exposure to roadway-related pollutants to the maximum extent feasible through inclusion of design components including air filtration and physical barriers.
- Do not locate sensitive receptors near the entry and exit points of a distribution center.
- Locate structures and outdoor living areas for sensitive uses as far as possible from the source of emissions. As feasible, locate doors, outdoor living areas and air intake vents primarily on the side of the building away from nearby high volume roadways or other pollution source. As feasible, incorporate dense, tiered vegetation that regains foliage year-round and has a long life span between the pollution source and the project.
- Maintain a 50-foot buffer from a typical gas dispensing facility (under 3.6 million gallons of gas per year).
- Install, operate and maintain in good working order a central heating and ventilation (HV) system or other air take system in the building, or in each individual residential unit, that meets the efficiency standard of the MERV 13. The HV system should include the following features:
  - Installation of a high efficiency filter and/or carbon filter-to-filter particulates and other chemical matter from entering the building.
  - Use of either HEPA filters or ASHRAE 85 percent supply filters.
  - Completion of ongoing maintenance.
- Retain a qualified HV consultant or Home Energy Rating Systems rater during the design phase of the project to locate the HV system based on exposure modeling from the mobile and/or stationary pollutant sources.
- Maintain positive pressure within the building.
- Achieve a performance standard of at least one air exchange per hour of fresh outside filtered air.
- Achieve a performance standard of at least four air exchanges per hour of recirculation. Achieve a performance standard of 0.25 air exchanges per hour of unfiltered infiltration if the building is not positively pressurized.

- Require project owners to provide a disclosure statement to occupants and buyers summarizing technical studies that reflect health concerns about exposure to highway/freeway exhaust emissions.

IMPLEMENTING AGENCIES AND TIMING

Implementing agencies for transportation projects are StanCOG and transportation project sponsor agencies. Implementing agencies for land use projects are cities and the County. This mitigation measure shall, or can and should, be applied during permitting and environmental review and implemented during construction where appropriate.

Significance After Mitigation

Although implementation of the above mitigation would reduce health risks associated with TAC emissions, individual receptors may still be exposed to substantial TAC concentrations that would have significant health risk effects. Therefore, this impact remains significant and unavoidable. No additional mitigation measures to reduce this impact to less-than-significant levels are feasible.

Threshold 4:	Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people.

Impact AQ-6 CONSTRUCTION OF THE PROPOSED TRANSPORTATION IMPROVEMENTS AND LAND USE PROJECTS ENVISIONED BY THE 2022 RTP/SCS WOULD NOT RESULT IN OTHER EMISSIONS (SUCH AS THOSE LEADING TO ODORS) ADVERSELY AFFECTING A SUBSTANTIAL NUMBER OF PEOPLE. IMPACTS WOULD BE LESS THAN SIGNIFICANT.

While offensive odors rarely cause physical harm, they can be unpleasant, leading to considerable distress among the public (SJVAPCD 2015a). The degree to which an odor is offensive is based on an individual's sensitivity and tolerance for said odor. Some people may find an odor acceptable (e.g., odors from a coffee roaster), while others may find it off-putting. Since odors are subjective, the sensory and physical response experienced by an individual varies based on their perception of the quality and intensity of the odor. Quality refers to the nature of the smell (e.g., flowery or sour) and intensity refers to the strength of the odor. Furthermore, the distance between the odor source and receptor, the wind direction, and sensitivity of the receptor can influence how the impact is perceived. Common sources of odors include landfills, agricultural uses, wastewater treatment plants, refineries, and vehicle exhaust.

Construction

Buildout under the 2022 RTP/SCS would generate oil and diesel fuel odors during construction from equipment use. The odors would be limited to the construction period and would be intermittent and temporary. Furthermore, these odors would dissipate rapidly with distance from in-use construction equipment. Accordingly, construction activities would not generate other emissions (such as those leading to odors) adversely affecting a substantial number of people. Impacts would be less than significant.

Operation

Development associated with the 2022 RTP/SCS is related to transportation improvements such as roadway widening, interchange improvements, and installation of bicycle lanes. These types of projects are not typical operational sources of odors. However, all 2022 RTP/SCS projects would be

subject to SJVAPCD Rule 4102, *Nuisance*, which prohibits the discharge of air contaminants or other material that would cause injury, detriment, nuisance, or annoyance to any considerable number of persons. Furthermore, the projects would be required to adhere to local policies, zoning designations, and municipal codes that would limit odors. As discussed in Section 4.3.2, counties and cities within the StanCOG region have air quality-related policies in their General Plans that promote multi-modal transportation, electric-vehicles, and transit oriented development. These types of policies aim to reduce travel with fossil-fueled vehicles and indirectly reduce odors from vehicle exhaust. However, if offensive odors are present and become a nuisance, complaints can be filed by email or phone call with the SJVAPCD, who will then investigate the source. Because odorous emissions associated with the operation of the projects under the 2022 RTP/SCS would be regulated by local governing bodies (i.e., SJVAPCD, County of Stanislaus, and local cities), implementation of the 2022 RTP/SCS would not result in other emissions (such as odors) adversely affecting a substantial number of people. Impacts would be less than significant.

Mitigation Measures

No mitigation measures are required.

c. Specific RTP Projects That May Result in Impacts

The RTP/SCS projects listed in Chapter 2, *Project Description*, would have the potential to result in air quality impacts. All projects that include a construction component could result in the impacts described under Impact AQ-2. Projects that include roadway, rail, and transit features and/or expansions could result in the impacts described under Impacts AQ-3 and AQ-4. Additional specific analysis outlined in the above mitigation measures would need to be conducted as individual projects are designed and implemented to determine the magnitude of impacts. Because any number of the proposed 2022 RTP/SCS projects that require construction equipment or include transportation improvement would presumably increase air pollutant emissions, no specific projects are listed in this section related to the adverse impacts on air pollutant emissions in the StanCOG region.

4.3.4 Cumulative Impacts

For the purposes of evaluating cumulative impacts to air quality, the geographic scope of the cumulative impacts analysis is the SJVAB, which includes the StanCOG planning region as well as Kern, Kings, Fresno, Madera, Merced, San Joaquin, and Tulare counties. As detailed in Section 4.3.1(d), *Current Air Quality*, the StanCOG region is in nonattainment for federal ozone and $PM_{2.5}$ standards and State ozone, PM_{10}, and $PM_{2.5}$ standards. SJVAPCD has prepared air quality plans for both ozone and $PM_{2.5}$ to improve conditions and meet federal and State air quality standards. Because Stanislaus County is in nonattainment for these air quality standards, a cumulative air quality impact currently exists. Any growth within Stanislaus County would contribute to existing exceedances of ambient air quality standards. SJVAPCD has prepared air quality plans for both ozone and particulate matter to address this cumulative impact, improve conditions, and meet federal and state air quality standards. As stated in the SJVAPCD GAMAQI (2015), any proposed development project that would individually have a significant air quality impact related to criteria air pollutant emissions would also be considered have a cumulatively considerable contribution to existing significant cumulative impacts related to criteria air pollutant emissions. For TACs, the SJVAPCD GAMAQI (2015) states that because impacts from TACs are localized and the thresholds of

significance for TACs have been established at such a conservative level, risks over the individual thresholds of significance are also considered cumulatively significant.

Construction activities associated with transportation and land use projects under the 2022 RTP/SCS would create fugitive dust and ozone precursor emissions and have the potential to result in temporary adverse impacts on air quality. As discussed under Impact AQ-2, although any individual improvement or development project may not generate significant short-term emissions, it is probable that several projects would be under construction simultaneously, generating cumulative construction emissions that could impact air quality. Short-term impacts would be significant because construction emissions could result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment. Implementation of Mitigation Measures AQ-1 for implementing agencies and AQ-2(a) through AQ-2(c) for individual projects would reduce PM and ozone precursor emissions. However, the contribution of construction emissions facilitated by the 2022 RTP/SCS to the existing significant cumulative impact would remain cumulatively considerable and unavoidable because it cannot be guaranteed that all future project-level impacts can be mitigated to a less-than-significant level.

As discussed under Impacts AQ-1 and AQ-3, regional PM emissions from on-road mobile sources would increase by 2046 with the 2022 RTP/SCS compared to existing 2022 conditions. As a result, the 2022 RTP/SCS's inconsistency with the 2018 $PM_{2.5}$ plan and the long-term operational emissions under the 2022 RTP/SCS would result in a cumulatively considerable contribution to existing significant cumulatively air quality impacts.

4.4 Biological Resources

This section describes the existing biological resources within the StanCOG region and evaluates the significance of potential impacts to sensitive biological resources that would result from implementation of the proposed 2022 RTP/SCS, and feasible mitigation measures to reduce these potential impacts. Sources utilized in this discussion include data provided by the U.S. Fish and Wildlife Service (USFWS), the California Native Plant Society (CNPS), and the California Department of Fish and Wildlife (CDFW).

4.4.1 Setting

a. Vegetation Communities and Land Cover Types

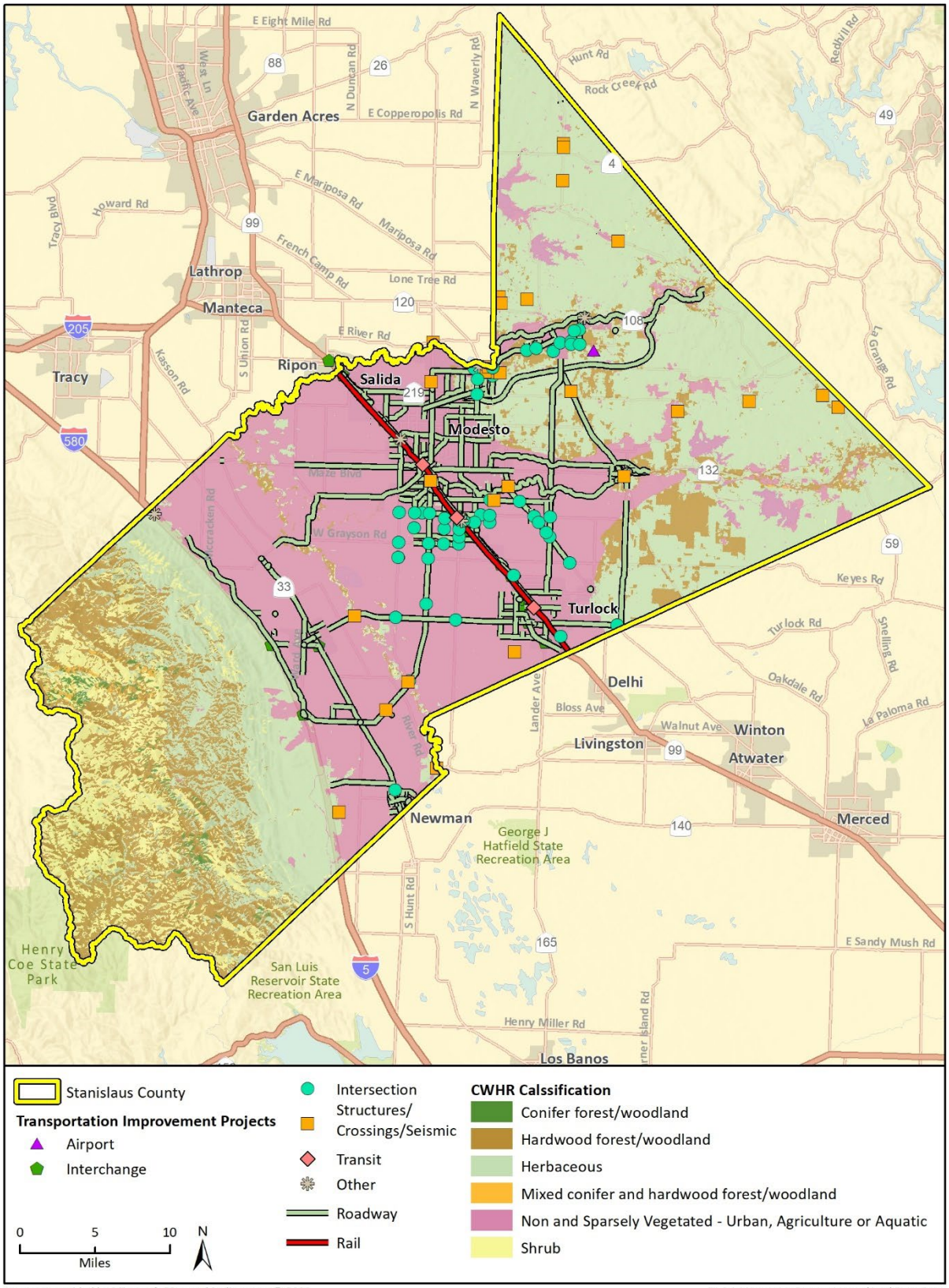
The StanCOG region contains a wide diversity of tree, shrub, and herbaceous (grasslands, pastures, certain wetlands) vegetation communities and land cover types. Twenty-eight vegetation communities and land cover types are mapped by the California Department of Fish and Wildlife (CDFW) California Wildlife Habitat Relationships (CWHR) classification system within the StanCOG region (CDFW 2014). Of the 15 vegetation communities and land cover types, six are tree dominated, three are shrub dominated, two are herbaceous, and four are either developed, sparsely/non-vegetated or cropland (see Figure 4.4-1). Because of the scale of vegetation data at the County level, the vegetation communities and land covers presented in Figure 4.4-1 depict a broad illustration of the distribution of CWHR categories (i.e., tree, shrub, herbaceous, etc.) found within the StanCOG Region. A description of each of the vegetation communities and land covers adapted from *A Guide to Wildlife Habitats of California* (Mayer and Laudenslayer 1988) is presented below. The vegetation classifications from *A Manual of California Vegetation, Second Edition* (Sawyer et al. 2009) that most closely resemble those classified by the CWHR are also presented in each description where possible.

It should be noted that these vegetation communities and land covers are generalized, and that site-specific variation is likely to be present. Also note that the CWHR classification system maps vegetation communities and land covers from a broad perspective and that in many areas it is expected that two or more vegetation communities and land cover types may blend with one another. As such, due to the large scale at which vegetation communities and land covers are mapped using the CWHR classification system, vernal pools, wetlands, and drainages are discussed separately in Section 4.4.1.b, utilizing additional sources of information that better capture aquatic and wetland types that are of smaller scale in the landscape. Vegetation communities and land covers which occur within populated areas can also show variation because of a greater exposure to anthropogenic influences such as the introduction of exotic plant species.

Tree-Dominated Vegetation Communities

The StanCOG region is home to a variety of hardwood, coniferous, and mixed woodlands, and forests (Figure 4.4-1). These tree-dominated vegetation communities can support diverse wildlife populations. Riparian vegetation communities are generally the terrestrial areas adjacent to freshwater bodies forming a vegetated corridor from stream edge to floodplain edge. Riparian vegetation communities occur in and along the major rivers (Stanislaus, Tuolumne, and San Joaquin Rivers), as well as along the many creeks, streams, and sloughs found in the County. Riparian areas are rich in wildlife species, providing foraging, migration, roosting, and nesting/breeding habitat.

Figure 4.4-1 Vegetation Communities and Land Cover Types in the StanCOG Region



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Additional data provided by Stanislaus County and CalFIRE, 2022.

Fig 4.4-1 Vegetation Communities and Land Cover Types

The following are descriptions of types of tree-dominated vegetation communities that occur within three miles of transportation projects included in the 2022 RTP/SCS.

Blue Oak-Foothill Pine

This vegetation community is typically diverse in structure, both vertically and horizontally, and is composed primarily of a mix of hardwoods, conifers, and shrubs. Shrub distributions tend to be clumped, with interspersed patches of annual grassland. Woodlands of this type tend to have only small accumulations of dead and downed woody material, compared with other tree habitats in California. Blue oak (*Quercus douglasii*) and foothill pine (*Pinus sabiniana*) typically comprise the overstory of this vegetation communities, with blue oak usually most abundant. In the foothills of the Sierra Nevada, other tree species typically associated with this vegetation community are interior live oak (*Quercus wislizeni*) and California buckeye (*Aesculus californica*). In the Coast Range, associated tree species include coast live oak (*Quercus agrifolia*), valley oak (Q*uercus lobata*), and California buckeye. In rocky areas, interior live oak sometimes dominates the overstory especially on north-facing slopes at higher elevations. At lower elevations, where blue oaks make up most of the canopy, the understory tends to be primarily annual grasses and forbs. At higher elevations, where foothill pine and in some stands interior live oak comprise the canopy, the understory usually includes patches of shrubs in addition to the annual grasses and forbs. Shrub species that can be associated with this vegetation community include various species of buckbrush (*Ceanothus* spp.) and manzanita (*Arctostaphylos* spp.). Other species found in this vegetation community can include California coffeeberry (*Frangula californicus*), poison-oak (*Toxicodendron diversilobum*) and silver lupine (*Lupinus albifrons*). This vegetation community is generally located in the foothills of the Central Valley, between 500 and 3,000 feet in elevation. In the StanCOG region, blue oak-foothill pine communities occur in the foothills of the Southern Coastal Range to the west and Sierra Nevada to the east. Blue oak-foothill pine vegetation communities typically correspond to the *Quercus douglasii* Woodland Alliance or *Pinus sabiniana* Woodland Alliance as described by Sawyer et al. (2009).

Blue Oak Woodland

Generally, these woodlands have an overstory of scattered trees, although the canopy can be nearly closed. The canopy is dominated by blue oak, a broad-leaved tree species 16 to 50 feet tall, commonly forming open savanna-like stands on dry ridges and gentle slopes. Shrubs such as poison oak, California coffeeberry, buckbrush (*Ceanothus cuneatus*), and redberry (*Rhamnus crocea*) are often present but rarely extensive and often occur on rock outcrops. Typical understory is composed of an extension of annual grassland vegetation described below. In the StanCOG region, blue oak woodland communities occur in the foothills of the Southern Coastal Range to the west and Sierra Nevada to the east. Blue oak woodland typically corresponds to the *Quercus douglasii* Woodland Alliance as described by Sawyer et al. (2009).

Montane Hardwood

A typical montane hardwood is composed of a pronounced hardwood tree layer, with an infrequent and poorly developed shrub stratum, and a sparse herbaceous layer. In the Coast Range, canyon live oak (*Quercus chrysolepis*) often forms pure stands on steep canyon slopes and rocky ridge tops. It is replaced at higher elevations by scattered huckleberry oak (*Quercus vacciniifolia*) amongst an overstory of various conifers including ponderosa pine (*Pinus ponderosa*), Coulter pine (*Pinus coulteri*), California white fir (*Abies concolor*), and Jeffrey pine (*Pinus jeffreyi*). At mid-elevations, typical associates include Douglas-fir (*Pseudotsuga menziesii*), tanoak (*Notholithocarpus*

densiflorus), Pacific madrone (*Arbutus menziesii*), California black oak (*Quercus kelloggii*), and bristlecone fir (*Abies bracteata*). At lower elevations, knobcone pine (*Pinus attenuata*), foothill pine, Oregon white oak (*Quercus garryana*), and coast live oak are abundant. Understory vegetation is mostly scattered woody shrubs and a few forbs. Elevations range from 300 feet near the Pacific Ocean up to 9,000 feet. In the StanCOG region, montane hardwood communities occur primarily in the foothills of the Southern Coastal Range to the west, with a small area to the southeast in the foothills of the Sierra Nevada. Montane hardwood typically corresponds to the *Quercus chrysolepis* Forest Alliance, as described by Sawyer et al. (2009).

Montane Riparian Forest

The vegetation of montane riparian forest vegetation communities is variable and often structurally diverse. Usually, these riparian areas occur as a narrow, often dense grove of broad-leaved, winter deciduous trees with a sparse understory. This vegetation community is typically associated with montane rivers and creeks below approximately 8,000 feet. The transition between this vegetation community and adjacent non-riparian vegetation is often abrupt, due to this vegetation community typically occurring in hilly or mountainous terrain compared to other riparian community types. At high mountain elevations, more shrubs tend to occur in the understory. In the StanCOG region, montane riparian forest communities occur in the foothills of the Southern Coastal Range to the west and Sierra Nevada to the east. Montane riparian forest can correspond to a variety of alliances depending upon the dominant tree species, for instance *Populus fremontii* Woodland Alliance, and the various *Salix* sp. alliances that can regionally occur as described by Sawyer et al. (2009).

Valley Oak Woodland

This vegetation community can range in structure from savanna-like to forest-like stands. The canopies tend to be partially closed and comprised mostly of winter-deciduous, broad-leaved species such as valley oak. Dense stands typically grow in valley soils along natural drainages and decrease with the transition from lowlands to uplands. Shrubs are also associated with this valley oak woodland in lowland areas, especially along drainages. Valley oak stands with little or no grazing tend to develop a partial shrub layer of bird disseminated species, such as poison oak, toyon (*Heteromeles arbutifolia*), and California coffeeberry. Ground cover consists of a well-developed carpet of annual grasses and forbs such as wild oat (*Avena* spp.), bromes (*Bromus* spp.), and ryegrass (*Festuca perennis*). In the StanCOG region, valley oak woodland communities occur primarily in the foothills of the Southern Coastal Range to the west, with a small area to the southeast in the foothills of the Sierra Nevada. Valley oak woodland typically corresponds to the *Quercus lobata* Woodland Alliance as described by Sawyer et al. (2009).

Valley-Foothill Riparian

This vegetation community is associated with drainages, particularly those with low velocity flows, flood plains, and gentle topography. Valley-foothill riparian is generally comprised of a canopy and sub-canopy tree layers dominated by valley oak, cottonwoods (*Populus* sp.), Oregon ash (*Fraxinus latifolia*), white alder (*Alnus rhombifolia*), and boxelder (*Acer negundo*). The understory shrub layer comprises species such as willows (*Salix* spp.) wild grape (*Vitus californica*), wild rose (*Rosa californica*), blackberry (*Rubus* spp.), blue elderberry (*Sambucus cerulean*) and poison-oak. In the StanCOG region, valley-foothill riparian communities may occur anywhere rivers, streams, or other aquatic habitats are found. Valley-foothill riparian can correspond to multiple alliances as described by Sawyer et al. (2009) depending upon the species composition. These alliances may include, but

are not limited to, *Platanus racemosa* Woodland Alliance, *Populus fremontii* Woodland Alliance, and various *Salix* alliances, depending upon dominant species present (Sawyer et al. 2009).

Shrub-Dominated Vegetation Communities

Shrub-dominated vegetation communities, such as chaparral and coastal scrub, are comprised primarily of woody, evergreen shrubs and occur primarily along the foothills of the Coast Range in western Stanislaus County. The following are descriptions of shrub-dominated vegetation communities that occur within three miles of construction projects outlined in the 2022 RTP/SCS.

Chamise-Redshank Chaparral

This habitat type can range from nearly pure stands of chamise (*Adenostoma fasciculatum*) or redshank (*A. sparsifolium*) to a mixture of both, however in the StanCOG Region mature chamise-redshank chaparral is single layered, generally lacking well-developed herbaceous ground cover and over story trees. Shrub canopies frequently overlap, producing a nearly impenetrable canopy of interwoven branches. In the StanCOG region, chamise-redshank chaparral communities occur primarily in the foothills of the Southern Coastal Range to the west, with a small area to the southeast in the foothills of the Sierra Nevada. Fire occurs regularly in Chamise-Redshank Chaparral and influences community structure. Chamise-redshank chaparral typically corresponds to the *Adenostoma fasciculatum* Shrubland Alliance as described by Sawyer et al. (2009).

Coastal Scrub

This vegetation community is typically dominated by shrub species with mesophytic leaves and shallow root systems. This vegetation community can differ in composition depending upon proximity to the coastline. California sagebrush (*Artemisia californica*) tends to be common in all coastal scrub habitats. In the StanCOG region, coastal scrub communities occur in the foothills of the Southern Coastal Range to the west. Coastal scrub can correspond to multiple alliances as described by Sawyer et al. (2009) depending upon the species composition. These alliances may include, but are not limited to, *Artemisia californica* Shrubland Alliance, *Baccharis pilularis* Shrubland Alliance and the *Salvia mellifera* Shrubland Alliance (Sawyer et al. 2009).

Mixed Chaparral

Mixed chaparral is a structurally homogeneous brushland type dominated by shrubs with thick, stiff, heavily cutinized evergreen leaves. Shrub height and crown cover vary with age since last burn, precipitation, aspect, and soil type. At maturity, cismontane mixed chaparral typically forms a dense, nearly impenetrable thicket. On nutrient-poor sites, serpentine soils or transmontane slopes, shrub cover may be considerably reduced, and shrubs may be shorter. Leaf litter and standing dead material may accumulate in stands that have not burned for several decades. In the StanCOG region, mixed chaparral communities occur primarily in the foothills of the Southern Coastal Range to the west, with a small area to the southeast in the foothills of the Sierra Nevada. Mixed chaparral can correspond to multiple alliances as described by Sawyer et al. (2009) depending upon the species composition. These alliances may include, but are not limited to, *Ceanothus cuneatus* Shrubland Alliance and the *Arctostaphylos glauca* Shrubland Alliance (Sawyer et al. 2009).

Herbaceous Dominated Vegetation Communities

These vegetation communities are generally comprised of areas dominated by grasses and other non-woody species. Most of this habitat in the StanCOG region is comprised of non-native

grasslands. Native perennial grasslands, which are dominated by perennial bunch grasses, such as nodding needlegrass (*Stipa cernua*), were historically abundant within the StanCOG region but are now currently patchy in distribution. The following are descriptions of the herbaceous dominated vegetation communities that occur within three miles of construction projects outlined in the 2022 RTP/SCS.

Annual Grasslands

This vegetation community is composed primarily of non-native annual herbs and forbs and typically lacks shrub or tree cover. The physiognomy and species composition of annual grasslands is highly variable and varies considerably on a temporal scale. Grazing is a common land use within this vegetation community. Common grass species include wild oats (*Avena* sp.), soft chess brome (*Bromus hordeaceus*), ripgut brome (*Bromus diandrus*), and red brome (*Bromus madritensis*). Common forb species can include species of filaree (*Erodium* sp.) and bur clover (*Medicago* sp.). California poppy can also be quite common in this vegetation community. Annual grassland communities may occur anywhere throughout the StanCOG region. Annual grassland can correspond to multiple alliances as described by Sawyer et al. (2009) depending upon the species composition. These alliances may include, but are not limited to, *Avena (barbata, fatua)* Semi-Natural Stands and *Bromus (diandrus, hordeaceus) – Brachypodium distachyon* Semi-Natural Stands.

Pasture

Pasture vegetation is a mix of perennial and annual grasses and legumes with typically complete canopy closure. Height of vegetation varies, according to season and livestock stocking levels. Old or poorly drained pastures may have patches of weeds greater than two feet in height. The mix of grasses and legumes varies according to management practices such as seed mixture, fertilization, soil type, irrigation, weed control, and the type of livestock on the pasture. Irrigated pastures are often a permanent agricultural habitat, established on soils not suitable for other crops and where water supply is a limiting factor. Because pastures generally requires flat topography, in the StanCOG region this community occurs primarily on the valley floor.

Cropland, Orchard/Vineyard Urban, and Barren Land Covers

Developed, sparsely to non-vegetated, and cropland land covers are abundant in the StanCOG region (Figure 4.4-1). Developed land covers are usually sparsely or non-vegetated and are associated with urban and agricultural areas and are highly disturbed. Species that occur in these areas are typically adapted to anthropogenic disturbance and/or comprised of ornamental species. Sparsely vegetated land covers also tend to be associated with rock outcrops and cliffs. Managed croplands are included with this group of land covers due to frequent disturbance and high levels of active management. The following are descriptions of developed, sparsely/non-vegetated and cropland land covers that occur within three miles of construction projects outlined in the 2022 RTP/SCS.

Cropland

This land cover is characterized by areas in active agriculture used to grow annual or perennial herbaceous crops and is entirely man-made. The structure of vegetation can vary in size, shape, and growing pattern. The dominant cropland use is row crops and can also include hay and grain. Subcategories of cropland classifications include, but are not limited to, dryland grain crop, irrigated hayfield crop and irrigated row and field crop, irrigated hayfield, rice, and pasture. Because

croplands generally require flat topography, in the StanCOG region this community occurs primarily on the valley floor. Orchards and vineyards are classified separately. Currently, one subcategory of the cropland classification occurs within three miles of projects outlined in the 2022 RTP/SCS: *Irrigated Row and Field Crop*.

> **Irrigated Row and Field Crop.** Vegetation in this land cover includes a variety of sizes, shapes and growing patterns. Cotton and asparagus can be three or four feet tall while others may be a foot or less high. Most irrigated row and field crops are grown in rows. Some may form 100 percent canopy while others may have significant bare areas between rows. Most are annuals, while others, such as asparagus and strawberries, are perennial. Annual crops are usually planted in spring and harvested in summer or fall. However, they may be planted in rotation with other irrigated crops and sometimes winter wheat or barley may be planted after harvest of a previous crop in the fall, dry farmed during the wet winter and early spring months, and then harvested in the late spring.

Orchard/Vineyard

This land cover is typically characterized by open, single-species tree- or woody vine-dominated agricultural areas. Depending on the tree or vine type and pruning methods, they are usually low, bushy plants with an open understory to facilitate harvest. Trees such as citrus, avocados, and olives are evergreen, and other common tree crops such as walnuts and stone fruits are deciduous. The understory is usually composed of low growing grasses and other herbaceous plants but may be managed to prevent understory growth totally or partially, such as along tree rows. Vineyards, comprised of grape vines, also share similar characteristics. Subcategories of orchard/vineyard classifications include, but are not limited to, deciduous orchard and evergreen orchard. Orchards generally require flat topography however vineyards may occur on foothills, therefore this community may occur anywhere in the StanCOG region. Currently one subcategory of orchard/vineyard classification occurs within three miles of projects outlined in the 2022 RTP/SCS: *Deciduous Orchard*.

> **Deciduous Orchard.** Deciduous orchards are formed of deciduous trees such as almonds, apples, apricots, cherries, figs, nectarines, peaches, pears, pecans, pistachios, plums, pomegranates, prunes, and walnuts. Trees range in height at maturity; many species range from 15 to 30 feet, but may be 10 feet or less for pomegranates, figs, and some dwarf varieties of other species, while pecans and walnuts reach 60 feet or more. Crowns usually touch and are usually in a linear pattern. Spacing between trees is uniform and dependent on desired spread of mature trees. In some orchards, cover crops of resident species are present year-round or are cultivated in the spring and summer. The cover crop can be composed of either natural or planted domesticated herbaceous plants. Many orchards are treated in strips down the tree rows with herbicides.

Urban

This land cover type is also a completely man-made habitat comprising residential, commercial, and industrial developed areas. Plant species within urban areas are typically comprised of ornamental and other non-native plant species, including invasive species, with large, developed areas lacking vegetation. This community may occur anywhere in the StanCOG region, but primarily occurs on the valley floor.

Barren

This land cover is defined by the absence of vegetation. Any area with less than two percent total herbaceous vegetation cover and less than 10 percent relative cover by tree or shrub species is defined as barren (Mayer and Laudenslayer 1988). Structure and composition of the substrate is largely determined by the region of the state as well as surrounding environment. Examples of barren land cover include areas of exposed parent rock or talus. This community may occur anywhere in the StanCOG region, but primarily occurs on the valley floor.

b. Drainages and Wetlands

Drainages

Four primary watersheds occur within the StanCOG region: the North Valley Floor, San Joaquin Valley Floor, Delta-Mendota Canal, and Middle Westside watersheds. Three major rivers are also located in the StanCOG region: the Stanislaus, Tuolumne, and San Joaquin Rivers. The San Joaquin River is approximately 300 miles long. It begins in the Sierra Nevada Mountain range in Fresno County and runs northwest through the Central Valley where it meets the Sacramento River at the Sacramento-San Joaquin Delta. The Stanislaus River is a tributary of the San Joaquin River and originates in the central Sierra Nevada. The river divides San Joaquin and Stanislaus Counties. The Tuolumne River originates in Yosemite National Park and runs southwest through the central portion of the StanCOG region.

Several creeks and tributaries are associated with each one of these watersheds (Figure 4.4-2). The drainages within these watersheds are of biological importance as they provide valuable foraging habitat, breeding habitat, and movement habitat for a wide variety of animal species, including sensitive species such as steelhead – Central Valley distinct population segment (DPS) (*Oncorhynchus mykiss irideus*) and California red-legged frog (*Rana draytonii*).

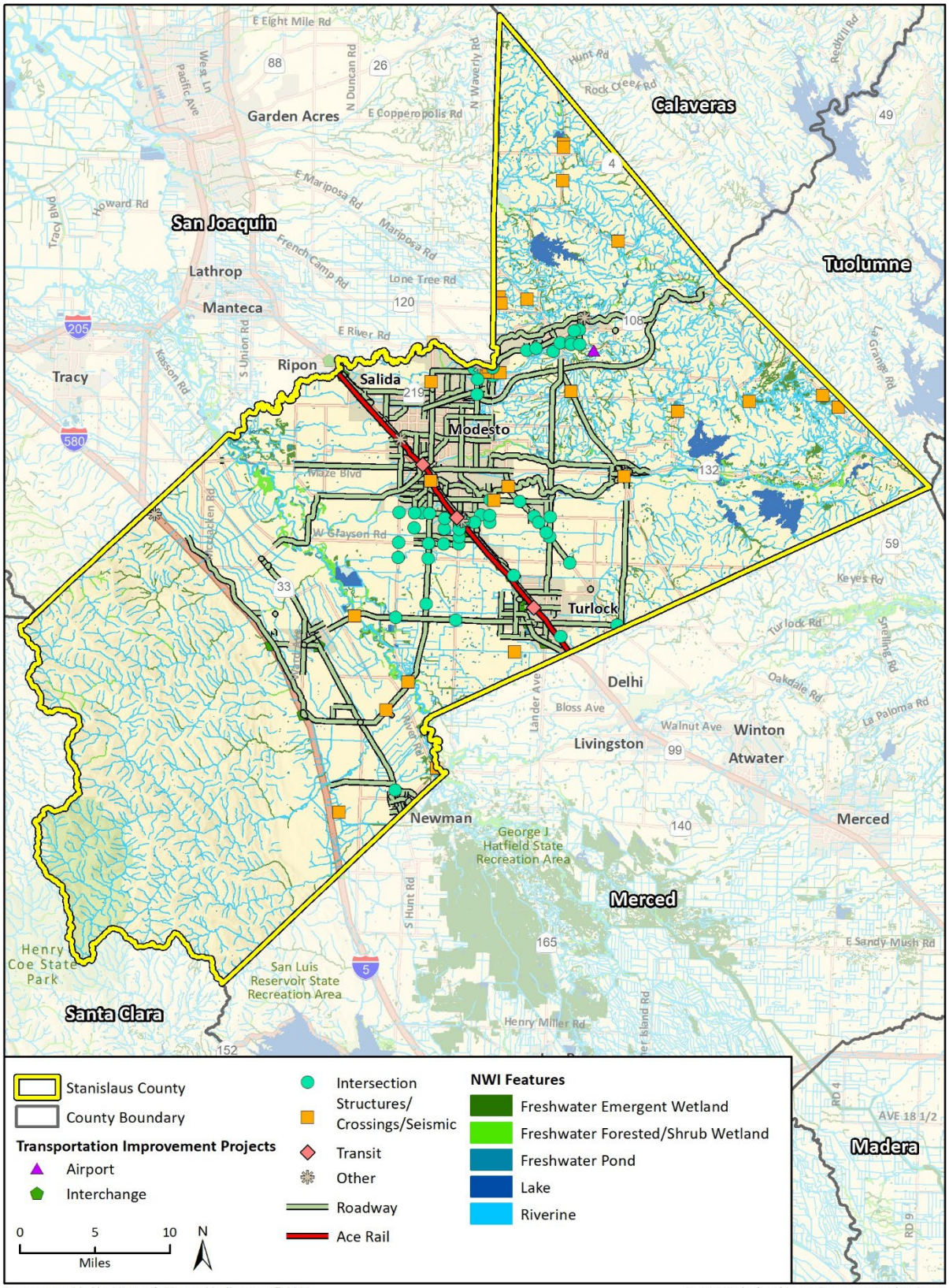
Canals

The County also contains a network of waterways that transport water through the County for use in irrigation and flood control. Major waterways include the California Aqueduct, the Hetch Hetchy Aqueduct, and the Delta-Mendota Canal.

Wetlands

Wetlands are regarded as important biological resources both because of their rarity and because they serve a variety of functional values. Several types of wetlands exist in the County, including freshwater marshes and vernal pools. In addition to vernal pools, several areas within three miles of 2022 RTP/SCS projects contain wetlands mapped by the USFWS National Wetlands Inventory (NWI; USFWS 2021a). A general description of each of the classifications used in the NWI is provided below. Of those wetland types mapped by the NWI, freshwater emergent wetland, riverine and lacustrine habitats are also mapped by the CWHR.

Figure 4.4-2 Wetlands and Drainages in the StanCOG Region



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Additional data provided by Stanislaus County and USFWS, 2022.

Fig 4.4-2 Wetlands and Aquatic Resources in Stainlaus County

Vernal Pools

These seasonal wetlands are small depressions that fill with water during the winter, gradually drying during the spring and becoming completely dry in the summer. These pools are found in only a few places in the world outside of California. Vernal pool vegetation is characterized by herbaceous plants that begin their growth as aquatic or semi-aquatic plants and transition to a dry land environment as the pool dries. Another suite of specially adapted plant species affiliated with vernal pools colonizes the pool margins, germinating as the pool dries. Most vernal pool plants are annual herbs. Wildlife species supported by vernal pools include the federal and state threatened California tiger salamander (*Ambystoma californiense*) and federally threatened vernal pool fairy shrimp (*Branchinecta lynchi*).

Freshwater Emergent Wetlands

Freshwater emergent wetlands are dominated by emergent herbaceous plant species, mosses, and/or lichens. Wetlands of this type are low in salinity. Wetlands which lack vegetation can be included in this class if they are less than 20 acres, do not have an active wave-formed or bedrock shoreline feature, have a low water depth less than 6.6 feet. This wetland type is also mapped by the CWHR. Freshwater emergent wetlands are characterized by erect, rooted herbaceous hydrophytes. Dominant vegetation is generally perennial monocots such as cattails (*Typha* spp.) and rushes (*Juncus* spp.). All emergent wetlands are flooded frequently enough that the roots of the vegetation prosper in an anaerobic environment. The vegetation may vary in size from small clumps to vast areas covering several kilometers. The acreage of freshwater emergent wetlands in California has decreased dramatically since the turn of the century due to drainage and conversion to other uses, primarily agriculture.

Freshwater Forested/Shrub Wetlands

These wetlands are dominated by trees and shrubs, such as cottonwoods and willows, with emergent herbaceous plants, mosses and/or lichens in the understory. The NWI also includes within this category wetlands that lack vegetation if they also exhibit the same criteria as described for freshwater emergent wetlands. Freshwater forested/shrub wetlands are generally dominated by woody vegetation such as shrubs and trees. This wetland category also can include riparian habitats.

Freshwater Ponds

Freshwater ponds often have vegetative cover along the edges, such as trees, shrubs, emergent herbaceous plants, mosses, and/or lichens. Freshwater ponds can be man-made or natural and typically consist of an area of standing water with variable amounts of shoreline. These wetlands and deep water habitats are dominated by plants that grow on or below the surface of the water. Open water in the center of the pond is also included. This wetland type is also mapped by the CWHR and categorized as lacustrine habitat, which in the CWHR classification includes vernal pools and lakes; however, vernal pools and lakes are recognized as unique features for purposes of this EIR, and thus provided a separate description.

Lakes

Lakes are a lacustrine system which includes wetlands and deep water habitats located in a topographic depression or dammed river channel. These areas tend to be greater than 20 acres. Vegetation cover within this habitat is generally less than 30 percent, surrounding deeper open water, and often occurs in the form of emergent or surface vegetation. Substrates are composed of

at least 25 percent cover of particles smaller than stones. This wetland type is also mapped by the CWHR.

Riverine

Riverine habitats are a riverine system which includes all wetlands and deep water habitats contained in natural or artificial channels that contain periodically or continuously flowing water. This system may also form a connecting link between two bodies of standing water. Substrates generally consist of rock, cobble, gravel, or sand. Features mapped as riverine wetlands in the NWI include major rivers and smaller streams and drainages as previously described. This wetland type is also mapped by the CWHR.

c. Special-Status Biological Resources

Special-Status Species

For the purpose of this PEIR, special-status species are those plants and animals listed, proposed for listing, or candidates for listing as threatened or endangered by the USFWS under the federal Endangered Species Act (ESA); those listed or proposed for listing as rare, threatened, or endangered by the CDFW under the California Endangered Species Act (CESA); animals designated as "Species of Special Concern," "Fully Protected," or "Watch List" by the CDFW. Those plants ranked as California Rare Plant Rank (CRPR) 1 or 2 are typically regarded as rare, threatened, or endangered under CEQA by lead agencies and were considered as such in this PEIR. The CRPR utilizes the following code definitions:

- **List 1A** = Plants presumed extinct in California;
- **List 1B.1** = Rare or endangered in California and elsewhere; seriously endangered in California (over 80 percent of occurrences threatened/high degree and immediacy of threat);
- **List 1B.2** = Rare or endangered in California and elsewhere; fairly endangered in California (20-80 percent occurrences threatened);
- **List 1B.3** = Rare or endangered in California and elsewhere, not very endangered in California (<20 percent of occurrences threatened, or no current threats known);
- **List 2** = Rare, threatened or endangered in California, but more common elsewhere;

CRPR List 3 species are "review list," and CRPR 4 species are considered "watch list" species. CRPR 3 and 4 species do not typically warrant analysis under CEQA except where they are part of a unique community, from the type locality, or designated as rare or significant by local governments, or where cumulative impacts could result in population–level effects. The CRPR 3 and 4 species reported from the region are not locally designated as rare or significant by the general plan within the StanCOG region and are not part of a unique community. Additionally, the County is not known to be the type locality for any ranked plant species. Therefore, potential impacts to CRPR 3 and CRPR 4 species were not considered in this analysis.

Species of Special Concern (SSC) is a category used by the CDFW for those species which are considered indicators of regional habitat changes or are considered to be potential future protected species. SSC do not have any special legal status except that which may be afforded by the Fish and Game Code. The SSC category is intended by the CDFW for use as a management tool to include these species into special consideration when decisions are made concerning the development of

natural lands, and these species are considered sensitive as described under the CEQA Appendix G questions.

Queries of the USFWS Information, Planning and Conservation System (IPaC; USFWS 2021b), the CDFW California Natural Diversity Database (CNDDB) (CDFW 2021a), and CNPS *Online Inventory of Rare, Threatened and Endangered Plants of California* (CNPS 2021) were conducted. These queries were conducted to obtain comprehensive information regarding state and federally listed species considered to have potential to occur within the StanCOG region.

The StanCOG region is home to several species protected by federal and state agencies. Important animal species can be found in a variety of habitats the StanCOG region hosts. The CNDDB (CDFW 2021a), CNPS (2021), and USFWS IPaC (2021b) together list 86 special-status plant and animal species (46 plant species and 40 animal species) that occur or have potential to occur within the StanCOG region. The status and habitat requirements of those species are presented in Appendix B as Tables B-1 and B-2 respectively.

In addition, although not listed in the CNDDB, mountain lions (Puma concolor) are legally classified as "specially protected species." In July 2019, the Center for Biological Diversity petitioned CDFW to list mountain lions as threatened under the CESA within a proposed evolutionarily significant unit (ESU) located in Southern California and along the central coast of California. In April 2020, the Commission found that listing of this ESU may be warranted and designated mountain lion within the ESU as a candidate species under CESA. Mountain lions inhabit diverse habitats across most of California and can be found wherever deer are present, which includes the foothills and mountainous areas within the StanCOG region.

Sensitive Natural Communities and Critical Habitat

Several natural communities considered sensitive by the CDFW occur within the StanCOG region (CDFW 2021a). The CNDDB lists seven natural communities that occur with the StanCOG region, all of which are mapped in the vicinity of 2022 RTP/SCS projects. The Sensitive Natural Communities List in the CNDDB is not currently maintained and no new information has been added in several years. As such, the CDFW maintains a List of Vegetation Alliances and Associations[1] (CDFW 2022. According to the CDFW's Vegetation Program, Alliances with State ranks of S1-S3 are considered to be imperiled, and thus, potentially of special concern.

Within the StanCOG region naturally occurring vegetation communities dominated by native species are likely to be considered sensitive if they have a restricted range or have been largely degraded by non-native invasive species or development. Several blue oak alliances are considered sensitive natural communities and may occur in blue oak-foothill pine and blue oak woodland communities. Many alliances associated with montane hardwood communities are also considered sensitive, including canyon live oak, ponderosa pine, Coulter pine, Jeffry pine, California white fir, Douglas fir, tanoak, and Pacific madrone. Chamise-redshank chaparral and mixed chaparral may also contain alliances considered sensitive by CDFW, including, chamise, toyon, and Melica (*Melica torreyana*). Additionally, many coastal scrub communities are considered sensitive, including black sage and California buckwheat alliances (CDFW 2022).

[1] CDFW classifies vegetation at the two finest levels of alliance and association. The alliance is defined by plant species composition, habitat conditions, physiognomy, and diagnostic species; at least one of the diagnostic species is typically found in the uppermost or dominant stratum (Jennings et al. 2009). The association is the most detailed classification level and reflects more specific characteristics of vegetation such as finer-level differences in species composition, topography, soils, substrate, climate, hydrology, and disturbance regime (FGDC 2008). Unlike alliances, associations often recognize two or more diagnostic species found in different vegetation layers (Sawyer et al. 2009).

Riparian habitats are generally considered sensitive by CDFW, including many willow (*Salix* sp.), California sycamore, and Fremont cottonwood alliances (CDFW 2022).

Because annual grassland communities in the StanCOG region, and throughout the Central Valley, are typically comprised of non-native species, this vegetation community is not likely to be considered sensitive by CDFW. Similarly, croplands and landscaped vegetation are also not considered sensitive.

Federally designated critical habitat for 12 species also occurs in the StanCOG region (Figure 4.4-3). These sensitive communities and critical habitats are also listed in Table 4.4-1. Certain 2022 RTP/SCS projects occur in federally designated critical habitats for five species, as indicated in Table 4.4-1.

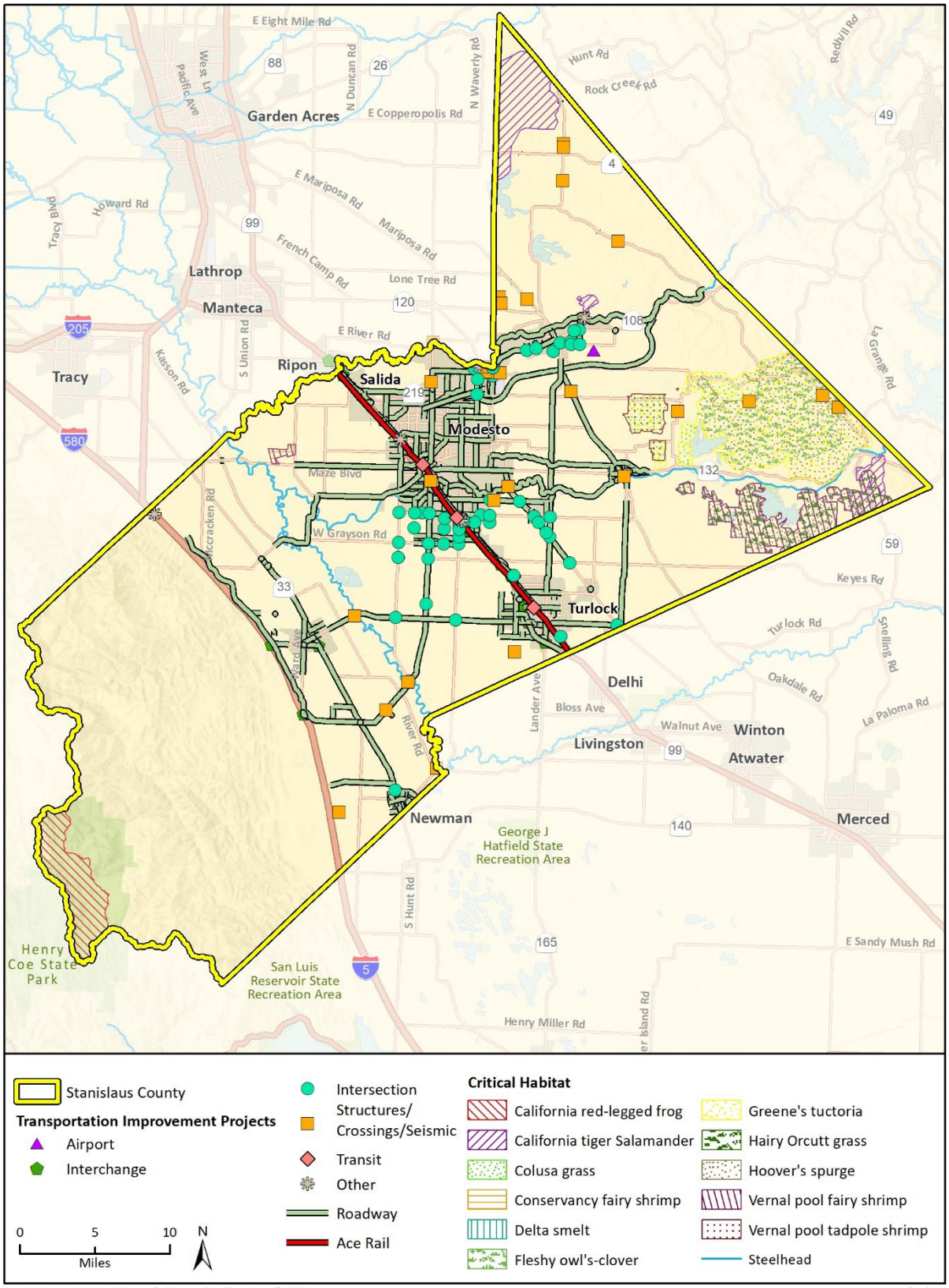
Table 4.4-1 Sensitive Communities and Critical Habitats Documented within the StanCOG Region

Communities Considered Sensitive by the CDFW
Coastal and Valley Freshwater Marsh
Elderberry Savanna
Great Valley Cottonwood Riparian Forest
Great Valley Mixed Riparian Forest
Great Valley Oak riparian Forest
Northern Hardpan Vernal Pool
Sycamore Alluvial Woodland
Critical Habitats
California red-legged frog (*Rana draytonii*)
California tiger salamander (*Ambystoma californiense*)
Colusa grass (*Neostapfia colusana*)*
Conservancy fairy shrimp (*Branchinecta conservatio*)
Delta smelt (*Hypomesus transpacificus*)
Fleshy owl's-clover (*Castilleja campestris ssp. succulenta*)*
Greene's tuctoria (*Tuctoria greenei*)*
Hairy orcutt grass (*Orcuttia pilosa*)
Hoover's spurge (*Chamaesyce hooveri*)*
Vernal pool fairy shrimp (*Branchinecta lynchi*)
Vernal pool tadpole shrimp (*Lepidurus packardi*)
Steelhead - Central Valley DPS*

*Indicates that some 2022 RTP/SCS projects are located within this species designated critical habitat.

Sources: CNDDB (CDFW 2021a); USFWS IPaC (2021b; 2021c)

Figure 4.4-3 Critical Habitats in the StanCOG Region



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Additional data provided by Stanislaus County and USFWS, 2022.

Fig 4.4-3 Critical Habitat

Wildlife Movement Corridors

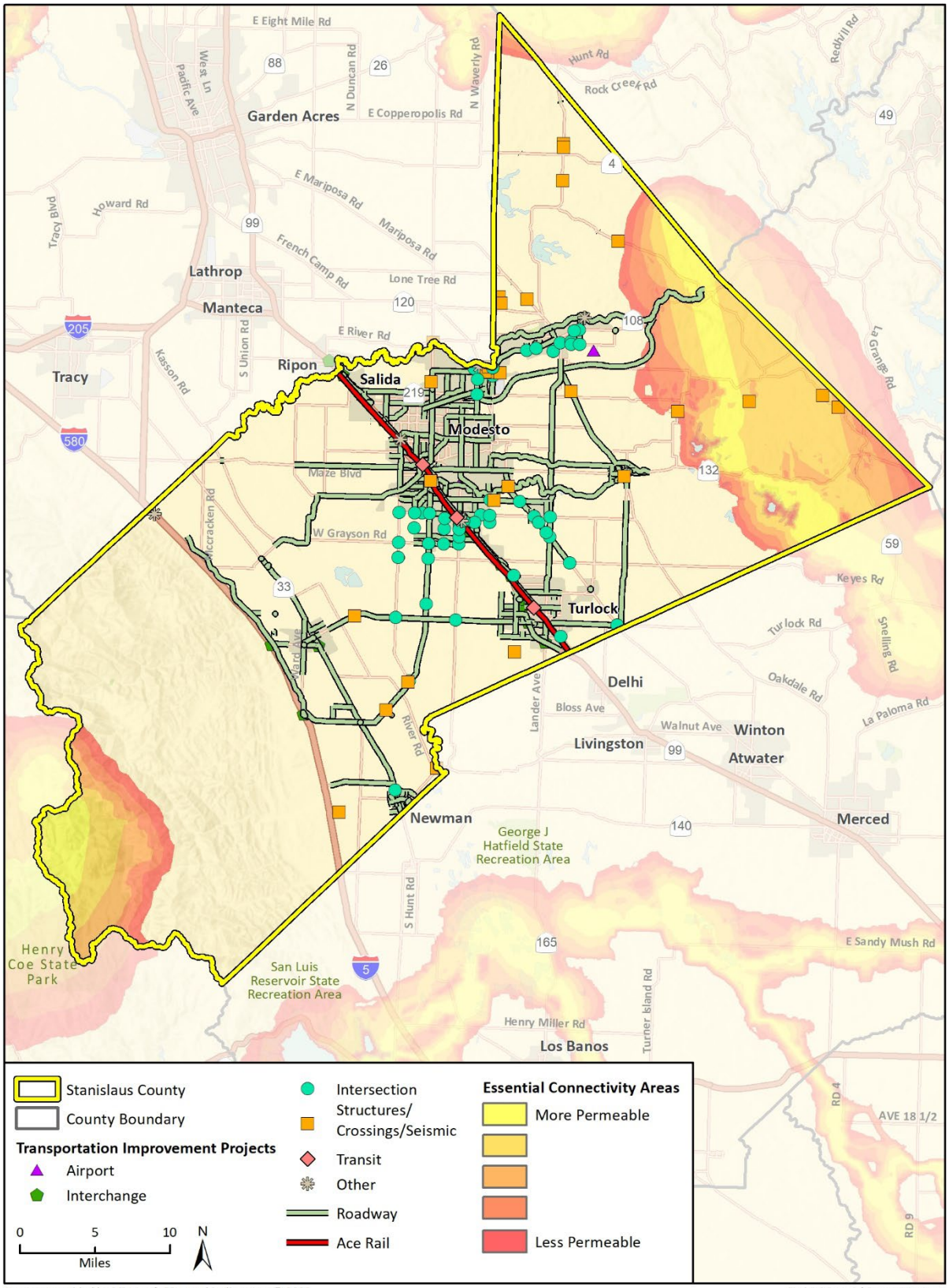
Wildlife movement corridors, or habitat linkages, are generally defined as connections between habitat patches that allow for physical and genetic exchange between otherwise isolated animal populations. Such linkages may serve a local purpose, such as providing a linkage between foraging and denning areas, or they may be regional in nature. Some habitat linkages may serve as migration corridors, wherein animals periodically move away from an area and then subsequently return. Others may be important as dispersal corridors for young animals. A group of habitat linkages in an area can form a wildlife corridor network.

The habitats within the link do not necessarily need to be the same as the habitats that are being linked. Rather, the link merely needs to contain sufficient cover and forage to allow temporary inhabitation by ground-dwelling species. Typically, habitat linkages are contiguous strips of natural areas, though dense plantings of landscape vegetation can be used by certain disturbance-tolerant species. Depending upon the species using a corridor, specific physical resources (such as rock outcroppings, vernal pools, or oak trees) may need to be located within the habitat link at certain intervals to allow slower-moving species to traverse the link. For highly mobile or aerial species, habitat linkages may be discontinuous patches of suitable resources spaced sufficiently close together to permit travel along a route in a short period of time.

Wildlife movement corridors can be both large and small scale. Essential Connectivity Areas (ECA) as mapped in the report *California Essential Habitat Connectivity Project: A Strategy for Conserving a Connected California* (Spencer et al. 2010) represents connectivity at the state level. ECAs are regions in which land conservation and management actions should be prioritized to maintain and enhance connectivity between areas of high ecological importance. ECAs are mapped based on coarse ecological condition indicators, rather than the needs of particular species and thus serve the majority of species in each region. It is important to recognize that even areas outside of Natural Landscape Blocks and ECAs support important ecological values and should not be immediately discounted as lacking conservation value without further review.

The mountainous regions of the StanCOG region likely support wildlife movement on a regional scale while riparian corridors, waterways, flood control channels, contiguous habitat and upland habitat on levees may provide more local scale opportunities for wildlife movement throughout the County. The CDFW BIOS (2021b) mapped two ECAs within the StanCOG region (see Figure 4.4-4). One is in the western portion of the County in the Diablo Range. The other is located near the foothills of the Sierra Nevada in the eastern edge of the StanCOG region. Five important movement corridors are also identified from the report, *Missing Linkages: Restoring Connectivity to the California Landscape* (Penrod et al. 2000). Three are associated with rivers and watercourses, including the San Joaquin River, Tuolumne River, and Stanislaus River. The remaining two movement corridors are associated with the foothill regions of the Diablo and Sierra Nevada Ranges. These areas are identified as important movement corridors for species such as San Joaquin kit fox, riparian brush rabbit, steelhead, Chinook salmon, riparian birds, and other small carnivores. Additionally, the western portion of the StanCOG region extends into the northern Diablo Mountain range which may serve as a movement corridor for the state provisionally protected Southern California/Central Coast ESU of mountain lion.

Figure 4.4-4 Essential Connectivity Areas in the StanCOG Region



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Additional data provided by Stanislaus County and CDFW, 2022.

Fig 4.4-4 Essential Connectivity Areas

4.4.2 Regulatory Setting

a. Federal Laws, Regulations, and Policies

Endangered Species Act

Under the Federal Endangered Species Act (ESA), authorization is required to "take" a listed species. Take is defined under ESA Section 3 as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct." Under federal regulation (50 CFR Sections 17.3, 222.102); "harm" is further defined to include habitat modification or degradation where it would be expected to result in death or injury to listed wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering. Critical habitat is a specific geographic area(s) that is essential for the conservation of a threatened or endangered species and that may require special management and protection. Critical habitat may include an area that is not currently occupied by the species but that will be needed for its recovery. ESA Section 7 outlines procedures for federal interagency cooperation to conserve federally listed species and designated critical habitat.

Section 7(a)(2) of ESA and its implementing regulations require federal agencies to consult with USFWS or National Marine Fisheries Service (NMFS) to ensure that they are not undertaking, funding, permitting, or authorizing actions likely to jeopardize the continued existence of listed species, or result in the destruction or adverse modification of critical habitat. For projects where federal action is not involved and take of a listed species may occur, the project proponent may seek to obtain an incidental take permit under ESA Section 10(a). Section 10(a) allows USFWS to permit the incidental take of listed species if such take is accompanied by a habitat conservation plan (HCP) that includes components to minimize and mitigate impacts associated with the take.

The USFWS and NMFS share responsibility and regulatory authority for implementing ESA (7 USC Section 136, 16 USC Section 1531 et seq.).

Migratory Bird Treaty Act

The Migratory Bird Treaty Act authorizes the Secretary of the Interior to regulate the taking of migratory birds. The act provides that it is unlawful, except as permitted by regulations, "to pursue, hunt, take, capture, kill, attempt to take, capture, or kill, possess, […] any migratory bird, or any part, nest, or egg of any such bird" (16 USC Section 703(a)). The Bald and Golden Eagle Protection Act is the primary law protecting eagles, including individuals and their nests and eggs. The USFWS implements the Migratory Bird Treaty Act (16 United States Code [USC] Section 703-711) and the Bald and Golden Eagle Protection Act (16 USC Section 668). Under the Act's Eagle Permit Rule (50 CFR 22.26), USFWS may issue permits to authorize limited, non-purposeful take of bald eagles and golden eagles.

Section 10 of the River and Harbors Act

Section 10 of the Rivers and Harbors Act of 1899 requires authorization from the Secretary of the Army, acting through the U. S. Army Corps of Engineers (USACE), for the construction of any structure in or over any navigable water of the United States. Regulated activities include dredging or disposal of dredged materials, excavation, filling, rechannelization and construction of any structure or any other modification of a navigable water of the United States.

Clean Water Act

Under Section 404 of the Clean Water Act, the USACE, with EPA oversight, has authority to regulate activities that result in discharge of dredged or fill material into wetlands or other "waters of the United States." Perennial and intermittent creeks are considered waters of the United States if they are hydrologically connected to other jurisdictional waters. In achieving the goals of the Clean Water Act, the U.S. Army Corps of Engineers (USACE) seeks to avoid adverse impacts and offset unavoidable adverse impacts on existing aquatic resources. Any discharge of dredged or fill material into jurisdictional wetlands or other jurisdictional "waters of the United States" would require a Section 404 permit from the USACE prior to the start of work. Typically, when a project involves impacts to waters of the United States, the goal of no net loss of wetlands is met by compensatory mitigation; in general, the type and location options for compensatory mitigation should comply with the hierarchy established by the Corp/EPA 2008 Mitigation Rule (U.S. Environmental Protection Agency 2021) (in descending order): (1) mitigation banks; (2) in-lieu fee programs; and (3) permittee-responsible compensatory mitigation. Also, in accordance with Section 401 of the Clean Water Act, applicants for a Section 404 permit must obtain water quality certification from the appropriate RWQCB.

b. State Laws, Regulations, and Policies

Endangered Species Act and Fully Protected Species

California Endangered Species Act (CESA; Fish and Game Code Section 2050 et. seq.) prohibits take of State-listed threatened and endangered species without a CDFW incidental take permit. Take under CESA is restricted to direct harm of a listed species and does not prohibit indirect harm by way of habitat modification.

Protection of fully protected species is described in Fish and Game Code Sections 3511, 4700, 5050 and 5515. These statutes prohibit take or possession of fully protected species. Incidental take of fully protected species may be authorized under an approved Natural Community Conservation Plan (NCCP).

California Fish and Game Code Sections 3503, 3503.5 and 3511

CFGC sections 3503, 3503.5 and 3511 describe unlawful take, possession, or destruction of birds, nests, and eggs. Fully protected birds (CFGC Section 3511) may not be taken or possessed except under specific permit. Section 3503.5 of the Code protects all birds-of-prey and their eggs and nests against take, possession, or destruction of nests or eggs.

California Fish and Game Code Sections 1360-1372

CFGC Sections 1360 through 1372 comprise the Oak Woodlands Conservation Act. The act was enacted to protect oak woodland habitats that were being diminished by development, firewood harvesting, and agricultural conversions. The Oak Woodlands Conservation Program was established because of the act and is intended to provide project funding opportunities for private landowners, conservation organizations, and cities and counties to conserve and restore oak woodlands. The program authorizes the Wildlife Conservation Board to purchase oak woodland conservation easements and provide grants for land improvements and oak restoration efforts. Section 21083.4 of CEQA requires counties to determine if a project within their jurisdiction may result in conversion of oak woodlands that would have a significant adverse effect on the environment. If the lead

agency determines that a project would result in a significant adverse effect on oak woodlands, mitigation measures to reduce the significant adverse effect of converting oak woodlands to other land uses are required.

Native Plant Protection Act

CDFW also has authority to administer the Native Plant Protection Act (NPPA) (CFGC Section 1900 et seq.). The NPPA requires the CDFW to establish criteria for determining if a species, subspecies, or variety of native plant is endangered or rare. Under Section 1913(c) of the NPPA, the owner of land where a rare or endangered native plant is growing is required to notify the department at least 10 days in advance of changing the land use to allow for salvage of the plant(s).

Section 1600 et seq. of the California Fish and Game Code

Section 1600 et seq. of the CFGC prohibits, without prior notification to CDFW, the substantial diversion or obstruction of the natural flow of, or substantial change or use any material from the bed, channel, or bank of, any river, stream, or lake, or deposit or dispose of debris, waste, or other material containing crumbled, flaked, or ground pavement where it may pass into any river, stream, or lake. For these activities to occur, the CDFW must receive written notification regarding the activity in the manner prescribed by the department and may require a lake or streambed alteration agreement. Lakes, ponds, perennial, and intermittent streams and associated riparian vegetation, when present, are subject to this regulation.

Natural Community Conservation Planning Act

The Natural Communities Conservation Planning (NCCP) Act was established by the California Legislature, is directed by the CDFW, and is implemented by the state, as well as public and private partnerships to protect habitat in California. The NCCP Act takes a regional approach to preserving habitat. An NCCP identifies and provides for the regional protection of plants, animals, and their habitats, while allowing compatible and appropriate economic activity. Once an NCCP has been approved, CDFW may provide take authorization for all covered species, including fully protected species, Section 2835 of the CFGC.

Porter-Cologne Water Quality Control Act

The State Water Resources Control Board (SWRCB) and each of nine local RWQCB has jurisdiction over “waters of the State” pursuant to the Porter-Cologne Water Quality Control Act which are defined as any surface water or groundwater, including saline waters, within the boundaries of the State. SWRCB adopted a State Wetland Definition and Procedures for Discharges of Dredged or Fill Material to Waters of the State (Procedures), for inclusion in the forthcoming Water Quality Control Plan for Inland Surface Waters and Enclosed Bays and Estuaries and Ocean Waters of California. The Procedures consist of four major elements: 1) a wetland definition; 2) a framework for determining if a feature that meets the wetland definition is a water of the state; 3) wetland delineation procedures; and 4) procedures for the submittal, review, and approval of applications for Water Quality Certifications and Waste Discharge Requirements for dredge or fill activities (SWRCB 2021).

California Department of Transportation - California Streets and Highways Code Section 156.3

Assessments and remediation of potential barriers to fish passage for transportation projects using State or federal transportation funds are required. Such assessments must be conducted for any projects that involve stream crossings or other alterations and must be submitted to the CDFW. New projects must be constructed so that they do not present a barrier to fish passage

c. Local Laws, Regulations, and Policies

Stanislaus County General Plan

The Stanislaus County 2015 General Plan Conservation and Open Space Element establishes the following goal, policy, and implementation measures to ensure the conservation and management of natural resources and the preservation of open space.

Goal 1 *Encourage the protection and preservation of natural and scenic areas throughout the County*

Goal 10 *Protect fish and wildlife species of the County*

City General Plans and Regulations

The cities of Ceres, Hughson, Modesto, Newman, Oakdale, Patterson, Riverbank, Turlock, and Waterford have developed General Plans, which guide development and growth within each City's jurisdiction or sphere of influence.

CITY OF CERES GENERAL PLAN

City of Ceres General Plan 2035 provides several goals and policies intended to promote the preservation of biological resources. The Biological Resources Chapter identifies the following relevant goals and policies.

Goal 2.A *Support growth that improves quality of life for all residents and enhances the qualities of Ceres that residents love*

Goal 4.C *Protect, restore, and enhance habitats and wildlife corridors that support fish and wildlife species to maintain populations at viable levels.*

Goal 4.D *Protect environmentally sensitive lands and rare, threatened, or endangered plant and animal communities.*

Goal 4.E *Manage, enhance, and improve the city's tree cover as a valuable community resource.*

CITY OF CERES TREE PROTECTION ORDINANCE

The City of Ceres tree protection ordinance (Municipal Code Chapter 12.17) includes protections for street trees and trees in City parks.

CITY OF HUGHSON GENERAL PLAN

The Hughson General Plan was adopted December 12, 2005. The General Plan's Conservation and Open Space Element provides the following goals, policies, and actions intended to promote the identification and preservation of biological resources:

Goal LU-3 Ensure that new development preserves and enhances Hughson's unique small town character.

Goal COS-3 Protect Hughson's biological resources.

City of Hughson Tree Protection Ordinance

The City of Hughson tree protection ordinance (Municipal Code 17.03.092) includes protections for "street trees" and "Significant trees". A significant tree is defined as *any tree which measures three inches or more in diameter at breast height (DBH) (four and one-half feet above natural grade) or immediately below the lowest branch, whichever is lower*. Under the Municipal Code an Administrative Permit is required for trimming or removal of street trees and significant trees.

City of Modesto General Plan

The Environmental Resources, Open Space and Conservation and Community Development Policies of the Modesto General Plan identifies in policies intended to identify and preserve biological resources. Two sets of policies apply to, on the one hand, the city's Downtown Area and Baseline Developed Area, and on the other, to the Planned Urbanizing Area.

Goal III.C Neighborhoods.

LOCAL OPEN SPACE PLAN

Open space needs are broadly identified by the state legislature. It is within this scope that local jurisdictions must identify specific areas and targets of preservation, development, and/or production. The State Government Code lists six (6) broad categories to be designated on a local open space plan: Open space for 1) the preservation of natural resources, 2) public health and safety, 3) managed production of resources, 4) outdoor recreation, 5) buffer zones to military activities, and 6) protection of places, features, and objects. These categories will be discussed in detail as they relate to the Modesto Urban Area.

1. OPEN SPACE FOR THE PRESERVATION OF NATURAL RESOURCES

State law defines this as including, but not limited to, areas required for the preservation of plant and animal life including habitat for fish and wildlife species; and areas required for ecologic and other scientific study purposes: rivers, streams, bays, estuaries, coastal beaches, lakeshores, banks of rivers and streams, and watershed lands. The Modesto Urban Area contains three such areas of preservation of natural resources: the Stanislaus River, Tuolumne River, and Dry Creek. All three of these waterways are proposed to be acquired and maintained as Regional Parks. Chapter III of this General Plan presents detailed policies, in the form of Comprehensive Planning Districts, for the development of these three parks.

7. Open Space Policies—River Greenway Program

The State Lands Commission holds a fee ownership in the bed of the Stanislaus and Tuolumne Rivers between the two ordinary low water marks. The entire rivers between the ordinary high water marks are subject to a Public Trust Easement. Both easement and fee-owned lands are under the jurisdiction of the State Lands Commission (Public Resources Code Sections 6301 and 6216). Use of lands underlying the state's easement must be consistent with Public Trust needs in the area. In addition, the state may have a sovereign interest in Dry Creek. Due to staff limitations of the State Lands Commission, a study of this area to define the precise nature and extent of the state's interest has not been done. However, the California State Parks Department is interested in providing additional recreational opportunities with the support of local jurisdictions.

City of Modesto Tree Protection Ordinance

The City of Modesto tree protection ordinance (Municipal Code Chapter 7) includes protections for "street trees". A street tree is defined as *any tree whose center of trunk at ground level is within the right-of-way or planting easement.* Under the municipal code permission from the City is required to *remove, trim, prune, spray, or cut any above- or below-ground portions of any street tree in a right-of-way or easement*.

City of Newman General Plan

The City of Newman 2030 General Plan Natural Resources Element provides the following goals, policies, and actions intended to preserve the city's biological resources.

Goal NR-2 Protect water quality in the San Joaquin River and the area's groundwater.

City of Newman Street Tree Plan

The City of Newman's Municipal Code (Section 4-11) requires a "street tree Plan", which the City developed and adopted in 2001. The Street Tree Plan includes detailed planting guidelines, species lists, a maintenance plan, and tree removal requirements.

City of Oakdale General Plan

The Natural Resources and Land Use elements of the Oakdale 2030 General Plan includes the following policies and implementation policies to provide for the identification, protection, and enhancement of the city's biological resources.

Goal NR-1.1 Conservation and enhancement of Oakdale's open spaces and significant biological resources.

City of Oakdale Street Tree Plan and Oak and Significant Tree Preservation Ordinance

The City of Oakdale's Municipal Code (Chapter 32) includes a "street tree Plan". The Street Tree Plan includes planting and removal permissions required, prohibited species, species lists, a maintenance plan. The City's Municipal Code (36-28) also includes Oak and Significant Tree Preservation requirements. Oak trees include and species in the genus *"Quercus" having a trunk or trunks of three (3) inches diameter as measured at a point three (3) feet above the ground*. a significant tree is defined as *any species of tree having a trunk or trunks of twenty-four (24) inches diameter as*

measured at a point three (3) feet above the ground. A permit is required for the destruction or removal of *any oak tree or significant tree growing on private or public property within the City limits*. Additionally, the municipal code includes safeguard measures to protect oak or significant trees during construction, and post construction maintenance, as a condition of grading or building permits.

City of Patterson General Plan

The Patterson General Plan's Natural Resources Element includes the following goals, policies, and implementation policies related to the preservation of biological resources.

Open Space and Sensitive Habitats Goal NR-3 To protect natural open space areas, sensitive native vegetation, and wildlife communities and habitat.

City of Patterson Street Tree Ordinance

The City of Patterson's Municipal Code (Chapter 12.16) includes a permitting, planting and maintenance requirements. A Street Tree is defined as *all trees planted or growing within public rights-of-way, public easements, streets, parking strips, roads and ways within the city*.

City of Riverbank General Plan

The Riverbank General Plan's Community Character and Design and Conservation and Open Space elements contain the following goals and policies intended to preserve biological resources.

Goal CON-4 Preserve Habitat Associated with the Stanislaus River While Increasing Public Access

Goal CONS-5 Preserve the Natural Diversity in the Riverbank Planning Area

City of Riverbank Street Tree Ordinance

The City of Riverbank's Municipal Code (Chapter 96) includes a permitting, planting and maintenance requirements for street trees. A Street Tree is defined as *all trees planted or growing within public rights-of-way, public easements, streets, parking strips, roads and ways within the city.*

City of Turlock General Plan

The Turlock General Plan's Conservation Element provides the following policies relevant to the identification and preservation of archaeological and built environment historical resources.

7.4-a Increase Biological Diversity.

Make efforts to enhance the diversity of Turlock's flora and fauna, including street trees.

7.4-b Sensitive Site Planning.

Protect mature trees and natural vegetation and features wherever feasible in new development areas.

7.4-c Urban Trees.

Protect and expand Turlock's urban forest through public education, sensitive maintenance practices, and a long-term financial commitment adequate to protect these resources. Continue to require the planting of appropriately-spaced street trees in new development areas.

7.4-d Special Review if New Information Becomes Available.

Establish environmental review procedures, such as site reconnaissance and certification by a biologist, as part of the project development application process if new information to support existence of a Special Status species becomes available.

7.4-e Identify and protect nesting habitat.

Projects on greenfield sites proposing to commence construction or other ground-disturbing activities during the typical nesting season (February through mid-September) shall be required to conduct a survey by a qualified biologist no more than 10 days prior to the start of disturbance activities. If nests are found, no-disturbance buffers around active nests shall be established as follows until the breeding season has ended or until a qualified biologist determines that the birds have fledged and are no longer dependent on the nest for survival:

- 250 feet for non-listed bird species;
- 500 feet for migratory bird species; and
- One-half mile for listed species and fully protected species.

7.4-f Swainson's Hawk protection.

If Swainson's Hawks are found foraging in an agricultural area prior to or during construction, project proponents shall consult a qualified biologist for recommended proper action, and incorporate appropriate mitigation measures. If specific project activities on sites where suitable nesting habitat may exist are to take place during the normal breeding season (February through mid-September), project proponents shall be required to conduct a survey by a qualified biologist for nesting raptors in all potentially suitable trees no more than 10 days prior to the start of disturbance activities. If an active Swainson's Hawk nest is found, appropriate mitigation measures may include, but are not limited to:

- Establishing a one-half mile buffer around the nest until the breeding season has ended or until a qualified biologist determines that the birds have fledged and are no longer dependent on the nest for survival
- Mitigating habitat loss within a 10 mile radius of known nest sites as follows:
    a. Providing a minimum of one acre of habitat management land for each acre of development for projects within one mile of an active nest tree
    b. Providing a minimum of 0.75 acres of habitat management land for each acre of development for projects within between one and five miles of an active nest tree
    c. Providing a minimum of 0.5 acres of habitat management land for each acre of development for projects within between five and 10 miles of an active nest tree

City of Turlock Street Tree Ordinance

The City of Turlock's Municipal Code (Chapter 7-7) includes a permitting, planting and maintenance requirements for street trees.

City of Waterford General Plan

Goal Area A Open Space for the Preservation of Natural Resources; Goal Area B: Open Space for the Managed Production of Resources;

City of Waterford Tree Ordinance

The City of Waterford's Municipal Code (Chapter 12.20) includes a permitting, planting and maintenance requirements for City trees and street trees. A City tree is defined as *any tree, other than a street tree, planted or maintained by the city within a city easement, right-of-way, park, greenbelt, public place or property owned by the city.* A street tree is defined as *any tree planted and/or maintained by the city as specified in the street tree plan, adjacent to a street or within a city easement or right-of-way on private property, within the street tree easement*.

4.4.3 Impact Analysis

a. Methodology and Significance Thresholds

Appendix G of the State CEQA Guidelines identifies the following criteria for determining whether a project would have any significant impacts to biological resources:

1. Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service.
2. Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or U.S. Fish and Wildlife Service.
3. Have a substantial adverse effect on state or federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means.
4. Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites.
5. Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.
6. Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.

Threshold 6 is discussed in Section 4.18, *Less than Significant Environmental Factors*. All other thresholds are discussed below.

Data on biological resources were collected from numerous sources, including relevant literature, aerial photographs, maps of natural resources, and data on special-status species and sensitive habitat information obtained from the CDFW CNDDB (2021a), CDFW BIOS (2021b), CWHR (CDFW 2014), CNPS online *Inventory of Rare and Endangered Plants of California* (2021), and the USFWS IPaC (2021b). The USFWS NWI (2021a) and Critical Habitat Mapper (2021c) were also queried. Potential areas of disturbance associated with construction projects or land use development as

discussed in the proposed 2022 RTP/SCS, were compared to the identified biological resource occurrences to determine whether an impact may occur.

b. Project Impacts and Mitigation Measures

The following section discusses potential impacts and mitigation measures that may be associated with transportation projects and the land use scenario contained within the proposed 2022 RTP/SCS. Section 4.1.3.c summarizes the impacts associated with capital improvement projects in the proposed 2022 RTP/SCS. Due to the programmatic nature of the proposed 2022 RTP/SCS, a precise, project-level analysis of the specific impacts associated with individual transportation and land use projects is not possible at this time. In general, however, implementation of proposed transportation improvement projects and future projects under the land use scenario envisioned by the proposed 2022 RTP/SCS could result in the impacts as described in the following section.

Threshold 1:	Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service

Impact BIO-1 IMPLEMENTATION OF TRANSPORTATION PROJECTS AND THE LAND USE SCENARIO ENVISIONED BY THE PROPOSED 2022 RTP/SCS WOULD HAVE A SUBSTANTIAL ADVERSE EFFECT, EITHER DIRECTLY OR THROUGH HABITAT MODIFICATIONS, ON SPECIES IDENTIFIED AS A CANDIDATE, SENSITIVE, OR SPECIAL-STATUS SPECIES IN LOCAL OR REGIONAL PLANS, POLICIES, OR REGULATIONS, OR BY THE CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE OR U.S. FISH AND WILDLIFE SERVICE. IMPACTS WOULD BE SIGNIFICANT AND UNAVOIDABLE.

For the purposes of this analysis, special-status plant and wildlife species include those designations described under 4.4.1.d above, plus locally important species. Most of the capital improvements proposed under the 2022 RTP/SCS consist of minor expansions of existing facilities that would not involve construction in environmentally sensitive habitat areas. However, several projects could affect areas occupied by special-status plant and animal species, namely those projects that would involve new construction or expansion of existing facilities into suitable habitat. As mentioned above, there are 86 special status species known to occur or with potential to occur within the StanCOG region. Twenty-five (25) of these species are protected by the federal government through listing under the ESA or by the State government through listing under CESA or designation as Fully Protected (animals only). The remaining species shown in Appendix B are protected through CEQA and/or through local ordinances. Most special-status species have very limited ranges within the County and have specific habitat requirements. Special-status species may also tend to be associated with sensitive habitats, such as riparian habitats and drainages.

Due to the programmatic nature of the 2022 RTP/SCS, a precise, project-level analysis of the specific impacts of individual transportation projects on special-status species is not possible at this time. As future transportation system improvement projects identified in the 2022 RTP/SCS are planned and designed, site-specific environmental review will be conducted by the agencies responsible for implementing such projects. However, some special-status species are expected to be encountered at the locations where projects administered under the 2022 RTP/SCS would occur. Thus, it is assumed that some resources would not be avoided and that potentially significant impacts would occur.

Projects such as those that occur over or in the vicinity of rivers and creeks, such as S27 (San Joaquin River Seismic Bridge Retrofit) and S28 (Tuolumne River Bridge Seismic Bridge Replacement), would be within suitable habitat for species such as California red-legged frog (Federally Threatened and SSC) and steelhead – Central Valley DPS (Federally Endangered and State Species of Special Concern). Creeks and river systems within the StanCOG region that are part of the San Joaquin River system, including those mentioned above, are considered within the current distribution of and accessible to steelhead – Central Valley DPS (Federally Threatened).

In addition to the rivers and creeks that may be impacted, future transportation projects under the 2022 RTP/SCS could impact upland habitats and the sensitive species that may occupy them. For example, coast horned lizards (*Phrynosoma blainvillii;* SSC) may be present in scrub, grassland, and some woodland habitats near roads where projects could occur. Several special-status bat species may be affected by proposed projects where they occur under bridges or similar structures, or in native habitat adjacent to construction areas. Furthermore, the wide variety of habitats within the 2022 RTP/SCS area can support many species of nesting birds, including sensitive species such as the burrowing owl (*Athene cunicularia;* SSC). Disturbance of special-status plants could result in reductions in local population size, habitat fragmentation, or lower reproductive success.

Direct impacts to special-status species include injury or mortality occurring during implementation of projects under the 2022 RTP/SCS. Direct impacts also include habitat modification and loss such that it results in the mortality or otherwise alters the foraging and breeding behavior substantially enough to cause injury. Indirect impacts could be caused by the spread of invasive non-native species that out-compete native species and/or alter habitat towards a state that is unsuitable for special-status species. For example, the spread of certain weed species can reduce the biodiversity of native habitats, potentially eliminating special-status plant species and reducing the availability of suitable forage and breeding sites for special-status animal species. Indirect impacts could also result from increased access by humans and domestic animals, particularly in areas where trails may be planned. Increased presence of humans and domestic animals foster the spread of non-native invasive plant species and can disrupt the normal behaviors of animal species.

In addition to direct and indirect impacts that may result from transportation improvement projects, the 2022 RTP/SCS also contains a future land use scenario that envisions infill development and mixed-use development. This land use scenario focuses future development within existing urbanized areas. As a result, encroachment into undisturbed habitat would be reduced when compared to a land use scenario that did not focus future development within existing urbanized areas. This would limit impacts to sensitive plant and animal species. However, it is possible that sensitive plant and animal species could be located on future infill and mixed-use development project sites. As a result, infill and mixed-use development could impact plant and animal species that may be present on or in proximity to undeveloped infill parcels. Many aquatic and semi-aquatic special-status animal species, such as steelhead, are associated with creeks even in the most densely developed urban areas. Both native and non-native trees and shrubs throughout urban areas may also support nesting birds and valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*). Impacts would be potentially significant.

Mitigation Measures

For transportation projects under their jurisdiction, StanCOG shall implement, and transportation project sponsor agencies can and should implement, the following mitigation measures for applicable transportation projects that would result in impacts to special-status animal and plant species or their habitats. The County and cities in the StanCOG region can and should implement

these measures, where relevant to land use projects implementing the 2022 RTP/SCS. Project-specific environmental impacts may require these mitigation measures be revised or expanded in response to site-specific conditions.

BIO-1(a) Biological Resources Screening and Assessment

The implementing agencies shall, or can and should, implement the following measures during CEQA review of projects implementing the proposed 2022 RTP/SCS. On a project-by-project basis, a preliminary biological resource screening shall be performed as part of the environmental review process to determine whether the project has any potential to impact biological resources. If it is determined that the project has no potential to impact biological resources, no further action is required. If the project would have the potential to impact biological resources, prior to construction, a qualified biologist shall conduct a biological resources assessment to document the existing biological resources within the project footprint plus a buffer and to determine the potential impacts to those resources. The biological resources assessment shall evaluate the potential for impacts to all biological resources including, but not limited to: special-status species, nesting birds, wildlife movement, sensitive plant communities, critical habitat, Essential Fish Habitat, and other resources judged to be sensitive by local, state, and/or federal agencies. Pending the results of the biological resources assessment, design alterations, further technical studies (i.e., protocol surveys) and/or consultations with the USFWS, CDFW and/or other local, state, and federal agencies may be required. If the project cannot be designed without complete avoidance, the sponsor agency shall coordinate with the appropriate regulatory agency (i.e., USFWS, NMFS, CDFW, USACE) to obtain regulatory permits and implement project - specific mitigation prior to any construction activities. The following mitigation measures [BIO-1(b) through BIO-1(j)] shall be incorporated only as applicable into the biological resources assessment and/or the project CEQA document for projects where specific resources are present or may be present and impacted by the project. Note that specific surveys described in the mitigation measures below may be completed as part of the biological resources assessment where suitable habitat is present. The results of the biological resources screening and assessment shall be provided to the implementing agency for review and approval.

BIO-1(b) Special-status Plant Species Surveys

If completion of the project-specific biological resources assessment determines that special-status plant species have potential to occur on-site, surveys for special-status plants shall be completed prior to any vegetation removal, grubbing, or other construction activity of each project (including staging and mobilization). The surveys shall be floristic in nature and shall be seasonally timed to coincide with the target species identified in the project-specific biological resources assessment. All plant surveys shall be conducted by a qualified biologist approved by the implementing agency no more than two years prior to project implementation. All special-status plant species identified on-site shall be mapped onto a site-specific aerial photograph or topographic map. Surveys shall be conducted in accordance with the most current protocols established by the CNPS, CDFW and/or USFWS. A report of the survey results shall be submitted to the implementing agency for review. If special-status plant species are identified, mitigation measure BIO-1(c) shall apply.

BIO-1(c) Special-status Plant Species Avoidance, Minimization, and Mitigation

If state or federally listed and/or CRPR 1 and 2 species are found during special-status plant surveys [pursuant to mitigation measure BIO-1(b)], then the project shall be re-designed to avoid impacting these plant species to the maximum extent feasible. Occurrences of these species that are not

within the immediate disturbance footprint but are located within 50 feet of disturbance limits shall have bright orange protective fencing installed at least 30 feet beyond their extent, or other distance as approved by a qualified biologist, to protect them from harm. If CRPR 3 and 4 species are found, the biologist shall evaluate to determine if they meet criteria to be considered special-status, and if so, the same process as identified for CRPR 1 and 2 species shall apply.

If special-status plants species cannot be avoided and would be impacted by a project implemented under the 2022 RTP/SCS, all impacts shall be mitigated at a minimum ratio of 1:1 (number of acres or individuals restored to number of acres or individuals impacted) for each species as a component of habitat restoration. A restoration plan shall be prepared and submitted to the implementing agency.

BIO-1(d) Endangered/Threatened Species Habitat Assessment and Protocol Surveys

If the results of the biological resources assessment determine that suitable habitat may be present for any such species, protocol habitat assessments/surveys shall be completed in accordance with CDFW and/or USFWS/NMFS protocols prior to issuance of any construction permits/project approvals.

Alternatively, in lieu of conducting protocol surveys, the implementing agency may choose to assume presence within the project footprint and proceed with development of appropriate avoidance measures, consultation, and permitting, as applicable.

If the target species is detected during protocol surveys, or protocol surveys are not conducted and presence assumed based on suitable habitat, mitigation measure BIO-1(e) shall apply.

BIO-1(e) Endangered/Threatened Species Avoidance and Compensatory Mitigation

If habitat is occupied or presumed occupied by federal and/or state listed species and would be impacted by the project, the implementing agency shall redesign the project in coordination with a qualified biologist to avoid impacting occupied/presumed occupied habitat to the extent feasible. If occupied or presumed occupied habitat cannot be avoided, the implementing agency shall estimate the total acreages for habitat that would be impacted prior to the issuance of construction permits/approvals.

Compensatory mitigation shall be achieved through purchase of credits at a USFWS, NMFS and/or CDFW approved conservation bank if available for the affected species, and/or through providing compensatory mitigation to offset impacts to federal and/or state listed species habitat. Compensatory mitigation shall be provided at an appropriate ratio to fully offset project impacts, as determined by a qualified biologist for permanent impacts. Compensatory mitigation may be combined/nested with special-status plant species and sensitive community restoration where applicable. Temporary impact areas shall be restored to pre-project conditions.

If on and/or off-site compensatory mitigation sites are identified, the implementing agency shall retain a qualified biologist to prepare a Habitat Mitigation and Monitoring Plan (HMMP) to ensure the success of compensatory mitigation sites that are to be conserved for compensation of permanent impacts to federal and/or state listed species. The HMMP shall identify long term site management needs, routine monitoring techniques, techniques, and success criteria, and shall determine if the conservation site has restoration needs to function as a suitable mitigation site. If restoration is required on the conservation site, the HMMP shall contain the restoration

components outlined under the Restoration Plan listed in measure BIO-1(c). The HMMP shall be submitted to the implementing agency.

BIO-1(f) Endangered/Threatened Species Avoidance and Minimization

The following measures shall be applied to aquatic and terrestrial species, where appropriate. Project sponsors shall select from these measures as appropriate depending on site conditions, the species with potential for occurrence, and the results of the biological resources screening and assessment (measure BIO-1[a]).

- Preconstruction surveys for federal and/or state listed species with potential to occur shall be conducted where suitable habitat is present by a qualified biologist not more than 48 hours prior to the start of construction activities. The survey area shall include the proposed disturbance area and all proposed ingress/egress routes, plus a 100-foot buffer. If any life stage of federal and/or state listed species is found within the survey area, the appropriate measures in the BO or Habitat Conservation Plan(HCP)/Incidental Take Permit (ITP) issued by the USFWS/NMFS (relevant to federal listed species) and/or the ITP issued by the CDFW (relevant to state listed species) shall be implemented; or if such guidance is not in place for the activity, the USFWS, NMFS and/or CDFW shall be consulted to determine the appropriate course of action. The results of the pre-construction surveys shall be submitted to the implementing agency for review and approval prior to start of construction.
- Ground disturbance shall be limited to the minimum necessary to complete the project. The project limits of disturbance shall be flagged. Areas of special biological concern within or adjacent to the limits of disturbance shall have highly visible orange construction fencing installed between said area and the limits of disturbance.
- All projects occurring within/adjacent to aquatic habitats (including riparian habitats and wetlands) shall be completed between April 1 and October 31, to avoid impacts to sensitive aquatic species.
- All projects occurring within or adjacent to sensitive habitats that may support federally and/or state endangered/threatened species shall have a qualified biologist present during all initial ground disturbing/vegetation clearing activities. Once initial ground disturbing/vegetation clearing activities have been completed, said biologist shall conduct daily pre-activity clearance surveys for endangered/threatened species. Alternatively, and upon approval of the CDFW and/or USFWS or as outlined in project permits, said biologist may conduct site inspections at a minimum of once per week to ensure all prescribed avoidance and minimization measures are begin fully implemented.
- No endangered/threatened species shall be captured and relocated without authorization from the CDFW and/or USFWS.
- If pumps are used for dewatering activities, all intakes shall be completely screened with wire mesh not larger than five millimeters to prevent animals from entering the pump system.
- If at any time during construction of the project an endangered/threatened species enters the construction site or otherwise may be impacted by the project, all project activities shall cease. At that point, the USFWS, NMFS and/or CDFW shall be consulted to determine the appropriate course of action, or the appropriate measures implemented in accordance with the BO or HCP/ITP issued by the USFWS (relevant to federal listed species) and/or the ITP issued by the CDFW (relevant to state listed species) and work can then continue as guided by those documents and the agencies as appropriate.

- All vehicle maintenance/fueling/staging shall occur not less than 100 feet from any riparian habitat or water body. Suitable containment procedures shall be implemented to prevent spills. A minimum of one spill kit shall be available at each work location near riparian habitat or water bodies.
- No equipment shall be permitted to enter wetted portions of any affected drainage channel.
- All equipment operating within streambeds (restricted to conditions in which water is not present) shall be in good conditions and free of leaks. Spill containment shall be installed under all equipment staged within stream areas and extra spill containment and clean up materials shall be located in close proximity for easy access.
- If project activities could degrade water quality, water quality sampling shall be implemented to identify the pre-project baseline, and to monitor during construction for comparison to the baseline.
- At the end of each workday, excavations shall be secured with cover or a ramp shall be provided to prevent wildlife entrapment.
- All trenches, pipes, culverts, or similar structures shall be inspected for animals prior to burying, capping, moving, or filling.

BIO-1(g) Non-Listed Special-status Animal Species Avoidance and Minimization

Depending on the species identified in the biological resources screening assessment (measure BIO-1[a]), measures shall be selected from among the following to reduce the potential for impacts to non-listed special-status animal species:

- Preconstruction clearance surveys shall be conducted within 14 days prior to the start of construction (including staging and mobilization). The surveys shall cover the entire disturbance footprint plus a minimum 100-foot buffer and shall identify all special-status animal species that may occur on-site. All non-listed special-status species shall be relocated from the site either through direct capture or through passive exclusion. A report of the preconstruction survey shall be submitted to the implementing agency for their review and approval prior to the start of construction.
- A qualified biologist shall be present during all initial ground disturbing activities, including vegetation removal, to recover special-status animal species unearthed by construction activities.
- Upon completion of the project, a qualified biologist shall prepare a final compliance report documenting all compliance activities implemented for the project, including the preconstruction survey results. The report shall be submitted within 30 days of completion of the project.
- If special-status bat species may be present and impacted by the project, within 30 days of the start of construction a qualified biologist shall conduct presence/absence surveys for special-status bats, in consultation with the CDFW, where suitable roosting habitat is present. Surveys shall be conducted using acoustic detectors and by searching tree cavities, crevices, and other areas where bats may roost. If active bat roosts or colonies are present, the biologist shall evaluate the type of roost to determine the next step.
- If a maternity colony is present, all construction activities shall be postponed within a 250-foot buffer around the maternity colony until it is determined by a qualified biologist that the young have dispersed or as recommended by CDFW through consultation. Once it has been determined that the roost is clear of bats, the roost shall be removed immediately.

- If a roost is determined by a qualified biologist to be used by a large number of bats (large hibernaculum), alternative roosts, such as bat boxes if appropriate for the species, shall be designed and installed near the project site. The number and size of alternative roosts installed will depend on the size of the hibernaculum and shall be determined through consultations with the CDFW.
- If other active roosts are located, exclusion devices such as valves, sheeting or flap-style one-way devices that allow bats to exit but not re-enter roosts discourage bats from occupying the site.

BIO-1(h) Preconstruction Surveys for Nesting Birds

The implementing agencies shall, or can and should, implement the following measures during CEQA review of projects implementing the proposed 2022 RTP/SCS. For construction activities occurring during the nesting season (generally February 1 to September 15), surveys for nesting birds covered by the CFGC, the Migratory Bird Treaty Act, and Bald and Golden Eagle Protection Act shall be conducted by a qualified biologist no more than 30 days prior to vegetation removal activities.

A qualified biologist shall conduct preconstruction surveys for raptors. The survey for the presence of bald and golden eagles, shall cover all areas within of the disturbance footprint plus a one-mile buffer where access can be secured. The survey area for all other nesting bird and raptor species shall include the disturbance footprint plus a 300-foot and 500-foot buffer, respectively.

If active nests (nests with eggs or chicks) are located, the qualified biologist shall establish an appropriate avoidance buffer ranging from 50 to 300 feet based on the species biology and the current and anticipated disturbance levels occurring in vicinity of the nest. The objective of the buffer shall be to reduce disturbance of nesting birds. All buffers shall be marked using high-visibility flagging or fencing, and, unless approved by the qualified biologist, no construction activities shall be allowed within the buffers until the young have fledged from the nest or the nest fails.

For bald or golden eagle nests identified during the preconstruction surveys, an avoidance buffer of up to one mile shall be established on a case-by-case basis in consultation with the USFWS and CDFW. The size of the buffer may be influenced by the existing conditions and disturbance regime, relevant landscape characteristics, and the nature, timing, and duration of the expected disturbance. The buffer shall be established between February 1 and September 15; however, buffers may be relaxed earlier than September 15 if a qualified ornithologist determines that a given nest has failed or that all surviving chicks have fledged, and the nest is no longer in use.

A report of these preconstruction nesting bird surveys and nest monitoring (if applicable) shall be submitted to the implementing agency for review and approval prior to the start of construction.

BIO-1(i) Fence and Signpost Restriction

Any fencing posts or signs installed temporarily or permanently throughout the course of the project shall have the top three post holes covered or filled with screws or bolts to prevent the entrapment of wildlife, specifically the talons of birds of prey. Also, fencing shall incorporate wildlife friendly design elements, such as smooth wires and having a 6-inch or greater gap above grade. Fencing shall also be designed to be wildlife friendly (e.g., smooth top wire, smooth bottom wire at 6 inches above grade, etc.).

BIO-1(j) Worker Environmental Awareness Program (WEAP)

The implementing agencies shall, or can and should, implement the following measures during CEQA review of projects implementing the proposed 2022 RTP/SCS. Prior to initiation of construction activities (including staging and mobilization), all personnel associated with project construction shall attend WEAP training, conducted by a qualified biologist, to aid workers in recognizing special-status resources that may occur in the project area. The specifics of this program shall include identification of the sensitive species and habitats, a description of the regulatory status and general ecological characteristics of sensitive resources, and review of the limits of construction and mitigation measures required to reduce impacts to biological resources within the work area. A fact sheet conveying this information shall also be prepared for distribution to all contractors, their employers, and other personnel involved with construction of the project. All employees shall sign a form documenting that they have attended the WEAP and understand the information presented to them.

IMPLEMENTING AGENCIES AND TIMING

Implementing agencies for transportation projects are StanCOG and transportation project sponsor agencies. Implementing agencies for land use projects are cities and the County. These mitigation measure shall, or can and should, be applied during project permitting and environmental review.

Significance After Mitigation

Compliance with the above mitigation measures would reduce impacts to special-status species and their habitat because the mitigation measures require pre-project surveys and biological monitoring, focused biological surveys, avoidance or minimization of project related disturbance or loss of special-status species, compensation for disturbed or loss of special-status species habitat and coordination with permitting agencies, as required prior to project implementation. However, it cannot be guaranteed that all future project level impacts to special-status species can be mitigated to a less than significant level for all species. Additionally, complete avoidance is the only mitigation for fully protected species, which may not be feasible under some circumstances. There are no other feasible mitigation measures. Therefore, impacts would remain significant and unavoidable.

Threshold 2:	Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or U.S. Fish and Wildlife Service
Threshold 3:	Have a substantial adverse effect on state and federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means

Impact BIO-2 IMPLEMENTATION OF TRANSPORTATION PROJECTS AND THE LAND USE SCENARIO ENVISIONED BY THE PROPOSED 2022 RTP/SCS WOULD RESULT IN SUBSTANTIAL ADVERSE IMPACTS ON SENSITIVE HABITATS, INCLUDING SENSITIVE NATURAL COMMUNITIES, AND STATE AND FEDERALLY PROTECTED WETLANDS. THIS IMPACT WOULD BE SIGNIFICANT AND UNAVOIDABLE.

Transportation projects and land use development that may be implemented under the 2022 RTP/SCS have the potential to impact riparian areas and wetlands, as mapped on Figure 4.4-2. Due to the programmatic nature of this analysis, the project-specific extent and severity of the impacts is

not known at this time. Some examples of types of projects with potential impacts include, but are not limited to: retrofit, construction and reconstruction/widening of bridges over rivers and creeks such as S27 (San Joaquin River Seismic Bridge Retrofit) and S28 (Tuolumne River Bridge Seismic Bridge Replacement), including the San Joaquin River, Stanislaus River, Tuolumne River, Orestimba Creek, and Gallup Creek. These types of projects would have potential to impact riparian areas, as well as water bodies. In addition, projects such as multi-use trails and bike paths may also involve development along riparian corridors. Riparian areas provide wildlife habitat, and movement corridors, enabling both terrestrial and aquatic organisms to move along river systems between areas of suitable habitat. Construction of the proposed facilities could have both direct impacts associated with the disturbance of riparian flora and fauna and indirect impacts caused by increased erosion and sedimentation, which can adversely affect downstream water quality. Construction could also impact aquatic features protected by CDFW and require a Lake and Streambed Alteration Agreement. These features include rivers, streams, and lakes, including the banks of these features.

In addition, other sensitive habitats, including oak woodlands, could occur at locations of transportation improvement projects and land use development sites. As noted in Section 4.4.1.c, vegetation alliances with State ranks of S1-S3 are considered to be imperiled and thus, potentially of special concern and sensitive (CDFW 2021d). Impacts to these sensitive communities, including oak woodlands, could be significant. Direct impacts to sensitive habitats include loss of habitat during construction of the project. Indirect impacts include habitat degradation caused by the introduction of invasive plant species incidentally from construction equipment and through selection of invasive landscape plants, as well as erosion of disturbed areas.

The future land use scenario envisioned by the 2022 RTP/SCS would encourage infill development and mixed-use development. This land use scenario focuses future development within existing urbanized areas. As a result, future infill and mixed-use development are likely to result in only limited impacts on riparian habitat or sensitive habitat, though some parcels that have been relatively free of ground disturbance may contain remnants of sensitive native habitats such as Elderberry Savanna and Great Valley Mixed Riparian Forest or other vegetation alliances and associations that are deemed sensitive by the CDFW. Furthermore, some areas mapped by CWHR as somewhat disturbed habitats, such as annual grasslands, may at the local scale include sensitive native vegetation with unique assemblages of native plants, such as areas dominated by native wildflowers, vernal pools, and native grasslands. Impacts would be potentially significant.

Mitigation Measures

For transportation projects under their jurisdiction, StanCOG shall implement, and transportation project sponsor agencies can and should implement, the following mitigation measure for applicable transportation projects that would impact sensitive habitats and/or jurisdictional wetlands and waters. Stanislaus County and cities in the StanCOG region can and should implement these measures, where relevant to land use projects implementing the 2022 RTP/SCS. Project-specific environmental documents may adjust these mitigation measures as necessary to respond to site-specific conditions.

BIO-2(a) Aquatic Resources Jurisdictional Delineation and Impact Avoidance

The implementing agencies shall, or can and should, implement the following measures during CEQA review of projects implementing the proposed 2022 RTP/SCS. If the results of measure BIO-1(a) indicates projects implemented under the proposed 2022 RTP/SCS occur within or adjacent to wetland, drainages, riparian habitats, or other areas that may fall under the jurisdiction of the

CDFW, USACE, and/or RWQCB, a qualified biologist shall complete an aquatic resources delineation in accordance with the requirement set forth by each agency. The result shall be submitted to the implementing agency, USACE, RWQCB, and/or CDFW, as appropriate, for review and approval, and the project shall be designed to avoid and minimize impacts to jurisdictional areas to the extent feasible. The delineation shall serve as the basis to identify potentially jurisdictional areas to be protected during construction, through implementation of the avoidance and minimization identified in measure BIO-2(f).

BIO-2(b) Wetland, Drainages, and Riparian Habitat Restoration

The implementing agencies shall, or can and should, implement the following measures during CEQA review of projects implementing the proposed 2022 RTP/SCS. Unavoidable impacts to jurisdictional wetlands, drainages, and riparian habitat shall be mitigated at an appropriate ratio to fully offset project impacts, as determined by a qualified biologist retained by the implementing agency and shall occur on-site or as close to the impacted habitat as possible. A mitigation and monitoring plan consistent with regulatory agency requirements shall be developed by a qualified biologist and submittal to the regulatory agency overseeing the project for approval. Alternatively, mitigation shall be accomplished through purchase of credits from an approved wetlands mitigation bank.

BIO-2(c) Landscaping Plan

If landscaping is proposed for a specific project, a qualified biologist/landscape architect retained by the implementing agency shall prepare a landscape plan. Drought tolerant, locally native plant species shall be used. Noxious, invasive and/or non-native plant species that are recognized on the Federal Noxious Weed List, California Noxious Weeds List and/or California Invasive Plant Council Inventory shall not be permitted. Species selected for planting shall be regionally appropriate native species that are known to occur in the adjacent native habitat types.

BIO-2(d) Sensitive Natural Community Avoidance and Mitigation

If the results of measure BIO-1(a) indicates projects implemented under the proposed 2022 RTP/SCS would impact sensitive natural communities, the implementing agency shall avoid impacts to sensitive natural communities through final project design modifications if feasible.

If the implementing agency determines that sensitive natural communities cannot be avoided, impacts shall be mitigated on-site or offsite at an appropriate ratio to fully offset project impacts, as determined by a qualified biologist based on any applicable resource agency guidelines. Temporarily impacted areas shall be restored to pre-project conditions. A Restoration Plan shall be developed by a qualified biologist and submitted to the implementing agency.

BIO-2(e) Invasive Weed Prevention and Management Program

Prior to start of construction for each project that occurs within or adjacent to native habitats, an Invasive Weed Prevention and Management Program shall be developed by a qualified biologist retained by the implementing agency to prevent invasion of native habitat by non-native plant species. The plan shall be submitted to the implementing agency for review and approval. A list of target species shall be included, along with measures for early detection and eradication.

The plan, which shall be implemented by the implementing agency, shall also include, but not be limited to, the following measures to prevent the introduction of invasive weed species:

- During construction, limit the use of imported soils for fill. If the use of imported fill material is necessary, the imported material must be obtained from a source that is known to be free of invasive plant species.
- To minimize colonization of disturbed areas and the spread of invasive species, the contractor shall stockpile topsoil and redeposit the stockpiled soil after construction or transport the topsoil to a permitted landfill for disposal.
- All erosion control materials, including straw bales, straw wattles, or mulch used on-site must be free of invasive species seed.
- Exotic and invasive plant species shall be excluded from any erosion control seed mixes and/or landscaping plant palettes associated with the proposed project
- All disturbed areas shall be hydroseeded with a mix of locally native species upon completion of work in those areas.

BIO-2(f) Wetlands, Drainages, and Riparian Habitat Best Management Practices During Construction

The following best management practices shall be required by the implementing agency for development within or adjacent to wetlands, drainages, or riparian habitat:

- Access routes, staging and construction areas shall be limited to the minimum area necessary to achieve the project goal and minimize impacts to other waters including locating access routes and ancillary construction areas outside of jurisdictional areas.
- To control sedimentation during and after project implementation, appropriate erosion control materials shall be deployed to minimize adverse effects on jurisdictional areas in the vicinity of the project.
- Project activities within the jurisdictional areas should occur during the dry season (typically between June 1 and November 1) in any given year, or as otherwise directed by the regulatory agencies.
- During construction, no litter or construction debris shall be placed within jurisdictional areas. All such debris and waste shall be picked up daily and properly disposed of at an appropriate site.
- Raw cement, concrete, or washings thereof, asphalt, paint or other coating material, oil or other petroleum products, or any other substances which could be hazardous to aquatic species resulting from project related activities, shall be prevented from contaminating the soil and/or entering wetlands, drainages, or riparian habitat.
- All refueling, maintenance and staging of equipment and vehicles shall occur at least 100 feet from bodies of water and in a location where a potential spill would not drain directly toward aquatic habitat (e.g., on a slope that drains away from the water source). Prior to the onset of work activities, a plan must be in place for prompt and effective response to any accidental spills.

IMPLEMENTING AGENCIES AND TIMING

Implementing agencies for transportation projects are StanCOG and transportation project sponsor agencies. Implementing agencies for land use projects are cities and the County. These mitigation measure shall, or can and should, be applied during project permitting and environmental review, and implemented prior to project construction and during construction activities.

Significance After Mitigation

Compliance with the above mitigation measures would reduce impacts to sensitive communities and wetlands because the mitigation measures require focused biological surveys, best management practices for avoidance or minimization impacts, compensation for disturbed or loss of sensitive communities and wetlands and coordination with permitting agencies, as required prior to project implementation. However, it cannot be guaranteed that all future project level impacts can be mitigated to a less than significant level for all sensitive habitats. There are no other feasible mitigation measures. As such, impacts would remain significant and unavoidable.

Threshold 4:	Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites

Impact BIO-3 IMPLEMENTATION OF TRANSPORTATION PROJECTS AND THE LAND USE SCENARIO ENVISIONED BY THE PROPOSED 2022 RTP/SCS WOULD INTERFERE SUBSTANTIALLY WITH THE MOVEMENT OF ANY NATIVE RESIDENT OR MIGRATORY FISH OR WILDLIFE SPECIES OR WITH ESTABLISHED NATIVE RESIDENT OR MIGRATORY WILDLIFE CORRIDORS OR IMPEDE THE USE OF NATIVE WILDLIFE NURSERY SITES. THIS IMPACT WOULD BE SIGNIFICANT AND UNAVOIDABLE.

As discussed above in Section 4.4.1, *Setting*, the StanCOG region contains two mapped ECAs (CDFW 2021b). One is in the western portion of the County in the Diablo Range. The other is located near the foothills of the Sierra Nevada in the eastern edge of Stanislaus County. Five important movement corridors are also identified. Three are associated with rivers and watercourses, including the San Joaquin River, Tuolumne River, and Stanislaus River. The remaining two movement corridors are associated with the foothill regions of the Diablo and Sierra Nevada Ranges, but also include some agricultural and developed areas (mostly rural residential) and some are bisected by major roadways. As such, several transportation projects in the proposed 2022 RTP/SCS may overlap with areas of mapped ECAs or other locally important wildlife movement corridors including rivers and watercourses within the region.

Large swaths of undeveloped areas within the StanCOG region provide vegetative cover suitable for the movement of many terrestrial wildlife species, including medium to large-sized, mobile mammals with relatively large home ranges, such as coyote, deer, bobcat, grey fox, and mountain lion, and provide foraging and breeding habitat for many species. Wildlife species can move through these vegetated areas routinely with some species also using concrete-lined or earthen stormwater channels in the area for movement.

As previously discussed under Impacts BIO-1 and BIO-2, transportation improvement projects and the land use scenario envisioned by the 2022 RTP/SCS could occur within areas that support sensitive habitat (e.g., riparian areas, undeveloped natural areas). Direct and indirect disturbances to these areas could potentially interfere with the movement of native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors within the SJCOG region.

Fragmentation of habitat by roads and development throughout the Central Valley and surrounding open space areas is already a serious issue, and retaining existing connectivity (e.g., roadless area) between large undeveloped areas is considered important for the long-term viability of wildlife populations in the area, and therefore is very desirable from the standpoint of conservation planning.

Even in more urbanized areas such as Modesto and Turlock, there are pockets of natural areas that are considered native wildlife nursery sites (e.g., San Joaquin River and Tuolumne River). These areas have the potential to support nesting birds and other breeding wildlife. Development projects are required to comply with CFGC sections (e.g., Sections 3503, 3503.5, 3513, and 4150); thus, it is unlikely that infill development or TOD accommodated under the 2022 RTP/SCS would result in the disturbance or destruction of active nest sites or the unauthorized take of birds or nongame mammals. Nevertheless, if development activities directly (e.g., cutting of trees or other vegetation, or removal of man-made structures containing an active bird nest or denning wildlife) or indirectly (e.g., if activities sufficiently harassed birds to cause nest abandonment) affect nesting birds and nongame mammals, a violation of the Fish and Game Code would result.

Larger predatory mammals known to occur in the StanCOG region do not travel in large groups requiring large swaths of land;[2] thus, the reduction in capacity of migratory corridors would be less than significant. Conversely, game species such as mule deer, would be confined to narrower movement channels, which could lead to a reduction in capacity and could present a more opportunistic situation for predators (i.e., may increase predation rates). If prey species are dispersing through a more confined corridor, this may provide a bottleneck of which a predator can take advantage, although there is no clear evidence that predation rates universally increase in a negative way due to corridors, and the relationship between predation and corridors is complex (Conservation Corridor 2021).

Development of wider roadways and associated infill development and TOD may also result in wildlife attempting to cross roadways at inopportune areas, (i.e., areas that are significantly narrower and confined by steeper hillsides or other barriers). This potential shift may lead to an increase in road mortality. Thus, impacts to wildlife movement based on existing and post-project opportunities would be considered significant without incorporation of mitigation.

Direct impacts to wildlife include increased noise and human presence during construction, as well as increased trash which may attract predators to the project site and discourage wildlife use of surrounding natural habitat. These edge effects of development in and adjacent to open space have the potential to adversely affect wide ranging predators, such as mountain lions. Indirect impacts include invasion of natural habitats by non-native species and increased presence of humans and domestic animals over the long-term. In addition, transportation improvement projects could include new segments of fencing or walls that that could hinder wildlife movement.

The future land use scenario envisioned by the proposed 2022 RTP/SCS would encourage infill and TOD within existing urbanized areas. Most of the future infill and TOD projects would likely be in areas that provide limited or no wildlife movement, although some development would occur in more undisturbed outlying areas. However, even the elimination of limited wildlife movement opportunities could further isolate areas of native habitat occupied by both sensitive and common native wildlife species.

Based on the above analysis, impacts on wildlife movement related to transportation projects as identified in Table 4.4-2 and impacts related to the future land use scenario envisioned by the proposed 2022 RTP/SCS would be significant. The following mitigation measures would reduce this impact.

[2] This discussion is related to the carrying capacity of a movement corridor and not the home range requirement of a given large predatory mammal.

Mitigation Measures

For transportation projects under their jurisdiction, StanCOG shall implement, and transportation project sponsor agencies can and should implement, the following mitigation measure for applicable transportation projects that would impact wildlife movement, including fish migration, and/or impede the use of native wildlife nursery. The StanCOG region and cities in the StanCOG region can and should implement these measures, where relevant to land use projects implementing the 2022 RTP/SCS. Project-specific environmental documents may adjust these mitigation measures as necessary to respond to site-specific conditions.

BIO-3(a) Project Design for Wildlife Connectivity

All projects including long segments of fencing and lighting shall be designed to minimize impacts to wildlife. Fencing or other project components shall not block wildlife movement through riparian or other natural habitat. Where fencing or other project components that may disrupt wildlife movement is required for public safety concerns, they shall be designed to permit wildlife movement by incorporating design features such as:

- A minimum 16 inches between the ground and the bottom of the fence to provide clearance for small animals;
- A minimum 12 inches between the top two wires, or top the fence with a wooden rail, mesh, or chain link instead of wire to prevent animals from becoming entangled; and
- If privacy fencing is required near open space areas, openings at the bottom of the fence measure at least 16 inches in diameter shall be installed at reasonable intervals to allow wildlife movement, or the fence may be installed with the bottom at least 16 inches above the ground level.
- If fencing or other project components must be designed in such a manner that wildlife passage would not be permitted, wildlife crossing structures shall be incorporated into the project design as appropriate.
- Lighting installed as part of any project shall be designed to be minimally disruptive to wildlife (see mitigation measure AES-3(a) Roadway Lighting for lighting requirements)

BIO-3(b) Maintain Connectivity in Drainages

No permanent structures shall be placed within any drainage or river that would impede wildlife movement (i.e., no hardened caps or other structures in the stream channel perpendicular to stream flow be left exposed or at depth with moderate to high risk for exposure as a result of natural bed scour during high flow events and thereby potentially create impediments to passage).

In addition, upon completion of construction within any drainage, areas of stream channel and banks that are temporarily impacted shall be returned to pre-construction contours and in a condition that allows for unimpeded passage through the area once the work has been complete.

If water is to be diverted around work sites, a diversion plan shall be submitted to StanCOG and/or local jurisdiction for review and approval prior to issuance of project construction permits/approvals. The diversion shall be designed in a way as to not impede movement while the diversion is in place.

BIO-3(c) Construction Best Management Practices to Minimize Disruption to Wildlife

The following construction BMPs shall be incorporated into all grading and construction plans in order to minimize temporary disruption of wildlife, which could hinder wildlife movement:

- Designation of a 20 mile per hour speed limit in all construction areas.
- Daily construction work schedules shall be limited to daylight hours only.
- Mufflers shall be used on all construction equipment and vehicles shall be in good operating condition.
- All trash shall be placed in sealed containers and shall be removed from the project site a minimum of once per week.
- No pets are permitted on project site during construction.

IMPLEMENTING AGENCIES AND TIMING

Implementing agencies for transportation projects are StanCOG and transportation project sponsor agencies. Implementing agencies for land use projects are cities and the County. These mitigation measure shall, or can and should, be applied during project permitting and environmental review.

Significance After Mitigation

Compliance with the above mitigation measures would reduce impacts to wildlife movement by requiring projects to be designed in a way that maintains connectivity. However, it cannot be guaranteed that movement of terrestrial species will not be impeded at the regional scale due to the large scale of the 2022 RTP/SCS. Further, StanCOG does not have the authority to require other implementing agencies (e.g., Caltrans, counties, cities, transit agencies, etc.) that are responsible agencies for this 2022 RTP/SCS EIR, but that will be the lead agency for future transportation and land use development projects to implement these mitigation measures. No additional feasible mitigation measures are available to reduce impacts on wildlife movement. Thus, this impact would remain significant and unavoidable.

Threshold 5:	Would the project conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.

Impact BIO-4 IMPLEMENTATION OF TRANSPORTATION IMPROVEMENTS AND THE LAND USE SCENARIO ENVISIONED BY THE 2022 RTP/SCS WOULD NOT CONFLICT WITH ANY LOCAL POLICIES OR ORDINANCES PROTECTING BIOLOGICAL RESOURCES, SUCH AS A TREE PROTECTION POLICY. THIS IMPACT WOULD BE LESS THAN SIGNIFICANT.

Most municipalities in the StanCOG region have local ordinances and policies in place that protect native habitat and/or native and nonnative trees in urban landscapes, as well as in unincorporated County lands. These ordinances and policies vary in their definitions of protected trees (e.g., certain species, percent within the public right-of-way, aesthetically suitable, deep-rooted trees, or a combination thereof) and in the requirements for ordinance or policy compliance. In addition, counties and cities may have local ordinances or policies that are intended to protect other biological resources such as wetlands and drainages, riparian habitat, and other sensitive habitat areas.

Protected trees and other biological resources which are protected by city and/or County ordinances and/or policies are expected to be encountered at the locations where projects administered under the 2022 RTP/SCS would occur and therefore there is potential for conflict with local ordinances and/or policies. Most of the transportation projects in the 2022 RTP/SCS are expansions or maintenance of existing roads or facilities. Because ground disturbances would be fairly limited as a result, the potential removal of native trees and disturbances to other biological resources protected by local policies or ordinances are expected to be minimal for most projects, although the potential for conflicts with local policies and/or ordinances to some degree remains.

In addition to potential conflicts with local policies and/or ordinances that may result from transportation projects, the proposed 2022 RTP/SCS also contains a future land use scenario that emphasizes infill development and TOD. This land use scenario focuses future development concentrated in existing urbanized areas, although some development would occur in more undisturbed outlying areas. This would reduce impacts to biological resources that are protected by city or county ordinances; however, there remains the potential for conflict with local policies and ordinances from development associated with the future land use scenario.

All future development projects as part of the future land use scenario as well as the transportation projects proposed for implementation under the 2022 RTP/SCS would be required to follow city and County development requirements, including compliance with local policies, ordinances and applicable permitting procedures related to protection biological resources. Project-level analysis would identify significant conflicts with local policies and ordinances as well as minimize, mitigate, or avoid those impacts through the design, siting and permitting process; and provide mitigation for any significant impacts as a condition of project approval and permitting. Therefore, the potential for development projects under the future land use scenario as well as proposed transportation projects to conflict with local policies or ordinances protecting biological resources is considered a less than significant impact.

Mitigation Measures

Mitigation measures are not required.

c. Specific RTP Projects That May Result in Impacts

Table 4.4-2 identifies representative projects that may create biological resource impacts. Projects that may have potential impacts are illustrated on Figure 2-3 through Figure 2-7 in Section 2.0, *Project Description*. The individual projects listed below could create significant biological impacts but would not necessarily do so. Additional specific analysis will need to be conducted as the individual projects are implemented to determine the actual magnitude of impact. Mitigation measures discussed above could apply to these specific projects.

Table 4.4-2 2022 RTP/SCS Projects with Potential to Impact Biological Resources

Project ID	Location	Description
Tier 1 Roadway Projects		
C23	Mitchell Rd/Service Rd	Construct New Interchange - Phase I
C24	7th St to Grayson Rd	Widen from 2 to 4 lanes
C25	Eastgate Blvd to Faith Home	Widen from 2 to 4 lanes
C27	Ustick Rd to Blaker Rd	Widen from 2 to 4 lanes

Project ID	Location	Description
C30	Hatch Rd to Grayson Rd	Widen from 2 to 4 lanes
C31	River Rd to Service Rd	Widen to 6 lanes
C46	Service Rd to Grayson Rd	Widen from 2 to 4 lanes
C50	Ustick Rd to Central Ave	Widen from 2 to 4 lanes
C72	El Camino Ave at North St	Surface Parking and undercrossing to ACE station traffic mitigation
C73	Railroad Ave, Central Ave, Hackett Rd	Overflow Parking ACE Station
C74	Develop a Lighted Park and Ride Lot	Near Whitmore Overpass
C75	Develop a lighted Park and Ride 2nd Lot	Near Freeway/ACE Station
C76	Bridge 38C0222 and 200 feet each direction on Service Rd. and Moore Rd.	Replace bridge for safety, widen lanes to meet Caltrans standards, add bike/pedestrian facility
CA03	22.56/24.75	Construction HOV lanes
CA06	On SR 99 from Keyes Rd to Taylor Rd	Construct auxiliary lane
CA12	PM 3.63 to 4.10	Construct NB and SB SR-99 auxiliary lanes between Monte Vista rd. to Taylor Rd
CA14	Bridge replacement in Stanislaus County on State Route 4 at Hoods Creed Bridge (#38 0041)	Bridge Replacement
CA22	Stanislaus 120 PM15.04	Bridge Replacement to address Fish Passage Priority.
M34	Oakdale Rd to Roselle Ave	Construct new 2 lane roadway
M52	McHenry Ave to Coffee Rd	Widen from 2 to 6-lane Expressway
M53	Coffee Rd. to Oakdale Rd	Widen from 2 to 6-lane Expressway
M54	Pelandale Ave to Kiernan Ave	Widen from 4 to 6 lanes
M55	Pelandale Ave to Standiford Ave	Widen from 4 to 6 lanes
M56	Briggsmore to Sylvan	Widen from 2 to 4 lanes
M58	Sylvan Ave to Claratina Ave	Widen from 3 to 6 lanes
M79	SR 99/Pelandale Interchange (Phase 2)	Widen Sisk Rd/Pelandale Intersection to the south-west corner of the intersection, construct a second left-turn lane from EB Pelandale to NB Sisk Rd, a third dedicated through lane on EB Pelandale, and a dedicated right-turn lane from EB Pelandale to SB Sisk Rd.
M82	State Route 99 to Dakota Ave Phase 1 (2-lane expressway)	Construct a two-lane expressway from N. Dakota Ave to the Needham St. Overcrossing. (Phase 1 of ultimate build-out of SR132 West Freeway/Expressway Project) (Reference: 2014 RTP Project ID - RE01).
M83	State Route 99 to Dakota Ave (Phase 2 Ultimate 4 lane facility with SR-99 connections)	Construct a four-lane freeway from N. Dakota Ave to the Needham St. Overcrossing.
N16	Driskell to Rgodeo Grounds Way	Realign Canal School Road to meet the Driskell Ave and Hills Ferry Road Intersection.
O14	Maag Ave to Stearns Rd	Widen Roadway to 5-lanes with full frontage improvements. Existing section includes 3 lanes with no frontage improvements.

Project ID	Location	Description
O15	Lee Ave to Stanislaus Ave/Wood Ave	Widen Roadway to 5-lanes, including realignment of existing sidewalk and frontage improvements infill on the North side of the street
O17	F Street to Pontiac	Widen Roadway to 4-lanes from existing 2 lane road. Includes full frontage improvements.
P03	Baldwin Road to Rogers Road	Install Complete Street Improvements, widen to four lanes.
P04	I-5 to Rogers Road	Signal and Off-Ramp Improvements at interchange. Widen Sperry Ave to 4 Lanes between Rogers Road and I-5.
P05	Delta Mendota to Keystone Pacific Park Way	Widen from 2 to 4 lanes.
P08	Raines Rd to I-5	Construct New Interchange at I-5.
P16	Ward Av to SR-33	Widen from 2 to 4 lanes.
P17	Sperry Av to American Eagle Way	Widen from 2 to 4 lanes.
P18	American Eagle Way to SR-33	Widen from 2 to 4 lanes.
P19	Sperry Av to Marshall Rd	Widen from 2 to 4 lanes.
R20	California to Claribel	Widen roadway from 2-4 lanes
S24	Milnes Road to Claribel Road	Widen to 3 lanes
S25	San Joaquin River Bridge	Seismic Bridge Replacement - 3-lane Bridge
S26	Hickman Rd @ Tuolumne River	Seismic Bridge Replacement
S27	Hills Ferry Rd @ San Joaquin River	Seismic Bridge Replacement
S29	Seventh St @ Tuolumne River Bridge	Seismic Bridge Replacement; 4 lane bridge with pedestrian access
S32	Kilburn Rd @ Orestimba Creek Bridge	Replace Bridge (Critical)
S56	Carpenter Rd to River Rd/Marshall Rd	Widen to 3 lanes
S57	River Rd/Marshall Rd to SR-33	Widen to 3 lanes
S65	San Joaquin River to Carpenter Rd	Widen to 3 lanes
S66	Carpenter Rd to Crows Landing Rd	Widen to 3 lanes
S67	Crows Landing Rd to Mitchell Rd	Widen to 3 lanes
S68	Mitchell Rd to Washington Rd	Widen to 3 lanes
S69	SR-99 to McHenry Ave	Widen to 6-lanes
S70	Cooperstown Road at Gallup Creek	Bridge Replacement - Off System Bridge Toll Credits
S71	Cooperstown Road at Rydberg Creek	Bridge Replacement - Off System Bridge Toll Credits
S72	Crabtree Road at Dry Creek	Bridge Replacement - Off System Bridge Toll Credits
S74	Pleasant Valley Road at South San Joaquin Main Canal	Bridge Replacement - Off System Bridge Toll Credits
S76	St. Francis Ave at MID Main Canal	Bridge Replacement - Off System Bridge Toll Credits
S78	Tim Bell Road at Dry Creek	Bridge Replacement - Off System Bridge Toll Credits
S79	Las Palmas Ave over San Joaquin River	Bridge Rehabilitation Preventative Maintenance
S80	Milton Road over Rock Creek Tributary	Bridge Replacement - Off System Bridge Toll Credits
S82	Claribel Road to Warnerville Road	Widen to 5 lanes
S84	Over Claribel Bridge Lateral	Replace Bridge

Project ID	Location	Description
S85	Over Lone Tree Creek	Bridge Rehabilitation
S86	Over Lone Tree Creek	Replace Bridge
S88	Over Hood Creek	Replace Bridge
S89	Over T.I.D. Main Canal	Replace Bridge
S90	Over Main Canal @ Dallas Rd	Replace Bridge
S101	SR 132 Dakota Avenue to Gates Road	Construct 2 or 4-lane divided expressway or freeway (County)
S104	Ladd Rd to the south end of the McHenry Bridge	Widen to 5 Lanes
S106	Over TID Upper Lateral #3	Replace Bridge
S107	Eastin Road & Orestimba Creek	Low water crossing - bridge or culvert construction
S119	Pirrone Road - Gateway Drive to Hammett Road	Roadway Realignment
S131	Oakdale Road to Claus Road	Construct 4-lane Expressway
S132	Claus Road to Albers Road	Construct 4-lane Expressway
S133	Albers Road to SR 120	Construct 4-lane Expressway
S134	Tully Road to Coffee Road	Construct 6-lane Freeway
S136	SR 99 to Dakota Avenue	Widen to 4-Lane Highway
T16	Tegner Rd to Dianne Dr	Widen from 2-lane to 4-lane Arterial with Class II bike facility and transit
T18	Washington Rd to Tegner Rd	Widen from 2-lane to 4-lane Arterial with Class II bike facility
T19	Linwood Ave to Fulkerth Rd	Widen from 2-lane to 4-lane Arterial with Class II bike facility and transit
T20	Linwood Ave to W. Main St	Construct new 2-lane Industrial Collector with Class II bike facility
T21	SR-99 to Tegner Rd	Construct new 2-lane Collector with Class I bike facility
T22	Tuolumne Rd to Tornell Rd	Widen from 2-lane to 4-lane Arterial with Class II bike facility
T23	Canal Dr to Wayside Rd	Widen from 2-lane to 4-lane Arterial with Class II bike facility and transit
T24	Wayside Dr to North Ave	Widen from 2-lane to 4-lane Arterial with Class II bike facility and transit
T25	Walnut Rd to Lander Ave	Widen from 2-lane to 3-lane Collector with Class II bike facility and transit (West Ave. South to Lander)
T26	Walnut Rd to Washington Rd	Widen from 2-lane to 3-lane Collector with Class II bike facility
T27	Washington Rd to Kilroy Rd	Construct new 2-lane Collector with Class I bike facility

Project ID	Location	Description
T28	Golden State Blvd to Daubenberger Rd	Widen from 2-lane to 4-lane Arterial with Class III bike facility from Minaret to S. Berkeley/Class II from S. Berkeley to Daubenberger and transit from Oak to S. Johnson
T31	W. Main St to W. Canal Dr	Construct new Collector
T32	Monte Vista Ave to Fulkerth Rd	Complete 2-lane Industrial Collector
T33	Fulkerth Rd to north of Pedretti Park	Construct new 2-lane Industrial Collector
T34	Tegner Rd to Golden State Blvd	Widen from 2-lane to 4-lane Collector with Class II bike facility
T35	Spengler Way to W. Linwood Ave	Construct new Industrial Collector
T36	Golden State Blvd to SR-99	Widen from 2-lane to 4-lane Arterial with Class II bike facility
T37	W. Main St to Fulkerth Rd	Construct new 2-lane Industrial Collector with Class II bike facility
T39	Lander Ave (SR-165) to S. City Limits	Construct New Interchange
T40	W. Main St	Construct New Interchange
T42	Tuolumne Rd	Construct New Overpass
T43	Fulkerth Rd to Monte Vista Ave	Construct 4-lane Expressway with Class II bike facility and transit
T44	Golden State Blvd & Taylor Rd	Widen Intersection from 2 to 4 lanes with bike improvements
W13	Western City Limit to the Eastern City Limit	Widen Yosemite Blvd to 4 Lane Arterial Standard as defined in the City of Waterford Vision 2025 General Plan
W14	Northern City Limit to Southern City Limit	Widen Reinway to 2 Lane Collector Standard as defined in the City of Waterford Vision 2025 General Plan
W15	Reinway Avenue to Pasadena Ave	Widen Washington to 2 Lane Local Road Standard as defined in the City of Waterford Vision 2025 General Plan
W16	Washington to Yosemite	Widen Pasadena to 2 Lane Local Road Standard as defined in the City of Waterford Vision 2025 General Plan
Transit Projects		
A01	UPRR Fresno Subdivision MP 103.98 to MP 107	Construct new rail bridge over the Stanislaus River, second main track, and modify at-grade crossings.
A03	UPRR Fresno Subdivision MP 113.69 to MP 114.63	Construct new rail bridge over the Stanislaus River and second main track and modify at-grade crossing at 7th Street/B Street.
A10	BNSF Stockton Subdivision	Construct new bridge over Stanislaus River and 2.5 miles of second main track.
A11	BNSF Stockton Subdivision	Construct 3.3 miles of second main track.
A12	BNSF Stockton Subdivision	Construct 0.45 miles of second main track and two bridges.
A13	BNSF Stockton Subdivision	Construct 6.1 miles of second main track and one bridge.

Project ID	Location	Description
A14	BNSF Stockton Subdivision	Construct 6.6 miles of second main track and three bridges.
Bicycle/Pedestrian Projects		
C02	Service Rd to Southern City Limits	Mitchell Rd Bike/Ped Project - Phase V
C06	East Gate Blvd. to Faith Home Rd	Hatch Rd TID Bike/Ped Project - Phase IV
C14	Morgan Rd to Herndon Rd	Construct Bike/Ped Facility (3 phase project)
C19	Roeding Rd to Frontage Rd	Class 1 Path. Pave path adjacent to irrigation canal. StanCOG Non- Motorized Transportation Master Plan Project ID: CER-1
C27	Ustick Rd to Crows Landing Rd	Class 1 Path. New construction. StanCOG Non-Motorized Transportation Master Plan Project ID: CER-8B
H01	Santa Fe Ave to Euclid Ave	Construct Multi-Use Trail
H07	Santa Fe Ave. to Geer Rd	Path (Class I) and pedestrian improvements. (Non-Motorized Transportation Plan Top 25: Route 20B)
M36	Yosemite to Orangeburg	Class I Bike path/Ped Bike Bridge
M37	Woodrow to Pelandale	Bike/Ped facility including overcrossings
M39	Kewin to Beardbrook Park	Class I Bike Path Connecting Trails
M40	MID Lateral Nos. 3,4 and 7	Contruct Class 1 Trail along MID Lateral Nos. 3, 4 and 7
M41	Carver to Virginia Corridor	Class I Bike Path along MID
M43	Briggsmore to Sylvan	Class I Bike Path along Claus Rd.
M45	Dale Road to Virginia Corridor	Class I bike path
M81	Ustick Rd to Golden State Highway	Class 1 Path. New construction, south side of roadway. StanCOG Non-Motorized Transportation Master Plan Project ID: MOD-1
M82	W. Whitmore Ave to South Ave	Path (Class 1) and Bicycle Boulevard (Class 3), and pedestrian improvements. (Non-Motorized Transportation Plan Top 25: Route 5)
M100	SR-132 to Garst Rd	Multi-Use Path (Class 1) and pedestrian improvements. (Non-Motorized Transportation Plan Top 25: Route 8)
M104	Sisk Rd to Claus Rd	Multi-Use Path (Class 1); Separated Bike Lane (Class 4) and pedestrian improvements. (Non-Motorized Transportation Plan Top 25: Route 1)
M109	East Briggsmore Ave to Virginia Ave	Class 1 Path. Pave side of existing irrigation canal. StanCOG Non- Motorized Transportation Master Plan Project ID: MOD-27
M115	Tuolumne River Bike Trail to River Rd	Class 1 Path. New construction. StanCOG Non-Motorized Transportation Master Plan Project ID: MOD-32
N02	Canal School Road/Hills Ferry From Driskell to City LID Project	Class I Multiuse Path
O10	South of Kerr Park to A Street	Construct Class I Bike Lane to connect to the D Street multi use trail.

Project ID	Location	Description
O11	North of Kerr Park to Valley View Park	Construct Class I Bike Lane along Stanislaus River to connect to the existing Valley View Trail.
R06	Jacob Myer Park Bridge	Install trail system bridge
R12	Pedestrian Access over MID Canal	Installation of Sidewalk over MID Canal
R14	Terminal to Claus Road	Bicycle/Pedestrian Path along BNSF Railroad
S21	North Yosemite Ave to 1st St	Class 1 Path. New Construction. StanCOG Non-Motorized Transportation Master Plan Project ID: STAN-1A
S22	North Yosemite Ave (Proposed) to Orange Blossom Rd	Class 1 Path. New Construction. StanCOG Non-Motorized Transportation Master Plan Project ID: STAN-1B
S23	630 ft NE of Stanislaus River Court/Stanislaus River Drive to Sonora Rd	Class 1 Path. New Construction. StanCOG Non-Motorized Transportation Master Plan Project ID: STAN-1C
S26	Virginia Corridor Bike Path to Terminal Ave	Class 1 Path. New Construction. StanCOG Non-Motorized Transportation Master Plan Project ID: STAN-4
S30	Claus Rd to Terminal Ave (Proposed)	Class 1 Path. New Construction. StanCOG Non-Motorized Transportation Master Plan Project ID: STAN-7
S38	Faith Home Rd to Santa Fe Rd	Class 1 Path. Pave existing path along canal. StanCOG Non- Motorized Transportation Master Plan Project ID: STAN-15
S39	180 ft E of Lucas Rd/Mitchell Rd to North Golden State Blvd	Class 1 Path. New Construction. StanCOG Non-Motorized Transportation Master Plan Project ID: STAN-16
S40	Hickman Rd to Mitchell Rd	Class 1 Path. New Construction. StanCOG Non-Motorized Transportation Master Plan Project ID: STAN-17
S41	Oakdale-Waterford Highway to Claus Rd	Class 1 Path. New Construction. StanCOG Non-Motorized Transportation Master Plan Project ID: STAN-18
S45	Lateral Number One Trail (Proposed) to Herndon Rd	Class 1 Path. Pave path along irrigation canal, Class 1 bridge over Golden State Highway. StanCOG Non-Motorized Transportation Master Plan Project ID: STAN-22
W07	Oakdale-Waterford Highway to Yosemite Blvd	Class 1 Path. New Construction. StanCOG Non-Motorized Transportation Master Plan Project ID: WF-1
Aviation Projects		
M10	Modesto City-County Airport	Construct Entrance Road
M11	Modesto City-County Airport	Construct New Airport Fire Station
M12	Modesto City-County Airport	Construct New Airport Maintenance Shop
M13	Modesto City-County Airport	Construct Terminal Building
M25	Modesto City-County Airport	Realign Airport Way
T04	Turlock Municipal Airport	Extend Parallel Taxiway "A"; Construct new runway/taxiway connector. Construction.

4.4.4 Cumulative Impacts

The cumulative impact analysis area for biological resources consists of the StanCOG region and the adjoining counties, as further described in Section 3.3.4.1 Cumulative Impact Methodology. This geographic scope is appropriate for biological resources because it encompasses the mosaic of representative land cover and habitat types (and associated biological resources) affected by the proposed 2022 RTP/SCS, including creeks and drainages, natural communities, and agricultural land uses. Future transportation projects and growth in the region, including growth in adjoining counties, could impact resources in the surrounding counties, and the interaction between the affected environment and the proposed 2022 RTP/SCS projects would occur throughout this larger cumulative impact analysis area.

Biological resources impacts resulting from cumulative development within the cumulative impact analysis area would include direct and indirect impacts to sensitive/special status species or their habitat; impacts to riparian, wetland, or other sensitive natural communities; interference with wildlife movement; or potential conflicts with local policies, ordinances. Given the extent of future development anticipated in the cumulative impact analysis area, these cumulative impacts would likely be significant. Implementation of the transportation projects and land use development patterns under the proposed 2022 RTP/SCS would contribute to these impacts, as described above in Section 4.4.3. Due to the potential direct and indirect impacts that may occur as a result of the proposed 2022 RTP/SCS, the proposed 2022 RTP/SCS's contribution to this impact would be cumulatively considerable.

Mitigation Measures BIO-1(a) through BIO-3(c)presented above in Section 4.4.3.b set requirements for surveys and actions to be taken if biological resources have potential to be impacted by 2022 RTP/SCS projects as well as the future land use scenario. If the implementing agency and/or project sponsor adopts these mitigation measures as well as complies with existing State, local and/or federal regulations the contribution of the proposed 2022 RTP/SCS to cumulative impacts would reduce those impacts but would still be cumulatively considerable as biological impact could still occur. Additionally, as discussed above, impacts to special-status species and wildlife movement would be significant and unavoidable. The contribution of the proposed 2022 RTP/SCS to cumulative impacts would therefore remain cumulatively considerable post-mitigation.

4.5 Cultural Resources

This section analyzes impacts to cultural resources within the StanCOG region that would result from implementation of the proposed 2022 RTP/SCS and recommends feasible mitigation measures to reduce the severity of these potential impacts. Tribal cultural resources are addressed in Section 4.16, *Tribal Cultural Resources*.

4.5.1 Setting

The following cultural background discussion is broken down into pre- and post-European contact histories of the implementation area of the 2022 RTP/SCS.

a. Prehistoric Background

California prehistory is generally divided into three broad time periods: Paleoindian period (ca. 11,550-8,550 B.C), Archaic Period (8,550 B.C.-A.D. 1100) and Emergent Occupation (A.D. 1000-European Contact) (Fredrickson 1973, 1994; Moratto 1984; Rosenthal et al. 2007). The prehistoric chronological sequence for the Central Valley presented below is based on Rosenthal et al. (2007) and Moratto (1984).

Paleoindian Period (11,550-8550 BCE)

Little is known about the Paleoindian period in the Central Valley. Geoarchaeological studies have demonstrated that erosion and deposition have buried or destroyed early archaeological deposits. Most claims of ancient human occupation have been dismissed by Moratto (1984) based on radiocarbon dating. Currently, the earliest accepted date of human occupation in the Central Valley ranges from 11,550 to 9,550 BCE and comes from fluted projectile points similar to Clovis points found at sites near Tracy Lake and the Tulare Lake Basin (Rosenthal et al. 2007). Along with fluted projectile points, concave base points have been discovered along the Tulare Lake shoreline which was occupied during the Late Pleistocene (Rosenthal et al. 2007).

Lower Archaic (8,550-5,550 BCE)

Climate change at the end of the Pleistocene caused significant periods of alluvial deposition beginning around 9,050 BCE. These new alluvial deposits created a clear stratigraphic boundary between the Late Pleistocene and Holocene sediments. The Lower Archaic, like the Paleoindian Period, is represented only by limited isolated finds. Only one Lower Archaic site (KER-116) has been identified in the Central Valley proper and few in the foothills surrounding the valley (Rosenthal et al. 2007).

Typical Lower Archaic artifacts include flaked stone crescents and stemmed points. The identification of projectile points and a diverse faunal assemblage at KER-116, (the only Lower Archaic site identified in the Central Valley to date), point to hunting being an important subsistence activity (Rosenthal et al. 2007). Milling tools and plant remains are largely absent in the valley, thus plant use during the Lower Archaic remains unclear. Several foothill sites contain milling implements and evidence of the use of nut crops such as acorn and pine (Lajeunesse and Pryor 1996). The relationship between foothill and valley floor adaptations is largely unknown during the Lower Archaic. However, distinct adaptations are apparent in the Middle Archaic, and it is possible that these divergent traditions first emerged in the Lower Archaic (Rosenthal et al. 2007).

Middle Archaic (5,550-550 BCE)

The Middle Archaic began with substantial climate change to much warmer, drier conditions. Fans and floodplains stabilized after an initial period of deposition in 5,550 BBCE Archaeological deposits dating to the Middle Archaic are rare in the Central Valley proper due to these geomorphic changes. Late Middle Archaic sites point to diverse adaptations and the emergence of organized subsistence practices and residential stability along river corridors by 6,000 years ago. The typical pattern of the Middle Archaic has been identified as the Windmiller Pattern, first identified on old levee ridges adjacent to freshwater marshes near the confluence of the Mokelumne and Cosumnes rivers. This pattern is represented by extended burials oriented to the west and a sophisticated material culture (Rosenthal et al. 2007). Middle Archaic sites are relatively common in the foothills surrounding the Central Valley and show relatively little change from the Lower Archaic (McGuire 1995).

During this time, the mortar and pestle become more widespread suggesting a shift toward more intensive subsistence practices. Fishing technologies, such as bone gorges, hooks, and spears, also appear during the Middle Archaic suggesting a new focus on fishing. Several other technologies become apparent during this time, particularly in the northern San Joaquin and southern Sacramento Valleys (Rosenthal et al. 2007). Baked-clay impressions of twined basketry, simple pottery, and other baked clay objects have been found at several sites. Personal adornment items also became more frequent. Exchange with outside groups is evidenced by the presence of obsidian, shell beads and ornaments (Rosenthal et al. 2007; Moratto 1984). Trade also seemed to be focused on utilitarian items such as obsidian or finished obsidian tools from at least five separate sources (Moratto 1984).

Upper Archaic (550 BCE. – CE 1100)

The Upper Archaic began with the onset of the Late Holocene, marked by a cooler, wetter climate. The Upper Archaic is better represented in the archaeological record than earlier periods. Cultural diversity was more pronounced and is marked by contrasting material cultures throughout the valley (Rosenthal et al. 2007).

During this period, numerous specialized technologies were developed such as bone tools and implements, manufactured goods such as Olivella and Haliotis beads and ornaments, well-made ceremonial blades, and ground-stone plummets. Beginning after circa 2,700 years ago, lower Sacramento Valley settlements shifted to a pattern of large, mounded villages, now identified as the Berkeley Pattern.

Upper Archaic period economies varied by region throughout the Central Valley. Economies were primarily focused on seasonal resources such as acorns, salmon, shellfish, rabbits, and deer (Rosenthal et al. 2007).

Emergent Occupation (CE 1100- Historic)

The stable climatic conditions of the Upper Archaic continued into the Emergent Period. In the Delta Region, this period is associated with the Augustine Pattern (Rosenthal et al. 2007). After CE 1000, many of the technologies identified during the Archaic disappeared to be replaced by cultural traditions recorded at European contact. The bow and arrow replaced the atlatl as the preferred hunting method sometime between CE 1000 and 1300.

Increased social complexity is evidenced by increased variation in burial types and offerings and larger residential communities. Grave offerings such as shell beads, ornaments, and ritually “killed” mortars and pestles are often found in burials. Pottery was frequently obtained through trade with

groups living in the foothills to the east. The Panoche side-notched point became important in the western side of the San Joaquin Valley (Rosenthal et al. 2007). In addition to the side-notched point, the Panoche Complex featured large circular structures, flexed burials, marine shell beads, bone awls, millingstones, and mortars and pestles (Moratto 1984).

As with the Archaic Period, Emergent Period economies varied geographically, though throughout the Central Valley fishing and plant harvesting increased in importance. Most Emergent residential sites contain diverse faunal assemblages containing mammal and bird remains and large amounts of fish bone. After ca. 1,000 years ago, the mortar and pestle become the dominant tool type and small seeds increase in archaeological deposits over time (Rosenthal et al. 2007)

b. Historic Background

The post-contact history of California is generally divided into three periods: the Spanish period (1769–1822), the Mexican period (1822–1848), and the American period (1848–present). Each of these periods is briefly described below.

Spanish Period (1769–1822)

In 1542, Juan Rodriguez Cabrillo led the first European expedition to observe what is now called Southern California. For more than 200 years, Cabrillo and other Spanish, Portuguese, British, and Russian explorers sailed the Alta (upper) California coast and made limited inland expeditions, but they did not establish permanent settlements (Bean 1968; Rolle 2003).

Gaspar de Portolá and Franciscan Father Junipero Serra established the first Spanish settlement in Alta California at Mission San Diego de Alcalá in 1769. This was the first of 21 missions erected by the Spanish between 1769 and 1823. Portolá continued north, eventually reaching the San Francisco Bay in 1769. In 1772, Pedro Fages led the first Europeans to enter the San Joaquin Valley (Wallace 1978; Johnson et al. 1993). Fages led a small expedition into the southernmost part of the valley, stopping at a village on the shores of Buena Vista Lake, before heading towards San Luis Obispo (Wallace 1978). The next European to enter the valley was Francisco Garcés in 1776 (Wallace 1978). In the early 1800s, numerous expeditions were made into the Central Valley to search for land for new missions or to recapture runaway neophytes (Hoover et al. 2002). However, the Spanish never succeeded in taking control of the region and no missions were established in the Central Valley.

During this period, Spain also deeded ranchos to prominent citizens and soldiers, though very few in comparison to the subsequent Mexican Period. To manage and expand their herds of cattle on these large ranchos, colonists enlisted the labor of the surrounding Native American population (Engelhardt 1927). Very few of the Central Valley tribes came under the control of the Spanish missions or ranchos. However, numerous runaway neophytes fled to the Central Valley, influencing local populations (Wallace 1978). The increased local population and contact with diseases brought by Europeans greatly reduced the Native American population (McCawley 1996).

Mexican Period (1822–1848)

The Mexican Period commenced when news of the success of the Mexican Revolution (1810-1821) against the Spanish crown reached California in 1822. This period was an era of extensive interior land grant development and exploration by American fur trappers west of the Sierra Nevada Mountains. Beginning in 1833, mission lands were conferred as rancho grants. Governor Pío Pico and his predecessors made more than 600 rancho grants between 1833 and 1846, putting most of the state's lands into private ownership for the first time (Gumprecht 1999). Among the notable

Mexican-era land grants in the county was Rancho Orestima y las Garzas, a west-county tract transferred to Sebastián Núñez in 1844 (Kyle 2002).

American Period (1848–Present)

The American Period officially began with the signing of the Treaty of Guadalupe Hidalgo in 1848, in which the United States agreed to pay Mexico $15 million for the conquered territory, including California, Nevada, Utah, and parts of Colorado, Arizona, New Mexico, and Wyoming. Settlement of California increased dramatically in the early American Period.

The discovery of gold in northern California in 1848 led to the California Gold Rush, though the first California gold was previously discovered in Placerita Canyon near the San Fernando Mission in 1842 (Guinn 1915; Workman 1935). Later, in 1848, James Marshall discovered gold while overseeing the construction of Sutter's Mill at Coloma. The discovery of gold led to an explosion in population and to the eventual establishment of the State of California. In 1850, California was admitted into the United States and by 1853, the population of California exceeded 300,000. Thousands of settlers and immigrants continued to move into the state, particularly after the completion of the transcontinental railroad in 1869.

StanCOG Region History and Historic Development

In the second half of the nineteenth century, the StanCOG region's development was characterized by a shift from mining to agriculture:

> Early settlement in the StanCOG region was focused on the foothills of the Sierra Nevada and on the three rivers in the area. Communities such as La Grange and Knight's Ferry, both located near the Sierra Nevada foothills, began as mining camps along the Tuolumne and Stanislaus rivers. By the 1860s, larger and more permanent settlements were developing along the Stanislaus River. These include Oakdale, New Hope, Adamsville, and Paradise. Initially, wheat was the primary agricultural crop county because it provided farmers with a source of income relatively quickly. Other cereal grains, such as barley and oats, were also common. Steamboats and small barges on the San Joaquin River provided early transportation for freight and passengers. Hill's Ferry and Grayson became important shipping points for wheat during the 1860s, and numerous settlements were established on the San Joaquin, Stanislaus, and Tuolumne rivers, particularly at ferry crossing points.
>
> River towns were generally abandoned in favor of railroad towns beginning in the 1870s. Development on the valley floor in support of the agricultural industry was energized when the Central Pacific Railroad (later Southern Pacific Railroad came to the StanCOG region. Railroads played a key role in the formation of the StanCOG region's two largest cities, Modesto and Turlock, as well as the smaller towns. Like Modesto, Turlock was established in 1871 along the railroad line.
>
> During the late nineteenth and early twentieth centuries, Turlock developed as a shipping point and retail center for surrounding farms. Southern Pacific Railroad branch lines constructed through the county in the 1880s stimulated the development of small commercial centers such as Oakdale, Waterford, and Newman.
>
> Implementation of new irrigation systems expanded opportunities for agricultural diversification in the StanCOG region. For example, although wheat was very important, alfalfa quickly became a leading crop that provided feed for growing herds of dairy cattle. The cultivation of orchard crops such as peaches, apricots, almonds, and oranges also became more prevalent. Although

the agricultural economy fluctuated during the twentieth century, it remains a key element of the county's economy today (Stanislaus County 2016).

In the twentieth century, communities throughout the county grew to support the region's booming irrigated agricultural economy. Within the county, Modesto consolidated its place as the county's leading commercial and cultural center. The city also boasted processing plants, the regional farm, and added value dairy outputs (City of Modesto 2021). Though less pronounced, development continued in several of the county's secondary communities, including Oakdale (incorporated in 1906), Turlock (1908), Ceres (1918), and Riverbank (1922).

Like most communities elsewhere in California, the StanCOG region experienced rapid growth in the decades following World War II. Between 1940 and 1970, the countywide the population more than doubled from 74,000 to 194,000. Postwar-era growth was particularly pronounced in Modesto, where the population roughly quadruped from 16,000 to 62,000 over the same period. Following a familiar pattern, the Modesto's growth following the war mostly followed the expansion of Highway 99 and consisted of new residences and commercial properties on the suburban periphery (City of Modesto 2022). Growth in Turlock accompanied the opening there of the California State University Stanislaus in 1960 (California State University Stanislaus 2022). Agriculture continues to be a principal economic driver in the county, which today is home to 556,000 residents.

c. Cultural Resources Inventory

Under the California Environmental Quality Act (CEQA), a historical resource is a building, site, structure, object, or district that is eligible for listing or is listed in the National Register of Historic Places (NRHP), California Register of Historical Resources (CRHR), or a local register due to its historical or archaeological significance. Archaeological resource types present, or expected to exist, within the StanCOG region include prehistoric period occupation areas (both short and long term), burial areas, ceremonial areas, resource collection and processing sites, lithic scatters, quarries, rock art sites, trails, and isolated examples of prehistoric period artifacts.

For the historic period, historical resources may include buildings and structures, in addition to trails, roads, railroads, small and large-scale mining features, logging features, occupation areas (short and long term), water conveyance features, quarries, trash dumps, and cemeteries.

In general, prehistoric-period cultural resources were situated in the most favored environmental settings—areas adjacent to permanent water sources with relatively level topography. This is also true of most historic-period built environment historical resources, with the exception of mining related features and settlements where the discovery of a mineral deposit did not always correspond with a favored environmental setting. It is important to note that lower sensitivity areas could still contain historical resources, and all areas proposed for development should be studied to determine whether potential historical resources are present.

A review of the NRHP and the California Office of Historic Preservation (OHP) website identified seven California Points of Historical Interest, five California Historical Landmarks and 24 NHRP- and CRHR-listed properties located in the County. NRHP-listed properties are automatically listed in the CRHR. There may be other known and potential historical resources located in the County. Resources identified on the OHP web site are listed in Table 4.5-1. A review of the OHP Built Environment Resource Directory identified more than 500 known and potential historical resources that have been listed in, determined eligible for, or recommended eligible for listing in the NRHP, CRHR, or a local register, including both individual properties and properties listed or eligible as part of a historic district. The Caltrans Historic Bridge Inventory identifies three bridges in the County

under local jurisdiction that are eligible for listing in the NRHP: the Orestimba Creek (38C0168), Tuolumne River Bridge (38C0023), and Dry Creek (38C0073) bridges. In addition, Caltrans identifies one NRHP-eligible bridge under state jurisdiction in the County: the Snake Ravine Bridge (38 0062; Caltrans 2021a; 2021b).

Table 4.5-1 California Historical Landmarks/Points of Historical Interest & Historical Resources in the StanCOG Region*

Reference Number	Location	Resource Name	Address and/or Date Listed
California Points of Historical Interest**			
P537	Modesto	Adamsville	July 31, 1979
P566	Denair	Denair Mercantile Development Company Building	March 13, 1981
P538	Westley	Grayson	July 31, 1979
P539	La Grange	La Grange Dam	July 31, 1979
P540	Modesto	McHenry Mansion	July 31, 1979
P541	Modesto	Paradise	July 31, 1979
P542	Westley	Tuolumne City	July 31, 1979
California Historical Landmarks**			
418	Empire	Empire City	February 28, 1949
347	Knights Ferry	Knights Ferry	August 8, 1939
414	La Grange	La Grange	November 15, 1948
934	Turlock	Temporary Detention Camps for Japanese Americans-Turlock Assembly Center	May 13, 1980
415	Knights Ferry	Willms Ranch	Willms Rd, 1.3 mi S of State Hwy 120; November 15, 1948
National Register of Historic Places			
N/A	Modesto	Bald Eagle Ranch House	511 Crawford Rd.; January 15, 2014
N2087	Oakdale	First National Bank of Oakdale Building	338 East F St.; April 6, 2000
N143	La Grange	Gold Dredge	South of La Grange; December 16, 1971
N1900	Modesto	Hotel Covell	1023 J St., December 29, 1994
N799	La Grange	Kingen Hotel	30054 Yosemite Blvd.; August 24, 1979
N/A	Knights Ferry	Knights Ferry	Knights Ferry; April 23, 1975
N/A	Knights Ferry	Knights Ferry Bridge	October 16, 2012
N800	La Grange	Louie's Place	30048 Yosemite Blvd.; August 29, 1979
N582	Modesto	McHenry Mansion	906 15th St.; April 4, 1978
N801	La Grange	Odd Fellow's Hall	Yosemite Blvd.; August 24, 1979
N802	La Grange	Old Adobe Barn	Yosemite Blvd. and La Grange Rd.; August 24, 1979
N803	La Grange	Old La Grange Schoolhouse	La Grange Rd. and Floto St.; August 24, 1979
N1664	Patterson	Patterson Branch Library	355 W. Las Palmas Ave.; December 10, 1990
N224	Patterson	Plaza Building	Plaza #2; January 6, 2004

Reference Number	Location	Resource Name	Address and/or Date Listed
N1960	Riverbank	Riverbank Branch Library	3237 Santa Fe St.; December 10, 1996
N804	La Grange	Shell Gas Station	Yosemite Blvd.; August 24, 1979
N805	La Grange	St. Louis Catholic Church	La Grange Rd. and Floto St.; August 24, 1979
N806	La Grange	Stage Stop	Yosemite Blvd. and La Grange Rd.; August 24, 1979
N1815	Turlock	Turlock Carnegie Library	250 N. Broadway; January 7, 1993
N1670	Turlock	Turlock H.S. Auditorium and Gymnasium	1574 E. Canal Dr.; January 11, 1991
N1176	Modesto	U.S. Post Office	Twelfth and I Sts.; February 10, 1983
N2350	Modesto	Dr. Robert and Mary Walton House	417 Hogue Dr.; December 14, 2006
N1590	Ceres	Daniel Whitmore House	2928 Fifth St.; April 5, 1989
N1559	Modesto	Walter B. Wood House	814 Twelfth St.; May 20, 1988

Sources: California Office of Historic Preservation, 2022; NRHP 2021

*This list may not include all historical resources listed on the NRHP and CRHR.

** California Historical Landmarks 1-769 and Points of Historical Interest listed before to 1998 need to be reevaluated using current standards.

4.5.2 Regulatory Setting

Federal Laws, Regulations, and Policies

National Register of Historic Places

The National Register of Historic Places (NRHP) was established by the National Historic Preservation Act of 1966 as "an authoritative guide to be used by Federal, state, and local governments, private groups and citizens to identify the Nation's cultural resources and to indicate what properties should be considered for protection from destruction or impairment" (36 Code of Federal Regulations 60.2). The NRHP recognizes properties that are significant at the national, state, and local levels. To be eligible for listing in the NRHP, a resource must be significant in American history, architecture, archaeology, engineering, or culture. Districts, sites, buildings, structures, and objects of potential significance must also possess integrity of location, design, setting, materials, workmanship, feeling, and association. A property is eligible for the NRHP if it meets any one of the following criteria:

- **Criterion A:** Are associated with events that have made a significant contribution to the broad patterns of our history
- **Criterion B:** Are associated with the lives of persons significant in our past
- **Criterion C:** Embody the distinctive characteristics of a type, period, or method of installation, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction
- **Criterion D:** Have yielded, or may be likely to yield, information important in prehistory or history

In addition to meeting at least one of the above designation criteria, resources must also retain integrity. The National Park Service recognizes seven aspects or qualities that, considered together,

define historic integrity. To retain integrity, a property must possess several, if not all, of these seven qualities, defined in the following manner:

- **Location:** The place where the historic property was constructed or the place where the historic event occurred
- **Design:** The combination of elements that create the form, plan, space, structure, and style of a property
- **Setting:** The physical environment of a historic property
- **Materials:** Materials are the physical elements that were combined or deposited during a particular period of time and in a particular pattern or configuration to form a historic property
- **Workmanship:** The physical evidence of the crafts of a particular culture or people during any given period in history or prehistory
- **Feeling:** A property's expression of the aesthetic or historic sense of a particular period of time
- **Association:** The direct link between an important historic event or person and a historic property

The Department of Transportation Act

Passed in 1966, the Department of Transportation Act (49 United States Code 303, formerly 49 United States Code 1651(b)(2) and 49 United States Code 1653f) includes Section 4(f), which states that the Federal Highway Administration and other U.S. Department of Transportation agencies cannot approve the use of land from public and private historical sites unless certain conditions apply. These conditions are the following: If there is no feasible and prudent avoidance alternative to the use of land, and if the action includes all possible planning to minimize harm to the property resulting from such use; or if the Federal Highway Administration determines the use of the property will have a *de minimis* impact.

Archaeological Resources Protection Act of 1979 (ARPA)

This regulation was enacted to protect archaeological resources and sites that are on public lands and tribal lands, to foster increased cooperation and exchange of information between government representatives, the professional archaeological community, and private individuals. Section 4 of the statute and Sections 16.5-16.12 of the uniform regulations describe the requirements that must be met before federal authorities can issue a permit to excavate or remove any archaeological resource on federal or tribal lands. The curation requirements of artifacts, other materials excavated or removed, and the records related to the artifacts and materials are described in Section 5 of the ARPA. This section also authorizes the Secretary of the Interior to issue regulations describing in more detail the requirements regarding these collections.

State Laws, Regulations, and Policies

California Register of Historical Resources

The CRHR program was designed for use by state and local agencies, private groups, and citizens to identify, evaluate, register, and protect California's historical resources. A historical resource can include any object, building, structure, site, area, or place that is determined to be historically or archaeologically significant. The CRHR is an authoritative guide to the state's significant archaeological and historic architectural resources. The list of these resources can be used for state and local planning purposes, the eligibility determinations can be used for state historic

preservation grant funding and listing in the CRHR provides a certain measure of protection under CEQA.

California Historical Landmarks Program

The Historical Landmarks Program was instated to register buildings or landmarks of historical interest. Historical Landmarks are defined as sites, buildings, or features that have a statewide historical, cultural, anthropological, or other significance. To be designated as a Historical Landmark by the Director of California State Parks, the resource must meet set criteria, be recommended for designation by the State Historical Resources Commission and be approved by the property owners. The goals of the program include the preservation and maintenance of registered landmarks, most of which include missions, early settlements, battles, and gold rush sites (PRC Sections 5020.4, 5021, 5022, 5022.5, 5031 and 5032).

California Environmental Quality Act

ARCHAEOLOGICAL RESOURCES

CEQA requires lead agencies to consider whether projects would affect unique archaeological resources. PRC Section 21083.2(g) states that "unique archaeological resource" means an archaeological artifact, object, or site about which it can be clearly demonstrated that, without merely adding to the current body of knowledge, there is a high probability that it meets any of the following criteria:

1. Contains information needed to answer important scientific research questions. And there is a demonstrable public interest in that information
2. Has a special and particular quality, such as being the oldest of its type or the best available example of its type
3. Is directly associated with a scientifically recognized important prehistoric or historic event or person

IMPACTS TO HISTORICAL RESOURCES

Section 15064.5 of the *State CEQA Guidelines* states that "a project with an effect that may cause a substantial adverse change in the significance of a historical resource is a project that may have a significant effect on the environment." The *State CEQA Guidelines* (Section 15064.5(a)) define an "historical resource" as including the following:

- A resource listed in, or eligible for listing in, the California Register of Historical Resources
- A resource listed in a local register of historical resources (as defined at PRC Section 5020.1(k)
- A resource identified as significant in a historical resources survey meeting the requirements of PRC Section 5024.1(g)

Any object, building, structure, site, area, place, record, or manuscript that a lead agency determines to be historically significant or significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California. (Generally, a resource is considered by the lead agency to be "historically significant" if the resource meets the criteria for listing in the CRHR

State CEQA Guidelines (Section 15064.5(b)[1]) define "substantial adverse change" as "physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such

that the significance of an historical resource would be materially impaired." Generally, the significance of a historical resource is "materially impaired" when a project demolishes or materially alters in an adverse manner those physical characteristics of a historical resource that convey its historical significance and that justify its inclusion in or eligibility for the CRHR, or its inclusion in a local register of historical resources (State CEQA Guidelines Section 15064.5(b)(2)).

STANDARD MITIGATION MEASURES UNDER CEQA

Historical Resources

Mitigation measures for historical resources impacts are discussed in State CEQA Guidelines Section 15126.4. Generally, by following the Secretary of the Interior's Standards for the Treatment of Historic Properties or the Secretary of the Interior's Standards for Rehabilitation, impacts can be considered as mitigated to a level less than significant. For historical resources that are archaeological sites, according to the State CEQA Guidelines Section 15126.4(b)(3), public agencies should, whenever feasible, seek to avoid damaging effects on any historical resource of an archaeological nature.

Unique Archeological Resources

A cultural resource is also significant if it is a unique *archaeological resource*, which is defined in §21083.2(g) as an archaeological artifact, object, or site about which it can be clearly demonstrated that, without merely adding to the current body of knowledge, there is a high probability that it meets any of the following criteria:

1. Contains information needed to answer important scientific research questions and that there is a demonstrable public interest in that information
2. Has a special and particular quality such as being the oldest of its type or the best available example of its type
3. Is directly associated with a scientifically recognized important prehistoric or historic event or person

If an archaeological resource qualifies as a "historical resource," potential adverse impacts must be considered in the same manner as a historical resource *State CEQA Guidelines* Section 15064.5(c)(2)). If the archaeological site does not qualify as a historical resource but does qualify as a unique archaeological resource, then the archaeological site is treated in accordance with PRC Section 21083.2 (State CEQA Guidelines Section 15064.5(c)(3)).

California Public Resources Code Section 5024 and State-Owned Lands

Historical resources on State-owned lands are subject to the requirements of PRC Section 5024. PRC Section 5024.5(f) requires State agencies to submit to SHPO for comment documentation for any project having the potential to affect historical resources under its jurisdiction listed in or potentially eligible for inclusion in the NRHP or registered or eligible for registration as California Historical Landmarks. The SHPO has 30 days after receipt of the notice for review and comment. If the SHPO determines that a proposed action would have an adverse effect on a listed historical resource, the relevant State agency shall adopt prudent and feasible measures that will eliminate or mitigate the adverse effects.

California Native American Historical, Cultural, and Sacred Sites Act

The California Native American Historical, Cultural, and Sacred Sites Act (PRC Section 5097.9) applies to both State and private lands. The act requires, upon discovery of human remains, that construction or excavation activity cease and that the county coroner be notified. If the remains are those of a Native American, the coroner must notify the NAHC, which notifies and has the authority to designate the most likely descendant (MLD) of the deceased. The act stipulates the procedures that the descendants may follow for treating or disposing of the remains and associated grave goods.

Health and Safety Code Section 7050.5

Section 7050.5 requires that construction or excavation be stopped in the vicinity of discovered human remains until the coroner can determine whether the remains are those of a Native American. If they are determined to be Native American, the coroner must contact the NAHC.

Public Resources Code Section 5097

PRC Section 5097 specifies the procedures to be followed in the event of the unexpected discovery of human remains on nonfederal land. The disposition of Native American burials falls within the jurisdiction of the NAHC. Section 5097.5 of the PRC states the following:

> No person shall knowingly and willfully excavate upon, or remove, destroy, injure, or deface any historic or prehistoric ruins, burial grounds, archaeological or vertebrate paleontological site, including fossilized footprints, inscriptions made by human agency, or any other archaeological, paleontological or historical feature, situated on public lands, except with the express permission of the public agency having jurisdiction over such lands. Violation of this section is a misdemeanor.

California Health and Safety Code Sections 7050.5, 7051, and 7054

HSC Sections 7050.5, 70051, and 7051, and 7054 specify the provisions for the protection of human burial remains. Section 7050.5 of the HSC states the following:

> In the event of discovery or recognition of any human remains in any location other than a dedicated cemetery, there shall be no further excavation or disturbance of the site or any nearby area reasonably suspected to overlie adjacent remains until the coroner of the county in which the human remains are discovered has determined, in accordance with Chapter 10 (commencing with Section 27460) of Part 3 of Division 2 of Title 3 of the Government Code, that the remains are not subject to the provisions of Section 27491 of the Government Code or any other related provisions of law concerning investigation of the circumstances, manner and cause of any death, and the recommendations concerning the treatment and disposition of the human remains have been made to the person responsible for the excavation, or to his or her authorized representative, in the manner provided in Section 5097.98 of the Public Resources Code. The coroner shall make his or her determination within two working days from the time the person responsible for the excavation, or his or her authorized representative, notifies the coroner of the discovery or recognition of the human remains. If the coroner determines that the remains are not subject to his or her authority and if the coroner recognizes the human remains to be those of a Native American, or has reason to believe that they are those of a Native American, he or she shall contact, by telephone within 24 hours, the Native American Heritage Commission.

Section 7051 of the HSC states the following:

> Every person who removes any part of any human remains from any place where it has been interred, or from any place where it is deposited while awaiting interment, cremation, or hydrolysis, with intent to sell it or to dissect it, without authority of law, or written permission of the person or persons having the right to control the remains under Section 7100, or with malice or wantonness, has committed a public offense that is punishable by imprisonment pursuant to subdivision (h) of Section 1170 of the Penal Code.

Section 7054 of the HSC states the following:

(a) (1) Except as authorized pursuant to the sections referred to in subdivision (b), every person who deposits or disposes of any human remains in any place, except in a cemetery, is guilty of a misdemeanor.

(2) Every licensee or registrant pursuant to Chapter 12 (commencing with Section 7600) of Division 3 of the Business and Professions Code and the agents and employees of the licensee or registrant, or any unlicensed person acting in a capacity in which a license from the Cemetery and Funeral Bureau is required, who, except as authorized pursuant to the sections referred to in subdivision (b), deposits or disposes of any human remains in any place, except in a cemetery, is guilty of a misdemeanor that shall be punishable by imprisonment in a county jail not exceeding one year, by a fine not exceeding ten thousand dollars ($10,000), or both that imprisonment and fine.

(b) Cremated remains or hydrolyzed human remains may be disposed of pursuant to Sections 7054.6, 7116, 7117, and 103060.

(c) Subdivision (a) of this section shall not apply to the reburial of Native American remains under an agreement developed pursuant to subdivision (l) of Section 5097.94 of the Public Resources Code, or implementation of a recommendation or agreement made pursuant to Section 5097.98 of the Public Resources Code.

Public Resources Code Section 5097.98

PRC Section 5097.98 addresses the disposition of Native American burials, protects such remains, and established the NAHC to resolve any related disputes. Section 5097.98 of the PRC states the following:

(a) Whenever the commission receives notification of a discovery of Native American human remains from a county coroner pursuant to subdivision (c) of Section 7050.5 of the Health and Safety Code, it shall immediately notify those persons it believes to be most likely descended from the deceased Native American. The descendants may, with the permission of the owner of the land, or his or her authorized representative, inspect the site of the discovery of the Native American human remains and may recommend to the owner or the person responsible for the excavation work means for treatment or disposition, with appropriate dignity, of the human remains and any associated grave goods. The descendants shall complete their inspection and make recommendations or preferences for treatment within 48 hours of being granted access to the site.

(b) Upon the discovery of Native American remains, the landowner shall ensure that the immediate vicinity, according to generally accepted cultural or archaeological standards or practices, where the Native American human remains are located, is not damaged or disturbed by further development activity until the landowner has discussed and

conferred, as prescribed in this section, with the most likely descendants regarding their recommendations, if applicable, taking into account the possibility of multiple human remains. The landowner shall discuss and confer with the descendants all reasonable options regarding the descendants' preferences for treatment.

Native American Graves Protection and Repatriation Act

Health and Safety Code Sections 8010–8011 establishes a State repatriation policy intent that is consistent with and facilitates implementation of the federal Native American Graves Protection and Repatriation Act. The act strives to ensure that all California Indian human remains and that cultural and cultural items by publicly funded agencies and museums in California. It also states the intent for the State to provide mechanisms for aiding California Indian tribes, including non-federally recognized tribes, in filing repatriation claims and getting responses to those claims.

California Health and Safety Code Sections 18950 through 18961

The State Historic Building Code (HSC; Sections 18950–18961) provide alternative building regulations and building standards for the rehabilitation, preservation, restoration (including related reconstruction), or relocation of buildings or structures designated as historic buildings. Such alternative building standards and building regulations are intended to facilitate the restoration or change of occupancy to preserve their original or restored architectural elements and features, to encourage energy conservation and a cost-effective approach to preservation, and to provide for the safety of the building occupants.

Local Laws, Regulations, and Policies

Stanislaus County General Plan

The Stanislaus County General Plan was adopted August 23, 2016. The Conservation Element of the General Plan establishes the following goal, policy, and implementation measures to ensure the preservation of archaeological and built environment historical resources.

GOAL 8: PRESERVE AREAS OF NATIONAL, STATE, REGIONAL, AND LOCAL HISTORICAL IMPORTANCE

Policy 24

The County will support the preservation of Stanislaus County's cultural legacy of archeological, historical, and paleontological resources for future generations.

Policy 25

"Qualified Historical Buildings" as defined by the State Building Code shall be preserved.

In addition to the goals, policies, and implementation measures enumerated in the Conservation and Open Space Element, the Land Use Element outlines Historical Standards for the identification and treatment of historical resources and design of new construction intended preserve the historical character and setting of the unincorporated communities of Knight's Ferry and La Grange. To achieve this, the Historical Standards provide an inventory of building details identifying the predominant architectural details found within the community, suggested design principals and standards for new construction to ensure the compatibility of new construction with older buildings, and suggested guidelines for the rehabilitation of buildings, identifying specific preferred actions to ensure the ongoing historic preservation efforts. Additional guidelines are provided to ensure the

preservation of the "agricultural/western 'small town' character" of the unincorporated community of Salida.

City of Ceres General Plan 2035

City of Ceres General Plan 2035 provides several goals and policies intended to promote the preservation of archaeological and built-environment historical resources. The Land Use & Community Design Element identifies goals and policies that encourage the preservation of historical resources as a means of fostering a distinctive city identity to promote Ceres' appeal. The Agricultural and Natural Resources elements outlines several additional goals and policies intended to preserve archaeological and built-environment historical resources through the registration, adaptive reuse, relocation, and protection of properties possessing historical and significance. Additional provisions promote the promote the retention of sites and resources associated with local Native American prehistory and history.

Ceres has adopted a historic preservation ordinance, the purpose of which is to promote the public health, safety, and general welfare by providing for the identification, protection, enhancement, perpetuation, and use of properties that reflect special elements of the City's historic, architectural, aesthetic, and other heritage. The ordinance provides for the creation and maintenance of a comprehensive survey and register of historic and cultural resources and provides certain provisions regulating the demolition or other alteration of a locally designated cultural resource.

City of Hughson General Plan

The City of Hughson General Plan's Conservation and Open Space Element provides policies intended to promote the identification and preservation of archaeological and built-environment historical resources. The City is committed to cooperating with the Hughson Historical Society to document and preserve the community's history and create a museum to highlight Hughson's past. Other relevant policies ensure environmental review consistent with CEQA requirements for projects that may affect historical and archaeological resources and commit the City to the completion of a survey of structures in the Hughson area to determine any of historical or architectural significance to the city.

Hughson's historic preservation ordinance authorizes the City Council to designate buildings, structures, or city blocks as historic if the property or area meets certain criteria. The demolition or alteration of designated resources or new construction within areas designated as historic are subject to certain provisions prior to the approval of a development application. To protect the character-defining architectural features of a designated building, structure, or block, the ordinance provides certain guidelines for construction and alterations and recommends adherence to the Secretary of the Interior's Standards for the Treatment of Historic Properties (Secretary's Standards).

Modesto General Plan

The Environmental Resources, Open Space and Conservation of the Modesto General Plan identifies in policies intended to identify and preserve archaeological and built environment historical resources. Two sets of policies apply to, on the one hand, the city's Downtown Area and Baseline Developed Area, and on the other, to the Planned Urbanizing Area. Generally, these policies propose regulations pertaining to zoning and the issuance of permits for the alteration of locally eligible historical resources.

Modesto's Landmark Preservation Ordinance is intended to preserve structures, natural features, sites and areas within the city of Modesto having historic, architectural, archeological, cultural, engineering or aesthetic significance. The City maintains a register of Modesto Landmark Preservation Sites, subject to the recommendation of the Historic Preservation Commission and approval of the City Council. Any building permit application which proposes to alter, renovate, or demolish a landmark or landmark-eligible property is subject to the review and approval of the Landmark Preservation Commission.

City of Newman 2030 General Plan

The City of Newman 2030 General Plan Recreation and Cultural Resources Element provides the goals, policies, and actions intended to preserve and enhance the city's archaeological and built environment historical resources. Among other things, the policies propose to identify, document, and evaluate Newman's historic resources under threat of loss due to development and enact policies to regulate development in or near a designated historic district. Other goals include the preservation and promotion of Newman's cultural resources by developing heritage tourism and establishing the City as a regional tourist destination, and the protection of the City's Native American heritage.

In addition, as required by ordinance, the City of Newman maintains an Inventory of Historic Resources. Building applications that propose to alter or demolish a resource listed in the inventory are subject to review, and permits are issued on the approval of the Architectural Review Committee. In addition, the City enforces certain regulations pertaining to development within an area zoned as an historic or cultural district.

Oakdale General Plan

The Natural Resources and Land Use elements of the Oakdale General Plan includes goals and policies to provide for the identification, protection, and enhancement of the city's cultural resources. Among the policies are those establishing standards for the completion of cultural resources studies, conducting Native American outreach, encouraging adaptive reuse of historically significant buildings, and adoption of historic districts.

While the City of Oakdale does not have a specific historic preservation ordinance, certain provisions of the municipal code provide for the establishment of "H-C" Historic-Cultural Combining Districts. The purpose of the H-C district zoning category is to preserve sites and structures with historical and/or cultural significance by restricting developments that would alter or remove the historical or cultural significance of the district are prohibited.

City of Patterson General Plan

The City of Patterson General Plan's Parks and Recreation Element includes goals and policies related to the preservation of archaeological and built environment historical resources. Among these are provisions related to the maintenances of a downtown historic district, regulation of the demolition of historical resources, and requirements for Native American consultation prior to development projects.

In addition, the City of Patterson Municipal Code authorizes the establishment of Historic Preservation Overlay Zoning Districts (HPOZD). A property or area may be designated historic if it meets specified criteria to determine historical and/or architectural significance. Development applications within an HPOZD are subject to the review of Planning Commission, which is authorized

to review design plans, building permit plans, and/or other applications for permits for construction, alteration, modification, remodeling, or demolition of designated historic or cultural resources.

Riverbank General Plan

The Riverbank General Plan's Community Character and Design and Conservation and Open Space elements contain goals and policies intended to preserve archaeological and built environment historical resources and ensure that new development is designed in a manner compatible with neighboring historical resources. For example, architectural design guidelines ensure the compatibility of new construction with the scale, proportions, massing, general architectural elements, and materials of neighboring buildings of historical quality or significance. Impacts to archaeological and Native American historical resources are minimized through measures to regulate development, protect the confidentiality of prehistoric site locations, and mitigate impacts to unanticipated discoveries of resources.

City of Waterford General Plan

The City of Waterford's General Plan contains policies for the protection of built environment and archaeological historical resources. These include efforts to inventory historical resources throughout the city, preserve newly discovered artifacts, revise as necessary local regulation pertinent to development of historically significant properties, and implement financial incentives for historic preservation.

4.5.3 Impact Analysis

a. Methodology and Significance Thresholds

For this discussion, historical resources include archaeological and built environment resources that are eligible for inclusion in the NRHP, CRHR, or a local historic register. The level of significance of an impact to a historical resource is determined by whether that resource meets the criteria discussed below. Where the significance of a site is unknown, it is presumed to be a significant resource for the purpose of identifying potential areas of disturbance associated with construction projects or development in urban infill areas near high-quality transportation corridors as outlined in the 2022 RTP/SCS.

Appendix G of the State CEQA Guidelines identifies the following criteria for determining whether implementation of the 2022 RTP/SCS' impacts would have a significant impact on cultural and historic resources:

1. Cause a substantial adverse change in the significance of a historical resource as defined in §15064.5;
2. Cause a substantial adverse change in the significant of an archaeological resource pursuant to §15064.5; or
3. Disturb any human remains, including those interred outside of formal cemeteries.

b. Project Impacts and Mitigation Measures

The following section presents a programmatic-level discussion of the potential for impacts to sensitive cultural resources from implementation of 2022 RTP/SCS. Impacts and associated mitigation measures would apply in the StanCOG region and all cities within the County. Due to the programmatic nature of 2022 RTP/SCS, a precise, project-level analysis of the specific impacts

associated with individual transportation and land use projects is not possible at this time. In general, however, implementation of proposed transportation improvements and future projects under the land use scenario envisioned by 2022 RTP/SCS could result in the impacts as described in the following section.

Threshold 1:	Cause a substantial adverse change in the significance of a historical resource pursuant to §15064.5

Impact CR-1 TRANSPORTATION IMPROVEMENT PROJECTS AND THE LAND USE SCENARIO ENVISIONED BY 2022 RTP/SCS WOULD CAUSE A SUBSTANTIAL ADVERSE CHANGE IN THE SIGNIFICANCE OF A HISTORICAL RESOURCE PURSUANT TO §15064.5. THIS IMPACT WOULD BE SIGNIFICANT AND UNAVOIDABLE.

The location and nature of the proposed 2022 RTP/SCS projects were evaluated relative to the location of the known and potential historical resources listed in Table 4.5-1. Projects that involve bridge replacements and removal of other structures older than 50 years could generate an impact to structures, which qualify as historical resources. Furthermore, projects that are adjacent to or near historical resources could have the potential alter the integrity of those buildings and structures by changing their environmental context if the setting of that resource conveys the reasons for its significance.

The 2022 RTP/SCS also has a future land use scenario that emphasizes infill development near transportation hubs in existing urbanized areas and includes some development in outlying areas. There are no specific development projects pursuant to the land use scenario envisioned by the 2022 RTP/SCS identified and, thus, a project specific evaluation is not possible. However, because future infill near transit could be located near or adjacent to known or potential historical resources, the integrity of such resources could be indirectly or directly impacted as a result. Moreover, if future infill near transit would involve redevelopment/demolition of existing resources, it is possible that such resource could have historical significance (as determined by site specific evaluation) given the presence of buildings and structures that are over 45 years old within the StanCOG region, particularly within existing urbanized areas. Redevelopment or demolition could result in the permanent loss of historical resources. Similarly, while proposed transportation projects would not impact known historical resources, it is possible that such projects may require reconstruction or demolition of transportation infrastructure or other buildings or structures that are over 45years old, and which may be considered historically significant as determined by site specific evaluation. Such reconstruction or demolition would result in the material impairment of historical resources.

In general, prior to commencement of any action, development, or land use changes on lands subject to federal jurisdiction or for projects involving federal funding, a cultural resource survey and an environmental analysis must be prepared, including a historic resources assessment. Historic buildings and structures are protected under the regulations of the National Historic Preservation Act and the Department of Transportation Act of 1966. StanCOG-sponsored projects would be subject to local ordinance requirements within the jurisdiction in which they occur, including General Plan provisions that protect cultural resources. Nevertheless, impacts would be significant because there would be substantial adverse changes to buildings and structures that meet the definition of “historical resources” as defined in Section 15064.5(b) of the CEQA Guidelines. Thus, the following mitigation measures would be required for any project that may impact historical resources.

Mitigation Measure

For projects under their jurisdiction, StanCOG shall implement, and transportation project sponsor agencies can and should implement, the following mitigation measures developed for the 2022 RTP/SCS program where applicable for projects that would result in impacts to historical resources, and where feasible and necessary based on project and site-specific considerations. Cities and the County can and should implement these measures, where relevant to land use projects implementing the 2022 RTP/SCS. Project specific environmental documents may adjust these mitigation measures as necessary to respond to site specific conditions.

CR-1 Built Environment Historical Resources

Prior to the issuance of an individual project permit, the implementing agency of a 2022 RTP/SCS project involving a building or structure over 45 years of age shall prepare a map defining the project area. This map shall indicate the areas of disturbance associated with construction and operation of the facility and will help in determining whether known and potential historical resources are located within the project area. If a building or structure greater than 45 years in age is within the identified impact zone, a survey and evaluation of the building(s) and/or structure(s) to determine their eligibility for recognition under State, federal, or local historic resource designation criteria shall be conducted. The evaluation shall be prepared by an architectural historian or historical architect meeting the Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation, Professional Qualification Standards (PQS) as defined in 36 CFR Part 61. All buildings and structures 45 years of age or older within the project area shall be evaluated in their historic context and documented in a report meeting the State Office of Historic Preservation guidelines. All evaluated properties shall be documented on Department of Parks and Recreation Series 523 Forms. The report shall be submitted to the implementing agency for review and concurrence.

If historical resources are identified within the project area of a proposed development, efforts shall be made to the extent feasible to ensure that impacts are mitigated. Application of mitigation shall generally be overseen by a qualified architectural historian or historic architect meeting the PQS, unless unnecessary in the circumstances (e.g., preservation in place). In conjunction with any development application that may affect the historical resource, a report identifying and specifying the treatment of character-defining features and construction activities shall be provided to the implementing agency for review.

To the greatest extent possible to ensure that the relocation, rehabilitation, or alteration of the resource is consistent with the *Secretary of the Interior's Standards for the Treatments of Historic Properties* (Standards). In accordance with CEQA, a project that has been determined to conform with the Standards generally would not cause a significant adverse direct or indirect impact to historical resources (14 CCR § 15126.4(b)(1)). Application of the Standards shall be overseen by a qualified architectural historian or historic architect meeting the PQS. In conjunction with any development application that may affect the historical resource, a report identifying and specifying the treatment of character-defining features and construction activities shall be provided to the implementing agency for review and concurrence.

If significant historical resources are identified on a development site and compliance with the Standards and/or avoidance is not possible, appropriate site-specific mitigation measures shall be established and undertaken. Mitigation measures may include documentation of the historical resource in the form of a Historic American Building Survey-Like report. The report shall comply with the Secretary of the Interior's Standards for Architectural and Engineering Documentation and shall

generally follow the HABS Level III requirements, including digital photographic recordation, detailed historic narrative report, and compilation of historic research. The documentation shall be completed by a qualified architectural historian or historian who meets the PQS and submitted to the implementing agency prior to issuance of any permits for demolition or alteration of the historical resource. Copies of the report shall be provided to a local library and/or other appropriate repositories.

IMPLEMENTING AGENCIES AND TIMING

Implementing agencies for transportation projects are StanCOG and transportation project sponsor agencies. Implementing agencies for land use projects are cities and the County. This mitigation measure shall, or can and should, be applied during permitting and environmental review and implemented during construction where appropriate.

Significance After Mitigation

Redevelopment or demolition that may be required to implement transportation improvements and/or infill and other development may result in the permanent loss or damage to historical resources. While implementation of Mitigation Measure CR-1 would reduce impacts to the extent feasible, some project-specific impacts may be unavoidable. Therefore, this impact is significant and unavoidable. No additional mitigation measures to reduce this impact to less-than-significant levels are feasible.

Threshold 2:	Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5

Impact CR-2 CONSTRUCTION ACTIVITY ASSOCIATED WITH TRANSPORTATION IMPROVEMENT PROJECTS, AND LAND USE DEVELOPMENT ENVISIONED BY THE IMPLEMENTATION OF 2022 RTP/SCS MAY CAUSE A SUBSTANTIAL ADVERSE CHANGE IN THE SIGNIFICANCE OF AN ARCHAEOLOGICAL RESOURCE PURSUANT TO §15064.5. POTENTIAL IMPACTS TO ARCHAEOLOGICAL RESOURCES WOULD BE SIGNIFICANT AND UNAVOIDABLE.

It is known that archaeological resources are present throughout the StanCOG region. Therefore, it is possible to encounter known and unknown archaeological resources as a result of implementation of transportation improvement projects pursuant to the 2022 RTP/SCS. Many of the improvements proposed under the 2022 RTP/SCS consist of minor expansions of existing facilities that would not involve construction in previously undisturbed areas. However, depending on the location and extent of the proposed improvement and ground disturbance, known and/or unknown cultural resources could be impacted. Project-specific analysis would be required as individual projects are proposed.

Representative new projects in the 2022 RTP/SCS that may disrupt previously undisturbed areas are listed in Table 2-1 of Section 2, *Project Description*. The projects listed in this table were chosen based on potential to include new infrastructure. It is possible that some of the proposed roadway or bridge widening or extension projects, beyond those listed in Table 2-1 of Section 2, *Project Description* would adversely impact archaeological resources. In particular, construction activities may disturb the resources thereby exposing them to potential vandalism or causing them to be displaced from the original context and integrity. Therefore, impacts to archaeological resources would be potentially significant. As mentioned above, specific analysis will be required as these individual projects are implemented.

The 2022 RTP/SCS considers a future land use scenario that emphasizes infill near transit and in existing urbanized areas. However, it is possible that archaeological resources could be located on or near future infill development sites, and in undisturbed areas that would be developed during implementation of the 2022 RTP/SCS. Project grading and excavation for development sites would disturb these undiscovered resources.

In general, prior to commencement of any action, development, or land use changes on lands subject to federal jurisdiction or for projects involving federal funding, a cultural resource survey and an environmental analysis must be prepared. County and city sponsored projects would be subject to local ordinance requirements, including General Plan provisions that protect cultural resources. Nevertheless, impacts to archaeological resources would be potentially significant because there could be substantial adverse changes to significant archaeological resources, i.e., archaeological resources that meet the definition of "historical resources" or "unique archaeological resources." Mitigation Measures CR-2(a) and CR-2(b) would reduce these impacts.

Mitigation Measures

For transportation projects under their jurisdiction, StanCOG shall implement, and transportation project sponsor agencies can and should implement, the following mitigation measures developed for the 2022 RTP/SCS program where applicable for transportation projects that would result in impacts to archaeological resources, and where feasible and necessary based on project and site-specific considerations. Cities and the County can and should implement these measures, where relevant to land use projects implementing the 2022 RTP/SCS. Project specific environmental documents may adjust these mitigation measures as necessary to respond to site specific conditions.

CR-2(a) Archaeological Resources Impact Minimization

Before construction activities, implementing agencies shall, or can and should, retain a qualified archaeologist to conduct a record search at the Northwest Information Center to determine whether the project area has been previously surveyed and whether resources were identified. When recommended by the Information Center, implementing agencies shall, or can and should, retain a qualified archaeologist to conduct archaeological surveys before construction activities. Implementing agencies shall, or can and should, follow recommendations identified in the survey, which may include, but would not be limited to: subsurface testing, designing and implementing a Worker Environmental Awareness Program, construction monitoring by a qualified archaeologist, or avoidance of sites and preservation in place. Recommended mitigation measures will be consistent with *State CEQA Guidelines* Section 15126.4(b)(3) recommendations and may include but not be limited to preservation in place and/or data recovery. All cultural resources work shall follow accepted professional standards in recording any find including submittal of standard DPR Primary Record forms (Form DPR 523) and location information to the appropriate California Historical Resources Information System office for the project area.

CR-2(b) Unanticipated Discoveries During Construction

During construction activities, implementing agencies shall, or can and should, implement the following measures. If evidence of any prehistoric or historic-era subsurface archaeological deposits (e.g., ceramic sherds, refuse scatters, lithic scatters, habitation debris, etc.), are discovered during construction-related earthmoving activities all ground-disturbing activity proximate to the discovery shall be halted until a qualified archaeologist (36 CFR Section 61) can assess the significance of the

find. If the find is a prehistoric archaeological site, the appropriate Native American group shall be notified. If the archaeologist determines that the find does not meet the CRHR standards of significance for cultural resources, construction may proceed. If the archaeologist determines that further information is needed to evaluate significance, a testing plan shall be prepared and implemented. If the find is determined to be significant by the qualified archaeologist (i.e., because the find is determined to constitute either an historical resource or a unique archaeological resource), the archaeologist shall work with the implementing agency to avoid disturbance to the resources, and if complete avoidance is not feasible in light of project design, economics, logistics and other factors, shall recommend additional measures such as the preparation and implementation of a data recovery plan. All cultural resources work shall follow accepted professional standards in recording any find including submittal of standard DPR Primary Record forms (Form DPR 523) and location information to the appropriate California Historical Resources Information System office for the project area. If the find is a prehistoric archaeological site, the culturally affiliated California Native American tribe shall be notified and afforded the opportunity to monitor mitigative treatment. During evaluation or mitigative treatment, ground disturbance and construction work could continue in other parts of the project area that are distant enough from the find not to impact it, as determined by the qualified archaeologist.

IMPLEMENTING AGENCIES AND TIMING

Implementing agencies for transportation projects are StanCOG and transportation project sponsor agencies. Implementing agencies for land use projects are cities and the County. These mitigation measure shall, or can and should, be applied during permitting and environmental review and implemented during construction where appropriate.

Significance After Mitigation

Implementation of Mitigation Measures CR-2(a) and CR-2(b) would reduce potential impacts to archaeological resources to the extent feasible, but some project-specific impacts may be unavoidable. Therefore, this impact is significant and unavoidable. No additional mitigation measures to reduce this impact to less-than-significant levels are feasible.

Threshold 3: Disturb any human remains, including those interred outside of formal cemeteries

Impact CR-3 CONSTRUCTION ACTIVITY ASSOCIATED WITH TRANSPORTATION IMPROVEMENT PROJECTS, AND LAND USE DEVELOPMENT ENVISIONED BY IMPLEMENTATION OF 2022 RTP/SCS COULD RESULT IN DISTURBANCES TO HUMAN REMAINS INCLUDING THOSE INTERRED OUTSIDE OF FORMAL CEMETERIES. POTENTIAL IMPACTS TO HUMAN REMAINS WOULD BE LESS THAN SIGNIFICANT.

Human burials outside of formal cemeteries are often associated with prehistoric archaeological contexts. Therefore, it is possible to encounter unknown human burials because of implementation of transportation improvement projects under the 2022 RTP/SCS. Excavation during construction activities in the StanCOG region would have the potential to disturb these resources, including Native American burials.

In addition to being potential archaeological resources, human burials have specific provisions for treatment in PRC Section 5097, as listed under Section 4.5.2, *Regulatory Setting*. The California Health and Safety Code (Sections 7050.5, 7051 and 7054) has specific provisions for the protection of human burial remains. Existing regulations address the illegality of interfering with human burial remains, and protects them from disturbance, vandalism, or destruction, and established

procedures to be implemented if Native American skeletal remains are discovered. PRC Section 5097.98 also addresses the disposition of Native American burials, protects such remains, and established the NAHC to resolve any related disputes. Implementation of these regulations would ensure that 2022 RTP/SCS impacts to disturbance of human remains, including those interred outside of formal cemeteries would be less than significant.

Mitigation Measures

No mitigation measures are required.

c. Specific 2022 RTP/SCS Projects That May Result in Impacts

All 2022 RTP/SCS projects that require ground disturbance in native soils may result in cultural impacts. Table 4.5-1 below identifies representative projects with the potential to cause or contribute to direct or indirect impacts to cultural resources. These projects were chosen based on their scope and potential to include the development of new transportation infrastructure. While many projects have the potential to impact cultural resources, those requiring substantial ground disturbance in undisturbed areas have greater potential to impact prehistoric archaeological resources. Projects located in urban infill or previously disturbed areas have a greater potential to impact historical built environment resources, as well as historical archaeological resources in older developed areas. Additional specific analysis will be required as individual projects are implemented to determine the actual magnitude of impact. Mitigation measures discussed above would apply to these specific projects.

Table 4.5-2 RTP Projects that May Result in Cultural Resources Impacts

Project ID	Location	Description	Potential Impact
Tier 1 Roadway Projects			
C22	Service Rd & Morgan Rd	Install Traffic Signal	CR-1, CR-2(a), and CR-2(b)
C23	Mitchell Rd/Service Rd	Construct New Interchange - Phase I	CR-1, CR-2(a), and CR-2(b)
C24	7th St to Grayson Rd	Widen from 2 to 4 lanes	CR-1, CR-2(a), and CR-2(b)
C25	Eastgate Blvd to Faith Home	Widen from 2 to 4 lanes	CR-1, CR-2(a), and CR-2(b)
C26	Crows Landing Rd & A Street	Install Traffic Signal	CR-1, CR-2(a), and CR-2(b)
C27	Ustick Rd to Blaker Rd	Widen from 2 to 4 lanes	CR-1, CR-2(a), and CR-2(b)
C29	Hatch Rd & Faith Home Rd	Install Traffic Signal	CR-1, CR-2(a), and CR-2(b)
C30	Hatch Rd to Grayson Rd	Widen from 2 to 4 lanes	CR-1, CR-2(a), and CR-2(b)
C31	River Rd to Service Rd	Widen to 6 lanes	CR-1, CR-2(a), and CR-2(b)
C46	Service Rd to Grayson Rd	Widen from 2 to 4 lanes	CR-1, CR-2(a), and CR-2(b)
CA03	22.56/24.75	Construction HOV lanes	CR-1, CR-2(a), and CR-2(b)
CA06	On SR 99 from Keyes Rd to Taylor Rd	Construct auxiliary lane	CR-1, CR-2(a), and CR-2(b)
CA14	Bridge replacement in Stanislaus County on State Route 4 at Hoods Creed Bridge (#38 0041)	Bridge Replacement	CR-1, CR-2(a), and CR-2(b)
H08	Whitmore Ave to Santa Fe Ave	Improve to 2-lane Major Collector	CR-1, CR-2(a), and CR-2(b)
H09	7th Street and Santa Fe Avenue	Roadway Realignment Project	CR-1, CR-2(a), and CR-2(b)

Project ID	Location	Description	Potential Impact
M52	McHenry Ave to Coffee Rd	Widen from 2 to 6-lane Expressway	CR-1, CR-2(a), and CR-2(b)
M53	Coffee Rd. to Oakdale Rd	Widen from 2 to 6-lane Expressway	CR-1, CR-2(a), and CR-2(b)
M54	Pelandale Ave to Kiernan Ave	Widen from 4 to 6 lanes	CR-1, CR-2(a), and CR-2(b)
M55	Pelandale Ave to Standiford Ave	Widen from 4 to 6 lanes	CR-1, CR-2(a), and CR-2(b)
M56	Briggsmore to Sylvan	Widen from 2 to 4 lanes	CR-1, CR-2(a), and CR-2(b)
N06	Yolo St to Sherman Pkwy	Install 4 Lane Arterial Roadway Improvements	CR-1, CR-2(a), and CR-2(b)
N07	Sherman Pkwy to Stuhr Road	Install 4 Lane Arterial Roadway Improvements	CR-1, CR-2(a), and CR-2(b)
N08	CCID Canal to Highway 33	Install 2 Lane Arterial Roadway Improvements	CR-1, CR-2(a), and CR-2(b)
N09	Yolo Avenue to Inyo Avenue	Install 4 Lane Arterial Roadway Improvements	CR-1, CR-2(a), and CR-2(b)
S01	SR-99 to Interstate 5	Improve 22 miles to Expressway standards	CR-1, CR-2(a), and CR-2(b)
S29	Seventh St @ Tuolumne River Bridge	Seismic Bridge Replacement; 4 lane bridge with pedestrian access	CR-1, CR-2(a), and CR-2(b)
S56	Carpenter Rd to River Rd/Marshall Rd	Widen to 3 lanes	CR-1, CR-2(a), and CR-2(b)
S57	River Rd/Marshall Rd to SR-33	Widen to 3 lanes	CR-1, CR-2(a), and CR-2(b)
S65	San Joaquin River to Carpenter Rd	Widen to 3 lanes	CR-1, CR-2(a), and CR-2(b)
S66	Carpenter Rd to Crows Landing Rd	Widen to 3 lanes	CR-1, CR-2(a), and CR-2(b)
S67	Crows Landing Rd to Mitchell Rd	Widen to 3 lanes	CR-1, CR-2(a), and CR-2(b)
S68	Mitchell Rd to Washington Rd	Widen to 3 lanes	CR-1, CR-2(a), and CR-2(b)
S69	SR-99 to McHenry Ave	Widen to 6-lanes	CR-1, CR-2(a), and CR-2(b)
T16	Tegner Rd to Dianne Dr	Widen from 2-lane to 4-lane Arterial with Class II bike facility and transit	CR-1, CR-2(a), and CR-2(b)
T17	Olive Ave to Berkeley Ave	Install Median; Add one (1) lane with Class II bike facility	CR-1, CR-2(a), and CR-2(b)
T18	Washington Rd to Tegner Rd	Widen from 2-lane to 4-lane Arterial with Class II bike facility	CR-1, CR-2(a), and CR-2(b)
T19	Linwood Ave to Fulkerth Rd	Widen from 2-lane to 4-lane Arterial with Class II bike facility and transit	CR-1, CR-2(a), and CR-2(b)
T20	Linwood Ave to W. Main St	Construct new 2-lane Industrial Collector with Class II bike facility	CR-1, CR-2(a), and CR-2(b)
T21	SR-99 to Tegner Rd	Construct new 2-lane Collector with Class I bike facility	CR-1, CR-2(a), and CR-2(b)
T22	Tuolumne Rd to Tornell Rd	Widen from 2-lane to 4-lane Arterial with Class II bike facility	CR-1, CR-2(a), and CR-2(b)
T23	Canal Dr to Wayside Rd	Widen from 2-lane to 4-lane Arterial with Class II bike facility and transit	CR-1, CR-2(a), and CR-2(b)

Project ID	Location	Description	Potential Impact
T24	Wayside Dr to North Ave	Widen from 2-lane to 4-lane Arterial with Class II bike facility and transit	CR-1, CR-2(a), and CR-2(b)
T25	Walnut Rd to Lander Ave	Widen from 2-lane to 3-lane Collector with Class II bike facility and transit (West Ave. South to Lander)	CR-1, CR-2(a), and CR-2(b)
T26	Walnut Rd to Washington Rd	Widen from 2-lane to 3-lane Collector with Class II bike facility	CR-1, CR-2(a), and CR-2(b)
T27	Washington Rd to Kilroy Rd	Construct new 2-lane Collector with Class I bike facility	CR-1, CR-2(a), and CR-2(b)
T28	Golden State Blvd to Daubenberger Rd	Widen from 2-lane to 4-lane Arterial with Class III bike facility from Minaret to S. Berkeley/Class II from S. Berkeley to Daubenberger and transit from Oak to S. Johnson	CR-1, CR-2(a), and CR-2(b)
T29	Taylor Rd to Monte Vista Ave	Complete 6-lane Boulevard with Class II bike facility and transit from Christoffersen to Monte Vista	CR-1, CR-2(a), and CR-2(b)
T30	Monte Vista Ave to Fulkerth Rd	Complete 6-lane Boulevard with Class II bike facility	CR-1, CR-2(a), and CR-2(b)
Rail Projects			
A01	UPRR Fresno Subdivision MP 103.98 to MP 107	Construct new rail bridge over the Stanislaus River, second main track, and modify at-grade crossings.	CR-1, CR-2(a), and CR-2(b)
A03	UPRR Fresno Subdivision MP 113.69 to MP 114.63	Construct new rail bridge over the Stanislaus River and second main track and modify at-grade crossing at 7th Street/B Street.	CR-1, CR-2(a), and CR-2(b)
A12	BNSF Stockton Subdivision	Construct 0.45 miles of second main track and two bridges	CR-1, CR-2(a), and CR-2(b)
A13	BNSF Stockton Subdivision	Construct 6.1 miles of second main track and one bridge	CR-1, CR-2(a), and CR-2(b)
A14	BNSF Stockton Subdivision	Construct 6.6 miles of second main track and three bridges	CR-1, CR-2(a), and CR-2(b)
A15	BNSF Stockton Subdivision	Construct second platforms at each station	CR-1, CR-2(a), and CR-2(b)
Bicycle/Pedestrian Projects			
C29	East Hatch Rd to Joyce Ave	Class 4 Separated Bike Lane. New construction, south side of roadway. StanCOG Non-Motorized Transportation Master Plan Project ID: CER-10	CR-1, CR-2(a), and CR-2(b)
M35	Semallon Dr to Riverbank	Class I Trail Improvements	CR-1, CR-2(a), and CR-2(b)
M36	Yosemite to Orangeburg	Class I Bike path/Ped Bike Bridge	CR-1, CR-2(a), and CR-2(b)

Project ID	Location	Description	Potential Impact
M37	Woodrow to Pelandale	Bike/Ped facility including overcrossings	CR-1, CR-2(a), and CR-2(b)
M38	Virginia Corridor to Dry Creek	Class IV Bike Path	CR-1, CR-2(a), and CR-2(b)
Aviation Projects			
M10	Modesto City-County Airport	Construct Entrance Road	CR-1, CR-2(a), and CR-2(b)
M11	Modesto City-County Airport	Construct New Airport Fire Station	CR-1, CR-2(a), and CR-2(b)
M12	Modesto City-County Airport	Construct New Airport Maintenance Shop	CR-1, CR-2(a), and CR-2(b)
M13	Modesto City-County Airport	Construct Terminal Building	CR-1, CR-2(a), and CR-2(b)
M31	Modesto City-County Airport	Taxiway E Re-alignment	CR-1, CR-2(a), and CR-2(b)
T01	Turlock Municipal Airport	Widen Runway 12-30, RSA & Infrastructure Improvements Including Airfield Electrical Upgrades.	CR-1, CR-2(a), and CR-2(b)

4.5.4 Cumulative Impacts

The cumulative impact analysis area for cultural resources consists of the StanCOG region and the adjoining counties, based on the historic, ethnographic, and prehistoric period use patterns of the region. Information regarding these adjoining counties can be found in Section 3.3.4, *Approach for Cumulative Analysis*. This is appropriate because cultural resources identified in this larger region will be similar in type and style to those that are or may be present in the StanCOG region. As discussed in Section 4.5.3, the changes envisioned in the 2022 RTP/SCS could include projects that would require substantial ground disturbance in undisturbed areas or in infill areas, which could impact historic built environment resources and archaeological resources.

The increase in growth in previously undisturbed areas contributes to regional impacts on existing and previously undisturbed and undiscovered historic and archaeological resources, including CEQA-defined “historical resources.” While most cultural resources are site specific, with impacts that are project specific, others may have regional significance; for example, an historic structure that represents the last known example of its kind would constitute a regional impact if it were affected by future 2022 RTP/SCS project implementation. In addition, there are historic districts or areas that can be affected by multiple or successive projects, over time, resulting in a cumulative impact to the historic resource. For such a resource, cumulative impacts would be significant, and the 2022 RTP/SCS contribution to them would be cumulatively considerable. Mitigation Measures CR-1, CR-2(a), and CR-2(b) would reduce impacts associated with 2022 RTP/SCS projects through impact minimization for historical and archaeological resources. However, it cannot be guaranteed that all future project level impacts can be mitigated to a less than significant level. As such, the 2022 RTP/SCS contribution would remain cumulatively considerable after mitigation.

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4.6 Energy

This section discusses the energy impacts of implementing transportation projects in the proposed 2022 RTP/SCS, as well as the energy-related consequences of the land use scenario envisioned in the proposed 2022 RTP/SCS.

4.6.1 Setting

Energy relates directly to environmental quality. Energy use can adversely affect air quality and other natural resources. Fossil fuels are burned to create electricity which powers homes and commercial/industrial buildings, to create heat and to power vehicles. Transportation energy use is related to the fuel efficiency of cars, trucks, and public transportation; choice of different travel modes (auto, carpool, and public transit); and miles traveled by these modes. Construction and routine operation and maintenance of transportation infrastructure also consume energy. In addition, residential, commercial and industrial land uses consume energy, typically through the use of natural gas and electricity.

a. Energy Supply

California's major sources of fuel production in 2019 comprised approximately 68.9 percent crude oil, 16.5 percent natural gas, 12.6 percent nuclear, and 1.9 percent biofuels (U.S. Energy Information Administration [EIA] 2020a). California's current electricity generation is comprised of approximately 44.5 percent non-hydroelectric renewable energy, 40.1 percent natural gas, 8.8 percent hydroelectric, 6.4 percent nuclear, and 0.2 percent coal-fired (U.S. EIA 2020a).

Petroleum fuels are regulated by the Energy, Minerals, and Compliance Division, Petroleum Unit. This includes onshore oil and gas activities within the StanCOG region by performing annual inspections of onshore wells, facilities, pipelines, and other pertinent equipment throughout oil production leases. The unit is also responsible for protecting the health, safety, public welfare, physical environment, and natural resources of the County by the reasonable regulation of onshore petroleum facilities and operations, including but not limited to, exploration (drilling), production, storage, processing, disposal, well plugging, and well abandonment (Stanislaus County 2021). According to the Division of Oil, Gas, and Geothermal Resources (DOGGR), there are wells in the County that are classified as idle, orphaned, abandoned, or cancelled oil wells in the La Grange and along State Route 33 (DOC 2021). The StanCOG region contains no active oil or gas wells (CalGEM 2022).

Table 4.6-1 2021 Oil and Natural Gas Production in StanCOG region

Natural Resource	California	StanCOG Total	StanCOG Proportion of Statewide Production
Crude Oil (bbl)	156,449,220	0	0.0%
Natural Gas (Mcf)	165,986,427	0	0.0%

Source: CalGEM 2022.

b. Energy Consumption and Sources

Total energy consumption in the U.S. in 2020 was estimated at approximately 100,266 trillion Btu (U.S. EIA 2021b). As shown in Table 4.6-1 petroleum provided approximately 36.8 percent of the energy used in 2019 in the U.S. (U.S. EIA 2021b). In the same year, coal provided approximately 11.3

percent of energy consumed, natural gas provided approximately 32.1 percent, nuclear energy provided approximately 8.4 percent and total renewable sources supplied the rest at approximately 11.3 percent (U.S. EIA 2020b). On a per capita basis, California is ranked second lowest of the states in terms of energy use in 2019 (198 million Btu per person), or about 44.0 percent less than the U.S.'s average per capita consumption of 354 million Btu per person (U.S. EIA 2020c).

Electricity and Natural Gas

In 2020, California used 277,704 gigawatt hours (GWh) of electricity; approximately 32 percent of California's electricity supply came from renewable energy sources, such as wind, solar photovoltaic, geothermal, and biomass (CEC 2021a). In 2020, California also consumed approximately 13,158 million U.S. therms of natural gas (CEC 2021b). Table 4.6-2 illustrates the electricity and natural gas consumption of the counties that make up the StanCOG region and their proportion of statewide consumption in 2020. In addition, many rural areas within the Stanislaus region rely on wood, propane, or other liquefied petroleum gases (LPGs) as heating fuels.

Table 4.6-2 2020 Electricity and Natural Gas Consumption in the StanCOG Region

County	Electricity Consumption 2020 Consumption (GWh)[1]	Electricity Consumption Per Capita Consumption (kWh)	Electricity Consumption Statewide Proportion	Natural Gas Consumption 2020 Consumption (MMthm)[2]	Natural Gas Consumption Per Capita Consumption (thm)	Natural Gas Consumption Statewide Proportion
Stanislaus	5,056	9,144	.018%	199	36	.015%

[1] Electricity consumption is quantified in Millions of Kilowatt-Hours (GWh), while per capita electricity is quantified in Kilowatt-Hours (kWh).

[2] Natural Gas consumption is quantified in Millions of Therms (MMthm), while per capita natural gas consumption is quantified in Therms (thm).

[3] Not available in the CEC database

Note: The per capita consumption for natural gas and electricity are determined by using 2020 data from the CEC for overall county-wide consumption and divided by the 2020 county population retrieved from the United States Census Bureau database (552,878 persons). Individual entries may not add up to exact total amounts as a result of rounding to a single decimal point.

Sources: CEC 2021a; CEC 2021b; U.S. Census Bureau 2021

As shown in Table 4.6-2, the StanCOG region accounted for approximately 0.018 percent of the State's electricity consumption and 0.015 percent of the State's natural gas consumption in 2019. The Southern California Edison Company (SCE) provides electric service to most of the StanCOG region. SCE obtains its electricity from natural gas, fossil fuels, nuclear power, hydroelectric power, and eligible renewable resources. The northern and southeastern corners of the StanCOG region are served by the Pacific Gas & Electric Company (PG&E). This includes electricity to the unincorporated communities and areas in the northeast portion of Stanislaus County.

Petroleum

Energy consumed by the transportation sector accounts for roughly 39.4 percent of California's energy demand, amounting to approximately 3,073 trillion Btu in 2019 (U.S. EIA 2020b). California's transportation sector, including on-road and rail transportation, consumed roughly 565,056,000 bbl of petroleum fuels in 2019 (U.S. EIA 2020d). Furthermore, petroleum-based fuels are used for approximately 98.2 percent of the State's transportation activity (U.S. EIA 2020d). Most gasoline and diesel fuel sold in California for motor vehicles is refined in California to meet state-specific

formulations required by the California Air Resources Board (CARB). Major petroleum refineries in California are concentrated in three counties: Contra Costa, Kern, and Los Angeles (CEC 2021c).

Daily vehicle miles travelled (VMT) within the StanCOG region were estimated at approximately 9.1 million in 2020 (Table 4.6-4). Based on this daily VMT, gasoline sales, and diesel sales in the StanCOG region for 2020, approximately 169.8 million Btu were consumed per day in 2020 as shown Table 4.6-3.

Table 4.6-3 Fuel Consumption in StanCOG Region

Fuel	2020 Annual Fuel Use (million gallons)	2020 Annual Energy Use (MMBtu)	2020 Daily Energy Use (MMBtu)	2020 Daily Per Capita Energy Use (Thousand Btu)[1]
Gasoline	197	21,627,878	59,254	1.10
Diesel	39	497,094	1,362	0.2
Total	**236**	**22,124,972**	**60,616**	**1.3**

[1] The per capita consumption for fuel was determined by using 2020 data divided by the 2020 county population retrieved from the California Department of Finance.

[2] Retail Fuel Sales data aggregates sales for the County of Stanislaus

Note: Totals may not add up due to rounding.

Source CEC 2022b

As stated in Section 4.15, *Transportation*, approximately 26,000 vehicle miles were traveled each day within the StanCOG region in 2020. This equates to approximately 9.16 million VMT per year. Table 4.6-4 illustrates the daily and annual VMT for the StanCOG region in 2020.

Table 4.6-4 Daily and Annual VMT for the StanCOG Region in 2020

Daily VMT	Annual VMT
25,094.75	9,159,585

Note: individual numbers may not add up to totals due to rounding.

Source: StanCOG Model, Appendix M

Alternative Fuels

A variety of alternative fuels are used to reduce petroleum-based fuel demand. The use of these fuels is encouraged through various statewide regulations and plans, such as the Low Carbon Fuel Standard and Senate Bill (SB) 32. Conventional gasoline and diesel may be replaced, depending on the capability of the vehicle with transportation fuels including the following:

- **Hydrogen** is being explored for use in combustion engines and fuel cell electric vehicles. The interest in hydrogen as an alternative transportation fuel stems from its clean-burning qualities, its potential for domestic production, and the fuel cell vehicle's potential for high efficiency, which is two to three times more efficient than gasoline vehicles. Currently, 42 hydrogen refueling stations are located in California; There are no hydrogen fueling stations located in the StanCOG region (DOE 2022).
- **Biodiesel** is a renewable alternative fuel that can be manufactured from vegetable oils, animal fats, or recycled restaurant greases. Biodiesel is biodegradable and cleaner-burning than petroleum-based diesel fuel. Biodiesel can run in any diesel engine generally without alterations; however, fueling stations have been slow to make it available. There are currently

11 biodiesel refueling stations in California, none of which are located in the StanCOG region (DOE 2021b).

- **Electricity** can be used to power electric and plug-in hybrid electric vehicles directly from the power grid. Electricity used to power vehicles is generally provided by the electricity grid and stored in the vehicle's batteries. Fuel cells are being explored as a way to use electricity generated onboard the vehicle to power electric motors. There are approximately 95 public electrical charging stations in the StanCOG region (DOE 2021c).

4.6.2 Regulatory Setting

Programs and policies at the State and national levels have emerged to bolster the previous trend towards energy efficiency, as discussed below.

a. Federal Laws, Regulations, and Policies

Energy Policy Conservation Act (EPCA) and Corporate Average Fuel Economy (CAFE)

The EPCA of 1975 established nationwide fuel economy standards in order to conserve oil. Pursuant to this Act, the National Highway Traffic and Safety Administration, part of the U.S. Department of Transportation, is responsible for revising existing fuel economy standards and establishing new vehicle fuel economy standards

The Corporate Average Fuel Economy (CAFE) program was established to determine vehicle manufacturer compliance with the government's fuel economy standards. Compliance with CAFE standards is determined based on each manufacturer's average fuel economy for the portion of their vehicles produced for sale in the United States.

National Energy Policy Act of 1992 (EPACT92)

EPACT92 calls for programs that promote efficiency and the use of alternative fuels. EPACT92 requires certain federal, state, and local government and private fleets to purchase a percentage of light duty alternative fuel vehicles (AFVs) capable of running on alternative fuels each year. In addition, EPACT92 has financial incentives. Federal tax deductions will be allowed for businesses and individuals to cover the incremental cost of AFVs. States are also required by the act to consider a variety of incentive programs to help promote AFVs.

Energy Policy Act of 2005

The Energy Policy Act of 2005 provides renewed and expanded tax credits for electricity generated by qualified energy sources, such as landfill gas; provides bond financing, tax incentives, grants, and loan guarantees for clean renewable energy and rural community electrification; and establishes a federal purchase requirement for renewable energy.

Energy Independence and Security Act (EISA) of 2007

EISA is designed to improve vehicle fuel economy and help reduce U.S. dependence on oil. It expands the production of renewable fuels, reducing dependence on oil, and confronting global climate change. Specifically, it:

- Increases the supply of alternative fuel sources by setting a mandatory Renewable Fuel Standard (RFS) requiring fuel producers to use at least 36 billion gallons of biofuel in 2022, which represents a nearly five-fold increase over current levels; and
- Reduces U.S. demand for oil by setting a national fuel economy standard of 35 miles per gallon by 2020 – an increase in fuel economy standards of 40 percent

b. State Laws, Regulations, and Policies

Warren-Alquist Act

The 1975 Warren-Alquist Act established the California Energy Resources Conservation and Development Commission, now known as CEC. The Act established a State policy to reduce wasteful, uneconomical, and unnecessary uses of energy by employing a range of measures. The CPUC regulates privately-owned utilities in the energy, rail, telecommunications, and water fields.

California Energy Plan

CEC is responsible for preparing the California Energy Plan, which identifies emerging trends related to energy supply, demand, conservation, public health and safety, and the maintenance of a healthy economy. The current (2008) California Energy Plan calls for the State to assist in the transformation of the transportation system to improve air quality, reduce congestion, and increase the efficient use of fuel supplies with the least environmental and energy costs. To further this policy, the plan identifies a number of strategies, including assistance to public agencies and fleet operators in implementing incentive programs for zero-emission vehicles and addressing their infrastructure needs; and encouragement of urban designs that reduce vehicle miles traveled (VMT) and accommodate pedestrian and bicycle access.

Assembly Bill 2076: Reducing Dependence on Petroleum

Pursuant to Assembly Bill (AB) 2076 (Chapter 936, Statutes of 2000), CEC and CARB prepared and adopted in 2003 a joint agency report, *Reducing California's Petroleum Dependence*. Included in this report are recommendations to increase the use of alternative fuels to 20 percent of on-road transportation fuel use by 2020 and 30 percent by 2030, significantly increase the efficiency of motor vehicles, and reduce per-capita VMT. Further, in response to the CEC's 2003 and 2005 *Integrated Energy Policy Reports*, the governor directed CEC to take the lead in developing a long-term plan to increase alternative fuel use.

A performance-based goal of AB 2076 was to reduce petroleum demand to 15 percent below 2003 demand.

Integrated Energy Policy Report (IEPR)

Senate Bill (SB) 1389 (Chapter 568, Statutes of 2002) required CEC to conduct assessments and forecasts of all aspects of energy industry supply, production, transportation, delivery and distribution, demand, and prices. The CEC shall use these assessments and forecasts to develop energy policies that conserve resources, protect the environment, ensure energy reliability, enhance the state's economy, and protect public health and safety.

CEC adopts an IEPR every two years and an update every other year. The 2021 IEPR, updated in 2022, provides a summary of priority energy issues currently facing the State, outlining strategies and recommendations to further the State's goal of ensuring reliable, affordable, and

environmentally responsible energy sources. Energy topics covered in the report include electricity resource and supply plans; electricity and natural gas demand forecasts; natural gas outlooks; transportation energy demand forecasts; energy efficiency savings; integrated resource planning; a barriers study; climate adaptation and resilience; renewable gas; southern California energy reliability; distributed energy resources; strategic transmission investment plans; and existing power plan reliability issues.

Senate Bill 1078: California Renewables Portfolio Standard Program.

SB 1078 (Chapter 516, Statutes of 2002), as expanded under SB 2, establishes a renewable portfolio standard (RPS) for electricity supply. The RPS requires that retail sellers of electricity, including investor-owned utilities and community choice aggregators, provide 20 percent of their supply from renewable sources by 2017. SB 2 expanded this law and required procurement from eligible renewable energy resources to 33 percent by 2020. In addition, electricity providers subject to the RPS must increase their renewable share by at least one percent each year. The outcomes of this legislation will impact regional transportation powered by electricity.

California Renewables Portfolio Standard

Early legislation established California's renewables portfolio standard (RPS). The program sets continuously escalating renewable energy procurement requirements for the state's load-serving entities. Generation must be procured from RPS-certified facilities. SB 2 (1X) of 2011 obligated all California electricity providers to obtain at least 33 percent of their energy from renewable resources by 2020. The CPUC and CEC are jointly responsible for implementing the program.

SB 350 (Chapter 547, Statutes of 2015) requires the following by 2030: an RPS of 50 percent, and a doubling of efficiency for existing buildings. SB 100 (Chapter 312, Statutes of 2018) establishes a new RPS target of 50 percent by 2026, increases the RPS target in 2030 from 50 to 60 percent, and establishes a goal of 100 percent zero-carbon energy sources by 2045

Senate Bill 350: Clean Energy and Pollution Reduction Act of 2015

The Clean Energy and Pollution Reduction Act of 2015 (SB 350) requires the amount of electricity generated and sold to retail customers per year from eligible renewable energy resources be increased to 50 percent by December 31, 2030. This act also requires doubling of the energy efficiency savings in electricity and natural gas for retail customers, through energy efficiency and conservation by December 31, 2030.

Assembly Bill 1493: Reduction of Greenhouse Gas Emissions

AB 1493 (Chapter 200, Statutes of 2002), known as the "Pavley bill," amended Health and Safety Code sections 42823 and 43018.5 requiring CARB to develop and adopt regulations that achieve maximum feasible and cost-effective reduction of GHG emissions from passenger vehicles, light-duty trucks, and other vehicles used for noncommercial personal transportation in California.

Implementation of new regulations prescribed by AB 1493 required that the State of California apply for a waiver under the federal Clean Air Act. Although EPA initially denied the waiver in 2008, EPA approved a waiver in June 2009, and in September 2009, CARB approved amendments to its initially adopted regulations to apply the Pavley standards that reduce GHG emissions to new passenger vehicles in model years 2009 through 2016. According to CARB, implementation of the

Pavley regulations is expected to reduce fuel consumption while also reducing GHG emissions (CARB 2017a).

Assembly Bill 1007: State Alternative Fuels Plan

AB 1007 (Chapter 371, Statutes of 2005) required CEC to prepare a State plan to increase the use of alternative fuels in California. CEC prepared the State Alternative Fuels Plan (SAF Plan) in partnership with the ARB and in consultation with other State, federal, and local agencies. The SAF Plan presents strategies and actions California must take to increase the use of alternative non-petroleum fuels in a manner that minimizes costs to California and maximizes the economic benefits of in-state production. The SAF Plan assessed various alternative fuels and developed fuel portfolios to meet California's goals to reduce petroleum consumption, increase alternative fuels use, reduce GHG emissions, and increase in-state production of biofuels without causing a significant degradation of public health and environmental quality.

Bioenergy Action Plan, Executive Order #S-06-06

Executive Order (EO) S-06-06, April 25, 2006, establishes targets for the use and production of biofuels and biopower, and directs State agencies to work together to advance biomass programs in California while providing environmental protection and mitigation. The EO establishes the following target to increase the production and use of bioenergy, including ethanol and biodiesel fuels made from renewable resources: produce a minimum of 20 percent of its biofuels within California by 2010, 40 percent by 2020, and 75 percent by 2050. EO S-06-06 also calls for the State to meet a target for use of biomass electricity. The 2011 Bioenergy Action Plan identifies those barriers and recommends actions to address them so that the State can meet its clean energy, waste reduction, and climate protection goals. The 2012 Bioenergy Action Plan updates the 2011 Plan and provides a more detailed action plan to achieve the following goals:

- Increase environmentally and economically sustainable energy production from organic waste;
- Encourage development of diverse bioenergy technologies that increase local electricity generation, combined heat and power facilities, renewable natural gas, and renewable liquid fuels for transportation and fuel cell applications;
- Create jobs and stimulate economic development, especially in rural regions of the state; and
- Reduce fire danger, improve air and water quality, and reduce waste.

Title 24, California Code of Regulations

California Code of Regulations, Title 24, Part 6, is California's Energy Efficiency Standards for Residential and Non-residential Buildings. Title 24 was established by CEC in 1978 in response to a legislative mandate to create uniform building codes to reduce California's energy consumption and provide energy efficiency standards for residential and nonresidential buildings. The standards are updated on an approximately three-year cycle to allow consideration and possible incorporation of new efficient technologies and methods. In 2019, CEC updated Title 24 standards with more stringent requirements effective January 1, 2020. All buildings for which an application for a building permit is submitted on or after January 1, 2017, must follow the 2016 standards. Energy efficient buildings require less electricity; therefore, increased energy efficiency reduces fossil fuel consumption and decreases GHG emissions. The CEC Impact Analysis for California's 2016 Building Energy Efficiency Standards estimates that the 2016 Standards are 28 percent more efficient than the previous 2013 standards for residential buildings and 5 percent more efficient for non-

residential buildings. The building efficiency standards are enforced through the local plan check and building permit process. Local government agencies may adopt and enforce additional energy standards for new buildings as reasonably necessary due to local climatologic, geologic, or topographic conditions, provided that these standards exceed those provided in Title 24.

California Green Building Standards Code, California Code of Regulations Title 24, Part 11

California's green building code, referred to as CalGreen, was developed to provide a consistent approach to green building within the State. Having taken effect in January 2019, the most recent version of the Code lays out the minimum requirements for newly constructed residential and nonresidential buildings to reduce GHG emissions through improved efficiency and process improvements. It also includes voluntary tiers to further encourage building practices that improve public health, safety, and general welfare by promoting a more sustainable design.

c. Local Laws, Regulations, and Policies

Stanislaus County General Plan

The Stanislaus County General Plan Conservation/Open Space Element includes goals and policies that would reduce energy use in the County. The reduction in motor vehicle emissions and traffic congestion would result in part from reduced transportation energy consumption (Stanislaus County 2016). The Stanislaus County General Plan contains the following goals and policies regarding energy consumption:

- **Policy Thirty**: The County shall provide zoning mechanism for locating material recovery facilities, recycling facilities, composting facilities, mini-hydroelectric plants, and alternative energy sources.
- **Policy Thirty-One**: New Construction by the County shall meet or exceed code requirements for energy conservation.

Local General Plans

Other cities in Stanislaus County that have General Plans which contain energy conservation goals and policies including Newman, Hughson, Ceres, Riverbank, Oakdale, Patterson, and Waterford. These General Plans contain policies aimed at incentivizing and encouraging the use of renewable energy sources, improving the feasibility of installing solar panels with requiring passive solar development design, promoting co-generation projects for commercial and industrial facilities, and requiring designs and measures that promote energy efficiency, among other objectives.

City of Modesto Urban Area General Plan

The City of Modesto Urban Area General Plan contains air quality policies aimed at reducing emissions associated with energy use by residences and businesses and energy conservation policies specifically aimed at requiring Leadership in Energy and Environmental Design (LEED) certification and implementation of CALGreen standards in new development (City of Modesto 2019). The Environmental Resources and Conservation Element contains the following policies regarding energy conservation.

Policy 2-g. Encourage the use of solar energy systems for residential, agricultural, parks, public building, and business purposes as provided in Government Code Section 65850.5.

Policy 2-k. Reduce heat gain from pavement minimizing street rights-of-way and pavement widths. Reinstate the use of parkway strips with trees where feasible, to provide shading of streets.

Policy 2-o. Encourage new residential, commercial, and industrial development to reduce air quality impacts from area sources and from energy consumption.

City of Turlock General Plan

The City of Turlock's General Plan Chapter 8.2, *Energy and Climate Change*, contains the following policies aimed at improving air quality through energy conservation and the use of clean energy (City of Turlock 2012):

Policy 8.2-a. Promote a broad range of transportation, land use, and site design measures that result in a decrease in the number of automobile trips and vehicle-miles traveled per capita.

Policy 8.2-c. Encourage energy efficiency through good urban design and site planning practices, as well as through building design, maintenance and retrofit.

Policy 8.2-e. Support understanding of the relationship between energy consumption, air quality, and greenhouse gases, and promote energy-saving practices.

City of Patterson General Plan

The City of Patterson's General Plan Air Resources and Climate Change Chapter includes the following goal, and policies to increase air quality and reduce emissions related to energy consumption.

Policy AR-6.1 The City shall work with the local energy providers and developers on voluntary incentive-based programs to encourage the use of energy efficient designs and equipment.

Policy AR-6.2 The City shall cooperate with the local building industry, utilities and the District to promote enhanced energy conservation standards for new construction.

Policy AR-6.3 The City shall implement circulation improvements that reduce vehicle idling.

4.6.3 Impact Analysis

a. Methodology and Significance Thresholds

Appendix G of the State CEQA Guidelines identifies the following criteria for determining whether a project's impacts would have a significant impact to energy resources. Because the proposed 2022 RTP/SCS is a regional plan and not a specific and single construction project. This is consistent with the programmatic nature of the EIR. For the purposes of this EIR, implementation of the proposed 2022 RTP/SCS would have a significant impact if it would:

1. Result in significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation (including transportation), based on whether the project would:
    a. Result in an increase in overall per-capita energy consumption relative to baseline conditions;
    b. Result in an increased reliance on fossil fuels and decreased reliance on renewable energy sources

2. Conflict with or obstruct a state or local plan for renewable energy or energy efficiency.

Direct and Indirect Energy Consumption

For this analysis, the calculation of total energy consumption follows the Input-Output methodology suggested by Caltrans (Caltrans Division of Engineering Services, Office of Transportation Laboratory, Energy and Transportation Systems, July 1983). It should be noted that the Caltrans methodology provides for the calculation of the cumulative energy consumption. Not only does the methodology include energy consumption that would be due solely to the construction of the proposed 2022 RTP/SCS projects, it also includes energy consumption that is not due to the proposed 2022 RTP/SCS, but rather is due to socioeconomic growth (e.g., population and employment), land use policies, and the existing transportation infrastructure.

Energy consumption from transportation projects is categorized in terms of "direct" and "indirect" energy. Direct energy is the fuel that propels vehicles – it is consumed directly by the automobile, bus, or transit vehicle. Indirect energy is the energy needed to construct, operate, and maintain the roadway and rail system and manufacture and maintain the vehicles using the roadway and rail system (Caltrans 1983). Indirect energy accounts for construction-related energy (e.g., the energy required to construct transportation improvements), which is anticipated to be consumed through the life of the plan as several transportation improvement projects may be undertaken concurrently, and is therefore characterized as a long-term, operational energy use. Indirect energy also accounts for the maintenance of a roadway over the life of a project, which is also considered a long-term, operational energy use.

Direct Energy Consumption for Transportation Projects

Direct energy is that energy used in the daily operation of the transportation system, including the propulsion of passenger vehicles (automobiles, vans, and trucks) and transit vehicles, including buses and trains. The direct energy analysis for the project is based on 2022 and 2046 vehicle miles traveled (VMT) with and without the proposed 2022 RTP/SCS (as analyzed in Section 4.15, *Transportation*).

The 2022 gasoline and diesel fuel consumption data for the StanCOG region (Appendix A) was converted to Btu using conversion factors obtained from the U.S. Energy Information Administration (U.S. Energy Information Administration 2021).

It should be noted that the Btu/VMT factor is forecast to continue to decrease into the future because of improved fuel economy, particularly if the fleet-wide goal of 35 mpg by year 2020 proposed under the Energy Independence and Security Act is met. Applying the 2021-based factor to future year (2046) VMT therefore provides a reasonable worst-case evaluation of energy consumption as the energy efficiency of vehicles in 2046 is anticipated to be higher than current fuel efficiency of vehicles.

Indirect Energy Consumption

Indirect energy is the energy required to construct, operate, and maintain the transportation network, as well as to manufacture and maintain on-road vehicles and transit vehicles. Therefore, construction-related impacts associated with the proposed 2022 RTP/SCS are included in the indirect energy analysis. The indirect energy analysis was conducted using the Input-Output methodology developed by Caltrans (1983). This method converts VMT, lanes-miles, or construction dollars into energy consumption based on data from other transportation projects in the United

States. Table 4.6-5 shows the indirect energy consumption factors used in this analysis. It should be noted that indirect energy consumption due to production of fuel and transportation/transmission to the end users is not included in this analysis, as any such analysis would be speculative.

Table 4.6-5 Indirect Energy Consumption Factors

Mode	Factor
Manufacturing	
Passenger Vehicles	1,410 Btu/VMT
Transit Buses	3,470 Btu/VMT
Roadway (construction)	27,300 Btu/VMT
Rail (construction)	2,108 Btu/VMT
Maintenance	
Passenger Vehicles	1,400 Btu/VMT
Transit Buses	13,142 Btu/VMT
Rail	7,060 Btu/VMT

Source: Caltrans 1983

b. Project Impacts and Mitigation Measures

The following section discusses potential impacts and mitigation measures that may be associated with transportation projects and the land use scenario contained within the proposed 2022 RTP/SCS. Section 4.6.3.c summarizes the impacts associated with capital improvement projects in the proposed 2022 RTP/SCS. Due to the programmatic nature of the proposed 2022 RTP/SCS, a precise, project-level analysis of the specific impacts associated with individual transportation and land use projects is not possible at this time. In general, however, implementation of proposed transportation improvement projects and future projects under the land use scenario envisioned by the proposed 2022 RTP/SCS could result in the impacts as described in the following section.

Threshold 1a: Result in significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation (including transportation), based on whether the project would result in an increase in overall per-capita energy consumption relative to baseline conditions

Threshold 1b: Result in an increased reliance on fossil fuels and decreased reliance on renewable energy sources

Impact E-1 FUTURE TRANSPORTATION IMPROVEMENT PROJECTS AND IMPLEMENTATION OF THE LAND USE SCENARIO ENVISIONED BY THE 2022 RTP/SCS WOULD NOT RESULT IN A SIGNIFICANT ENVIRONMENTAL IMPACT DUE TO WASTEFUL, INEFFICIENT, OR UNNECESSARY CONSUMPTION OF ENERGY RESOURCES OR INCREASED RELIANCE ON FOSSIL FUELS. THIS IMPACT WOULD BE LESS THAN SIGNIFICANT.

Daily operation of the StanCOG region's transportation system uses energy in the form of fuel consumed by propulsion of passenger vehicles (automobiles, vans, and trucks) and transit vehicles (buses and trains). Some highway and roadway improvements included in the 2022 RTP/SCS will increase vehicle capacity, allowing a greater number of vehicles to use County facilities. However, increasing capacity and improving roadways and intersections does not necessarily result in an increase in motor vehicle trips. Increases in motor vehicle trips are primarily a combined function of

population growth and employment growth. It should be noted that population growth and an increase in VMT would occur within the region regardless of whether the 2022 RTP/SCS is implemented. As a result, energy consumption as it relates to vehicles would increase beyond the 2021 baseline in any scenario. The 2022 RTP/SCS would help to minimize energy consumption by improving the overall efficiency of the transportation system. In addition, many 2022 RTP/SCS projects (e.g., carshare and bikeshare, parking management and an Electric Vehicle (EV) Infrastructure Charging Incentive Program) as well as the proposed infill land use pattern would improve the availability of alternative transportation modes, help reduce congestion, and resultant harmful air quality emissions in the County. Generally, the availability of these alternative modes would be expected to reduce overall motor vehicular trips, VMT, and associated energy consumption.

Construction and maintenance of the proposed 2022 RTP/SCS projects would result in short-term consumption of energy resulting from the use of construction equipment and processes. In addition, roadway and transit construction materials, such as asphalt, concrete, surface treatments, steel, rail ballast, as well as building materials, require energy to be produced, and would likely be used in projects that involve new construction or replacement of older materials, as well as construction of future infill and transit-oriented development (TOD) projects envisioned by the proposed 2022 RTP/SCS. The California Green Building Standards Code (CALGreen Code) includes specific requirements related to recycling, construction materials, and energy efficiency standards, which would apply to construction of roadway and transit improvement projects, as well as future infill and TOD envisioned by the proposed 2022 RTP/SCS and would help to minimize waste and energy consumption. All construction and maintenance conducted pursuant to the proposed 2022 RTP/SCS, or as a result of improvements made by the proposed 2022 RTP/SCS, would be required to comply with the CALGreen Code. Table 4.6-6 shows the VMT, estimated to increase proportionally with population growth in the StanCOG region, and estimated fuel consumption translated into energy use (Btu) in the StanCOG region under 2022 conditions, no project, and the proposed 2022 RTP/SCS.

Table 4.6-6 Direct and Per-Household Transportation Energy Use

Year	Annual VMT	Direct Energy Use (Daily MM Btu)	Per Household Energy Use (Daily Thousand Btu)[1]	Energy Use per Capita (Daily Thousand Btu)
2022	11,459,828	196.04	1.06	0.35
2046 with 2022 RTP/SCS	14,922,100	174.39	0.79	0.26
Change % (Baseline vs. 2022 RTP/SCS)	**30%**	**-11%**	**-25%**	**-26%**

[1] Calculated a persons per household of 3.03, based on California Department of Finance E-5 Table Estimations

Source: U.S. Energy Information Agency 2021, California Department of Finance 2022, Appendix A

As shown in Table 4.6-6, countywide annual VMT and total daily energy use would increase over time as the result of regional socioeconomic (population and employment) growth. However, the 2022 RTP/SCS would result in an approximately 25.7 percent decrease in per capita energy usage when compared to 2022 conditions.

Transportation Improvement Projects

The transportation improvements proposed under the proposed 2022 RTP/SCS would result in a more efficient transit system. The proposed 2022 RTP/SCS also would result in greater availability of public transit and other alternative modes of transportation, such as bicycling, which does not consume fuel energy and reduces traffic congestion. As mentioned previously, improvements to State fuel efficiency standards for vehicles and State mandated increases in the supply and use of alternative transportation fuels would further reduce fuel consumption, such as implementation of an electric vehicle charging station plan.

New transportation facilities that require energy for operation, such as signal lighting, roadway or parking lot lighting, and electronic equipment would increase energy demand. New landscaping irrigation would also increase energy demand through water pumping and treatment. However, energy consumption would not be unnecessary or wasteful, as all lighting, signage and irrigation systems would comply with applicable energy efficiency requirements within the California Building Code. Therefore, the transportation improvement projects included in the proposed 2022 RTP/SCS would not result in inefficient, unnecessary, or wasteful consumption of gasoline or diesel fuel or an increased reliance on fossil fuels relative to baseline conditions.

Land Use Changes

The proposed 2022 RTP/SCS envisions a regional land use scenario that promotes mixed-use and infill development in existing commercial corridors in combination with high-quality transit service (e.g., bus service that has headways of 30 minutes or less during the peak period, Bus Rapid Transit [BRT], express bus or rail) and improved bicycle and pedestrian infrastructure. Mixed-use and infill projects would reduce VMT and energy use because they would locate people closer to existing goods and services, thereby resulting in shorter vehicle trips and/or promoting walking or biking, and they would locate people closer to existing transportation hubs, thereby encouraging the use of alternative modes of transit (e.g., buses) and resulting in fewer vehicle trips. Operation of future infill projects would increase overall demand for energy beyond existing demand; however, such development would not require unusual, unnecessary, or wasteful amounts of energy. Future mixed-use and infill projects are anticipated to be constructed using standard building practices. These projects would also be subject to the CalGreen Code and Title 24 of the California Energy Code, which set forth specific energy efficiency requirements related to design, construction methods and materials. In summary, the 2022 RTP/SCS would reduce energy consumption, thus it would not result in wasteful or inefficient energy consumption within the region relative to baseline conditions. Therefore, 2022 RTP/SCS impacts on energy usage would be less than significant.

Mitigation Measures

No mitigation measures are required.

Threshold 1b:	Result in a significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resource, during project construction or operation (including transportation), based on whether the project would result in an increased reliance on fossil fuels and decreased reliance on renewable energy sources

Impact E-2 THE PROPOSED 2022 RTP/SCS WOULD NOT INCREASE RELIANCE ON FOSSIL FUELS OR DECREASE RELIANCE ON RENEWABLE ENERGY SOURCES. THIS IMPACT WOULD BE LESS THAN SIGNIFICANT.

The proposed 2022 RTP/SCS, resulting transportation projects, and implementation of the land use scenario envisioned by proposed 2022 RTP/SCS are required to follow State regulations, such as California's Green Building Standards and SB 350, by incorporating alternative energy use. SCE and PG&E are the utility providers for the StanCOG region, and pursuant to CPUC regulations, utilities such as SCE and PG&E utilize a long-term planning process to plan for increased energy demand in the future with its publication of ten-year integrated resource plans. The most recent SCE plan, titled Integrated Resource Plan of Southern California Edison Company, details projects that aim to ensure compliance with emissions targets identified in SCE's *Pathway 2045* whitepaper, procure renewable energy resources, and improve transmission system access (SCE 2020). The most recent PG&E plan, titled PG&E's 2020 Integrated Resource Plan, details planned projects between 2020 and 2030 that aim to ensure compliance with North American Electric Reliability Corporation standards, improve transmission system access for renewable generation to meet Renewable Portfolio Standard (RPS) goals and targets, improve service reliability for end users and coordinate long-term plans for PG&E's transmission system (PG&E 2020). Thus, renewable energy options would be incorporated in the proposed 2022 RTP/SCS projects as future transportation improvements and implementation of the land use scenario envisioned by proposed 2022 RTP/SCS rely on the aforementioned service providers, and each has integrated a reduction in reliance on fossil fuels as part of their standards and goals.

Each Integrated Resource Plan published is a ten-year planning document; thus, each utility will continue to assess the reliability and capacity of its energy facilities every ten years based on critical system conditions, growth assumptions and study years agreed upon by the California Independent System Operator Corporation (CAISO) and participating stakeholders.

Furthermore, as described under Impact E-1, construction and operation of land use development envisioned under the proposed 2022 RTP/SCS would be required to comply with relevant provisions of CALGreen and Title 24 of the California Energy Code. In addition, land use and transportation projects would be required to comply with the State's Bioenergy Action Plan, Alternative Fuels Plan, among other regulatory standards to reduce GHG and encourage alternative energy use.

Transportation Projects

As shown in Table 4.6-6 and discussed above, the proposed 2022 RTP/SCS would result in an 25.7 percent reduction in per-capita energy usage when compared to 2022 conditions. Projects that would support alternative energy use and potentially decrease VMT would be roadway improvements that incorporate multi use paths along existing corridors. For instance, there are projects planned by the proposed 2022 RTP/SCS in Newman which would construct a Class I multi-use path. Other projects within the proposed 2022 RTP/SCS would involve the construction of bicycle and pedestrian paths. These specific projects support alternative energy use by providing County residents with non-motorized transportation options, thereby lessening energy usage within the region. Also, as mentioned above, the proposed 2022 RTP/SCS includes other transportation

projects which are subject to the State's Alternative Fuels Plan, thereby encouraging alternative energy use.

Land Use Projects

The proposed 2022 RTP/SCS emphasizes a regional land use scenario that promotes mixed use and infill development in existing commercial corridors in combination with high quality transit service and improved bicycle and pedestrian infrastructure, which would reduce per-capita energy use and energy use per-household by 25.7 percent. Operation of future infill projects would increase the overall demand for energy beyond existing demand, however, such development would not require unusual, unnecessary, or wasteful amounts of energy shown through a reduction in per-capita energy usage and energy use per-household as shown in Table 4.6-6. As mentioned above, land use projects would incorporate renewable energy options through reliance on service provider, and that have integrated a reduction in reliance on fossil fuels as part of their standards and goals. Therefore, the proposed 2022 RTP/SCS would not increase reliance on fossil fuels or decrease reliance on renewable energy sources. Impacts would be less than significant.

Mitigation Measures

No mitigation measures are required.

Threshold 2:	Conflict with or obstruct a State or local plan for renewable energy or energy efficiency

Impact E-3 THE PROPOSED 2022 RTP/SCS WOULD NOT CONFLICT WITH OR OBSTRUCT A STATE OR LOCAL PLAN FOR RENEWABLE ENERGY OR ENERGY EFFICIENCY. THIS IMPACT WOULD BE LESS THAN SIGNIFICANT.

As discussed in Section 4.6.2, Regulatory Setting, several State plans, the County's adopted General Plan, city General Plans, and include energy conservation and energy efficiency strategies intended to enable the State and the County to achieve GHG reduction and energy conservation goals. A full discussion of the 2022 RTP/SCS's consistency with GHG reduction plans is included in Section 4.9, *Greenhouse Gas Emissions and Climate Change*.

As discussed in Impact E-1, the 2022 RTP/SCS would result in an approximately 23 percent decrease in per capita energy use in the region and would not result in energy used in an unnecessary or wasteful manner. Implementation of the 2022 RTP/SCS would result in an 8 percent energy use reduction; with per capita energy consumption less than 2021 baseline conditions. Accordingly, inconsistencies between 2022 RTP/SCS and adopted plans and policies related to energy conservation have not been identified. The discussion below further examines consistency with adopted plans and policies related to energy conservation.

StanCOG monitors regulations related to fuel efficiency standards and alternative fuel vehicles. 2022 RTP/SCS would not conflict with such regulations (e.g., Energy Policy and Conservation Act and CAFE Standards, EPAct, Energy Independence and Security Act of 2007, AB 1493: Reduction of Greenhouse Gas Emissions, AB 1007: State Alternative Fuels Plan).

The 1975 Warren-Alquist Act established the California Energy Resource Conservation and Development Commission, now known as the California Energy Commission (CEC), and established a State policy to reduce wasteful, uneconomical, and unnecessary uses of energy. Based on the data above, and explained in the conclusion below, 2022 RTP/SCS would not result in wasteful,

inefficient, or unnecessary use of energy. Therefore, 2022 RTP/SCS is consistent with the Warren-Alquist Act policies.

Senate Bill (SB) 350, the Clean Energy and Pollution Reduction Act of 2015, requires the amount of electricity generated and sold to retail customers per year from eligible renewable energy resources be increased to 50 percent by December 31, 2030. This act also requires doubling of the energy efficiency savings in electricity and natural gas for retail customers, through energy efficiency and conservation by December 31, 2030.

In addition, the 2017 Integrated Energy Policy Report (IEPR) includes a set of strategies to address California's future energy needs. Key topics covered in the report include electricity resource and supply plans; electricity and natural gas demand forecasts; natural gas outlooks; transportation energy demand forecasts; energy efficiency savings; integrated resource planning; a barriers study; climate adaptation and resilience; renewable gas; distributed energy resources; strategic transmission investment plans; and existing power plan reliability issues. The 2022 RTP/SCS would not conflict with these policies. Refer to Section 4.8, *Greenhouse Gas Emissions and Climate Change,* for a discussion of greenhouse gas emissions reductions related to the proposed 2022 RTP/SCS.

Locally, the proposed 2022 RTP/SCS would be consistent with the Stanislaus County General Plan and city general plans that include goals and policies that encourage energy conservation and energy efficiency. The plan encourages the use of renewable energy, energy conservation and energy efficiency techniques in all new building design, orientation, construction, and support of alternative transportation and fuels. Local General Plans include similar goals and policies. The proposed 2022 RTP/SCS would be consistent with the State and local plans as the proposed 2022 RTP/SCS's Goal 5 Environmental Quality states:

> Consider environmental impacts when making transportation investments and minimize impacts on clean air and natural resources. Support infrastructure investments that facilitate vehicle electrification and the provision of electrification infrastructure in public and private parking facilities and structures.

Therefore, the proposed 2022 RTP/SCS would be consistent with State energy efficiency plans, the County's adopted energy conservation and efficiency strategies contained in its General Plan, and local General Plans' energy efficiency policies. As described under Impact E-1, construction, and operation of the proposed 2022 RTP/SCS would be required to comply with relevant provisions of CALGreen and Title 24 of the California Energy Code. Therefore, this impact would be less than significant.

Mitigation Measures

No mitigation measures are required.

c. Specific RTP/SCS Projects That May Result in Impacts

The analysis within this section discusses the potential energy related impacts associated with the proposed 2022 RTP/SCS. The transportation projects within the proposed 2022 RTP/SCS are evaluated herein in their entirety and are intended to promote energy efficient, environmentally sound modes of travel and facilities and services rather than cause adverse impacts. However, as described above, the proposed 2022 RTP/SCS would decrease per-household and per-capita energy usage associated with transportation projects in the region. These effects have been found to be less than significant, as described above. Taken separately, even if any specific of the proposed 2022

RTP/SCS projects increases energy use, those impacts would be less than significant. For example, any project that required construction equipment or lighting improvements would increase energy usage, but based on the above, the overall impacts of the totality of the proposed 2022 RTP/SCS are less than significant Thus, no specific projects are listed in this section related to the adverse impacts on energy in the StanCOG region.

4.6.4 Cumulative Impact Analysis

The cumulative impact analysis area for energy consists of the StanCOG region and adjoining counties. Information regarding these adjoining counties can be found in Section 3.3.4, *Environmental Setting, Cumulative Impact Methodology*. Future development in this region that could impact energy use is considered in the analysis. This cumulative extent is used to evaluate potential wasteful or inefficient use of energy resulting in an increase overall per-capita energy consumption or result in increased reliance on fossil fuels and decreased reliance on renewable energy sources or conflict with state or local plans for renewable energy or energy efficiency across the cumulative impact area.

Future development in the cumulative impact analysis area would result in short term consumption of energy resulting from construction equipment and use of fuel for vehicles. Operation of future developments would also require energy but would be subject to CalGreen and California Building Energy Efficiency Standards. Furthermore, pursuant to the California Public Utilities Commission, utilities such as Pacific Gas and Electric must utilize a long-term planning process to plan for increased energy demand in the area and would account for increased development and an increase in population. As such, growth in the cumulative impact analysis area and increased energy demand would be accounted for and would not result in the inefficient, unnecessary, or wasteful use of energy.

Demand for energy resources such as natural gas, electricity, and transportation fuels would increase as the population of the StanCOG region grows. However, proposed transportation improvements and land use projects envisioned under the proposed 2022 RTP/SCS would conserve transportation energy by relieving congestion and contributing towards other transportation efficiencies such as transit and active transportation, resulting in lower per-capita transportation energy consumption in 2046 than in the 2022 baseline year. In addition, renewable energy sources steadily constitute a larger proportion of California's energy supply makeup, resulting in a trend of decreased dependency on fossil fuels and increased dependency on renewable energy sources. As a result, the proposed 2022 RTP/SCS would not contribute to significant cumulative impacts related to wasteful or inefficient use of energy resources and services because energy usage would be reduced on a per-household and per-capita basis with the proposed 2022 RTP/SCS as compared to existing 2021 conditions.

In addition, adherence to existing applicable policies and regulations, such as CalGreen, California Building Energy Efficiency Standards, and the Low Carbon Fuel Standard, would ensure the incorporation of energy efficiency measures in the design and operation of future projects facilitated by the proposed 2022 RTP/SCS and other cumulative projects. As such, the proposed 2022 RTP/SCS would not contribute to a cumulative impact to the wasteful, unnecessary, or inefficient use of energy. The proposed 2022 RTP/SCS contribution to cumulative impacts related to energy consumption would not result in the inefficient use of energy resources. As such, the incremental proposed 2022 RTP/SCS impact on wasteful, inefficient, or unnecessary energy use, or conflicts with plans for renewable energy or energy efficiency, would not be a cumulatively considerable.

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4.7 Environmental Justice

This section evaluates potential impacts to environmental justice communities from development facilitated by the proposed 2022 RTP/SCS.

4.7.1 Setting

a. Overview

Environmental justice (EJ) is defined in the California Government Code as "the fair treatment of people of all races, cultures, and incomes with respect to the development, adoption, implementation, and enforcement of environmental laws, regulations, and policies" (Gov. Code § 65040.12 (e)). In May 2012, the California Attorney General's office released a report titled "Environmental Justice at the Local and Regional Level – Legal Background" which interprets CEQA to include considerations of environmental justice, although environmental justice is not explicitly mentioned in the CEQA guidelines. The report defines "fairness" in this context to mean that "the benefits of a healthy environment should be available to everyone, and the burdens of pollution should not be focused on sensitive populations or on communities that already are experiencing its adverse effects."

In the transportation context, environmental justice seeks to ensure that underserved communities are involved in transportation planning and decision-making, benefit equitably from transportation plans and investments, and do not suffer disproportionate burdens from any adverse impacts. Prior to environmental justice emerging as a regulatory issue, the issues underlying environmental justice emerged in the Civil Rights movements and are reflected in Title VI of the Civil Rights Act. In 1994, President Bill Clinton signed Executive Order 12898 -- Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, which became effective on February 11, 1994. The Executive Order directs every federal agency to make environmental justice part of its mission by identifying and addressing the effects of all programs, policies, and activities on minority and low-income populations. Hence, the U.S. Department of Transportation (DOT) issued its own order, 5610.2(a), to clarify and reinforce environmental justice policies related to transportation planning. The Federal Highway Administration (FHWA), a branch of the DOT, has established policies for integrating environmental justice principles into existing operations. There are three main elements to FHWA's environmental justice policy:

- Avoid, minimize, or mitigate disproportionately high and adverse human health or environmental effects, including social and economic effects on minority and low-income populations;
- Ensure full and fair participation by all potentially affected communities in the transportation decision-making process; and
- Prevent reduction or significant delay in the receipt of benefits by minority populations and low-income groups.

Issues of environmental justice impact low-income populations; minority individuals and populations; and low-mobility populations, and may include, but are not limited to concerns related to human health and safety, economic development, society and culture, accessibility, and the natural environment. These populations are discussed further below.

Minority populations are further defined by the guidance document prepared by the Council on Environmental Quality (CEQ) titled *Environmental Justice: Guidance Under the National*

Environmental Policy Act (CEQ 1997). In that document, CEQ defines "minority persons" as "individuals who are members of the following population groups: American Indian or Alaskan Native; Asian or Pacific Islander; Black (not of Hispanic origin; or Hispanic" (CEQ 1997). Hispanic or Latino refers to an ethnicity whereas American Indian, Alaskan Native, Asian, Pacific Islander, and Black/African American (as well as White or European American) refers to racial categories; thus, for the purposes of the United States Census Bureau (Census), individuals classify themselves into racial categories as well as ethnic categories, where ethnic categories include Hispanic/Latino and non-Hispanic/Latino. The 2020 Census allowed individuals to choose more than one race. For this analysis, consistent with guidance from CEQ (1997), "minority" refers to people who are Hispanic/Latino of any race, as well as those who are non-Hispanic/Latino of a race other than White or European-American.

b. Demographics

The StanCOG region contains nine incorporated cities: Modesto, Turlock, Ceres, Riverbank, Oakdale, Patterson, Newman, Waterford, and Hughson. In 2020, approximately 39.2 percent of the StanCOG region population was concentrated in the City of Modesto, with the next most populous cities being Turlock (13.3 percent) and Ceres (8.9 percent). The StanCOG region also contains other census-designated places and unincorporated communities.

Table 4.7-1 summarizes the racial and ethnic composition of communities within the StanCOG region. Table 4.7-2 summarizes median income, persons below poverty level, and unemployment rates for communities within the region.

Table 4.7-1 Racial and Ethnic Composition of the StanCOG Region (2020)

Location	White	Black	American Indian	Asian	Pacific Islander	Other	Two or More Races	Hispanic	Minority[1]
California	36.5%	5.4%	0.3%	14.6%	0.3%	0.3%	3.4%	39.1%	63.5%
StanCOG Region	40.8%	2.9%	0.4%	5.7%	0.6%	0.2%	2.5%	46.9%	59.2%
Incorporated Cities									
Ceres	23.6%	3.4%	0.7%	7.0%	0.6%	0.6%	1.9%	62.3%	76.4%
Hughson	56.4%	0.4%	1.1%	7.1%	0.0%	0.0%	0.0%	35.0%	43.6%
Modesto	42.5%	4.7%	0.6%	7.5%	1.0%	0.1%	2.9%	40.7%	57.5%
Newman	30.0%	0.9%	0.0%	1.4%	0.0%	0.3%	0.4%	67.1%	70.0%
Oakdale	59.5%	0.6%	0.7%	1.9%	0.1%	0.1%	4.2%	33.0%	40.5%
Patterson	20.5%	5.0%	0.0%	5.3%	0.7%	0.1%	1.8%	66.7%	79.5%
Riverbank	31.7%	1.7%	0.3%	5.3%	0.1%	0.0%	2.4%	58.3%	68.3%
Turlock	48.0%	2.0%	0.2%	5.9%	0.3%	0.6%	2.9%	40.1%	52%
Waterford	49.6%	0.1%	0.0%	4.9%	0.0%	0.0%	2.8%	42.5%	50.4%
Census-Designated Places									
Airport	21.6%	1.2%	0.0%	0.0%	0.0%	0.0%	0.7%	76.6%	78.4%
Bret Harte	10.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.7%	88.6%	89.3%
Bystrom	11.6%	0.1%	0.0%	8.2%	0.3%	0.0%	3.5%	76.4%	88.4%
Cowan	27.8%	0.0%	0.0%	9.5%	0.0%	0.0%	5.5%	57.2%	72.2%
Denair	52.3%	0.3%	0.0%	3.6%	0.0%	0.0%	0.5%	43.3%	47.7%

Location	White	Black	American Indian	Asian	Pacific Islander	Other	Two or More Races	Hispanic	Minority[1]
Empire	27.5%	1.1%	1.0%	0.0%	0.0%	0.0%	4.1%	66.4%	72.5%
Keyes	20.8%	0.7%	0.0%	0.7%	0.0%	0.5%	2.1%	75.3%	79.2%
Monterey Park Tract	9.6%	0.0%	3.4%	0.0%	0.0%	0.0%	0.0%	87.0%	90.4%
Parklawn	4.0%	0.0%	0.2%	0.0%	0.0%	0.0%	0.0%	95.8%	96.0%
Rouse	10.2%	6.4%	0.0%	5.9%	0.0%	0.0%	2.9%	74.6%	89.8%
Salida	35.9%	0.6%	0.0%	8.0%	0.6%	0.0%	1.7%	53.3%	64.1%
West Modesto	21.2%	1.9%	0.0%	5.1%	0.0%	0.0%	1.0%	70.8%	78.8%

[1] "Hispanic" is defined as ethnicity white other categories are races. To prevent double counting, persons whom identified themselves as Hispanic were excluded from racial population counts, but comprise a portion of the total minority population. Minority populations plus the population identifying as white comprise 100 percent of the StanCOG region population.

Source: Census 2022a

Table 4.7-2 Income and Poverty Rate in the StanCOG Region (2020)

Location	Median Household Income	Poverty Rate — All People	Percent Unemployed
California	$78,672	12.6%	3.9%
StanCOG Region	$62,873	13.5%	5.4%
Incorporated Cities			
Ceres	$59,247	14.5%	7.0%
Hughson	$83,231	8.8%	4.1%
Modesto	$62.182	12.4%	5.2%
Newman	$65,156	8.4%	7.6%
Oakdale	$67,459	10.7%	7.5%
Patterson	$69,947	7.8%	6.2%
Riverbank	$70,163	12.9%	3.9%
Turlock	$60,799	15.0%	4.6%
Waterford	$59,938	20.3%	4.3%
Census-Designated Places			
Airport	$28,370	39.5%	16.2%
Bret Harte	$33,250	33.9%	11.7%
Bystrom	$34,796	30.2%	7.4%
Cowan	$66,082	0.0%	16.7%
Denair	$83,304	6.0%	8.0%
Empire	$39,727	23.5%	4.6%
Keyes	$46,250	29.8%	3.6%
Monterey Park Tract	–	66.9%	7.3%
Parklawn	$63,764	11.0%	0.0%
Rouse	$50,132	19.8%	3.8%
Salida	$82,563	8.7%	6.0%
West Modesto	$43,864	25.4%	7.3%

"--" indicates information not readily available.
Source: Census 2022b

As shown in Table 4.7-1, approximately 59.2 percent of StanCOG region residents, or approximately 323,371, were identified as being a minority race or ethnicity (Census 2022a). The largest minority group in the StanCOG region is Hispanic (39.1 percent) followed by Asian (14.6 percent). As shown in Table 4.7-2 the median income for the StanCOG region was $62,873, the poverty rate of all people was 13.5 percent, and the unemployment rate was 5.4 percent (Census 2022b). For comparison purposes, the 2020 State median income was $78,672, the poverty rate of all people was 12.6 percent, and the unemployment rate was 5.4 percent (Census 2022b).

EJ Communities

EJ communities in the StanCOG region were identified using 2020 data from the American Community Survey (ACS) 5-Year Estimates (Census 2022a; Census 2022b). For the purpose of this analysis, two socioeconomic indicators were considered in identifying EJ communities: minority population and percentage of low-income households. Minority persons are those who identify as Black or African American, American Indian or Alaskan Native, Asian, Native Hawaiian or Other Pacific Islander, some other race, multiple races, or Hispanic/Latino of any race. Non-minority persons are those self-reporting as white and not of Hispanic/Latino ethnic origin. The standard convention among policymakers is to define “low-income” households as those making 80 percent or less of the median household income. As previously stated, the most recent estimates show that the median household income in the StanCOG region was $62,873, so the “low-income” threshold would be $50,298 for the StanCOG region.

StanCOG has conducted an EJ analysis intended to identify and address disproportionately high and adverse effects of the proposed 2022 RTP/SCS on EJ communities. StanCOG used Census data that roughly corresponds to the Traffic Analysis Zones (TAZs) used in StanCOG’s travel-demand forecasting model. For the proposed 2022 RTP/SCS the proportions of EJ population in each TAZ are considered. Overlap between minority and low-income populations were handled by adding the minority and low-income and dividing by two. As such, a TAZ where 100 percent of residents are minority and 100 percent low-income, it would have an EJ score of 100. If a TAZ was 100 percent minority and 0 percent low income, it would have an EJ score of 50, and vice versa. If a TAZ is 0 percent low-income and 0 percent minority, it would have an EJ score of 0. As concluded in the StanCOG EJ analysis, the overall EJ score for the StanCOG region was 48.9 (StanCOG 2022).

4.7.2 Regulatory Setting

a. Federal Laws, Regulations, and Policies

Title VI of the Civil Rights Act of 1964

Title VI of the Civil Rights Act of 1974 prohibits discrimination by recipients of federal funds on the basis of race, color or national origin. Additionally, Title VI imposes obligations on recipients of federal funds to take affirmative action to assure, among other things, “that no person is excluded from participation in or denied the benefits of the program or activity on the grounds of race, color, or national origin.”

Executive Order 12898

Executive Order 12898, established in 1994, directed federal agencies to (1) identify and address disproportionately high and adverse human health or environmental effects of their actions on minority and low-income populations, (2) develop a strategy for implementing environmental

justice, and (3) promote nondiscrimination in federal programs that affected human health and the environment, as well as provide minority and low-income communities access to public information and public participation. This executive order established an interagency working group on environmental justice chaired by the Environmental Protection Agency.

Executive Order 14008

Executive Order 14008, signed in January 2021, created the White House Environmental Justice Advisory Council and the White House Environmental Justice Interagency Council. The order directs agencies to develop programs, policies, and activities to address disproportionately high and adverse human health, environmental, climate-related, and other cumulative impacts on disadvantaged communities. Executive Order 14008 also established the Justice40 Initiative. Through the Justice40 Initiative, federal agencies are directed to work with states and local communities in order to deliver at least 40 percent of the overall benefits from federal investments in climate and clean energy to disadvantaged communities. Programs that are in alignment with the Justice40 Initiative include the Department of Homeland Security's Flood Mitigation Assistance Program and the Department of Housing and Urban Development's Lead Hazard Reduction and Healthy Homes grants.

United States Department of Transportation EJ Order 5610.2(A)

Unites States Department of Transportation EJ Order 5610.2(A) specifies that operations carried out or overseen by the department must incorporate (1) identifying and evaluating environmental, public health, and interrelated social and economic effects of its actions; (2) proposing measures to avoid, minimize and/or mitigate disproportionately high and adverse environmental and public health effects and interrelated social and economic effects; (3) considering alternatives that would result in avoiding and/or minimizing disproportionately high and adverse human health or environmental impacts; and (4) eliciting public involvement opportunities including soliciting input from affected minority and low-income populations in considering alternatives.

b. State Laws, Regulations, and Policies

California Government Code Section 65040.12

Senate Bill 115 of 1999 and Senate Bill 89 of 2000 (Section 65040.12 of the Government Code) required the California Office of Planning and Research (OPR) to:

- Consult with the Secretaries of the California Environmental Protection Agency, the Resources Agency, and the Business, Transportation, and Housing Agency, the Working Group on Environmental Justice established pursuant to Section 72002 (now Section 71113) of the Public Resources Code, any other appropriate State agencies, and all other interested members of the public and private sectors in this State.
- Coordinate OPR's efforts and share information regarding environmental justice programs with the Council on Environmental Quality, the United States Environmental Protection Agency, the General Accounting Office, the Office of Management and Budget, and other federal agencies.
- Review and evaluate any information from federal agencies that is obtained as a result of their respective regulatory activities under federal Executive Order 12898, and from the Working Group on Environmental Justice established pursuant to Section 72002 of the Public Resources Code.

SB 89 also required the formation of an advisory committee, California Environmental Justice Advisory Committee (CEJAC), to provide information and assistance to the Secretary of the CalEPA and Interagency Working Group on Environmental Justice (IWG) in establishing and implementing an intra-agency strategy to achieve environmental justice. In 2004, the CalEPA released its Environmental Justice Strategy and Action Plan based on the IWG recommendations for identifying and addressing any gaps in existing programs, policies, or activities that may impede the achievement of environmental justice and suggested procedures for collecting, maintaining, analyzing, and coordinating information relating to its environmental justice strategy.

California Government Code Section 11135

California Government Code Section 11135 states that no person in the State of California shall, on the basis of race, national origin, ethnic group identification, religion, age, sex, sexual orientation, color, or disability, be unlawfully denied full and equal access to the benefits of, or be unlawfully subjected to discrimination under, any program or activity that is conducted, operated, or administered by the State or by any State agency, is funded directly by the State, or receives any financial assistance from the State.

Senate Bill 1000

Senate Bill 1000, signed in 2016, requires local governments to identify environmental justice communities in their jurisdictions and address environmental justice in their general plans. The bill requires the environmental justice element, or related environmental justice goals, policies, and objectives integrated into other elements, to identify objectives and policies to reduce health risks in disadvantages communities. Senate Bill 1000 required the environmental justice element, or the environmental justice goals, policies, and objectives in other elements, to be adopted or reviewed upon the adoption or next revision of two or more elements concurrently on or after January 1, 2018.

Senate Bill 244

Senate Bill 244, signed in 2011, requires that general plans identify disadvantaged unincorporated communities, disadvantaged communities located outside of the city limit, but within the Sphere of Influence. Senate Bill 244 requires that cities analyze infrastructure and fire service needs and deficiencies and assess potential funding mechanisms for expansions of services and facilities.

c. Local Laws, Regulations, and Policies

City General Plans and Regulations

Senate Bill 1000 required a consideration of environmental justice in a city's General Plan to be adopted or reviewed upon the adoption or next revision of two or more General Plan elements concurrently on or after January 1, 2018. Only the cities of Ceres and Modesto have updated their general plan since January 1, 2018. Therefore, Ceres and Modesto are the only cities in the StanCOG region with explicit environmental justice policies implemented into their respective General Plans.

City of Ceres General Plan 2035

The City of Ceres General Plan 2035 Section 5.1 *Public Health and Environmental Justice* contains goals and policies to ensure EJ groups have equal opportunity to live healthy lifestyles and are not

unduly burdened by environmental pollution and other hazards. Policies include (City of Ceres 2018):

- **Policy 5.A.3:** Monitor and maintain data from CalEPA related to pollution burdens and socioeconomic vulnerabilities in Ceres, and use the data (by Census tract) to inform new programs and investments to reduce the health risks of disadvantaged communities.
- **Policy 5.A.6:** Identify projects and programs that provide benefits to disadvantaged communities and pursue funding for implementation from the State's Greenhouse Gas Reduction fund and other funding sources.
- **Policy 5.B.1:** Encourage development patterns, urban design, and streetscapes that allow people to safely and conveniently reach destinations by walking, bicycling, or using transit. See Chapter: 2 Land Use and Community Design Element and Chapter 3: Transportation and Circulation Element for more information and related goals and policies

City of Modesto Urban Area General Plan

The City of Modesto's Transportation Element of the Urban Area General Plan includes Goal V.F that aims to increase transit use through higher-frequency service of at least 15-minute headways downtown and along major transportation corridors. Policies that support Goal V.F include the following (City of Modesto 2019):

- **Policy V.F.1:** Provide the most frequent service feasible in order to facilitate the highest quality public transportation.
- **Policy V.F.3:** Provide service on a half-mile grid where feasible to make the service as accessible as possible. Newly developing areas should provide a street pattern capable of accommodating transit service on a half-mile grid. Sidewalks should be provided in the development of new roadway systems to accommodate bus stops, and to minimize walking distance between them.
- **Policy V.F.9:** Coordinate bus and other transit feeder service with passenger rail and other long-distance transit service to facilitate transfers between services and reduce automobile use.

4.7.3 Impact Analysis

a. Methodology and Significance Thresholds

Under CEQA, a significant impact is defined as "a substantial or potentially substantial adverse change in the environment"(CEQA Section 21068). Although EJ is not a listed impact in CEQA Appendix G, for determining the significance of environmental justice impacts, this analysis focuses on whether environmental benefits and burdens are distributed generally equally across the region's EJ and non-EJ communities, or if EJ communities bear substantially greater environmental burdens or benefit substantially less than non-EJ communities.

To evaluate whether EJ communities would disproportionately bear the impacts of the transportation system resulting from the 2022 RTP/SCS, the following performance measure were used across the region's population to evaluate whether EJ communities would benefit proportionally from the benefits of the 2022 RTP/SCS transportation improvements. The following performance measures were analyzed:

- Percentage of low-income/minority population within a half-mile of transit;
- Percentage of low-income/minority population benefiting from transportation expenditures;
- Percentage of low-income/minority population within 500 feet of roadway projects; and

- Composition of housing stock within the StanCOG region.

EJ is not a resource area included in Appendix G of the *State CEQA Guidelines*. For the purposes of this Program EIR; StanCOG has determined that significant impacts to EJ communities would occur if the proposed 2022 RTP/SCS would:

1. Result in disproportionately high or adverse environmental impacts to EJ communities.
2. Result in disproportionately lower distribution of benefits derived from the proposed transportation improvement projects to EJ communities; or
3. Result in decreased availability of affordable housing stock.

b. Project Impacts and Mitigation Measures

The following section discusses potential impacts and mitigation measures that may be associated with transportation projects and the land use scenario contained within the proposed 2022 RTP/SCS. Section 4.7.3.c summarizes the impacts associated with capital improvement projects in the proposed 2022 RTP/SCS. Due to the programmatic nature of the proposed 2022 RTP/SCS, a precise, project-level analysis of the specific impacts associated with individual transportation and land use projects is not possible at this time. In general, however, implementation of proposed transportation improvement projects and future projects under the land use scenario envisioned by the proposed 2022 RTP/SCS could result in the impacts as described in the following section.

Threshold 1:	Result in disproportionately high or adverse environmental impacts to EJ communities.

Impact EJ-1 **THE PROPOSED TRANSPORTATION IMPROVEMENTS AND LAND USE PROJECTS ENVISIONED BY THE PROPOSED 2022 RTP/SCS WOULD RESULT IN ADVERSE IMPACTS TO EJ HOUSEHOLDS. THIS IMPACT WOULD BE SIGNIFICANT AND UNAVOIDABLE.**

Short-Term Impacts

During construction of some transportation and improvement projects and the development of the land use scenario envisioned in the proposed 2022 RTP/SCS, some minority and/or low-income populations may experience impacts. Improvement projects included in the proposed 2022 RTP/SCS may have short-term impacts on surrounding communities related to construction, including impacts related to air quality and noise (refer to Sections 4.3, *Air Quality*, and 4.13, *Noise*, respectively). Specific air quality impacts could include exposure to dust and toxic air contaminants (TACs) due to the operation of construction vehicles (i.e. scrapers, loaders, dump trucks), and clearing and grading activities. Construction noise impacts from the use of pile drivers could expose nearby receptors to levels up to 101 decibels at 50 feet from the source, as discussed in Section 4.13, *Noise*. Implementation of Mitigation Measures AQ-2(a), AQ-2(b), AQ-4 and N-1 would reduce air-quality and noise impacts related to the construction of transportation projects for all populations, but as discussed in their respective sections, would not necessarily mitigate impacts to a less than significant level.

The majority of EJ communities in the StanCOG region are primarily concentrated in within the cities of Modesto, Turlock, and Newman, along with unincorporated southwestern Stanislaus County (StanCOG 2022). Proposed transportation project and land use development envisioned by the 2022 RTP/SCS would take place in these areas. Within the StanCOG EJ analysis, a burden analysis was performed for each roadway project. Of the 262 roadway projects analyzed, 147 had EJ score higher

than StanCOG region score of 48.9, while 115 had scores at or below that of StanCOG region. This shows that the proportion of EJ households within 500 feet of a roadway project is, on average, higher than that of StanCOG as a whole, and therefore EJ households would be disproportionately exposed to impacts from construction. As described above, mitigation measures are put in place in order to mitigate air quality and noise impacts. However, under the transportation improvements and land use projects envisioned by the 2022 RTP/SCS, EJ households would be exposed to environmental impacts related to close proximity to transportation projects in a greater proportion than non-EJ households. Therefore, impacts would be potentially significant.

Long-Term Impacts

Proximity to major transportation corridors can increase a population's exposure to high levels of noise, as well as air contaminants, such as DPM from diesel exhaust and re-entrained road dust caused by moving vehicles. As discussed in Section 4.3, *Air Quality*, long-term DPM emissions, which are the primary toxic air contaminant associated with major roadways, would be lower in the region under 2022 with RTP/SCS conditions than under existing conditions. In addition, implementation of Mitigation Measure AQ-4 would reduce impacts to sensitive receptors located in proximity to major transportation corridors. Nevertheless, EJ populations are usually located closer to transportation corridors and could be adversely impacted by the proposed 2022 RTP/SCS if it would increase the percentage of the EJ population within 500 feet of a major transportation corridor, as compared to the non-EJ population, relative to existing conditions. According to the EJ analysis completed by StanCOG, under the proposed 2022 RTP/SCS approximately 67.4 percent of the minority population and 39.1 percent of low-income households would be within 500 feet of roadway projects. As previously discussed, this proportion of EJ households within 500 feet of a roadway project are, on average, higher than that of StanCOG as a whole. As such, the proposed 2022 RTP/SCS would result in an increased proportion of EJ households located within 500 feet of a roadway project. Although there are mitigation measures within this EIR that would reduce impacts to sensitive receptors in proximity to major transportation corridors the adverse effects caused by residing in close proximity to roadway projects would be experienced by a greater proportion of EJ households and a lesser proportion of non-EJ households. Therefore, impacts would be disproportionate to EJ households and are considered potentially significant.

Mitigation Measures

Mitigation that could reduce long-term impacts to EJ households includes measures such as rerouting traffic or designating applicable land use away from transportation corridors. However, either of these changes would contradict the provisions set forth in the SCS, designed to meet the GHG per capita emissions reduction targets pursuant to Senate Bill 743. The SCS identifies a land use pattern that would assist in achieving Senate Bill 743 goals. Transportation redirection and changes in land use designations could result in non-compliance with the standards for Vehicle Miles Traveled (VMT) set forth within Senate Bill 743. As such, although rerouting traffic or redesignating land use could result in lesser impacts to EJ households, ultimately this would be infeasible as it would contradict the per capita VMT reduction goals set forth in Senate Bill 743. Therefore, no feasible mitigation measures exist that would reduce impacts. Impacts would be significant and unavoidable.

Significance After Mitigation

No mitigation measures are feasible. Impacts would remain significant and unavoidable.

Threshold 2:	Result in disproportionately lower distribution of benefits derived from the proposed transportation improvement projects to EJ communities.

Impact EJ-2 THE PROPOSED TRANSPORTATION IMPROVEMENTS ENVISIONED BY THE PROPOSED 2022 RTP/SCS WOULD NOT RESULT IN A DISPROPORTIONATELY LOWER DISTRIBUTION OF BENEFITS TO EJ COMMUNITIES. THIS IMPACT WOULD BE LESS THAN SIGNIFICANT.

For populations with limited financial, physical, or other means, convenient access to transit is critical due to the lower likelihood of these populations having access to a vehicle. The EJ analysis conducted by StanCOG details the proportion of EJ households within a half-mile, one mile, and two miles of RTP active transportation projects. Active transportation projects are projects which provide the ability to walk or bike to work for other trips. Results are provided in Table 4.7-3 below.

Table 4.7-3 Minority Population and Low-Income Households within Proximity to Active Transportation Projects

Analysis Zone		Total	Minority	Low-Income	EJ Score
Half-Mile	Population	333,040	214,971	–	51.3
	Households	104,920	–	39,918	
	Percentage	–	64.50%	38.05%	
One Mile	Population	459,371	291,914	–	50.5
	Households	114,001	–	42,692	
	Percentage	–	63.50%	37.40%	
Two Mile	Population	488,276	308,899	–	47.5
	Households	49,804	–	15,812	
	Percentage	–	63.30%	31.70%	

Source: StanCOG 2022

As shown in Table 4.7-3, the proportion of EJ populations are highest in closer proximity to active transportation projects under the proposed 2022 RTP/SCS, and the proportion of EJ populations decrease as the distance to active transportation projects increases. As such, the transportation projects under the proposed 2022 RTP/SCS would provide greater access to active transportation for EJ communities.

In addition to active transportation, the proposed 2022 RTP/SCS would result in a total 15.2 percent of new EJ households located within walking distance to a transit stop, compared to 9.9 percent under a Business and Usual scenario (StanCOG 2022). Therefore, the proposed 2022 RTP/SCS would distribute benefits derived from the proposed transportation projects to EJ communities. Therefore, impacts would be less than significant.

Mitigation Measures

No mitigation measures are required.

Significance After Mitigation

Impacts would be less than significant without mitigation.

Threshold 3: Result in decreased availability of affordable housing stock.

Impact EJ-3 IMPLEMENTATION OF THE LAND USE SCENARIO ENVISIONED BY THE PROPOSED 2022 RTP/SCS WOULD NOT DECREASE THE AVAILABILITY OF AFFORDABLE HOUSING STOCK. THIS IMPACT WOULD BE LESS THAN SIGNIFICANT.

The provision of affordable housing is an important issue in considering impacts to EJ communities because lack of housing can lead to displacement of existing EJ communities, typically to areas with poorer environmental conditions. Providing a greater mix of housing type allows for a greater range of options for all populations, including EJ populations, and also provides for a greater range of housing affordability. Typically, multifamily housing provides a more affordable option relative to single family housing.

Table 4.7-4 shows the existing composition of housing stock at a 2019 baseline and provides the composition of StanCOG's housing stock under a *Business As Usual* scenario and the proposed RTP/SCS scenario. The *Business As Usual* scenario represents growth in the StanCOG region continuing based on existing conditions as shown by the most recent development trends following updated general plans and/or area plans and not including new transportation projects added to the 2022 RTP project list. This is the best available data representing a 2022 baseline future growth pattern. As indicated in the table, the diversity of housing stock would increase, with a greater percentage of multi-family housing available under the proposed 2022 RTP/SCS conditions.

Table 4.7-4 Composition of Housing Stock: Baseline and at Buildout

	Percent of Housing Stock		
Housing Type	Baseline (2019)[1]	Business As Usual (2046)	Proposed 2022 RTP/SCS (2046)
Single-Family	77.5%	75.1%	71.9%
Multi-Family	22.4%	24.8%	28.0%

[1]The baseline for this EIR is January 2022. 2019 Housing Type data represents the most recent data made available, and thus it is used for the purposes of the Impact EJ-3 analysis.

Source: StanCOG 2022

As shown, under the proposed 2022 RTP/SCS, multi-family housing availability would increase 3.2 percent compared to a Business As Usual scenario in 2046 and increase 5.6 percent over the current baseline conditions (2019). The SCS provides that the housing growth would be located in low VMT areas. As such, households and mixed-use development are forecasted to primarily occur in the cities of Modesto and Turlock and their surrounding unincorporated communities, where EJ communities are present. The SCS would provide 26 percent more new dwelling units at 20+ units per acre, consistent with what the California Department of Housing and Community Development assumes as affordable to extremely low, very low, and low-income households (County of Stanislaus 2016). Therefore, implementation of the proposed 2022 RTP/SCS would not decrease the diversity of the housing stock, but rather improve housing diversity and affordability. This impact would be less than significant.

Mitigation Measures

No mitigation measures are required.

Significance After Mitigation

Impacts would be less than significant without mitigation.

a. Specific Projects That May Result in Impacts

Table 4.7-5 identifies proposed 2022 RTP/SCS projects that may result in impacts to environmental justice communities. Given the large number of projects envisioned across the StanCOG region in the proposed 2022 RTP/SCS, the table shows a representative rather than a comprehensive list of projects. Listed projects that would generate these impacts are representative of the types of impacts and the types of projects that could be affected in different localities.

Table 4.7-5 Projects with Potential Environmental Justice Impacts

Agency	Project Location	Project Scope	Impact
City of Modesto	State Route 132	Construct a two-lane expressway from N. Dakota Ave to the Needham St. Overcrossing. (Phase 1 of ultimate build-out of SR132 West Freeway/Expressway Project).	EJ-1
City of Modesto	State Route 132	Construct a four-lane freeway from N. Dakota Ave to the Needham St. Overcrossing.	EJ-1
City of Turlock	North Olive Avenue	Widen from 2-lane to 4-lane Arterial with Class II bike facility and transit	EJ-1
City of Turlock	North Olive Avenue	Widen from 2-lane to 4-lane Arterial with Class II bike facility and transit.	EJ-1
Stanislaus County	State Route 219	Widen to 6-lanes.	EJ-1

4.7.4 Cumulative Impacts

The cumulative impact analysis area for environmental justice consists of the StanCOG region and adjoining counties. Information regarding these adjoining counties can be found in Section 3, *Setting*. Future development in this region that could impact environmental justice communities is considered in this analysis. This cumulative extent is used to evaluate potential direct and indirect, permanent and temporary impacts from disproportionately causing more environmental impacts in EJ communities, lowering the benefit of projects for EJ communities, or decreasing affordable housing stock within the context of the cumulative impact analysis area.

Growth and development in adjoining counties would be developed in accordance with applicable General Plans, RTP/SCS programs, and other planning documents. As such, any proposed growth and development would be required to comply with goals, policies, and programs adopted for the purpose of avoiding or mitigating environmental effects, including those that pertain specifically to EJ communities. However, as applicable planning documents focus efforts to encourage transit-oriented infill development pursuant to State GHG reduction goals, a greater proportion of residential development, particularly high-density, low-income residential development, would be placed near transit corridors and exposed to environmental effects associated with living near a transportation corridor. Therefore, cumulative impacts related to EJ communities would be significant.

As previously discussed in Impact EJ-1, the proposed 2022 RTP/SCS would result in significant and unavoidable impacts to EJ communities with regards to disproportionately high adverse effects to EJ communities as a result of close proximity to roadway projects. Similar to other planning documents, the proposed 2022 RTP/SCS would prioritize transit-oriented infill development which would result in an increased proportion of EJ housing located near transportation corridors. As such, EJ housing would be disproportionately exposed to adverse environmental effects associated with

living near roadways. As previously stated, mitigation to reduce impacts would be infeasible as it would require the rearrangement of land use patterns and transportation routes which has the potential to directly conflict with State GHG reduction targets. Therefore, the contribution of the proposed 2022 RTP/SCS to cumulative EJ impacts would be cumulatively considerable.

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4.8 Geology and Soils

This section evaluates potential impacts to geology and soils from development facilitated by the proposed 2022 RTP/SCS.

4.8.1 Setting

The StanCOG region is located within three of California's 11 geomorphic provinces: Coast Ranges, Great Valley, and Sierra Nevada. Geomorphic provinces are naturally defined geologic regions that are characterized by a distinct landscape or landform (California Geological Survey [CGS] 2002). The Coast Ranges extend along the majority of California's coast from the California-Oregon border to Santa Barbara County in the south and consist of northwest-trending mountain ranges and valleys. In the StanCOG region, the Coast Ranges province is located west of Interstate 5 (I-5) where the topography changes from the valley floor to hills. The Coast Ranges are composed of Mesozoic and Cenozoic sedimentary strata. The eastern side is characterized by strike-ridges and valleys in the Upper Mesozoic strata. The Coast Ranges province runs parallel to and overlaps the San Andreas Fault in some areas (CGS 2002).

a. Geology and Soils

Great Valley

The Great Valley province encompasses the San Joaquin and Sacramento valleys, running from the feet of the Klamath Mountains in the north to the Tehachapi Mountains in the south. This province covers the central portion of the County east of I-5 and west of the foothills, generally known as the valley floor. The Great Valley is characterized as a trough in which sediments have been deposited almost continuously during the last 160 million years (CGS 2002).

Sierra Nevada

The Sierra Nevada province begins in the foothills along the eastern edge of the County near Knights Ferry and La Grange. The Sierra Nevada is a tilted fault block nearly 400 miles long in the eastern portion of Stanislaus County (CGS 2015). Deep river canyons cut into the gently sloping western side of the Sierras, which contrast with the steep and rugged eastern slope.

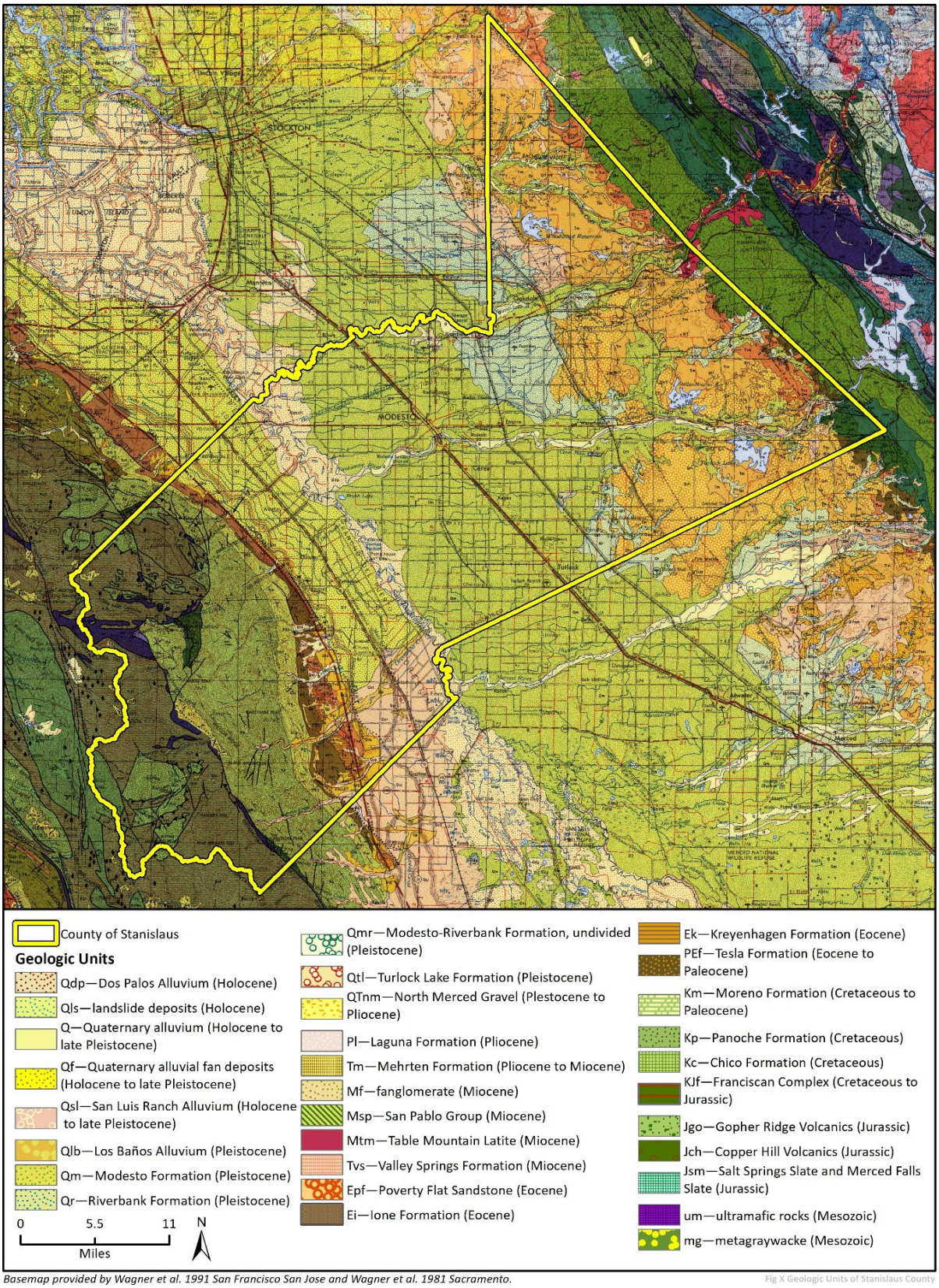
Geologic Units

The geology of the StanCOG region was mapped at a scale of 1:250,000 by Wagner et al. (1981, 1991). These authors identified 30 distinct geologic units in the StanCOG region, presented in Table 4.8-1 below with their corresponding paleontological sensitivities. These geologic units can also be viewed in Figure 4.8-1.

Table 4.8-1 Paleontological Sensitivity of Geologic Units in the StanCOG Area

Geologic Unit	Abbreviation	Paleontological Sensitivity
Dos Palos Alluvium	Qdp	Low
Quaternary landslide deposits	Qls	Low
Quaternary alluvium	Q	High
Quaternary alluvial fan deposits	Qf	High
Patterson Alluvium	Qp	Low
San Luis Ranch Alluvium	Qsl	High
Los Baños Alluvium	Qlb	High
Modesto Formation	Qm	High
Riverbank Formation	Qr	High
Modesto-Riverbank Formation, undivided	Qmr	High
Turlock Lake Formation	Qtl	High
North Merced Gravel	QTnm	Less than six feet: Low; Greater than six feet: Unknown
Laguna Formation	Pl	Low
Mehrten Formation	Tm	High
Fanglomerate	Mf	High
San Pablo Group	Msp	High
Table Mountain Latite	Mtm	None
Valley Springs Formation	Tvs	Low
Poverty Flat Sandstone	Epf	Low
Ione Formation	Ei	Low
Kreyenhagen Formation	Ek	Low
Tesla Formation	PEf	Low
Moreno Formation	Km	High
Panoche Formation	Kp	Low
Chico Formation	Kc	High
Franciscan Complex	KJf	Low
Gopher Ridge Volcanics	Jgo	None
Copper Hill Volcanics	Jch	None
Salt Springs Slate and Merced Falls Slate	Jsm	Low
Mesozoic ultramafic rocks	Um	None
Metagraywacke	mg	None

Figure 4.8-1 Geologic Units in the StanCOG Region



Basemap provided by Wagner et al. 1991 San Francisco San Jose and Wagner et al. 1981 Sacramento.

Fig X Geologic Units of Stanislaus County

Earthquake Faults

Faults generally produce damage in two ways: ground-shaking and surface rupture. Seismically induced ground-shaking covers a wide area and is greatly influenced by the distance of a site to the seismic source, soil conditions, and depth to groundwater. Surface rupture is limited to very near the fault. Although no active faults are known to exist in the San Joaquin Valley floor, several known active faults exist in the Diablo Range west of I-5I-5 and in the eastern part of the StanCOG region (Stanislaus County 2016a). In particular, the Ortigalita Fault, located in the Diablo Range approximately 13.4 miles southwest of the City of Newman, is designated as an Alquist-Priolo Earthquake Fault Zone. Two faults that have experienced displacement within the last 1.6 million years have also been identified in the San Joaquin Valley. The San Joaquin Fault crosses I-5I-5 approximately seven miles southwest of the City of Newman while the Vernalis Fault runs along the San Joaquin River approximately 13 miles west of the City of Modesto (City of Turlock 2012). See Figure 4.8-2 for the location of faults in the StanCOG region.

Ground-shaking

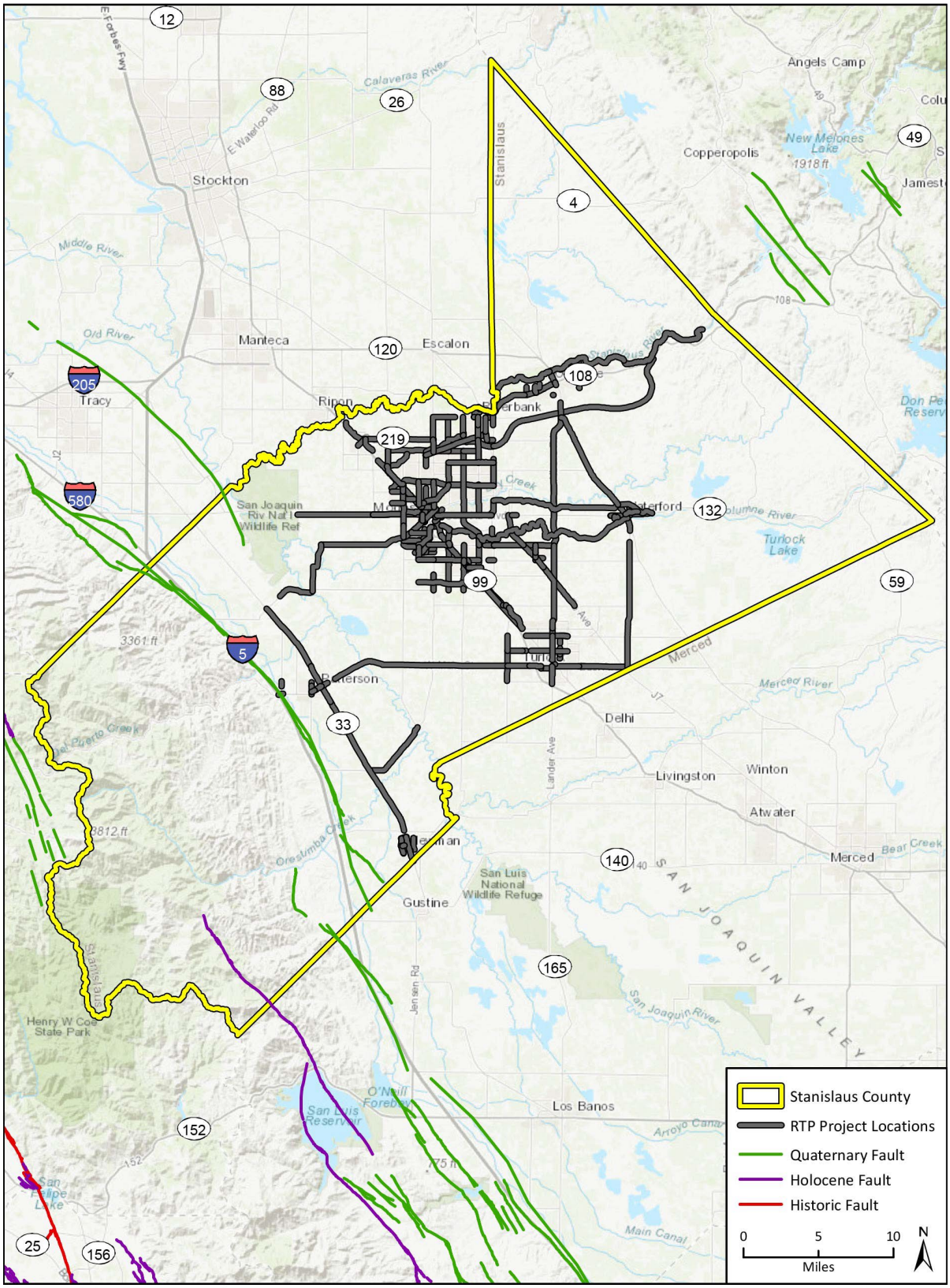
As opposed to surface rupture which effects are generally limited to the trace of the fault, ground-shaking propagates into surrounding areas during an earthquake and can affect an area around the fault. Although the intensity of the ground-shaking is depending on the distance from the source of the earthquake/fault, ground shaking can be amplified locally, or prolonged depending on the types of substrate/materials. Generally, the ground-shaking hazard in the County ranges from moderate to low because there are no active faults in the County (Stanislaus County 2016a).

The most intense ground-shaking potential occurs in the western half of the StanCOG region, particularly to the east of I-5I-5, through Patterson and Newman. Peak Ground Acceleration (PGA), which is defined as a fraction or percentage of acceleration due to gravity (G) from ground motion that has a specified probability of being exceeded in 50 years (Stanislaus County Office of Emergency Services [OES] 2017), may be in excess of 0.45 G in this area. Ground-shaking can result in very serious damage to most structures around Newman and Patterson, considerable damage to ordinary structures in the western half of the County, and minor to moderate damage in the eastern half (OES 2017).

Liquefaction and Lateral Spreading

Liquefaction is the loss of soil bearing strength during a strong earthquake and is a potential occurrence in several areas with younger soils as well as in areas where the groundwater table is less than 50 feet below ground surface. The severity of ground deformation due to liquefaction is dependent on the density and depth of the liquefied material. Shallower materials experience the most severe effects. The Stanislaus County Local Hazard Mitigation Plan (LHMP) does not identify liquefaction as a natural hazard in the County (OES 2017). Additionally, the Stanislaus Multi-Jurisdictional Hazard Mitigation Plan (MJHMP) does not identify liquefaction as a hazard with great potential to cause a negative impact to the community (Stanislaus County 2016a).

Figure 4.8-2 Faults in the StanCOG Region



Imagery provided by Esri and its licensors © 2022.
Data provided by USGS, 2022.

Fig 4.7-1 Faults in the StanCOG Region

Slope Stability

Unstable geologic formations that are susceptible to landslides in the County occur in the Diablo Range to the west of I-5I-5 and along river bluffs (Stanislaus County 2016a; OES 2017). Virtually the entire area located west of I-5I-5 is composed of geological formations that, due to structure, slope, runoff, lack of vegetation, earthquake and human activity, are considered extremely susceptible to failure and sliding. On a California Division of Mines and Geology scale used to rate landslide potential, which runs from class one (low risk) to eight (high risk), the area west of I-5 is comprised of classes above four (CGS 2011). Several State highways traverse through hillsides or along river bluffs where landslide hazards may pose a risk, including State Routes 4, 108, 120, 132, 219 and I-5 (Stanislaus County OES 2017). In addition, portions of the following County roads are identified as being at risk of landslides:

- Ingram Creek Road
- Roberts Ferry Road
- Del Puerto Canyon
- Diablo Grande Parkway
- Warnerville Road
- Orestimba Road
- Crabtree Road
- Crows Landing Road (at San Joaquin River)
- La Grange Road
- South Carpenter Road
- Cooperstown Road
- Grayson Road (at San Joaquin River)
- Los Cerritos Road
- Paradise Road (at San Joaquin River)
- River Road (Ceres area)
- Shiloh Road (at Tuolumne River)
- Mitchell Road (at Tuolumne River)
- Santa Fe Avenue
- Hills Ferry Road
- Geer/Albers Roads

Expansive Soils

Soils with relatively high clay content are expansive due to the capacity of clay minerals to take in water and swell (expand) to greater volumes. Collapsible and compressible soils occur in areas where fine-grained soils have accumulated relatively rapidly and not been buried with associated consolidation. Soils in the Camarillo-Orestimba, Waukena-Fresno, and Capay associations, which would be considered expansive under the Uniform Building Code, are scattered throughout the StanCOG region (Stanislaus County 2016b). Soil issues of concern in the County include high water table, restricted permeability, and shrink swell potential (Stanislaus County 2016b). These issues can cause construction concerns due to lack of soil stability.

Subsidence

Subsidence is a gradual settling or sudden sinking of the Earth's surface due to removal or displacement of subsurface earth materials. Principal causes include aquifer-system compaction associated with groundwater withdrawals; drainage of organic soils; underground mining; or natural compaction or collapse, such as with sinkholes or thawing permafrost (USGS 2022). The StanCOG region is north of the region of the San Joaquin Valley most severely affected by land subsidence, and land subsidence as a result of groundwater overdraft is possible (Stanislaus County 2016b).

b. Paleontological Resources

Paleontological resources, or fossils, are the evidence of once-living organisms preserved in the rock record. They include both the fossilized remains of ancient plants and animals and the traces thereof

(e.g., trackways, imprints, burrows, etc.). Paleontological resources are not found in "soil" but are contained within the geologic deposits or bedrock that underlies the soil layer. Typically, fossils are greater than 5,000 years old (i.e., older than middle Holocene in age) and are typically preserved in sedimentary rocks. Although rare, fossils can also be preserved in volcanic rocks and low-grade metamorphic rocks under certain conditions (Society of Vertebrate Paleontology [SVP] 2010). Fossils occur in a non-continuous and often unpredictable distribution within some sedimentary units, and the potential for fossils to occur within sedimentary units depends on several factors. It is possible to evaluate the potential for geologic units to contain scientifically important paleontological resources, and therefore evaluate the potential for impacts to those resources and provide mitigation for paleontological resources if they are discovered during construction of a project.

Paleontological sensitivity refers to the potential for a geologic unit to produce scientifically significant fossils. Direct impacts to paleontological resources occur when earthwork activities, such as grading or trenching, cut into the geologic deposits within which fossils are buried and physically destroy the fossils. Since fossils are the remains of prehistoric animal and plant life, they are considered to be nonrenewable. Such impacts have the potential to be significant and, under the *CEQA Guidelines*, may require mitigation. Sensitivity is determined by rock type, past history of the geologic unit in producing significant fossils, and fossil localities recorded from that unit. Paleontological sensitivity is derived from the known fossil data collected from the entire geologic unit, not just from a specific survey. Vertebrate fossils are almost always significant because they occur more rarely than invertebrates or plants. Thus, geological units having the potential to contain vertebrate fossils are considered the most sensitive

The SVP outlines in its Standard Procedures for the Assessment and Mitigation of Adverse Impacts to Paleontological Resources (2010) guidelines for categorizing paleontological sensitivity of geologic units within a project area. The SVP (2010) describes sedimentary rock units as having a high, low, undetermined, or no potential for containing significant nonrenewable paleontological resources. This criterion is based on rock units within which vertebrates or significant invertebrate fossils have been determined by previous studies to be present or likely to be present.

The geographic distribution, general characteristics, and paleontological sensitivities of each geologic unit in the StanCOG region is discussed below. Table 4.8-1 summarizes the paleontological sensitivities of each geologic unit.

Dos Palos Alluvium (Qdp)

The Dos Palos Alluvium (Qdp) is found in western part of the San Joaquin Valley in the StanCOG region (Figure 4.8-1). The Dos Palos Alluvium consists of fine-grained floodplain deposits associated with the Stanislaus River, Tuolumne River, and San Joaquin River (Wagner et al. 1991). Laudon and Bellitz (1991) suggest that their 'flood-basin deposits' along the San Joaquin River are equivalent to the Dos Palos Alluvium. They state that these deposits are generally at least ten feet deep before abruptly transitioning to coarser grained 'Sierran Sand' (which they equate to the Modesto Formation). The Dos Palos Alluvium is Holocene in age, which is generally considered too young to preserve scientifically significant paleontological resources (SVP 2010). Therefore, the Dos Palos Alluvium has a low paleontological sensitivity.

Quaternary Landslide Deposits (Qls)

Quaternary landslide deposits (Qls) are found in small areas within the Coast Ranges in western Stanislaus County (Figure 4.8-1). Quaternary landslide deposits consist of poorly sorted rubble sourced from upslope geologic units (Dibblee and Minch 2006a, b; Wagner et al. 1991). Quaternary landslide deposits are Holocene in age, which is generally considered too young to preserve scientifically

significant paleontological resources (SVP 2010). The high-energy depositional environment that produces Quaternary landslide deposits is also not conducive to fossil formation. Therefore, Quaternary landslide deposits have a low paleontological sensitivity**.**

Quaternary Alluvium (Q)

Quaternary alluvium (Q) is found around along the courses of the Stanislaus River and Tuolumne River. Q consists of unconsolidated stream and basin sediments that range from clay- to boulder-sized (Wagner et al. 1991). Quaternary alluvium is Holocene to late Pleistocene in age. Pleistocene-aged alluvium has produced scientifically significant paleontological resources throughout California, including in the StanCOG region (Jefferson 2010; PBDB 2022; UCMP 2022). Therefore, Quaternary alluvium is assigned a **high paleontological sensitivity.**

Quaternary Alluvial Fan Deposits (Qf)

Quaternary alluvial fan deposits (Qf) are found in western StanCOG region, in the foothills of the Coast Ranges west of the San Joaquin River (Figure 4.8-1). Quaternary alluvial fan deposits consist of gravel, sand, silt, and clay (Wagner et al. 1991). Qf is one of several units that represent Coast Range-sourced alluvial fan deposits in the StanCOG region (i.e., Qp, Qsl, Qlb, QTt). These named alluvial fan units are distinctive in some way, but Quaternary alluvial fan deposits represent undivided deposits that range from the Holocene to late Pleistocene. Pleistocene-aged alluvial sediments have produced scientifically significant paleontological resources throughout California, including in the StanCOG region (Jefferson 2010; PBDB 2022; UCMP 2022). Therefore, Quaternary alluvial fan deposits are assigned a **high paleontological sensitivity.**

Patterson Alluvium (Qp)

The Patterson Alluvium (Qp) is found in western Stanislaus County, with the largest deposits found along Orestimba Creek (Figure 4.8-1). The Patterson Alluvium consists of unconsolidated, poorly to well-sorted gravel, sand, silt, and clay found in modern stream channels and low terraces (Wagner et al. 1991; Wentworth et al. 1999). The Patterson Alluvium often forms a thin layer overlying older alluvial sediments. The Patterson Alluvium is one of several units that represent Coast Range-sourced alluvial deposits in the StanCOG region (i.e., Qf, Qsl, Qlb, QTt). The Patterson Alluvium is Holocene in age, which is generally considered too young to preserve scientifically significant paleontological resources. Therefore, the Patterson Alluvium is assigned a **low paleontological sensitivity.**

San Luis Ranch Alluvium (Qsl)

The San Luis Ranch Alluvium (Qsl) is found in southwestern Stanislaus County, west of the San Joaquin River (Figure 4.8-1). The San Luis Ranch Alluvium consists of unconsolidated, poorly to moderately sorted, poorly to moderately bedded coarse sandy gravel and gravelly coarse sand (Lettis 1982; Wagner et al. 1991; Wentworth et al. 1999). The San Luis Ranch Alluvium is one of several units that represent Coast Range-sourced alluvial fan deposits in the StanCOG region (i.e., Qf, Qp, Qlb, QTt). Laudon and Bellitz (1991) suggest that the 'Coast Range alluvium,' which they correlate with the San Luis Ranch Alluvium and Patterson alluvium, is at least 50 feet thick. The San Luis Ranch Alluvium is early Holocene to late Pleistocene in age. Pleistocene-aged alluvial sediments have produced scientifically significant paleontological resources throughout California, including in the StanCOG region (Jefferson 2010; PBDB 2022; UCMP 2022). Therefore, the San Luis Alluvium is assigned a **high paleontological sensitivity.**

Los Baños Alluvium (Qlb)

The Los Baños Alluvium (Qlb) is found in small areas in western Stanislaus County (Figure 4.8-1). The Los Baños Alluvium consists of poorly bedded, poorly sorted sandy gravel and gravelly coarse sand that represent terrace, pediment, and fan deposits that are middle to late Pleistocene in age (Wagner et al. 1991; Wentworth et al. 1999). The Los Baños Alluvium is one of several units that represent Coast Range-sourced alluvial fan deposits in the StanCOG region (i.e., Qf, Qp, Qsl, QTt). Pleistocene-aged alluvial sediments have produced scientifically significant paleontological resources throughout California, including in the StanCOG region (Jefferson 2010; PBDB 2022; UCMP 2022). Therefore, the Los Baños Alluvium is assigned a **high paleontological sensitivity.**

Modesto Formation (Qm)

The Modesto Formation (Qm) underlies much of the StanCOG region, covering the Great Central Valley, east of the San Joaquin River (Figure 4.8-1). The Modesto Formation consists of arkosic sand, gravel, and silt, originating from the Sierra Nevada (Bartow et al. 1981; Wagner et al. 1981, 1991). The Modesto Formation is a late Pleistocene unit that has produced vertebrate fossils in the StanCOG region, including ground sloths (*Megalonyx*), mammoths (*Mammuthus*), bison (*Bison*), and camel (*Camelops*) (Jefferson 2010; PBDB 2022; UCMP 2022). Given this fossil-producing history, the Modesto Formation is assigned a **high paleontological sensitivity.**

Riverbank Formation (Qr)

The Riverbank Formation (Qr) underlies parts of central Stanislaus County in the eastern Great Central Valley (Figure 4.8-1). The Riverbank Formation primarily consists of sand, though gravel lenses and fine-grained interbeds are present, that originate from the Sierra Nevada (Bartow et al. 1981; Wagner et al. 1991). The Riverbank Formation is a late Pleistocene unit that has produced vertebrate fossils in the StanCOG region, ground sloth (*Paramylodon*), and elsewhere in California, mammoth (*Mammuthus*), horse (*Equus*), rodent (*Neotoma*, *Thomomys*, *Microtus*), dire wolf (*Canis dirus*), and others (Jefferson 2010; PBDB 2022; UCMP 2022). Given this fossil-producing history, the Riverbank Formation is assigned a **high paleontological sensitivity.**

Modesto-Riverbank Formation, undivided (Qmr)

In small areas of eastern Stanislaus County, the Modesto and Riverbanks formations are undivided and mapped as a single unit (Qmr) (Figure 4.8-1). Qmr consists of sand, gravel, and silt, representing alluvial deposition originating from the Sierra Nevada (Bartow et al. 1981; Wagner et al. 1991). As noted above, the Modesto and Riverbank formations are Pleistocene in age and have produced vertebrate fossils in the StanCOG region, including ground sloths (*Megalonyx*, *Paramylodon*), mammoths (*Mammuthus*), bison (*Bison*), and camel (*Camelops*) (Jefferson 2010; PBDB 2022; UCMP 2022). Given that both the Modesto and Riverbank Formations are assigned a high paleontological sensitivity, areas mapped as Qmr, in which these formations cannot be distinguished are a **high paleontological sensitivity.**

Turlock Lake Formation (Qtl)

The Turlock Lake Formation (Qtl) is found in eastern Stanislaus County in the foothills of the Sierra Nevada (Figure 4.8-1). The Turlock Lake Formation consists of gravel, sand, silt, and clay that represents glacial outwash and rock flour originating in the Sierra Nevada (Bartow et al. 1981; Wagner et al. 1991). The Turlock Lake Formation is middle to early Pleistocene in age. No fossils have been recovered from the Turlock Lake Formation in the StanCOG region, but localities from this geologic unit in Fresno and

Madera Counties have produced sabre-toothed cats (*Homotherium*, *Smilodon*), mammoths (*Mammuthus*), ground sloths (*Megalonyx*, *Nothrotheriops*, *Paramylodon*), and other species (Dundas et al. 1996; Jefferson 2010; PBDB 2022; UCMP 2022). Therefore, the Turlock Lake Formation is assigned a **high paleontological sensitivity.**

North Merced Gravel (QTnm)

The North Merced Gravel (QTnm) is found in small areas of eastern Stanislaus County in the foothills of the Sierra Nevada (Figure 4.8-1). The North Merced Gravel consists of coarse gravel and cobbles (up to 15 cm in diameter) that is rarely more than six feet thick, forming a pediment layer overlying older Cenozoic strata (Bartow et al. 1981; Marchand and Allwardt 1978; Wagner et al. 1991). No fossil localities are recorded from the North Merced Gravel (Jefferson 2010; PBDB 2022; UCMP 2022), and its coarse-grained lithology is not conducive to fossil preservation. However, the North Merced Gravel is typically less than 6 feet thick. Therefore, areas mapped as the North Merced Gravel have a **low paleontological sensitivity at less than six feet in depth, and unknown paleontological sensitivity deeper than six feet in depth.**

Laguna Formation (Pl)

The Laguna Formation (Pl) is found in eastern Stanislaus County (Figure 4.8-1). The Laguna Formation consists of primarily gravel but with some sandy and silty beds that represent alluvial deposits originating from the Sierra Nevada and is Pliocene in age (Bartow et al. 1981; Marchand and Allwardt 1978; Wagner et al. 1991). No fossil localities are recorded from the Laguna Formation (PBDB 2022; UCMP 2022), and its dominantly coarse-grained lithology is not conducive to fossil preservation. Therefore, the Laguna Formation has a **low paleontological sensitivity.**

Mehrten Formation (Tm)

The Mehrten Formation (Tm) is found in eastern Stanislaus County, where it covers more geographic area than any other pre-Quaternary geologic unit (Figure 4.8-1). The Mehrten Formation consists of conglomerate, sandstone, and siltstone primarily derived from andesitic sources that generally becomes finer moving southward (Marchand and Allwardt 1978; Wagner et al. 1981, 1991). The Mehrten Formation is Miocene to early Pliocene in age. Several dozen fossil localities from the Mehrten Formation are known in the StanCOG region, preserving taxa such as tortoises (Testudinidae), horses (Equidae), dogs (Canidae), camels (Camelidae), and plants (Axelrod 1957; Balisi et al. 2018; PBDB 2022; UCMP 2022). Therefore, the Mehrten Formation is assigned a **high paleontological sensitivity.**

Fanglomerate (Mf)

Fanglomerate (Mf) deposits are found in western Stanislaus County, in the foothills of the Diablo Range (Figure 4.8-1). Some authors refer to these deposits as the Oro Loma and/or Carbona formations (Wagner et al. 1991). These fanglomerate deposits are late Miocene and possibly early Pliocene in age and consist of reddish-brown to gray cross-bedded, channeled, conglomerate, sandstone, and siltstone (Wagner et al. 1991; Wentworth et al. 1999). Three fossil localities preserving horses (Equidae) and camels (Camelidae) are known from these fanglomerate deposits (referred to as the Oro Loma Formation) in Fresno County (Kelly and Stewart 2008; PBDB 2022). Therefore, fanglomerate deposits are assigned a **high paleontological sensitivity.**

San Pablo Group (Msp)

The San Pablo Group (Msp) is found in small areas of western Stanislaus County, in the foothills of the Diablo Range (Figure 4.8-1). The San Pablo Group is Miocene in age and consists of mudstone, siltstone, shale, and tuff, which some authors split into several geologic units: the Neroly Sandstone/Formation, Cierbo Sandstone/Formation, and Briones Sandstone/Formation (Dibblee and Minch 2005, 2007a, b, c; Wagner et al. 1991; Wentworth et al. 1999). Numerous fossil localities are known from the San Pablo Group including in the StanCOG region (PBDB 2022; UCMP 2022). Marine invertebrates (Mollusca, Crustacea) are most commonly recovered, but several localities preserve terrestrial vertebrates including horses (Equidae), antelope (Antilocapridae), and dogs (Canidae). Therefore, the San Pablo Group is assigned a **high paleontological sensitivity.**

Table Mountain Latite (Mtm)

The Table Mountain Latite (Mtm) is found in small areas of eastern Stanislaus County, in the foothills of the Sierra Nevada (Figure 4.8-1). The Table Mountain Latite is a dark gray to black porphyritic latite flow with abundant labradorite phenocrysts representing a late Miocene lava flow that is dated to 9.0 Ma (Bartow et al. 1981; Wagner et al. 1991). Igneous rocks are formed by the cooling of magma which is not conducive to fossil preservation. Therefore, the Table Mountain Latite has **no paleontological sensitivity.**

Valley Springs Formation (Tvs)

The Valley Springs Formation (Tvs) is found in the eastern edge of Stanislaus County, in the foothills of the Sierra Nevada (Figure 4.8-1). The Valley Springs Formation consists of claystone, rhyolitic tuff, siltstone, sandstone, and conglomerate that is late Oligocene to middle Miocene in age (Bartow et al. 1981; Wagner et al. 1991). No fossil localities are known from the Valley Springs Formation in the StanCOG region, but several localities bearing fossil plants are known from further north in Calaveras, El Dorado, and Sierra counties (Axelrod 1957; PBDB 2022; UCMP 2022). The Valley Springs Formation is fossiliferous in parts, but it does not have a history of producing scientifically significant fossils. Therefore, the Valley Springs Formation has a **low paleontological sensitivity.**

Poverty Flat Sandstone (Epf)

The Poverty Flat Sandstone (Epf) is found in small areas of southwestern Stanislaus County in the Diablo Range (Figure 4.8-1). The Poverty Flat Sandstone consists of gray, micaceous sandstone interbedded with gray claystone near the base that grades upward into white, cross-bedded quartz sandstone and siltstone (Wagner et al. 1991; Wentworth et al. 1999). Locally, greenish-gray sandy claystone and brown siltstone is present, and a characteristic red and orange chert conglomerate is found near the top of the unit. Scattered mollusk fossils near the base of the unit represent the only fossils recovered from the Poverty Flat Sandstone (Bartow et al. 1985; PBDB 2022; UCMP 2022). The Poverty Flat Sandstone has produced few invertebrate fossils; therefore, it has a **low paleontological sensitivity.**

Ione Formation (Ei)

The Ione Formation (Ei) is found in the eastern edge of Stanislaus County in the foothills of the Sierra Nevada (Figure 4.8-1). The Ione Formation consists of light brown, tan, gray, pinkish, or yellowish quartz sandstone with claystone interbeds near its base and is Eocene in age (Bartow et al. 1981; Wagner et al. 1991). No vertebrate fossil localities are known from the Ione Formation, but many plant fossil-bearing localities are known from elsewhere in the northern Sierra Nevada foothills, including one in the

StanCOG region (PBDB 2022; UCMP 2022). Although the Ione Formation has a history of preserving plant fossils, these fossils are generally not considered scientifically significant. Therefore, the Ione Formation has a **low paleontological sensitivity.**

Kreyenhagen Formation (Ek)

The Kreyenhagen Formation (Ek) is found in southwestern Stanislaus County in the Diablo Range (Figure 4.8-1).The Kreyenhagen Formation is a gray, crumbly, micaceous clay shale, diatomaceous shale, or siltstone that is Eocene in age (Dibblee and Minch 2007b, c; Wagner et al. 1991). Shark (Elasmobranchii), ray-finned fish (Actinopterygii), plants, and microfossils (foraminifera, diatoms), are known from the Kreyenhagen Formation, but no localities have been recorded in the StanCOG region (PBDB 2022; UCMP 2022). The Kreyenhagen Formation has produced fossils, but these fossils are generally of common taxa which are not scientifically significant. Therefore, the Kreyenhagen Formation has a **low paleontological sensitivity.**

Tesla Formation (PEf)

The Tesla Formation (PEf) is found in southwestern Stanislaus County in the Diablo Range (Figure 4.8-1). The Tesla Formation consists of friable tan or white sandstone, siltstone, and mudstone that is Paleocene to Eocene in age (Dibblee and Minch 2006a, 2007b, c, d; Wagner et al. 1991; Wentworth et al. 1999). Several dozen invertebrate- and plant-bearing fossil localities are known from the Tesla Formation, including seven in the StanCOG region (PBDB 2022; UCMP 2022). The Tesla Formation has produced fossils, but these fossils are generally of common taxa which are not scientifically significant. Therefore, the Tesla Formation has a **low paleontological sensitivity.**

Moreno Formation (Km)

The Moreno Formation (Km) is found in southwestern Stanislaus County in the Diablo Range (Figure 4.8-1). The Moreno Formation consists of gray, crumbly micaceous clay shale or light gray to tan, bedded fine- to medium-grained arkosic sandstone that is late Cretaceous in age (Dibblee and Minch 2006a, 2007b, c, d, e; Wagner et al. 1991; Wentworth et al. 1999). The Moreno Formation (also known as the Moreno Shale) has yielded numerous vertebrate fossil localities in the southern Coast Ranges, including in the StanCOG region, producing taxa such as mosasaurs, plesiosaurs, hadrosaurs, turtles, ray-finned fish, and invertebrates (bivalves, gastropods, cephalopods, etc.) (Bell and Evans 2010; Lindgren and Schulp 2010; O'Gorman 2019; PBDB 2022; UCMP 2022). Therefore, the Moreno Formation has a **high paleontological sensitivity.**

Panoche Formation (Kp)

The Panoche Formation is found in the southwestern Stanislaus County in the Diablo Range (Figure 4.8-1). The Panoche Formation consists of light brown to tan sandstone, gray to dark gray clay shale, or gray to brown conglomerate and is Cretaceous in age (Dibblee and Minch 2006a, 2007a, b, c, d, e, f; Wagner et al. 1991; Wentworth et al. 1999). Numerous invertebrate (gastropod, bivalve, cephalopod) fossil localities are known from the Panoche Formation, including in the StanCOG region, but the only vertebrate specimens consist of several fragmentary ray-finned fish, shark, and reptile fossils (PBDB 2022; UCMP 2022). The Panoche Formation is fossiliferous, but these fossils are generally common and/or fragmentary. Therefore, the Panoche Formation is assigned a **low paleontological sensitivity.**

Chico Formation (Kc)

The Chico Formation (Kc) is found in the northeastern edge of Stanislaus County in the Sierra Nevada (Figure 4.8-1). The Chico Formation consists of shale, sandstone, and conglomerate and is Cretaceous in age (Wagner et al. 1991). The Chico Formation contains several vertebrate fossil localities, producing bird, mosasaur, pterosaur, plesiosaur, fish, and invertebrate fossils (Hilton et al. 1999; Parham and Stidham 1999; PBDB 2022; UCMP 2022). Therefore, the Chico Formation has a **high paleontological sensitivity.**

Franciscan Complex (KJf)

The Franciscan Complex (KJf) covers much of the southwestern part of the StanCOG region in the Diablo Range (Figure 4.8-1). The Franciscan Complex is a Jurassic and Cretaceous-aged assemblage of sedimentary, volcanic, and metamorphic rocks that form the basement of much of the Coast Ranges (Dibblee and Minch 2006a, b, 2007a, b, c, d, e, f; Wagner et al. 1991; Wentworth et al. 1999). Sedimentary rocks of the Franciscan Complex may bear invertebrate fossils and two marine reptiles are known from Franciscan rocks, though not in the StanCOG region (PBDB 2022; UCMP 2022). Although scientifically significant paleontological resources have been recovered from the Franciscan Complex, they are extremely rare with only two specimens found in this unit which covers large areas of the Coast Ranges. Therefore, the Franciscan Complex is assigned a **low paleontological sensitivity.**

Gopher Ridge Volcanics (Jgo)

The Gopher Ridge Volcanics (Jgo) are found in the northeastern edge of the StanCOG region in the Sierra Nevada (Figure 4.8-1). The Gopher Ridge Volcanics consist of metamorphosed mafic and felsic pyroclastic flows that are Jurassic in age (Wagner et al. 1991). The Gopher Ridge Volcanics are metamorphosed, so they cannot preserve scientifically significant paleontological resources and have **no paleontological sensitivity.**

Copper Hill Volcanics (Jch)

The Copper Hill Volcanics (Jch) are found in the eastern edge of the StanCOG region in the Sierra Nevada (Figure 4.8-1). The Copper Hill Volcanics consist of metamorphosed mafic and felsic pyroclastic flows that are Jurassic in age (Wagner et al. 1991). The Copper Hill Volcanics are metamorphosed, so they cannot preserve scientifically significant paleontological resources and have **no paleontological sensitivity.**

Salt Springs Slate and Merced Falls Slate (Jsm)

The Salt Springs Slate and Merced Falls Slate (Jsm) are found in the eastern edge of the StanCOG region in the Sierra Nevada (Figure 4.8-1). The Salt Springs Slate and Merced Falls Slate consist of slate, metagraywacke, and conglomerate (Wagner et al. 1991). The Salt Springs Slate and Merced Falls Slate consist primarily of metamorphic rocks, which cannot preserve scientifically significant paleontological resources. It is possible for conglomerate facies to preserve paleontological resources, but their coarse-grained nature is indicative of high-energy depositional environment in which fossilization is unlikely. Therefore, the Salt Springs Slate and Merced Falls Slate have a **low paleontological sensitivity.**

Mesozoic Ultramafic Rocks (um)

Areas mapped as Mesozoic ultramafic rocks (um) are found in western Stanislaus County in the Diablo Range (Figure 4.8-1). Mapping by Dibblee and Minch (2006b, 2007d, e, f) identified these rocks as

Jurassic-aged diabase, diorite, and gabbro, associated with the Coast Range Ophiolite and serpentinite. These rocks are intrusive igneous rocks or metamorphic. Therefore, they cannot preserve paleontological resources and have **no paleontological sensitivity.**

Metagraywacke (mg)

Metagraywacke (mg) is found in western Stanislaus County in the Diablo Range (Figure 4.8-1). Metagraywacke is the result of metamorphic processes acting on the graywacke sandstone that comprises much of the areas mapped as the Franciscan Complex (KJf) (Dibblee and Minch 2006a, b, 2007a, b, c, d, e, f; Wagner et al. 1991; Wentworth et al. 1999). The heat and pressure needed to transform graywacke to metagraywacke would have destroyed any scientifically significant paleontological resources originally contained within these sediments and have **no paleontological sensitivity.**

4.8.2 Regulatory Setting

a. Federal Laws, Regulations, and Policies

Earthquake Hazards Reduction Act

The Earthquake Hazards Reduction Act was enacted in 1977 to "reduce the risks to life and property from future earthquakes in the United States through the establishment and maintenance of an effective earthquake hazards and reduction program." To accomplish this, the act established the National Earthquake Hazard Reduction Program (NEHRP). NEHRP's mission includes improved understanding and characterization of hazards and vulnerabilities, improvement of building codes and land use practices, risk reduction through post-earthquake investigations and education, development and improvement of design and construction techniques, improvement of mitigation capacity, development of alternative performance objectives to advance functional recovery, and accelerated application of research results. The NEHRP designates the National Institute of Standards and Technology as the lead agency of the program and assigns it several planning, coordinating, and reporting responsibilities. Programs under the NEHRP help inform and guide planning and building code requirements, such as emergency preparedness responsibilities and seismic code standards.

Disaster Recovery Reform Act of 2018

The Disaster Recovery Reform Act was signed into law in 2018. The reforms acknowledge the shared responsibility for disaster response and recovery, are intended to reduce the complexity of the Federal Emergency Management Agency (FEMA), and build the nation's capacity for the next catastrophic event. The law, which amends the Robert T. Stafford Disaster Relief and Emergency Assistance Act, contains 56 distinct provisions that require FEMA policy or regulation changes for full implementation. Examples of the provisions include expanding eligible hazard mitigation activities including the replacement of electric utility poles resilient to extreme winds (Section 1204) and earthquake early warning technology (Section 1233).

Archaeological and Paleontological Salvage (23 USC 305)

Statute 23 United States Code (USC) 305 amends the Antiquities Act of 1906. Specifically, it states:

> "Funds authorized to be appropriated to carry out this title to the extent approved as necessary, by the highway department of any State, may be used for archaeological and paleontological salvage in

that state in compliance with the Act entitled "An Act for the preservation of American Antiquities," approved June 8, 1906 (Public Law [PL] 59-209; 16 USC 431-433), and State laws where applicable."

This statute allows funding for mitigation of paleontological resources recovered pursuant to federal aid highway projects, provided that "excavated objects and information are to be used for public purposes without private gain to any individual or organization" (Federal Register [FR] 46(19): 9570).

Paleontological Preservation Act

The Paleontological Resources Preservation Act (PRPA) was signed into law in 2009. It directs the Department of Agriculture and the Department of the Interior to implement comprehensive paleontological resource management programs on federal lands. The PRPA protects scientifically significant fossils on federal lands and provides a permitting system where researchers can collect and study scientifically significant fossils which will remain in the public trust. The act also allows for the collection of common plant and invertebrate fossils for personal, non-commercial use on federal lands. The PRPA requires the Secretaries of the Interior and Agriculture to manage and protect paleontological resources on federal land. The PRPA furthers the protection of fossils on federal lands by criminalizing the unauthorized removal of fossils.

b. State Laws, Regulations, and Policies

Alquist-Priolo Earthquake Fault Zoning Act

The Alquist-Priolo Earthquake Fault Zoning Act, California's Alquist-Priolo Act (PRC 2621 et seq.), is intended to reduce the risk to life and property from surface fault rupture during earthquakes. The Alquist-Priolo Act prohibits the location of most types of structures intended for human occupancy across the traces of active faults and strictly regulates construction in the corridors along active faults (Earthquake Fault Zones). It also defines criteria for identifying active faults, giving legal weight to terms such as "active," and establishes a process for reviewing building proposals in and adjacent to Earthquake Fault Zones. Under the Alquist-Priolo Act, faults are zoned, and construction along or across them is strictly regulated if they are "sufficiently active" and "well-defined." A fault is considered sufficiently active if one or more of its segments or strands shows evidence of surface displacement during Holocene time (defined as within the last 11,000 years). A fault is considered well-defined if its trace can be clearly identified by a trained geologist at the ground surface or in the shallow subsurface, using standard professional techniques, criteria and judgment.

Seismic Hazards Mapping Act of 1990

Like the Alquist-Priolo Act, the Seismic Hazards Mapping Act of 1990 (PRC 2690–2699.6) is intended to reduce damage resulting from earthquakes. While the Alquist-Priolo Act addresses surface fault rupture, the Seismic Hazards Mapping Act addresses other earthquake-related hazards, including strong ground-shaking, liquefaction and seismically induced landslides. Its provisions are similar in concept to those of the Alquist-Priolo Act: the State is charged with identifying and mapping areas at risk of strong ground-shaking, liquefaction, landslides and other corollary hazards, and cities and counties are required to regulate development within mapped Seismic Hazard Zones.

California Building Standards Code

The California Building Code (CBC) has been codified in the CCR as Title 24, Part 2. Title 24 is administered by the California Building Standards Commission, which, by law, is responsible for

coordinating all building standards. The purpose of the CBC is to establish minimum standards to safeguard the public health, safety, and general welfare through structural strength, means of egress facilities, and general stability by regulating and controlling the design, construction, quality of materials, use and occupancy, location, and maintenance of all building and structures within its jurisdiction. The 2019 CBC is based on the 2018 IBC published by the International Code Council. In addition, the CBC contains necessary California amendments, which are based on reference standards obtained from various technical committees and organizations, such as the American Society of Civil Engineers (ASCE), the American Institute of Steel Construction, and the American Concrete Institute. ASCE Minimum Design Standard 7-05 (ASCE 7-05) provides requirements for general structural design and includes means for determining earthquake loads, as well as other loads (e.g., flood, snow, wind), for inclusion into building codes. The provisions of the CBC apply to the construction, alteration, movement, replacement, and demolition of every building or structure, or any appurtenances connected or attached to such buildings or structures throughout California.

The earthquake design requirements consider the occupancy category of the structure, site class, soil classifications, and various seismic coefficients that are used to determine a Seismic Design Category (SDC) for a project as described in Chapter 16 of the CBC. The SDC is a classification system that combines the occupancy categories with the level of expected ground motions at the site and ranges from SDC A (very small seismic vulnerability) to SDC E (very high seismic vulnerability and near a major fault) and SDC F (hospitals, police stations, emergency control centers in areas near major active faults). Design specifications are then determined according to the SDC in accordance with Chapter 16 of the CBC. Chapter 16, Section 1613 provides earthquake loading specifications for design and construction to resist the effects of earthquake motions in accordance with ASCE 7-05.

Chapter 18 of the CBC covers the requirements of geotechnical investigations (Section 1803); excavation, grading, and fills (Section 1804); load-bearing of soils (1806); foundations (Section 1808); shallow foundations (Section 1809); and deep foundations (Section 1810). Chapter 18 also describes analysis of expansive soils and the determination of the depth to groundwater table. For SDC D, E, and F, Chapter 18 requires analysis of slope instability, liquefaction, and surface rupture attributable to faulting or lateral spreading, plus an evaluation of lateral pressures on basement and retaining walls, liquefaction and soil strength loss, and lateral movement or reduction in foundation soil-bearing capacity. It also addresses mitigation measures to be considered in structural design, which may include ground stabilization, selection of appropriate foundation type and depths, selection of appropriate structural systems to accommodate anticipated displacements, or any combination of these measures. The potential for liquefaction and soil strength loss must be evaluated for site specific peak ground acceleration magnitudes and source characteristics consistent with the design earthquake ground motions.

Specifically, Section 1803.7 of the CBC requires geologic and earthquake engineering reports for all proposed construction. The purpose of the engineering report is to identify geologic and seismic conditions that may require mitigation. The reports, which are prepared by a California certified engineering geologist in consultation with a California-registered geotechnical engineer, assess the nature of the site and potential for earthquake damage based on appropriate investigations of the regional and site geology, project foundation conditions, and potential seismic shaking at the site. These reports must consider the most recent CGS Note 48 (Checklist for the Review of Engineering Geology and Seismology Reports for California Public Schools, Hospitals, and Essential Services Buildings), CGS Special Publication 42: Fault Rupture Hazard Zones in California (for project sites proposed within an Alquist-Priolo Zone), and the most recent version of CGS Special Publication 117: Guidelines for

Evaluating and Mitigating Seismic Hazard in California (for project sites proposed within a Seismic Hazard Zone). All conclusions must be fully supported by satisfactory data and analysis.

The geotechnical report required by Section 1803 provides completed evaluations of the foundation conditions of the site and the potential geologic and seismic hazards. It includes site specific evaluations of design criteria related to the nature and extent of foundation materials, groundwater conditions, liquefaction potential, and settlement potential and slope stability, as well as the results of the analysis of problem areas identified in the engineering geologic report. The geotechnical report incorporates estimates of the characteristics of site ground motion provided in the engineering geologic report. The geotechnical report must be prepared by a geotechnical engineer registered in the State of California with the advice of the certified engineering geologist and other technical experts, as necessary. The approved engineering geologic report is submitted with, or as part of, the geotechnical report. Local jurisdictions in the StanCOG region typically regulate construction activities through a process that requires the preparation of a site-specific geotechnical investigation, consistent with Title 24, Part 2, Chapter 18 of the CBC.

California Construction General Permit Order 2009-0009-DWQ

The California Construction General Permit Order 2009-0009-DWQ (Order) requires projects that would disturb one or more acres of soil, or whose projects disturb less than one acre but are part of a larger common plan of development that in total disturbs one or more acres, to obtain coverage under the Order. As such, applicable projects are required to implement a Storm Water Pollution Prevention Plan (SWPPP) developed by a certified Qualified SWPPP Developer. The SWPPP includes Best Management Practices (BMPs) for erosion and sediment control.

California Department of Transportation Regulations and Seismic Design Criteria

The California Department of Transportation (Caltrans) has Seismic Design Criteria (SDC) which contain new and currently practiced seismic design and analysis methodologies for the design of new bridges in California. The SDC adopts a performance-based approach specifying minimum levels of structural system performance, component performance, analysis and design practices for ordinary standard bridges. The SDC has been developed with input from the Caltrans Offices of Structure Design, Earthquake Engineering and Design Support and Materials and Foundations. Memo 20-1 outlines the bridge category and classification, seismic performance criteria, seismic design philosophy and approach, seismic demands and capacities on structural components and seismic design practices that collectively comprise Caltrans' seismic design methodology (Caltrans 2010).

California Surface Mining and Reclamation Act (SMARA)

SMARA mandated the initiation by the State geologist of mineral land classification to help identify and protect mineral resources in areas within the State subject to urban expansion or other irreversible land uses that would preclude mineral extraction. Areas are classified into mineral resource zones based on the presence of deposits and how much evaluation of the resource has occurred.

SMARA also allowed the State Mining and Geology Board (SMGB), after receiving classification information from the State geologist, to designate lands containing mineral deposits of regional or Statewide significance. Areas designated by SMGB are incorporated by regulation into Title 14, Division 2 of the CCR. Such designations require that a lead agency's land use decisions involving designated areas be made in accordance with its mineral resource management policies and that the lead agency consider the importance of the mineral resource to the region or the State as a whole and not just the lead agency's jurisdiction. In 1979, SMGB adopted guidelines for the management of mineral resources

and preparation of local plans. The guidelines require local general plans to reference the State-identified mineral deposits and sites that are identified by the State geologist for conservation and/or future mineral extraction. Subsequently, SMGB identified urbanized areas where irreversible land uses precluded mineral extraction.

California Assembly Bill 885 (2000)

AB 885 (Chapter 781, Statutes of 2000) required SWRCB to draft and implement regulations for siting, installation, operation, and maintenance of on-site wastewater treatment systems. Proposed regulations were issued in 2009 and adopted in June 2012.

California Environmental Quality Act – Paleontological Resources

Paleontological resources are protected under CEQA, which states in part a project will "normally" have a significant effect on the environment if it, among other things, will disrupt or adversely affect a paleontological site except as part of a scientific study. Specifically, in Section VII(f) of Appendix G of the State CEQA Guidelines, the Environmental Checklist Form, the question is posed thus: "Will the project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature." To determine the uniqueness of a given paleontological resource, it must first be identified or recovered (i.e., salvaged). Therefore, CEQA mandates mitigation of adverse impacts, to the extent practicable, to paleontological resources.

CEQA does not define "a unique paleontological resource or site." However, the Society of Vertebrate Paleontology (SVP) has defined a "significant paleontological resource" in the context of environmental review as follows:

> Fossils and fossiliferous deposits, here defined as consisting of identifiable vertebrate fossils, large or small, uncommon invertebrate, plant, and trace fossils, and other data that provide taphonomic, taxonomic, phylogenetic, paleoecologic, stratigraphic, and/or biochronologic information. Paleontological resources are typically to be older than recorded human history and/or older than middle Holocene (i.e., older than about 5,000 radiocarbon years) (SVP 2010).

The loss of paleontological resources meeting the criteria outlined above (i.e., a significant paleontological resource) would be a significant impact under CEQA, and the CEQA lead agency is responsible for ensuring that impacts to paleontological resources are mitigated, where practicable, in compliance with CEQA and other applicable statutes.

California Public Resources Code

Section 5097.5 of the Public Resources Code states:

> No person shall knowingly and willfully excavate upon, or remove, destroy, injure or deface any historic or prehistoric ruins, burial grounds, archaeological or vertebrate paleontological site, including fossilized footprints, inscriptions made by human agency, or any other archaeological, paleontological or historical feature, situated on public lands, except with the express permission of the public agency having jurisdiction over such lands. Violation of this section is a misdemeanor.

Here "public lands" means those owned by, or under the jurisdiction of, the state or any city, county, district, authority, or public corporation, or any agency thereof. Consequently, public agencies are required to comply with Public Resources Code Section 5097.5 for their own activities, including

construction and maintenance, and for permit actions (e.g., encroachment permits) undertaken by others.

c. Local Laws, Regulations, and Policies

Stanislaus County General Plan

The Stanislaus County General Plan Safety Element guides land use by providing pertinent data regarding geologic, soil, seismic, fire, and flood hazards. Policy Three of the Safety Element states that development should not be allowed in areas particularly susceptible to seismic hazards. Policy Three Implementation Measures include enforcement of Alquist-Priolo Earthquake Fault Zoning Act regulations, requiring development in areas of geologic hazards to include an acceptable evacuation route, requiring development adjacent to reservoirs to include the potential of seismically-induced seiche, minimization of seismic risk for new public roads in areas subject to seismic hazards, and addition of right-of-way widths if found necessary to provide added safety in geologically unstable areas. Additionally, Policy Four requires development west of I-5I-5 in areas susceptible to landslides to present a geological report and follow any mitigation measures necessary to reduce potential impacts regarding landslides.

The Stanislaus County General Plan Conservation/Open Space Element emphasizes the conservation and management of natural resources. Policy 24 of the Conservation/Open Space Element of the Stanislaus County General Plan addresses paleontological resources: “The County will support the preservation of Stanislaus County's cultural legacy of archeological, historical, and paleontological resources for future generations.” Implementation Measure 5 explains how Stanislaus County plans to implement Policy 24:

> The County shall utilize the California Environmental Quality Act (CEQA) process to protect archaeological, historic, or paleontological resources. Most discretionary projects require review for compliance with CEQA. As part of this review, potential impacts must be identified and mitigated.

Stanislaus County Local Hazard Mitigation Plan

The Stanislaus County LHMP is a countywide plan managed by the Stanislaus County OES that identifies risks posed by disasters, and identifies ways to minimize damage from those disasters (OES 2017). The plan is a comprehensive resource document that serves many purposes, including: enhancing public awareness and understanding of disasters and disaster-related planning, creating a decision tool for management, promoting compliance with State and federal program requirements, enhancing local policies for hazard mitigation capability, and providing inter-jurisdictional coordination. Natural hazards covered in the plan include earthquakes, landslides, dam failure, flooding, and wildfires (OES 2017). The LHMP is currently being updated as a MJHMP under the guidance of a Hazard Mitigation Planning Committee (StanOES 2021).

City of Ceres General Plan 2035

The City of Ceres General Plan 2035 Health and Safety Element Goal 5.G aims to minimize the loss of life, injury, and property damage due to seismic or geologic hazards. Policies 5.G.1 through 5.G.8 require the City of Ceres to implement the California Building Code, require geotechnical reports for projects shown to have potential for expansive soils or geologic instability and require specific design specifications for expansive soils, implement design considerations for historic buildings and critical facilities, and require use of Best Management Practices to control and mitigate soil erosion during construction activities (City of Ceres 2018).

The Agricultural and Natural Resources Element of the Ceres General Plan 2035 includes Goal 4.I, which specifies the City's goal to "Protect and preserve archaeological and paleontological resources in the Planning Area" (City of Ceres 2018). Policy 4.I.4 "Paleontological Resources," implements Goal 4.I, and states:

> Establish a procedure for the management of paleontological materials found on-site during a development, including the following provisions:
>
> - If materials are found on-site during grading, require that work be halted until a qualified professional evaluates the find to determine if it represents a significant paleontological resource.
> - If the resource is determined to be significant, the paleontologist shall supervise removal of the material and determine the most appropriate archival storage of the material.
> - Appropriate materials shall be prepared, catalogued, and archived at the applicant's expense and shall be retained within Stanislaus County if feasible.

City of Hughson General Plan

The City of Hughson General Plan Safety Element Goal S-1 includes Goal S-1 which focuses on minimizing risks associated with seismic and other geologic hazards. Policy S-1.1 requires all new developments to include geologic and engineering studies, and Policy S-1.4 requires mitigation of expansive soils prior to development occurring. Policy S-1.3 requires site preparation procedures and construction phasing be managed to minimize erosion, runoff, and exposure of soils and loss of topsoil (City of Hughson 2005).

The Conservation and Open Space Element of the Hughson General Plan includes Goal COS-4, which specifies the City's goal to "Preserve Hughson's cultural resources" (City of Hughson 2005).

City of Modesto Urban Area General Plan

The City of Modesto Urban Area General Plan Chapter VII, *Environmental Resources and Open Space*, requires new structures must be designed to resist collapse in a magnitude 8.0 earthquake (City of Modesto 2019b). The City of Modesto meets this requirement by enforcing the California Building Code and Alquist-Priolo Earthquake Fault Zoning Act.

Chapter VII "Environmental Resources and Open Space" of the City of Modesto General Plan addresses paleontological resources (City of Modesto 2019b). It states:

> If paleontological resources are discovered during earth-moving activities, the construction crew shall immediately cease work in the vicinity of the find, and the City's Planning Manager shall be notified. A qualified paleontologist shall evaluate the resource and prepare a proposed mitigation plan in accordance with Society of Vertebrate Paleontology guidelines. The proposed mitigation plan may include a field survey of additional construction areas, sampling and data recovery procedures, museum storage coordination for any specimen recovered, and a report of findings. Recommendations determined by the lead agency to be necessary and feasible shall be implemented before construction activities can resume at the site where the paleontological resources were discovered.

City of Newman 2030 General Plan

The City of Newman 2030 General Plan Health and Safety Element Policies HS-1.1 through Policy HS-1.4 requires preparation of soils reports for all new development projects and geotechnical reports for all

new major development projects, and projects proposed in areas where geological hazards may exist. These policies also require all new construction and renovation to conform to the California Building Code, and Policy HS-1.3 specifically requires underground utilities to be designed to withstand seismic forces (City of Newman 2007).

The Recreational and Cultural Resources Element of the Newman 2030 General Plan includes Goal RCR-5 "Preserve and enhance Newman's cultural and historic heritage resources" (City of Newman 2007). Policy RCR-5.10 implements Goal RCR-5 and states:

> Consistent with CEQA and/or the National Historic Preservation Act (NHPA) and prior to project approval, developers shall provide an assessment by appropriate professionals regarding the presence and condition of onsite historical, archaeological, and paleontological resources on and adjacent to a project site, the potential for adverse impacts on these resources and appropriate mitigation. This assessment will be conducted for all projects subject to CEQA, NHPA and ministerial projects with the potential to either affect buildings 45 years or older as well as the potential to affect buried cultural resources. As part of this assessment, historical buildings will be assessed as to the viability of their continued use and re-use.

City of Oakdale 2030 General Plan

The City of Oakdale 2030 General Plan Public Health and Safety Element Policies PHS-3.1 through PHS-3.3 require enforcement of the Uniform Building Code, encourage the retrofit of critical facilities and other structures that do not meet current building and safety code standards, and require geotechnical studies to be prepared for projects where geologic or seismic hazards may be present (City of Oakdale 2013).

The Natural Resources Element of the Oakdale 2030 General Plan includes Goal NR-7 "Identification, protection and enhancement of Oakdale's important cultural resources" (City of Oakdale 2013).

City of Patterson General Plan

The City of Patterson General Plan Health and Safety Element identifies potential natural and human-made hazards to Patterson residents, including seismic events, and provides policies, programs, and standards to protect people and property from such hazards. Of these policies, HS-1.1 and HS-1.2 require preparation of geotechnical reports for proposed development, and require underground utilities be designed to withstand seismic forces in accordance with state requirements (City of Patterson 2010).

The Parks, Recreation and Cultural Resources Element of the City of Patterson General Plan includes Goal PR-6 "To protect the area's archaeological resources" (City of Patterson 2010). Policy PR-6.1 "Protection of archaeological resources", which implements Goal PR-6 states:

> The City shall provide for the protection of both known and potential archaeological resources. To avoid significant damage to important archaeological sites, all available measures, including purchase of the property in fee or easement, shall be explored at the time of a development proposal. Where such measures are not feasible and development would adversely affect identified archaeological or paleontological resources, mitigation shall be required in accordance with the relevant provisions of federal and State laws.

City of Riverbank General Plan

The City of Riverbank General Plan Safety Element includes Policy SAFE-1.11 which requires a geotechnical study for proposed development within river bluff areas and other areas prone to geologic and soil limitations. Any mitigation included in project-specific geotechnical studies shall be incorporated to reduce risks, to the satisfaction of the City of Riverbank (City of Riverbank 2005).

The Conservation and Open Space Element of the City of Riverbank General Plan includes Goal CONS-2 "Minimize Negative Impacts to Archaeological Resources" (City of Riverbank 2005).

City of Turlock General Plan

The City of Turlock General Plan Safety Element Implementing Policies 10.2-b through 10.2-h minimize geologic and seismic risk. Specifically, these policies require adherence to the latest California Building Code, prohibit a building change to higher intensity use for seismically unsafe buildings, require geotechnical investigations for critical structures, require soils reports for development on sites with potential for unstable soils, and require erosion control plans (City of Turlock 2012).

City of Waterford Vision 2025 General Plan

The City of Waterford Vision 2025 General Plan Safety Element, Goal Area 2 aims to provide reasonable safety for residents from earthquake hazards and other geologic activity. The City of Waterford achieves this through Policies S-2.1 and S-2.2, each of which contain implementing actions. Implementing Actions of Policies S-2.1 enforces implementation of state law regarding seismic retrofitting of existing buildings and pursuance of uniform infrastructure, building, and land use requirements within the City of Waterford's urban boundaries. Policy S-2.2 Implementing Actions require collaboration with Caltrans and Stanislaus County to review transportation projects and, where possible, increase the earthquake stability of grade-separated transportation structures within the City of Waterford's planning area (City of Waterford 2006).

4.8.3 Impact Analysis

a. Methodology and Significance Thresholds

Appendix G of the State CEQA Guidelines identifies the following criteria for determining whether a project's impacts would have a significant impact related to geology and soils:

1. Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving rupture of a known earthquake fault, strong seismic ground shaking, seismic-related ground failure, including liquefaction, or landslides;
2. Result in substantial soil erosion or the loss of topsoil;
3. Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse;
4. Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property;
5. Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater;
6. Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature;

7. Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state; or
8. Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan.

Thresholds 5, 7, and 8 are discussed in Section 4.18, *Less Than Significant Environmental Factors*. All other thresholds are discussed below.

b. Project Impacts and Mitigation Measures

The following section discussed potential impacts and mitigation measures that may be associated with transportation projects and the land use scenario contained within the proposed 2022 RTP/SCS. Section 4.7.3.c summarizes the impacts associated with capital improvement projects planned in the proposed 2022 RTP/SCS. Due to the programmatic nature of the proposed 2022 RTP/SCS, a precise, project-level analysis of the specific impacts associated with individual transportation and land use projects is not possible at this time. In general, however, implementation of proposed transportation improvements and future projects under the land use scenario envisioned by the proposed 2022 RTP/SCS could result in the impacts as described in the following section.

Threshold 1:	Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving rupture of a known earthquake fault, strong seismic ground shaking, seismic-related ground failure, including liquefaction, or landslides

Impact GEO-1 THE PROPOSED TRANSPORTATION IMPROVEMENTS AND LAND USE PROJECTS ENVISIONED BY THE PROPOSED 2022 RTP/SCS WOULD NOT DIRECTLY OR INDIRECTLY CAUSE POTENTIAL SUBSTANTIAL ADVERSE EFFECTS, INCLUDING THE RISK OF LOSS, INJURY, OR DEATH INVOLVING RUPTURE OF A KNOWN EARTHQUAKE FAULT, STRONG SEISMIC GROUND SHAKING, SEISMIC-RELATED GROUND FAILURE, INCLUDING LIQUEFACTION, OR LANDSLIDES. IMPACTS WOULD BE LESS THAN SIGNIFICANT.

Fault rupture can occur along or immediately adjacent to faults during an earthquake. Fault rupture is characterized by ground cracks and displacement which could endanger life and property. Damage is typically limited to areas close to the moving fault.

As indicated by Figure 4.8-2 there are Late Quaternary and Holocene-aged faults which are present in the southwest StanCOG region. There are proposed 2022 RTP/SCS transportation projects on I-5 which are near Quaternary-aged faults. However, any potential structural damage and the exposure of people to the risk of injury or death from structural failure would be minimized by compliance with California Building Code engineering design and construction measures. Foundations and other structural support features would be designed to resist or absorb damaging forces from strong ground shaking.

Ground shaking effects are also the result of an earthquake, but the impacts can be widespread. Although a function of earthquake intensity, ground shaking effects can be magnified by the underlying soils and geology, which may amplify shaking at great distances. It is difficult to predict the magnitude of ground shaking following an earthquake, as shaking can vary widely within a relatively small area. The type of transportation and land use projects proposed under the proposed 2022 RTP/SCS are unlikely to exacerbate seismic activity, fault rupture, or increases in ground shaking due to the nature of the project's effects, including construction, being near or on the ground surface. Footings and pilings that could extend below the surface would be localized to the project site and require geological testing for specific impacts. The land use growth envisioned under the proposed 2022 RTP/SCS would create growth in existing urban areas, all of which do not fully or partially intersect any earthquake fault line as

shown in Figure 4.8-2. Therefore, the potential to directly or indirectly cause adverse impacts due to rupture of a known earthquake fault related to planned transportation and land use projects from implementation of the proposed 2022 RTP/SCS would be less than significant.

Seismic related ground failure such as landslides may result from an earthquake in the StanCOG region. Unstable geologic formations susceptible to landslides occur in the Diablo Range to the west of I-5 and along river bluffs. As such, any projects located in these areas, including State Routes 4, 108, 120, 132, 219, and I-5, are particularly susceptible to landslides. The areas west of I-5 are classified as a landslide susceptibility class of four. There are proposed 2022 RTP/SCS projects which are proposed on these routes, and thus this impact is potentially significant.

As discussed in *Setting,* the StanCOG region Local Hazard Mitigation Plan and the Stanislaus Multi-Jurisdictional Hazard Mitigation Plan both do not identify liquefaction as a natural hazard in the county with any significant potential to cause a negative impact within the StanCOG region. The potential to directly or indirectly cause adverse impacts due to seismic-related liquefaction from implementation of the proposed 2022 RTP/SCS would be less than significant.

All projects are required to adhere to design standards described in the CBC and all standard geotechnical investigation, design, grading, and construction practices to avoid or reduce impacts from earthquakes, ground shaking, ground failure, and landslides. These requirements would partially reduce seismic impacts. The CBC provides standards for various aspects of construction, including but not limited to: excavation, grading and earthwork construction; fills and embankments; expansive soils; foundation investigations; liquefaction potential; and soil strength loss. In accordance with California law, proponents of specific projects are required to comply with all provisions of the CBC for certain aspects of design and construction.

There are limited instances where the proposed land use pattern and planned transportation investments of 2022 RTP/SCS may result in growth in or near a known earthquake fault that could result in, strong seismic ground shaking and seismic-related ground failure. However, substantial geologic-related effects could still occur, including landslides along state routes which abut river bluffs. The type of transportation and land use projects planned under the proposed 2022 RTP/SCS are unlikely to exacerbate seismic activity, fault rupture, or increases in ground shaking due to the nature of the project's effects, including construction, being near or on the ground surface. Footings and pilings that could extend below the surface would be localized to the project site and require geological testing for specific impacts. The proposed 2022 RTP/SCS would not have the potential to exacerbate risks related to seismic activity. Compliance with the CBC and provisions of the Alquist-Priolo Act, including the preparation of a site-specific geotechnical investigation, would minimize the potential for seismic damage to occur as a result of implementation of proposed 2022 RTP/SCS projects. Based on the above analysis, impacts would be less than significant.

Mitigation Measures

No mitigation is required.

Threshold 2:	Result in substantial soil erosion or the loss of topsoil

IMPACT GEO-2 THE PROPOSED TRANSPORTATION IMPROVEMENTS AND LAND USE PROJECTS ENVISIONED BY THE PROPOSED 2022 RTP/SCS WOULD NOT RESULT IN SUBSTANTIAL SOIL EROSION OR THE LOSS OF TOPSOIL. IMPACTS WOULD BE LESS THAN SIGNIFICANT.

Typically, erosion and loss of topsoil resulting from grading and development occur on a very small scale and do not present a quantifiable threat to a community. However, erosion and grading also have the potential to create unstable slopes and significant loss of topsoil can occur for projects where excavations require off-site soil disposal. Additionally, improper management of topsoil during construction can result in the soil becoming mobilized in stormwater runoff or during high-wind events.

Construction and buildout under the proposed 2022 RTP/SCS would occur in conformance with regulatory requirements and local ordinances pertaining to erosion control, including the Stanislaus County Code, Chapter 14.14 Stormwater Management and Discharge Control. Section 14.14.120 of the County Code requires that all construction activities in the County prevent pollutants, including erosion, from entering the stormwater conveyance system and comply with all applicable federal, State and local laws, ordinances or regulations, including, but not limited to, the State's National Pollutant Discharge Elimination System (NPDES) construction general permit. Pursuant to the NPDES permit, the Regional Water Quality Control Board would require a project-specific Storm Water Pollution Prevention Plan (SWPPP) to be prepared for each project that disturbs an area one acre or larger for construction. The SWPPPs would include project-specific best management practices (BMPs) designed to control drainage and erosion. Project BMPs may include, but would not be limited to: silt fencing, fiber rolls, slope stabilization, and sand bags. These BMPs would be required as part of each individual project permit and would mitigate potential impacts on soil erosion as a result of construction or grading. Stanislaus County requires an erosion and control plan for construction projects disturbing less than one acre (Section 14.14.120 of the County Code). Cities in the StanCOG region also have similar erosion control and stormwater management regulations in their municipal codes.

Adherence to the applicable ordinance codes and other local, State and local regulatory programs, as discussed above, would ensure that project-specific erosion and topsoil loss would be minimized. Because such effects would not be substantial, impacts related to erosion and loss of topsoil would be less than significant.

Mitigation Measures

No mitigation is required.

Threshold 3:	Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse
Threshold 4:	Be located on expansive soil, creating substantial risks to life or property

IMPACT GEO-3 IMPLEMENTATION OF THE PROPOSED TRANSPORTATION IMPROVEMENT PROJECTS AND FUTURE LAND USE SCENARIO ENVISIONED BY THE 2022 RTP/SCS COULD BE LOCATED ON UNSTABLE SOILS SUBJECT TO LANDSLIDES AND SOILS SUBJECT TO EXPANSION. THIS IMPACT WOULD BE LESS THAN SIGNIFICANT.

Implementation of proposed transportation improvements and future projects under the land use scenario envisioned by the proposed 2022 RTP/SCS could be prone to slope instability, liquefaction, and other soil-related hazards.

Ground failure, including liquefaction, lateral spreading, and subsidence, caused by an earthquake could occur in the StanCOG region depending on the underlying conditions including groundwater level, relative size of soil particles, and density of subsurface materials within 50 feet of ground surface. Damage from earthquake-induced ground failure associated with liquefaction, lateral spreading, and subsidence could be high in buildings with foundations not properly constructed for such hazards. The mountainous areas and along steeply sloped streambanks in the StanCOG region are most susceptible to landslides or mudflows, especially when soils are wet and in areas adjacent to destabilized cut or fill.

It is not expected that projects envisioned in the proposed 2022 RTP/SCS would be susceptible to liquefaction or lateral spreading. As discussed in *Setting,* liquefaction is not considered to be a risk within the StanCOG region. However, there is potential for some subsidence to occur. Impacts related to these types of geological hazards are site-specific and need to be evaluated on a project-by-project basis.

There are proposed 2022 RTP/SCS projects located along state routes which are adjacent to river bluffs, and as such these projects could be susceptible to landslides. Additionally, projects involving cut slopes of over 20 feet in height or projects located in areas of bedded or jointed bedrock are more likely to result in a landslide.

New land use development and transportation projects constructed on expansive soils could be subject to damage or could become unstable when the underlying soil shrinks or swells. Soils with high clay content have the highest potential for shrink-swell. Expansive soils have not been mapped consistently across the StanCOG region, thus it is not possible, at a programmatic-level review, to pinpoint specific projects that may be subject to expansive soils.

The preparation of site-specific geotechnical studies prepared in accordance with requirements as set forth by the CBC, the Seismic Hazards Mapping Act, and standard industry practices would reduce impacts related to slope instability, liquefaction, soil expansion, and ground failure. Future projects under the proposed 2022 RTP/SCS would also be required to comply with local general plans and local building code requirements that contain seismic safety policies to resist ground failure through construction techniques, including structural design. Potential structural damage and the exposure of people to the risk of injury or death from structural failure would be minimized by compliance with California Building Code engineering design and construction measures. Foundations and other structural support features would be designed to resist or absorb damaging forces from expansive soils, liquefaction, or landslides. Land use and transportation projects included in the proposed 2022 RTP/SCS would be required to comply with the CBC, and local building standards including the implementation of geotechnical practices such as ground treatments or replacing existing soils with engineered fill. Transportation projects that would involve the construction or improvements of bridge or overpass design would also be required to comply with Caltrans seismic design criteria which would reduce potential ground failure hazards. The proposed 2022 RTP/SCS would not have the potential to exacerbate risks related to ground failure.

Therefore, impacts related to ground failure hazards, including liquefaction, lateral spreading, and subsidence would be less than significant with compliance with the CBC, local general plans and building standards, and Caltrans design criteria for transportation projects where applicable.

Mitigation Measures

No mitigation is required.

Threshold 6:	Directly or indirectly destroy a unique paleontological resource or site or unique paleontological feature

IMPACT GEO-4 IMPLEMENTATION OF THE PROPOSED TRANSPORTATION IMPROVEMENTS AND THE LAND USE SCENARIO ENVISIONED BY THE 2022 RTP/SCS COULD CAUSE A SUBSTANTIAL ADVERSE CHANGE IN OR DISTURB KNOWN AND UNKNOWN PALEONTOLOGICAL RESOURCES AS DEFINED IN CEQA UNDER GUIDELINES SECTION 15064.5. IMPACTS TO PALEONTOLOGICAL RESOURCES WOULD BE SIGNIFICANT AND UNAVOIDABLE.

Paleontological resources are present throughout the StanCOG region. Therefore, it is possible to encounter known and unknown paleontological resources as a result of implementation of transportation improvement projects pursuant to the proposed 2022 RTP/SCS.

The *State CEQA Guidelines* provide no definition to the term "unique geologic feature." This phrase also has no common definition. However, a geologic unit could be considered unique if it is a stratotype, contributes to scientific research, or is exclusive to the region.

Many of the improvements proposed under the proposed 2022 RTP/SCS consist of minor expansions of existing facilities that would not involve construction in previously undisturbed areas. However, depending on the location and extent of the proposed improvement and ground disturbance, paleontological resources could be impacted. There are mapped areas with a higher occurrence of paleontological features, but it should be noted that any project overlying a geologic unit with high paleontological sensitivity could result in impacts, regardless of location relative to existing development. It is also possible that construction activities associated with some of the proposed roadway widening or extension projects could adversely impact paleontological resources by exposing them to potential vandalism or causing displacement from the original context and integrity. Project-specific analysis would be required as individual projects are proposed.

In addition, the proposed 2022 RTP/SCS contains a future land use scenario that emphasizes infill near transit and within existing urbanized areas, but with development still allowed in more suburban and rural areas. It is possible that paleontological resources could be located on or near future infill sites, or other development sites. Project grading and excavation for land development may disturb these known or undiscovered resources. Impacts to paleontological resources would therefore be significant and unavoidable.

Mitigation Measures

For transportation projects under their jurisdiction, StanCOG shall implement, and transportation project sponsor agencies can and should implement, the following mitigation measures developed for the proposed 2022 RTP/SCS program where applicable for transportation projects that would result in impacts to paleontological resources and where feasible and necessary based on project and site-specific considerations. Cities and the County can and should implement these measures, where relevant to land use projects implementing the proposed 2022 RTP/SCS. Project specific environmental documents may adjust these mitigation measures as necessary to respond to site specific conditions.

GEO-4 Paleontological Resources Mitigation and Monitoring

The implementing agency of a 2022 RTP/SCS project involving ground disturbing activities (including grading, trenching, foundation work and other excavations) shall retain a qualified paleontologist, defined as a paleontologist who meets the Society of Vertebrate Paleontology (SVP) standards for Qualified Professional Paleontologist (SVP 2010), to conduct a Paleontological Resources Assessment (PRA). The PRA shall determine the age and paleontological sensitivity of geologic formations underlying the

proposed disturbance area, consistent with SVP Standard Procedures for the Assessment and Mitigation of Adverse Impacts to Paleontological Resources (SVP 2010) guidelines for categorizing paleontological sensitivity of geologic units within a project area. If underlying formations are found to have a high potential (sensitivity) for paleontological resources, the following measures shall apply:

- **Avoidance.** Avoid routes and project designs that would permanently alter unique paleontological and geological features. If avoidance practices cannot be implemented, the following measures shall apply.
- **Retention of a Qualified Paleontologist.** A Qualified Paleontologist shall be retained to create a Paleontological Resources Monitoring and Mitigation Program (PRMMP) to direct all mitigation measures related to paleontological resources. The Qualified Paleontologist shall meet the qualifications for a Qualified Professional Paleontologist, which is defined by the SVP as an individual, preferably with an M.S. or Ph.D. in paleontology or geology, who is experienced with paleontological procedures and techniques, who is knowledgeable in the geology of California, and who has worked as a paleontological mitigation project supervisor for a least two years (SVP 2010).
- **Paleontological Worker Environmental Awareness Program (WEAP).** Prior to the start of ground disturbance activity, construction personnel shall be informed on the appearance of fossils and the procedures for notifying paleontological staff should fossils be discovered by construction staff.
- **Paleontological Monitoring.** Paleontological monitoring shall be conducted by a qualified paleontological monitor, who is defined as an individual who has experience with collection and salvage of paleontological resources and meets the minimum standards of the SVP (2010) for a Paleontological Resources Monitor. The duration and timing of the monitoring will be determined by the Qualified Paleontologist based on the observation of the geologic setting from initial ground disturbance. If the Qualified Paleontologist determines that full-time monitoring is no longer warranted, based on the specific geologic conditions once the full depth of excavations has been reached, they may recommend that monitoring be reduced to periodic spot-checking or ceased entirely. Monitoring shall be reinstated if any new ground disturbances are required, and reduction or suspension shall be reconsidered by the Qualified Paleontologist at that time. In the event of a fossil discovery by the paleontological monitor or construction personnel, all work in the immediate vicinity of the find shall cease. A Qualified Paleontologist shall evaluate the find before restarting construction activity in the area. If it is determined that the fossil(s) is (are) scientifically significant, the Qualified Paleontologist shall complete the following conditions to mitigate impacts to significant fossil resources:
  - **Fossil Salvage**. If fossils are discovered, the implementing agency shall be notified immediately, and the qualified paleontologist (or paleontological monitor) shall recover them. Typically, fossils can be safely salvaged quickly by a single paleontologist and not disrupt construction activity. In some cases, larger fossils (such as complete skeletons or large mammal fossils) require more extensive excavation and longer salvage periods. In this case, the paleontologist should have the authority to temporarily direct, divert or halt construction activity to ensure that the fossil(s) can be removed in a safe and timely manner.
  - Preparation and Curation of Recovered Fossils. Once salvaged, fossils shall be identified to the lowest possible taxonomic level, prepared to a curation-ready condition, and curated in a scientific institution with a permanent paleontological collection along with all pertinent field notes, photos, data, and maps.

- **Final Paleontological Mitigation and Monitoring Report**. Upon completion of ground disturbing activity (and curation of fossils, if necessary) the Qualified Paleontologist shall prepare a final mitigation and monitoring report outlining the results of the PRMMP. The report shall include

discussion of the location, duration and methods of the monitoring, stratigraphic sections, any recovered fossils, and the scientific significance of those fossils, and where fossils were curated. The report shall be submitted to the sponsor agency. If the monitoring efforts recovered fossils, then a copy of the report shall also be submitted to the designated museum repository.

IMPLEMENTING AGENCIES AND TIMING

Implementing agencies for transportation projects are StanCOG and transportation project sponsor agencies. Implementing agencies for land use projects are cities and the County. This mitigation measure shall, or can and should, be applied during permitting and environmental review and implemented during construction where appropriate.

Significance After Mitigation

Implementation of the above mitigation measure would reduce impacts to paleontological resources by requiring a Paleontological Resources Assessment for any projects under 2022 RTP/SCS that may impact sensitive paleontological resources. While implementation of Mitigation Measure GEO-4 would reduce impacts to the extent feasible, some project-specific impacts may be unavoidable. Therefore, this impact is significant and unavoidable. No additional mitigation measures to reduce this impact to less-than-significant levels are feasible.

c. Specific 2022 RTP/SCS Projects That May Result in Impacts

Table 4.8-2 shows projects that may result in impacts to geology and soils as discussed above. Given the large number of projects envisioned across the StanCOG region in the proposed 2022 RTP/SCS, the table shows a representative rather than comprehensive list of projects that would generate these impacts. Listed projects are representative of the types of impacts and the types of projects that could be affected in different localities. Additional site-specific analysis would need to be conducted as the individual projects are proposed in order to determine the project-specific magnitude of impact. Mitigation measures discussed above would apply to these specific projects as well as any other proposed 2022 RTP/SCS projects that would result geology and soils-related impacts.

The state of California contains numerous paleontological resources throughout its state boundary. While some geologic units are known to have higher paleontological sensitivities than others, unknown paleontological resources may be encountered at all proposed 2022 RTP/SCS project sites. While additional site-specific paleontological studies could determine the sensitivity of site-specific underlying geologic units, it is impossible to accurately account for the existence of all paleontological resources prior to ground-disturbing activities. Therefore, due to the potential for any proposed 2022 RTP/SCS project to encounter paleontological resources, Impact GEO-4 is not included within Table 4.8-2.

Table 4.8-2 Specific 2022 RTP/SCS Projects That May Result In Geology/Soils Impacts

Jurisdiction and Location	Project Description	Potential Impact
City of Modesto		
Hwy 132	Various improvements	GEO-1
Hwy 132	Construct a two-lane expressway from N. Dakota Ave to the Needham St. Overcrossing. (Phase 1 of ultimate build-out of SR132 West Freeway/Expressway Project) (Reference: 2014 RTP Project ID - RE01).	GEO-1
Hwy 132	Construct a four lane freeway from N. Dakota Ave to the Needham St. Overcrossing.	GEO-1

Jurisdiction and Location	Project Description	Potential Impact
City of Patterson		
I-5 to Rogers Road	Signal and Off-Ramp Improvements at interchange. Widen Sperry Ave to 4 Lanes between Rogers Road and I-5.	GEO-1
City of Riverbank		
SR-108 at Claus	Install signal light at Claus & SR-108 and Install congestion Management Improvements at First Street & SR-108	GEO-1
SR-108 at First Street	Install Congestion Management improvements	GEO-1
County of Stanislaus		
270 ft E of Brady Rd/CA 108 to 8th St	Class 3.5 Bicycle Route with Wide Shoulders. Parking removal (both sides). StanCOG Non-Motorized Transportation Master Plan Project ID: STAN-2	GEO-1
SR-108 to Riverbank City Limits (Near Oakdale Rd)	Multi-Use Path (Class 1) and pedestrian improvements. (Non-Motorized Transportation Plan Top 25: Route 22)	GEO-1
SR 132 Dakota Avenue to Gates Road	Construct 2 or 4-lane divided expressway or freeway (County)	GEO-1
Albers Road to SR 120	Construct 4-lane Expressway	GEO-1
SR-219	Widen to 6-lanes	GEO-1
SR 132 – SR 99 to Dakota Avenue	Widen to 4-Lane Highway	GEO-1

4.8.4 Cumulative Impacts

The cumulative impact analysis area for geology and soils, and paleontological resources consists of the StanCOG region and adjoining counties. Information regarding these adjoining counties can be found in Section 3, *Environmental Setting*. Future development in this region that could impact geology and soils and paleontological resources is considered in this analysis. This cumulative extent is used to evaluate potential direct and indirect, permanent and temporary impacts to increased exposure to seismic hazards, increased erosion and/or loss of topsoil, the presence of unstable or expansive soils, and the presence of paleontological resources or unique geologic features within the context of the cumulative impact analysis area.

Geology and soils impacts may be related to increased exposure to seismic hazards, increased erosion and/or loss of topsoil, the presence of unstable/expansive soils and alternative waste disposal or septic systems. Individual projects and developments in the cumulative impacts analysis area would be subject to geologic hazards based on site-specific conditions and project design. These effects occur independently of one another and are caused by site specific and project specific characteristics and conditions. In addition, existing regulations, such as the California Building Code, specify mandatory actions that must occur during project development which would minimize effects from construction and operation of projects related to geology, soils, and seismicity as discussed above. Cumulative impacts related to geology, soils and seismicity would therefore be less than significant.

While projects envisioned under the proposed 2022 RTP/SCS may be subject to seismic hazards, including fault rupture, ground-shaking, and landslides, compliance with applicable requirements would reduce impacts. Future development envisioned under the proposed 2022 RTP/SCS would be required to comply with the California Building Code, Seismic Hazards Mapping Act, Alquist Priolo Act, local building codes, and general plan goals and policies. Furthermore, geology and soils impacts are site specific by nature and would not result in cumulative impacts to the surrounding area. The proposed

2022 RTP/SCS would not have a cumulatively considerable contribution to significant cumulative impacts related to geology, soils and seismicity.

Development and construction in the cumulative impacts analysis area would require excavation and ground disturbance. Excavation and ground disturbance could encounter and damage or destroy subsurface paleontological resources, depending on underlying geologic units and soils. While most paleontological resources are typically site specific, with impacts that are project specific, others may have regional significance. For example, fossils may capture a particular type of organism that was endemic to a region and therefore have regional significance. Due to the potential for a fossil of regional significance to be uncovered during excavation and ground disturbing activities of projects in the cumulative impact analysis area, cumulative impacts would be significant.

The proposed 2022 RTP/SCS could cause a substantial adverse change in or disturb known and unknown paleontological resources and would therefore result in a cumulatively considerable contribution to the significant impact. Mitigation measures outlined in Impact GEO-4, would reduce paleontological resource impacts associated with proposed 2022 RTP/SCS projects. However, the proposed 2022 RTP/SCS contribution would remain cumulatively considerable after mitigation because it cannot be guaranteed that all future project level impacts can be mitigated to a less than significant level. As such, the proposed 2022 RTP/SCS contribution to cumulative impacts to paleontological resources would remain cumulatively considerable after mitigation.

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4.9 Greenhouse Gas Emissions and Climate Change

This section evaluates potential impacts related to greenhouse gas (GHG) emissions and climate change facilitated by the proposed 2022 RTP/SCS. Air quality impacts are discussed in Section 4.3, *Air Quality.*

4.9.1 Setting

a. Climate Change and Greenhouse Gases

Climate change is the observed increase in the average temperature of Earth's atmosphere and oceans along with other substantial changes in climate (such as wind patterns, precipitation, and storms) over an extended period. The term "climate change" is often used interchangeably with the term "global warming," but "climate change" is preferred to "global warming" because it helps convey other changes in addition to rising temperatures. The baseline against which these changes are measured originates in historical records identifying temperature changes that have occurred in the past, such as during previous ice ages. The global climate changes continuously, as evidenced by repeated episodes of substantial warming and cooling documented in the geologic record. The rate of change has typically been incremental, with warming or cooling trends occurring over the course of thousands of years. The past 10,000 years have been marked by a period of incremental warming, as glaciers have steadily retreated across the globe. However, scientists have observed substantial acceleration in the rate of warming during the past 150 years. The United Nations Intergovernmental Panel on Climate Change (IPCC) expressed that the rise and continued growth of atmospheric carbon dioxide (CO_2) concentrations is unequivocally due to human activities in the IPCC's Sixth Assessment Report (2021). Human influence has warmed the atmosphere, ocean, and land, which has led the climate to warm at an unprecedented rate in the last 2,000 years. It is estimated that between the period of 1850 through 2019, that a total of 2,390 gigatonnes of anthropogenic CO_2 was emitted. It is likely that anthropogenic activities have increased the global surface temperature by approximately 1.07 degrees Celsius between the years 2010 through 2019 (IPCC 2021). Furthermore, since the late 1700s, estimated concentrations of CO_2, methane, and nitrous oxide in the atmosphere have increased by over 43 percent, 156 percent, and 17 percent, respectively, primarily due to human activity (United States Environmental Protection Agency [U.S. EPA] 2021a). Emissions resulting from human activities are thereby contributing to an average increase in Earth's temperature.

Gases that absorb and re-emit infrared radiation in the atmosphere are called GHGs. The gases widely seen as the principal contributors to human-induced climate change include CO_2, methane (CH_4), nitrous oxides (N_2O), fluorinated gases such as hydrofluorocarbons (HFCs) and perfluorocarbons (PFCs), and sulfur hexafluoride (SF_6). Water vapor is excluded from the list of GHGs because it is short-lived in the atmosphere, and natural processes, such as oceanic evaporation, largely determine its atmospheric concentrations.

GHGs are emitted by natural processes and human activities. Of these gases, CO_2 and CH_4 are emitted in the greatest quantities from human activities. Emissions of CO_2 are usually by-products of fossil fuel combustion, and CH_4 results from off-gassing associated with agricultural practices and landfills. Human-made GHGs, many of which have greater heat-absorption potential than CO_2, include fluorinated gases and SF_6 (U.S. EPA 2021b).

Different types of GHGs have varying global warming potentials (GWP). The GWP of a GHG is the potential of a gas or aerosol to trap heat in the atmosphere over a specified timescale (generally, 100 years). Because GHGs absorb different amounts of heat, a common reference gas (CO_2) is used to relate the amount of heat absorbed to the amount of the gas emitted, referred to as "carbon dioxide equivalent" (CO_2e), which is the amount of GHG emitted multiplied by its GWP. Carbon dioxide has a 100-year GWP of one. By contrast, methane has a GWP of 30, meaning its global warming effect is 30 times greater than CO_2 on a molecule per molecule basis (IPCC 2021).[1]

The accumulation of GHGs in the atmosphere regulates the earth's temperature. Without the natural heat-trapping effect of GHGs, the earth's surface would be about 33 degrees Celsius (°C) cooler (World Meteorological Organization 2020). However, since 1750, estimated concentrations of CO_2, CH_4, and N_2O in the atmosphere have increased by 36 percent, 148 percent, and 18 percent, respectively, primarily due to human activity (Forster et al. 2007). GHG emissions from human activities, particularly the consumption of fossil fuels for electricity production and transportation, are believed to have elevated the concentration of these gases in the atmosphere beyond the level of concentrations that occur naturally.

b. Greenhouse Gas Emissions Inventories

United States Emissions Inventory

Total U.S. GHG emissions were 6,558 MMT of CO_2e in 2019. Emissions decreased by 1.7 percent from 2018 to 2019; since 1990, total U.S. emissions have increased by an average annual rate of 0.06 percent for a total increase of 1.8 percent between 1990 and 2019. The decrease from 2018 to 2019 reflects the combined influences of several long-term trends, including population changes, economic growth, energy market shifts, technological changes such as improvements in energy efficiency, and decrease carbon intensity of energy fuel choices. In 2019, the industrial and transportation end-use sectors accounted for 30 percent and 29 percent, respectively, of nationwide GHG emissions while the commercial and residential end-use sectors accounted for 16 percent and 15 percent of nationwide GHG emissions, respectively, with electricity emissions distributed among the various sectors (U.S. EPA 2021b).

California Emissions Inventory

Based on the California Air Resources Board (CARB) California GHG Inventory for 2000-2019, California produced 418.2 MMT CO_2e in 2019 (CARB 2021a). The largest single source of GHG in California is transportation, contributing 40 percent of the State's total GHG emissions. Industrial sources are the second-largest source of the state's GHG emissions, contributing 21 percent of the State's GHG emissions (CARB 2021a). The magnitude of California's total GHG emissions is due in part to its large size and large population compared to other states. However, a factor that reduces California's per capita fuel use and GHG emissions as compared to other states is its relatively mild climate. In 2016, the State of California achieved its 2020 GHG emission reduction target of reducing emissions to 1990 levels as emissions fell below 431 MMT of CO_2e (CARB 2021a). The annual 2030 statewide target emissions level is 260 MMT of CO_2e (CARB 2017).

[1] The Intergovernmental Panel on Climate Change's (2021) *Sixth Assessment Report* determined that methane has a GWP of 30. However, the 2017 Climate Change Scoping Plan published by the California Air Resources Board uses a GWP of 25 for methane, consistent with the Intergovernmental Panel on Climate Change's (2007) *Fourth Assessment Report*. Therefore, this analysis utilizes a GWP of 25.

c. Potential Effects of Climate Change

Globally, climate change has the potential to affect numerous environmental resources through potential impacts related to future air temperatures and precipitation patterns. Scientific modeling predicts that continued GHG emissions at or above current rates would induce more extreme climate changes during the 21st century than were observed during the 20th century. Long-term trends have found that each of the past four decades has been warmer than all the previous decades in the instrumental record and the decade from 2011 through 2020 has been the warmest. The observed global mean surface temperature (GMST) for the decade from 2011 to 2020 was approximately 1.09°C (0.95°C to 1.20°C) higher than the average GMST over the period from 1850 to 1900. Due to past and current activities, anthropogenic GHG emissions are increasing global mean surface temperature at a rate of 0.2°C per decade. In addition to these findings, the latest IPCC report states that "human-induced climate change is already affecting many weather and climate extremes in every region across the globe" (IPCC 2021). These climate change impacts include climate change sea level rise, increased weather extremes, and substantial ice loss in the Arctic over the past three decades.

According to *California's Fourth Climate Change Assessment*, statewide temperatures from 1986 to 2016 were approximately 0.6 to 1.1°C higher than those recorded from 1901 to 1960. Potential impacts of climate change in California may include reduced water supply from snowpack, sea level rise, more extreme heat days per year, more large forest fires, and more drought years (State of California 2018). In addition to statewide projections, *California's Fourth Climate Change Assessment* includes regional reports that summarize climate impacts and adaptation solutions for nine regions of the state and regionally specific climate change case studies (State of California 2018). However, while there is growing scientific consensus about the possible effects of climate change at a global and statewide level, current scientific modeling tools are unable to predict what local impacts may occur with a similar degree of accuracy. A summary follows of some of the potential effects that could be experienced in California and the StanCOG region as a result of climate change.

Public Health

Climate change is expected to cause a number of impacts which could negatively affect public health in the StanCOG region. As temperatures increase, the Central Valley is set to experience an increased number of extreme heat days, which may lead to increases in the number of heat-related deaths and illnesses (State of California 2018). An increase in the frequency and severity of wildfires may contribute to worsening air quality and cause additional illnesses such as asthma. Higher temperatures could also lead to increased air pollution formation and potentially accelerate the spread of certain diseases and pests. These adverse impacts may also disproportionately burden vulnerable populations.

Air Quality

Scientists project that the annual average maximum daily temperatures in California could rise by 2.4 to 3.2°C in the next 50 years and by 3.1 to 4.9°C in the next century (State of California 2018). Higher temperatures are conducive to air pollution formation, and rising temperatures could therefore result in worsened air quality in California. As a result, climate change may increase the concentration of ground-level ozone, but the magnitude of the effect, and therefore its indirect effects, are uncertain. In addition, as temperatures have increased in recent years, the area burned by wildfires throughout the state has increased, and wildfires have occurred at higher elevations in

the Sierra Nevada Mountains (State of California 2018). If higher temperatures continue to be accompanied by an increase in the incidence and extent of large wildfires, air quality could worsen. Severe heat accompanied by drier conditions and poor air quality could increase the number of heat-related deaths, illnesses, and asthma attacks throughout the state.

Water Supply

Analysis of paleoclimatic data (such as tree-ring reconstructions of stream flow and precipitation) indicates a history of naturally and widely varying hydrologic conditions in California and the west, including a pattern of recurring and extended droughts. Uncertainty remains with respect to the overall impact of climate change on future precipitation trends and water supplies in California. Year-to-year variability in statewide precipitation levels has increased since 1980, meaning that wet and dry precipitation extremes have become more common (California Department of Water Resources 2018). This uncertainty regarding future precipitation trends complicates the analysis of future water demand, especially where the relationship between climate change and its potential effect on water demand is not well understood. The average early spring snowpack in the western U.S., including the Sierra Nevada Mountains, decreased by about 10 percent during the last century. During the same period, sea level rose over 0.15 meter along the central and southern California coasts (State of California 2018). The Sierra snowpack provides the majority of California's water supply as snow that accumulates during wet winters is released slowly during the dry months of spring and summer. A warmer climate is predicted to reduce the fraction of precipitation that falls as snow and the amount of snowfall at lower elevations, thereby reducing the total snowpack (State of California 2018). Projections indicate that average spring snowpack in the Sierra Nevada and other mountain catchments in central and northern California will decline by approximately 66 percent from its historical average by 2050 (State of California 2018).

Agriculture

California has a roughly $49 billion annual agricultural industry that produces nearly a third of the country's vegetables and over half of the country's fruits and nuts (California Department of Food and Agriculture 2021). Higher CO_2 levels can stimulate plant production and increase plant water-use efficiency. However, if temperatures rise and drier conditions prevail, certain regions of agricultural production could experience water shortages of up to 16 percent, which would increase water demand as hotter conditions lead to the loss of soil moisture. In addition, crop yield could be threatened by water-induced stress and extreme heat waves, and plants may be susceptible to new and changing pest and disease outbreaks (State of California 2018). Temperature increases could also change the time of year certain crops, such as wine grapes, bloom or ripen, and thereby affect their quality (California Climate Change Center 2006).

Ecosystems and Wildlife

Climate change and the potential resultant changes in weather patterns could have ecological effects at the global and local scale. Rising temperatures could have four major impacts on plants and animals: timing of ecological events; geographic distribution and range of species; species composition and the incidence of nonnative species within communities; and ecosystem processes, such as carbon cycling and storage (Parmesan 2006; State of California 2018).

4.9.2 Regulatory Setting

The following regulations address both climate change and GHG emissions.

a. Federal Laws, Regulations, and Policies

Clean Air Act

The U.S. Supreme Court determined in *Massachusetts et al. v. Environmental Protection Agency et al.* ([2007] 549 U.S. 05-1120) that the U.S. EPA has the authority to regulate motor-vehicle GHG emissions under the federal Clean Air Act. The U.S. EPA issued a Final Rule for mandatory reporting of GHG emissions in October 2009. This Final Rule applies to fossil fuel suppliers, industrial gas suppliers, direct GHG emitters, and manufacturers of heavy-duty and off-road vehicles and vehicle engines and requires annual reporting of emissions. In 2012, the U.S. EPA issued a Final Rule that established the GHG permitting thresholds that determine when Clean Air Act permits under the New Source Review Prevention of Significant Deterioration (PSD) and Title V Operating Permit programs are required for new and existing industrial facilities.

In *Utility Air Regulatory Group v. Environmental Protection Agency* (134 S. Ct. 2427 [2014]), the U.S. Supreme Court held the U.S. EPA may not treat GHGs as an air pollutant for purposes of determining whether a source can be considered a major source required to obtain a PSD or Title V permit. The Court also held that PSD permits otherwise required based on emissions of other pollutants, may continue to require limitations on GHG emissions based on the application of Best Available Control Technology.

Corporate Average Fuel Economy Standards

The Energy Policy and Conservation Act in 1975 established the Corporate Average Fuel Economy Standards (CAFE standards). The CAFE standards are Federal rules established by the National Highway Traffic Safety Administration (NHTSA) that set fuel economy standards for all new passenger cars and light trucks sold in the United States. The CAFE standards become more stringent each year, reaching an estimated 38.3 miles per gallon for the combined industry-wide fleet for model year 2020 (77 Federal Register 62624 et seq. [October 15, 2012, Table I-1).

In September 2019, U.S. EPA and the National Highway Traffic Safety Administration issued the Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule. Part One, “One National Program” (84 FR 51310), revokes a waiver granted by U.S. EPA to the State of California under Section 209 of the CAA to enforce more stringent emission standards for motor vehicles than those required by U.S. EPA for the explicit purpose of GHG reduction, and indirectly, criteria air pollutants and ozone precursor emission reduction. This revocation became effective on November 26, 2019 and could have restricted the ability of CARB to enforce more stringent GHG emission standards for new vehicles and set zero emission vehicle mandates in California. However, on December 21, 2021, the National Highway NHTSA published its Corporate Average Fuel Economy (CAFE) Preemption rule, which finalizes its repeal of 2019’s SAFE Rule Part One.

Part Two addresses CAFE standards for passenger cars and light trucks for model years 2021 to 2026. This rulemaking proposes new CAFE standards for model years 2022 through 2026 and would amend existing CAFE standards for model year 2021. The proposal would retain the model year 2020 standards (specifically, the footprint target curves for passenger cars and light trucks) through model year 2026. The proposal addressing CAFE standards was jointly developed by NHTSA and U.S. EPA, with U.S. EPA simultaneously proposing tailpipe CO_2 standards for the same vehicles covered by the same model years. However, on March 31, 2022, the NHTSA finalized new CAFE Standards for model years 2024 through 2026 that would increase federal CAFE standards compared to the SAFE Rule Part Two (NHTSA 2022).

b. State Laws, Regulations, and Policies

CARB is responsible for the coordination and oversight of state and regional GHG emissions reduction programs in California. There are numerous regulations aimed at reducing the state's GHG emissions. These initiatives are summarized below.

California Advanced Clean Cars Program

Assembly Bill (AB) 1493 (2002), California's Advanced Clean Cars program (referred to as "Pavley"), requires CARB to develop and adopt regulations to achieve "the maximum feasible and cost-effective reduction of GHG emissions from motor vehicles." On June 30, 2009, U.S. EPA granted the waiver of Clean Air Act preemption to California for its GHG emission standards for motor vehicles, beginning with the 2009 model year, which allows California to implement more stringent vehicle emission standards than those promulgated by the U.S. EPA. Pavley I regulates model years from 2009 to 2016 and Pavley II, now referred to as "LEV (Low Emission Vehicle) III GHG," regulates model years from 2017 to 2025. The Advanced Clean Cars program coordinates the goals of the LEV, Zero Emissions Vehicles (ZEV), and Clean Fuels Outlet programs, and would provide major reductions in GHG emissions.

Executive Order S-3-05

Executive Order (EO) S-3-05, among other things, established the following GHG emission reduction goals for California: reduction to 2000 levels by 2010; to 1990 levels by 2020; and to 80 percent below 1990 levels by 2050.

California Global Warming Solutions Act of 2006 (Assembly Bill 32 and Senate Bill 32)

The "California Global Warming Solutions Act of 2006," AB 32, outlines California's major legislative initiative for reducing GHG emissions (Chapter 488, Statutes of 2006). AB 32 codifies the statewide goal of reducing GHG emissions to 1990 levels by 2020 and requires CARB to prepare a Scoping Plan that outlines the main State strategies for reducing GHGs to meet the 2020 deadline. In addition, AB 32 requires CARB to adopt regulations to require reporting and verification of statewide GHG emissions. Based on this guidance, CARB approved a 1990 statewide GHG level and 2020 target of 431 MMT of CO_2e. CARB approved the Scoping Plan on December 11, 2008, and the Plan included measures to address GHG emission reduction strategies related to energy efficiency, water use, and recycling and solid waste, among others (CARB 2008). Many of the GHG reduction measures included in the Scoping Plan (e.g., Low Carbon Fuel Standard, Advanced Clean Car standards, and Cap-and-Trade) have been adopted since the Plan's approval.

CARB approved the 2013 Scoping Plan update in May 2014. The update defined CARB's climate change priorities for the next five years and set the groundwork to reach post-2020 statewide goals. The update highlighted California's progress toward meeting the "near-term" 2020 GHG emission reduction goals defined in the original Scoping Plan. It also evaluated how to align the State's longer term GHG reduction strategies with other State policy priorities, including those for water, waste, natural resources, clean energy, transportation, and land use (CARB 2014).

On September 8, 2016, the governor signed Senate Bill (SB) 32 into law (Chapter 429, Statutes of 2016), extending the California Global Warming Solutions Act of 2006 by requiring the State to further reduce GHG emissions to 40 percent below 1990 levels by 2030 (the other provisions of AB 32 remain unchanged). SB 32 became effective on January 1, 2017 and codifies the 2030 goal set in

EO B-30-15. On December 14, 2017, CARB adopted the 2017 Scoping Plan, which provides a framework for achieving the 2030 target. The 2017 Scoping Plan relies on the continuation and expansion of existing policies and regulations, such as the Cap-and-Trade Program, and implementation of recently adopted policies and legislation, such as SB 1383 (see below). The 2017 Scoping Plan also puts an increased emphasis on innovation, adoption of existing technology, and strategic investment to support its strategies. As with the 2013 Scoping Plan Update, the 2017 Scoping Plan does not provide project-level thresholds for land use development. Instead, it recommends that local governments adopt policies and locally appropriate quantitative thresholds consistent with statewide per capita goals of six MT of CO_2e by 2030 and two MT of CO_2e by 2050 (CARB 2017). As stated in the 2017 Scoping Plan, these goals may be appropriate for plan-level analyses (city, county, sub-regional, or regional level), but not for specific individual projects because they include all emissions sectors in the state (CARB 2017).

Executive Order S-01-07 (Low Carbon Fuel Standard)

EO S-01-07 (17 California Code of Regulations 95480 et seq.) requires the state to achieve a 10 percent or greater reduction by 2020 in the average fuel carbon intensity for transportation fuels in California regulated by CARB. CARB identified the Low Carbon Fuel Standard (LCFS) as a discrete early action item under AB 32.

In 2018, CARB approved amendments to the LCFS regulation, which included strengthening and smoothing the carbon intensity benchmarks through 2030 in line with California's 2030 GHG emission reduction target enacted through SB 32, adding new crediting opportunities to promote zero emission vehicle adoption, alternative jet fuel, carbon capture and sequestration, and advanced technologies to achieve deep decarbonization in the transportation sector.

Senate Bill 375

SB 375, signed in August 2008, enhances the State’s ability to reach AB 32 goals by directing CARB to develop regional GHG emission reduction targets to be achieved from passenger vehicles by 2020 and 2035. SB 375 aligns regional transportation planning efforts, regional GHG reduction targets, and affordable housing allocations. Metropolitan Planning Organizations (MPOs) are required to adopt a Sustainable Communities Strategy (SCS), which allocates land uses in the MPO’s Regional Transportation Plan (RTP). StanCOG was assigned targets of a 12 percent reduction in GHG emissions from per capita passenger vehicles by 2020 and a 16 percent reduction in GHG emissions from per capita passenger vehicles by 2035, relative to 2005 emission levels (CARB 2020b. However, the proposed 2022 RTP/SCS cannot influence the achievement of target year 2020 GHG emissions. Therefore, StanCOG will report on meeting 2035 goals with submittal of this SCS for review by CARB.

Executive Order B-16-12

EO B-16-12 orders State entities under the direction of the Governor including CARB, the California Energy Commission, and the California Public Utilities Commission to support the rapid commercialization of zero emission vehicles (ZEVs). It directs these entities to achieve various benchmarks related to zero emission vehicles, including:

- Infrastructure to support up to one million ZEVs by 2020,
- Widespread use of ZEVs for public transportation and freight transport by 2020,
- Over 1.5 million ZEVs on California roads by 2025,
- Annual displacement of at least 1.5 billion gallons of petroleum fuels by 2025, and

- A reduction of GHG emissions from the transportation sector equaling 80 percent less than 1990 levels by 2050.

AB 197

AB 197 of 2016 (Chapter 250, Statutes of 2016) expands CARB membership to include two nonvoting members from the Legislature; creates a Joint Legislative Committee on Climate Change Policies to make recommendations to the Legislature concerning climate change policies; provides for annual reporting of GHG emissions from sectors covered by the AB 32 Scoping Plan as well as evaluations of regulatory requirements and other programs that may affect GHG emissions trends; and specifies that the adoption of GHG emissions reduction rules and regulations shall consider the social costs. In addition, Scoping Plan updates are required to identify the range of potential GHG emissions reductions and the cost-effectiveness for each emissions reduction measure, compliance mechanism and incentive.

Senate Bill 1383

Adopted in September 2016, SB 1383 requires CARB to approve and begin implementing a comprehensive strategy to reduce emissions of short-lived climate pollutants (Chapter 395, Statutes of 2016). SB 1383 requires the strategy to achieve the following reduction targets by 2030:

- Methane – 40 percent below 2013 levels
- Hydrofluorocarbons – 40 percent below 2013 levels
- Anthropogenic black carbon – 50 percent below 2013 levels

SB 1383 also requires the California Department of Resources Recycling and Recovery, in consultation with CARB, to adopt regulations that achieve specified targets for reducing organic waste in landfills. In addition, SB 1383 requires CARB to adopt regulations to be implemented on or after January 1, 2024 specific to the dairy and livestock industry, requiring a 40 percent reduction in methane emissions below 2013 levels by 2030, if certain conditions are met.

Senate Bill 100

Adopted on September 10, 2018, SB 100 supports the reduction of GHG emissions from the electricity sector by accelerating the State's Renewables Portfolio Standard Program, which was last updated by SB 350 in 2015. SB 100 requires electricity providers to increase procurement from eligible renewable energy resources to 33 percent of total retail sales by 2020, 60 percent by 2030, and 100 percent by 2045.

Executive Order B-55-18

On September 10, 2018, the former Governor Brown issued Executive Order (EO) B-55-18, which established a new statewide goal of achieving carbon neutrality by 2045 and maintaining net negative emissions thereafter. This goal is in addition to the existing statewide GHG reduction goals established by SB 375, SB 32, SB 1383, and SB 100. The 2022 Scoping Plan Update will assess progress towards achieving the SB 32 target and layout out a path to achieve carbon neutrality (CARB 2022).

Executive Order N-19-19

EO N-19-19 was signed on September 20, 2019 and is intended to require a redoubling of the State's efforts to reduce GHG emissions and mitigate the impacts of climate change while building a sustainable, inclusive economy. This EO includes four main directives which include investment, transportation, state buildings and operations, and zero-emissions vehicles.

Senate Bill 391

The California Transportation Plan Act requires the California Department of Transportation (Caltrans) to prepare a statewide plan that addresses how the state will achieve maximum feasible emissions reductions to attain a statewide reduction of GHG emissions to 1990 levels by 2020 and 80 percent below 1990 levels by 2050. Caltrans prepared the original California Transportation Plan in June 2016 and a released an update of the plan in February 2021 (Caltrans 2021).

As EO B-55-18 establishes a goal of achieving economy-wide carbon neutrality in California by 2045, the plan establishes policies and strategies to move toward a carbon-neutral transportation system. However, current trends to due not indicate the state will achieve carbon neutrality. The statewide strategy has not been developed to achieve carbon neutrality and regional targets do not require any Metropolitan Planning Organization's RTP to achieve carbon neutrality over the current planning horizon.

Executive Order N-79-20

EO N-79-20 established a statewide goal that 100 percent of in-state sales of new passenger cars and trucks will be zero-emission by 2035 and that 100 percent of medium- and heavy-duty vehicles in the state be zero-emission by 2035 for drayage trucks and by 2045 for all operations where feasible.

Executive Order N-82-20

EO N-82-20 established a goal of conserving at least 30 percent of California's lands and coastal waters by 2030 and directed state agencies to create a Natural and Working Lands Climate Smart Strategy to advance the State's carbon neutrality goal and builds climate resilience.

California Building Standards Code

The California Code of Regulations (CCR) Title 24 is referred to as the California Building Code, or CBC. It consists of a compilation of several distinct standards and codes related to building construction including plumbing, electrical, interior acoustics, energy efficiency, and handicap accessibility for persons with physical and sensory disabilities. The CBC's energy-efficiency and green building standards are outlined below. The 2019 Title 24 standards are currently in effect. However, at the time of this EIR, the 2022 Title 24 standards have been adopted and will go into effect on January 1, 2023.

Part 6 – Building Energy Efficiency Standards/Energy Code

California Code of Regulations Title 24, Part 6 is the Building Energy Efficiency Standards or California Energy Code. This code, originally enacted in 1978, establishes energy-efficiency standards for residential and non-residential buildings in order to reduce California's energy demand. The Energy Code is updated periodically to incorporate and consider new energy-efficiency technologies and methodologies as they become available. New construction and major renovations

must demonstrate their compliance with the current Energy Code through submittal and approval of a Title 24 Compliance Report to the local building permit review authority and the California Energy Commission. The 2019 Title 24 standards are the latest iteration of the statewide building energy efficiency standards because they became effective on January 1, 2020. All buildings for which an application for a building permit is submitted on or after January 1, 2020, must follow the 2019 standards. Energy efficient buildings require less electricity; therefore, increased energy efficiency reduces fossil fuel consumption and decreases GHG emissions. The CEC Impact Analysis estimates that nonresidential buildings will be 30 percent more energy efficient compared to buildings built consistent with 2016 Building Energy Efficiency Standards, and single-family homes will be 7 percent more energy efficient (CEC 2018). Due to the solar requirement for all new homes, the CEC also estimates that the 2019 standards will cut energy demand from grid electricity in new homes by more than 50 percent (CEC 2018). The building efficiency standards are enforced through the local plan check and building permit process. Local government agencies may adopt and enforce additional energy standards for new buildings as reasonably necessary due to local climatologic, geologic, or topographic conditions, provided that these standards exceed those provided in Title 24.

Part 11 – California Green Building Standards/CALGreen

The California Green Building Standards Code, referred to as CALGreen, was added to Title 24 as Part 11, first in 2009 as a voluntary code, which then became mandatory effective January 1, 2011 (as part of the 2010 California Building Standards Code). The 2019 CALGreen includes mandatory minimum environmental performance standards for all ground-up new construction of residential and non-residential structures. It also includes voluntary tiers (Tiers I and II) with stricter environmental performance standards for these same categories of residential and non-residential buildings. Local jurisdictions must enforce the minimum mandatory CALGreen standards and may adopt additional amendments for stricter requirements.

The mandatory standards require:

- 20 percent reduction in indoor water use relative to specified baseline levels;[2]
- 65 percent construction/demolition waste diverted from landfills;
- Inspections of energy systems to ensure optimal working efficiency;
- Low-pollutant emitting exterior and interior finish materials such as paints, carpets, vinyl flooring, and particleboards;
- Dedicated circuitry to facilitate installation of electric vehicle charging stations for certain land uses; and
- Installation of electric vehicle charging stations for certain land uses.

The voluntary standards require:

- **Tier I:** stricter energy efficiency requirements, stricter water conservation requirements for specific fixtures, 65 percent reduction in construction waste with third-party verification, 10 percent recycled content for building materials, 20 percent permeable paving, 20 percent cement reduction, and cool/solar reflective roof; and

[2] Similar to the compliance reporting procedure for demonstrating Energy Code compliance in new buildings and major renovations, compliance with the CALGreen water-reduction requirements must be demonstrated through completion of water use reporting forms. Buildings must demonstrate a 20 percent reduction in indoor water use by either showing a 20 percent reduction in the overall baseline water use as identified in CALGreen or a reduced per-plumbing-fixture water use rate.

- **Tier II:** stricter energy efficiency requirements, stricter water conservation requirements for specific fixtures, 75 percent reduction in construction waste with third-party verification, 15 percent recycled content for building materials, 30 percent permeable paving, 25 percent cement reduction, and cool/solar reflective roof.

California State Transportation Agency (CalSTA) Climate Action Plan for Transportation Infrastructure (CAPTI)

Adopted in July 2021, the Climate Action Plan for Transportation Infrastructure (CAPTI) details how the State recommends investing billions of discretionary transportation dollars annually to aggressively combat and adapt to climate change while supporting public health, safety and equity (CalSTA 2021). CAPTI builds on EOs signed by Governor Gavin Newsom in 2019 and 2020 targeted at reducing GHG emissions in transportation, which account for more than 40 percent of all emissions, to reach the State's ambitious climate goals. The CAPTI provides investment strategies that focuses on expanding travel options in California and ensuring said investments also prioritize advancing equity and climate priorities in the State.

c. Local Laws, Regulations, and Policies

Local GHG Reduction Plans

Two of StanCOG's member jurisdictions, the City of Hughson and City of Oakdale, have adopted Climate Action Plans (CAP) that set emission reduction goals and outline policies to achieve GHG reductions consistent with AB 32 (City of Hughson 2013; City of Oakdale 2013). Local CAPs typically address emissions produced by transportation, energy usage, and other operational emissions such as water supply and conveyance, wastewater treatment, and solid waste disposal. Transportation and land use strategies aim to reduce vehicle miles traveled (VMT) by offering more opportunities for alternative transportation modes, including bicycling, walking, and transit use, and promoting higher-density and infill development. Energy strategies aim to reduce electricity and natural gas-related GHG emissions by encouraging energy efficiency and increase sourcing from renewable energy. Other strategies include reducing per capita solid waste disposal rates and water consumption.

Other Local Plans

GHG reduction policies can also be found in other local plans, particularly general plans. Many of the general plans prepared by member jurisdictions include policies that support GHG emissions reductions, such as policies that promote waste diversion and development of pedestrian and bicycle infrastructure. In addition, some local plans, such as the Patterson General Plan, Riverbank General Plan, and Turlock General Plan, include specific chapters, goals, and/or objectives to address GHG emission reductions.

4.9.3 Impact Analysis

a. Methodology and Significance Thresholds

Significance Thresholds

Appendix G of the State CEQA Guidelines identifies the following two general criteria for determining whether a project's impacts would have a significant impact related to GHG emissions. Specific criteria under each general criterion have been developed for this EIR.

1. Generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment. An increase that exceeds the following threshold would be considered a significant impact:
    a. A net increase in GHG emissions by 2046 compared to existing baseline conditions.
2. Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases. Any conflict with the following thresholds would be considered a significant impact:
    a. Conflict with regional SB 375 per capita passenger vehicle CO_2 emission reduction targets of 16 percent by 2035 from 2005 levels;
    b. Conflict with state's ability to achieve SB 32 GHG reduction target, which aims to reduce statewide emissions to 40 percent below 1990 levels by 2030;
    c. Conflict with state's ability to achieve EO B-55-18 carbon neutrality goal by 2045 or EO S-3-05 GHG reduction 2050 goal, which aims to reduce statewide emissions to 80 percent below 1990 levels by 2050; or
    d. Conflict with applicable local GHG emission reduction plans.

The San Joaquin Valley Air Pollution Control District (SJVCAPCD) has not adopted GHG significance thresholds that are applicable to evaluating the impacts of the proposed 2022 RTP/SCS in light of the State's post-2020 GHG emission reduction targets. In the absence of applicable SJVAPCD-adopted thresholds, this section uses the project-specific thresholds of significance listed above for each GHG impact criterion in Appendix G.

Methodology

Mobile Source Emissions Modeling

GHG emissions from on-road mobile sources were calculated using the emission factors, fleet mix, and vehicle trip and population estimates from CARB's EMFAC2021 model and VMT from StanCOG's Regional Travel Demand Model, shown in Table 4.9-1. Detailed calculations are available in Appendix A.

Table 4.9-1 Proposed 2022 RTP/SCS Total Daily VMT Data

Year	Daily VMT
2005 Baseline	9,129,097
2022 Baseline	11,459,828
2030 with Proposed 2022 RTP/SCS	12,613,919
2046 with Proposed 2022 RTP/SCS	14,922,100

Source: Appendix A

EMFAC2021 emission factors are established by CARB and incorporate mobility assumptions (e.g., vehicle fleets, speed, delay times, average trip lengths, time of day and total travel time) and socioeconomic growth projections based on data from sources including the Bureau of Automotive Repair, Caltrans, the California Household Travel Survey, the University of California Riverside College of Engineering-Center for Environmental Research and Technology, the UCLA Anderson Forecast, California Department of Finance, California Board of Equalization, California Energy Commission, and U.S. Department of Energy - Energy Information Administration. EMFAC2021 accounts for updated fleet characterization, vehicle activity profile, and socio-econometric forecasting data; new vehicle testing data for emission rates; updated assumptions on the Advanced Clean Truck regulation and Innovative Clean Transit regulation; and implementation of new regulations and policies including the SAFE Vehicles Rule. Projected emissions from all vehicle types on the StanCOG transportation network for the year 2046 under proposed 2022 RTP/SCS conditions were compared with emissions estimated for baseline year 2022.

Total transportation related GHG emissions were evaluated using the total daily VMT with emissions reported in terms of CO_2e. For the purposes of evaluating consistency with the SB 32 target, 2005 VMT data from StanCOG's 2018 RTP/SCS was used to back-calculate estimated 1990 emissions levels pursuant to CARB's guidance to assume 1990 emissions levels are roughly equivalent to a 15 percent reduction from baseline 2005 emissions levels (CARB 2008). In addition, for the SB 32 consistency analysis, emissions were calculated in terms of CO_2, which was used as a proxy to indicate the estimated percent change in GHG emissions levels between 1990 and 2030.

SB 375 Analysis

To determine whether the proposed 2022 RTP/SCS would allow StanCOG to meet its SB 375 reduction targets, per capita CO_2 emissions were calculated by multiplying the emission factors by the VMT from passenger vehicles and dividing by the region's population. For the purposes of this analysis, the year 2005 is used as the baseline year per consistent with CARB's guidance (CARB 2019). EMFAC2014 was utilized for SB 375 modeling for the proposed 2022 RTP/SCS to provide a consistent comparison of per capita CO_2 emissions with the SB 375 targets (CARB 2019). Furthermore, per CARB guidance, off-model adjustment factors related to the SAFE Rule were not applied in the SB375 analysis because EMFAC2014 does not account for the impact of light duty ZEV and GHG emissions standards when used in SB 375 mode (CARB 2020a). For detailed SB 375 methodology and calculations, see Appendix M of the proposed 2022 RTP/SCS.

The EMFAC model generates an output of CO_2 emissions, which were used as the overall indicator of GHG emissions associated with passenger vehicles. The CO_2 emissions associated with vehicle starts are accounted for in the EMFAC model based on the distribution of vehicle starts by vehicle

classification, vehicle technology class, and operating mode. EMFAC adds these vehicle starts to the running emissions to compute total on-road mobile source emissions.

The percent reduction relative to the 2005 baseline was calculated by subtracting 2005 baseline per capita daily emissions from the 2035 with the proposed 2022 RTP/SCS per capita daily emissions and then dividing the difference by 2005 baseline per capita daily emissions. The 2005 baseline used is the same baseline as was used for the 2014 RTP/SCS (modeled in EMFAC 2011), in accordance with CARB guidance (CARB 2019). The percent reduction determined for 2035 was adjusted to take into account differences between EMFAC 2011 and EMFAC 2014, as instructed in CARB's guidance (CARB 2019). Additionally, the StanCOG travel demand model incorporates reductions from SCS strategies including bicycle projects, electric vehicle incentives, and telecommuting (See Appendix M of the proposed 2022 RTP/SCS).

Consistency with SB 32, the 2017 Scoping Plan, EO S-3-05, and EO B-55-18

Meeting the goals of SB 375 does not guarantee consistency with SB 32 and the 2017 Scoping Plan. To determine that a project would not conflict with the State's ability to achieve the SB 32 target and its associated 2017 Scoping Plan, the proposed 2022 RTP/SCS would need to achieve substantial progress toward achieving the reduction target. Mobile source emissions were calculated to determine regionwide GHG emissions with implementation of the proposed 2022 RTP/SCS. If implementation of the proposed 2022 RTP/SCS would achieve substantial progress toward the emissions reduction targets established by SB 32, then impacts related to consistency with SB 32 would not be considered significant.

At this time, the State Legislature has codified a target of reducing emissions to 40 percent below 1990 emissions levels by 2030 (SB 32) and has developed the 2017 Scoping Plan to demonstrate how the State will achieve the 2030 target and make substantial progress toward the 2050 goal of an 80 percent reduction in 1990 GHG emission levels set by EO S-3-05. In EO B-55-18, which identifies a new goal of carbon neutrality by 2045, CARB has been tasked with including a pathway toward the EO B-55-18 carbon neutrality goal in the next Scoping Plan update. While state and regional regulators of energy and transportation systems, along with the State's Cap-and-Trade program, are designed to be set at limits to achieve most of the reductions needed to attain the State's long-term targets, local governments can do their fair share toward meeting the State's targets by siting and approving projects that accommodate planned population growth and projects that are GHG-efficient. At this time, CARB has not adopted a plan that establishes a pathway to achieving the State's long-term targets under EO S-3-05 and EO B-55-18; therefore, these targets are not used as thresholds of significance in this analysis.

Instead, the Association of Environmental Professionals (AEP) Climate Change Committee recommends that CEQA GHG analyses evaluate project emissions in light of the trajectory of state climate change legislation and assess their "substantial progress" toward achieving long-term reduction targets identified in available plans, legislation, or EOs (AEP 2016). Consistent with AEP Climate Change Committee recommendations, GHG impacts are analyzed using a threshold based on the State's 2030 target, which evaluates whether the project would impede "substantial progress" toward meeting the reduction goals identified in SB 32, EO S-3-05, and EO B-55-18. Because SB 32 is considered an interim target toward meeting the 2045 and 2050 State goals, consistency with SB 32 is considered to be contributing substantial progress toward meeting the State's long-term 2045 and 2050 goals. Avoiding interference with, and making substantial progress toward, these long-term State targets is important because these targets have been set at levels that achieve California's share of international emissions reduction targets that will stabilize global

climate change effects and avoid the adverse environmental consequences of climate change (EO B-55-18). Furthermore, these targets will depend on substantial technological innovation in GHG emission reduction measures and changes in legislation and regulations that will need to occur over the next 25 to 30 years as have occurred over the past 14 years to meet the 2020 target set by AB 32. Therefore, if the proposed 2022 RTP/SCS is consistent with the SB 32 target, the proposed 2022 RTP/SCS would also achieve substantial progress toward climate-stabilizing targets set forth by EOs S-3-05 and B-55-18 and would be consistent with these long-term goals.

b. Project Impacts and Mitigation Measures

The following section discusses impacts and mitigation measures that may be associated with transportation projects and the land use scenario contained within the proposed 2022 RTP/SCS. Section 4.9.3(c) summarizes the impacts associated with capital improvement projects in the proposed 2022 RTP/SCS. Due to the programmatic nature of the proposed 2022 RTP/SCS, a precise, project-level analysis of the specific impacts associated with individual transportation and land use projects is not possible at this time. In general, however, implementation of proposed transportation improvement projects and future projects under the land use scenario envisioned by the proposed 2022 RTP/SCS could result in the impacts as described in the following section.

Threshold 1:	Generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment. An increase that exceeds the following threshold would be considered a significant impact: a. A net increase in GHG emissions by 2046 compared to existing baseline conditions

Impact GHG-1 CONSTRUCTION OF THE TRANSPORTATION IMPROVEMENTS AND LAND USE PROJECTS ENVISIONED BY THE PROPOSED 2022 RTP/SCS WOULD GENERATE GHG EMISSIONS THAT MAY HAVE A SIGNIFICANT IMPACT ON THE ENVIRONMENT. IMPACTS WOULD BE SIGNIFICANT AND UNAVOIDABLE.

Construction activities associated with transportation improvement projects and future land use projects envisioned by the proposed 2022 RTP/SCS would generate temporary short-term GHG emissions primarily due to the operation of construction equipment and truck trips. GHG emissions from construction can vary depending on the level of activity, the specific operations taking place, the equipment being operated, and other factors. However, because such emissions are dependent on the characteristics of individual development projects, construction-related emissions are speculative at the RTP/SCS level. At the program-level of analysis, it is not feasible to quantify the amount of emissions expected from implementation of the proposed 2022 RTP/SCS. This is due to the variability in the extent of construction based on site conditions throughout the StanCOG region and the lack of project details needed to conduct such an analysis. Therefore, this analysis includes a qualitative analysis of potential GHG emissions from construction activity associated with projected land use development and proposed transportation projects.

Construction activity tends to be temporary in nature and would be expected to occur throughout the planning period of the proposed 2022 RTP/SCS. During construction activities, GHG emissions would be emitted from vehicular travel to and from the worksites and the operation of construction equipment such as graders, backhoes, and generators. Site preparation and grading typically generate the greatest amount of emissions due to the intensive use of grading equipment and soil hauling. The level of GHG emissions from the construction of any one project or of all projects combined would be primarily dependent on the particular type, size, quantity, engine type, fuel

type, and fuel efficiency of the equipment and the duration of their operation at the construction site or in the region. Construction activities generally result in annual GHG emissions that represent a small proportion of total annual GHG emissions from operational sources such as transportation and land use emissions. For example, the Southern California Association of Governments (SCAG) noted in their 2020-2045 RTP/SCS PEIR that total construction-related emissions typically account for less than 0.3 percent of total GHG emissions for the entire SCAG region (SCAG 2020).

Construction activities generally result in annual GHG emissions that represent a small proportion of total annual GHG emissions, and implementation of the proposed 2022 RTP/SCS would result in an overall net reduction in long-term transportation-related GHG emissions in 2046 when compared to existing 2022 conditions (refer to Impact GHG-2). Nonetheless, construction activities would still result in GHG emissions would result in GHG emissions exceeding the 2022 baseline, a significant impact. Therefore, this analysis identifies the mitigation measures that should be implemented for individual construction projects to reduce impacts related to GHG emissions. The following mitigation measures would reduce this impact.

Mitigation Measures

For all transportation projects under their jurisdiction, StanCOG shall implement, and transportation project sponsor agencies can and should implement, the following mitigation measure developed for the proposed 2022 RTP/SCS where applicable for transportation projects generating construction-related GHG emissions. Cities and the County can and should implement these measures, where relevant to land use projects implementing the proposed 2022 RTP/SCS. Project-specific environmental documents may adjust these mitigation measures as necessary to respond to site-specific conditions.

GHG-1 Construction GHG Reduction Measures

The project sponsor shall incorporate the most recent GHG emission reduction measures for off-road construction vehicles during construction. The measures shall be noted on all construction plans, and the implementing agency shall perform periodic site inspections. Current GHG-reducing measures include the following:

- Use of diesel construction equipment meeting CARB's Tier 4 certified engines wherever feasible for off-road heavy-duty diesel engines and comply with the State Off-Road Regulation. Where the use of Tier 4 engines is not feasible, Tier 3 certified engines shall be used; where the use of Tier 3 engines are not feasible, Tier 2 certified engines shall be used;
- Use of on-road heavy-duty trucks that meet CARB’s 2007 or cleaner certification standard for on-road heavy-duty diesel engines, and comply with the State On-Road Regulation;
- Minimizing idling time (e.g., five-minute maximum). Signs shall be posted in the designated queuing areas and or job sites to remind drivers and operators of the five-minute idling limit;
- Use of electric-powered equipment in place of diesel-powered equipment when feasible;
- Use of alternatively fueled or catalyst-equipped diesel construction equipment when feasible, to the extent electric powered equipment is not feasible;
- Substitute gasoline-powered in place of diesel-powered equipment, when neither electric-powered equipment or alternatively fueled or catalyst-equipped diesel equipment is feasible; and
- Project proponents shall incentivize that construction workers carpool, and/or use electric vehicles to commute to and from the project site.

IMPLEMENTING AGENCIES AND TIMING

Implementing agencies for transportation projects are StanCOG and transportation project sponsor agencies. Implementing agencies for land use projects are cities and the County. This mitigation measure shall, or can and should, be applied during permitting and environmental review and implemented during construction where appropriate.

Significance After Mitigation

Implementation of Mitigation Measure GHG-1 would reduce short-term construction emissions from individual projects and thus reduce the severity of impacts by requiring best practices for exhaust emissions via readily available, lower-emitting diesel equipment, and/or equipment powered by alternative cleaner fuels (e.g., propane) or electricity, as well as on-road trucks using particulate exhaust filters. Implementation of Mitigation Measures AQ-2(b) and AQ-2(c) would also reduce GHG emissions from the proposed 2022 RTP/SCS. However, these mitigation measure may not be feasible or effective for all projects. Therefore, this impact would remain significant and unavoidable. No additional mitigation measures to reduce this impact to less than significant levels are feasible.

Threshold 1:	Generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment. An increase that exceeds the following threshold would be considered a significant impact: b. A net increase in GHG emissions by 2046 compared to existing baseline conditions

Impact GHG-2 PROPOSED TRANSPORTATION IMPROVEMENTS AND LAND USE PROJECTS ENVISIONED BY THE PROPOSED 2022 RTP/SCS WOULD RESULT IN A NET INCREASE IN GHG EMISSIONS BY 2046 COMPARED TO THE EXISTING BASELINE CONDITIONS AND WOULD THEREFORE HAVE A SIGNIFICANT IMPACT ON THE ENVIRONMENT. IMPACTS WOULD BE SIGNIFICANT AND UNAVOIDABLE.

Transportation-Related Emissions

Table 4.9-2 compares the total transportation-related emissions from all vehicle classes for existing (2022) conditions and with implementation of the proposed 2022 RTP/SCS. As presented in Table 4.9-2, implementation of the proposed 2022 RTP/SCS would result in a net reduction in per capita emissions of 0.84 MT of CO_2e per person per year and a net reduction in total emissions of 212,955 MT of CO_2e per year, compared to existing (2022) conditions. The estimated reduction in total mobile source emissions is primarily due to stricter fuel efficiency and vehicle emissions standards such as the CAFE standards that will phase in over the planning period as reflected in EMFAC2021 emission factors. In addition, the estimated reduction in per capita mobile source emissions is also the result of slower growth in VMT as compared to forecast population growth, due to the improved circulation networks and multimodal transportation initiatives outlined in the proposed 2022 RTP/SCS, which would reduce per capita VMT.

Because the proposed 2022 RTP/SCS would result in a net decrease in overall transportation-related GHG emissions in the StanCOG region, operational activities under the plan would not generate GHG emissions that may have a significant impact on the environment, and impacts would be less than significant.

Table 4.9-2 Proposed 2022 RTP/SCS Net Change in Transportation-Related Emissions (2022-2046)

Scenario	Total Emissions (MT of CO_2e/year)	Per Capita Emissions (MT of CO_2e/person/year)[1]
Existing (2022)	1,934,271	3.41
2046 with Proposed 2022 RTP/SCS	1,721,316	2.57
Net Change from 2046 No Project	**(212,955)**	**(0.84)**
Threshold of Significance	> 0	> 0
Threshold Exceeded?	No	No

( ) denotes a negative number.
MT = metric tons; CO_2e = carbon dioxide equivalent
[1] The existing (2022) population of the StanCOG region is 567,329 persons, and the future (2046) population is forecast to be 670,338 persons.
Source: Appendix A

Other Land Use Development Emissions

In addition to the transportation-related GHG emissions shown in Table 4.9-2, land use projects envisioned by the land use scenario in the proposed 2022 RTP/SCS would also result in GHG emissions due to sources such as electricity and natural gas consumption. Residential, commercial, agricultural, and other land uses would result in GHG emissions; however, data is not available to quantify impacts from such sources. For instance, agricultural machinery and processes have unique emission factors, and GHG emissions must be calculated using precise information regarding specific processes. Furthermore, emissions from land use projects cannot be feasibly quantified at this time because details about future land use projects and their timing are unknown at this time. Therefore, because future land use projects would represent new sources of GHG emissions, it can be conservatively estimated that total GHG emissions from the land use scenario envisioned by the proposed 2022 RTP/SCS would increase over the planning period. Although per capita emissions associated with electricity and natural gas consumption, water and wastewater conveyance and treatment, and solid waste disposal are anticipated to decline, primarily as a result of increasingly stringent iterations of State building code standards (specifically, the California Energy Code and the California Green Building Standards Code), total emissions may increase due to population growth and future land use projects. As a result, impacts of land use projects implementing the proposed 2022 RTP/SCS would be significant.

Mitigation Measures

Cities and the County can and should implement the following mitigation measure, where relevant to land use projects implementing the proposed 2022 RTP/SCS. Project-specific environmental documents may adjust these mitigation measures as necessary to respond to site-specific conditions.

GHG-2 Land Use Project Energy Consumption and Water Use Reduction Measures

For land use projects under their jurisdiction, cities and the County can and should implement measures to reduce energy consumption, water use, solid waste generation, and VMT, all of which contribute to GHG emissions. Project-specific environmental documents may adjust these

mitigation measures as necessary to respond to site-specific conditions. These measures include, but are not limited to:

- Require new residential and commercial construction to install solar energy systems or be solar-ready
- Require new residential and commercial development to install low flow water fixtures
- Require new residential and commercial development to install water-efficient drought-tolerant landscaping, including the use of compost and mulch
- Require new development to exceed the applicable Title 24 energy-efficiency requirements
- Require new development to be fully electric
- Require new residential and commercial development to offer information on recycling, composting, and disposal of household hazardous waste and e-waste
- Require new development to implement circulation design elements in parking lots for no-residential uses to reduce vehicle queuing and improve the pedestrian environment

IMPLEMENTING AGENCIES AND TIMING

Implementing agencies for land use projects are cities and the County. This mitigation measure can and should be applied during project permitting and environmental review and implemented during project operation, as applicable.

Significance After Mitigation

If implementing agencies adopt and require the mitigation described above, impacts would be reduced because energy, water use, solid waste generation, and VMT related GHG emissions from land use projects would be reduced. However, implementation of project-level GHG-reducing measures may not be feasible and cannot be guaranteed on a project-by-project basis. Therefore, this impact would remain significant and unavoidable. No additional feasible mitigation measures are available that would ensure no net increase in GHG emissions compared to existing baseline conditions.

Threshold 2:	Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases. Any conflict with the following thresholds would be considered a significant impact: a. Conflict with regional SB 375 per capita passenger vehicle CO_2 emission reduction targets of 16 percent by 2035 from 2005 levels

Impact GHG-3 THE TRANSPORTATION IMPROVEMENTS AND LAND USE PROJECTS ENVISIONED BY THE PROPOSED 2022 RTP/SCS WOULD CONFLICT WITH REGIONAL SB 375 PER CAPITA PASSENGER VEHICLE CO_2 EMISSION REDUCTION TARGETS OF 16 PERCENT BY 2035 FROM 2005 LEVELS. IMPACTS WOULD BE LESS THAN SIGNIFICANT.

One of the goals of SB 375 is to reach the per capita GHG emissions reduction targets for passenger vehicles set by CARB through an integrated land use, transportation, and housing plan. Achievement of this goal is an objective of the proposed 2022 RTP/SCS. The target from CARB, analyzed in this EIR, is identified as a 16 percent reduction in per capita passenger vehicle emissions from 2005

levels by 2035.[3] Table 4.9-3 presents the percent change in per capita passenger vehicle emissions for 2035 as compared to the 2005 baseline. The per capita transportation-related emissions from passenger vehicles include off-model adjustments that represent a reasonable level effect of the transportation programs included in the proposed 2022 RTP/SCS.

Table 4.9-3 Per Capita Passenger Vehicle CO_2 Emissions Comparison

	Per Capita CO2 Emissions (Percent Change) 2035 Conditions
Percent Change in Per Capita GHG Emissions from 2005	-16.17%
SB 375 Target	-16%
SB 375 Target Met?	Yes

SB = Senate Bill
Source: Appendix M of the proposed 2022 RTP/SCS

As shown in Table 4.9-3, implementation of the proposed 2022 RTP/SCS in the year 2035 would result in a decrease of per capita passenger vehicle CO_2 emissions of 16.17 percent compared to 2005 levels. Therefore, implementation of the proposed 2022 RTP/SCS would achieve the SB 375 GHG reduction target for StanCOG of 16 percent by 2035, and the proposed 2022 RTP/SCS would therefore be consistent with SB 375. Impacts would be less than significant.

Mitigation Measures

No mitigation is required.

Threshold 2: Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases. Any conflict with the following thresholds would be considered a significant impact:

b. Conflict with state's ability to achieve SB 32 GHG reduction target, which aims to reduce statewide emissions to 40 percent below 1990 levels by 2030

c. Conflict with state's ability to achieve EO S-3-05 GHG reduction 2050 goal, which aims to reduce statewide emissions to 80 percent below 1990 levels by 2050 and EO B-55-18; or

d. Conflict with applicable local GHG reduction plans

Impact GHG-4 IMPLEMENTATION OF THE PROPOSED 2022 RTP/SCS WOULD CONFLICT WITH THE STATE'S ABILITY TO ACHIEVE SB 32, EOS S-3-05 AND B-55-18, AND APPLICABLE LOCAL GHG REDUCTION PLAN TARGETS AND GOALS. IMPACTS WOULD BE SIGNIFICANT AND UNAVOIDABLE.

2017 Scoping Plan

The proposed 2022 RTP/SCS would implement a suite of transportation improvement projects and facilitate a land use scenario that is consistent with the transportation sustainability goals of the 2017 Scoping Plan. The land use scenario envisioned by the proposed 2022 RTP/SCS concentrates

[3] The SB 375 target for 2020 is not utilized herein as a threshold of significance because the 2022 RTP/SCS would apply only to future transportation and land use planning from the year of adoption (anticipated to be 2022) forward.

the forecasted growth in population and employment in already urbanized areas in an effort to reduce VMT. Active transportation projects would implement design policies that prioritize transit, biking, and walking throughout the StanCOG region including but not limited to the cities of Ceres, Hughson, Modesto, Newman, Oakdale, Patterson, and Riverbank. Active transportation projects would increase the number, safety, and connectivity, and attractiveness of biking and walking facilities by adding sidewalks, trails, bike lanes, crosswalks, intersection improvements, and signage throughout the StanCOG region. Furthermore, the proposed 2022 RTP/SCS includes transit projects designed to maintain, enhance, and expand transit services offered by agencies in the StanCOG region, including, but not limited to, Stanislaus County Regional Transportation Agency (StanRTA), Modesto Area Express, and municipal transit agencies such as Turlock Transit and Ceres Area Transit (CAT). Proposed 2022 RTP/SCS projects include electrification studies by StanRTA, acquisition of zero-emission buses by the City of Turlock, installation of solar lighting by Stanislaus County, and expansion of bicycle and pedestrian infrastructure regionwide. Transit projects would increase the availability of low carbon mobility options in the region, thereby contributing to the 2017 Scoping Plan's goals of increasing the penetration of zero emission vehicles in non-light-duty sectors and electrifying the transportation sector. Therefore, the proposed 2022 RTP/SCS is consistent with the goals and strategies of the 2017 Scoping Plan.

SB 32

The SB 375 targets are a key element of CARB's 2017 Scoping Plan. However, the 2017 Scoping Plan states, "Stronger SB 375 GHG reduction targets [adopted in 2018] will enable the State to make significant progress toward this goal, but alone will not provide all of the VMT growth reductions that will be needed. There is a gap between what SB 375 can provide and what is needed to meet the State's 2030 and 2050 goals" (CARB 2017). Therefore, consistency with the SB 375 target does not necessarily equate to consistency with SB 32 and the 2017 Scoping Plan. This analysis hypothetically assumes that the proposed 2022 RTP/SCS would be required to achieve the same proportional GHG reductions as the state by the year 2030 (i.e., a 40 percent reduction in GHG emissions below 1990 levels). As shown in Table 4.9-4, although per capita transportation-related emissions would decrease over the planning period, the reduction would not be sufficient to achieve the 2030 target of a 40 percent reduction below 1990 levels.

Table 4.9-4 Per Capita Transportation-Related Emissions (All Vehicle Classes) Compared to 1990 Levels

	Per Capita CO_2 Emissions (lbs/day)	
Scenario	Vehicle Emissions	% Change in Emissions Compared to 1990 Baseline
1990 Baseline[1]	18.2	–
2005 Baseline	21.4	–
Existing (2022)	19.8	-9%
2030 with proposed 2022 RTP/SCS[3]	16.2	-11%
2046 with proposed 2022 RTP/SCS	15.0	-18%

[1] Actual 1990 emissions are unknown but are generally assumed to be 15% below 2005 levels (CARB 2008).

Source: Appendix A

As discussed in Impact GHG-2, per capita land use emissions associated with electricity and natural gas consumption, water and wastewater conveyance and treatment, and solid waste disposal are

anticipated to decline over the planning period, primarily as a result of increasingly stringent iterations of State building code standards. However, it cannot be feasibly determined that reductions in land use emissions would achieve the SB 32 target.

Therefore, although the policies, transportations projects, and land use scenario identified in the proposed 2022 RTP/SCS are designed to align transportation and land use planning to reduce transportation related GHG emissions, the proposed 2022 RTP/SCS would conflict with the State's ability to achieve the SB 32 GHG emissions reduction target, assuming that the proposed 2022 RTP/SCS is required to achieve the same proportional Statewide GHG reductions.

EOs S-3-05 and B-55-18

Because the plan would conflict with the State's ability to achieve the SB 32 GHG reduction target, it would also impede "substantial progress" toward meeting the reduction goals identified in EO S-3-05 and EO B-55-18.

Based on the above analysis, impacts related to consistency with SB 32, the 2017 Scoping Plan, and EOs S-3-05 and B-55-18 would be significant.

Local Climate Action Plans

Two of StanCOG's member jurisdictions (the Cities of Hughson and Oakdale) have adopted CAPs that set goals and targets for the reduction of GHG emissions, and outline policies to help achieve those goals (City of Hughson 2013; City of Oakdale 2013).

The CAPs developed by the Cities of Hughson and Oakdale had been adopted prior to enaction of SB 32, and thus present strategies intended to comply with the GHG emissions reduction goals recommended for local governments in the AB 32 Scoping Plan, which was aimed at reducing GHG emissions to 1990 levels by 2020 in accordance with AB 32. These CAPs are also intended to make progress toward the State's 2030 target of reducing GHG emissions by 40 percent below 1990 levels, as first set forth in EO S-3-05 in 2005 and later codified by SB 32 in 2017. As discussed previously, the proposed 2022 RTP/SCS was determined to be inconsistent with the SB 32 target and EO S-3-05 and B-55-18 goals. Therefore, it would also conflict with the goals of local CAPs designed to meet the same State goals, and impacts would be significant.

The following mitigation measures would reduce this impact.

Mitigation Measures

For all transportation projects under their jurisdiction, implementing agencies shall implement, and transportation project sponsor agencies can and should implement, the following mitigation measures developed for the proposed 2022 RTP/SCS where applicable for transportation projects generating construction GHG emissions. The County of Stanislaus and cities in the StanCOG region can and should implement these measures, where relevant to land use projects implementing the proposed 2022 RTP/SCS. Project-specific environmental documents may adjust these mitigation measures as necessary to respond to site-specific conditions.

Implementation of Mitigation Measure GHG-4 would reduce transportation related emissions. Implementation of Mitigation Measures GHG-2 would reduce GHG emission from land use projects. Implementation of Mitigation Measures T-2(a) and T-2(b) in Section 4.15, *Transportation*, would also reduce GHG emissions from the proposed 2022 RTP/SCS.

GHG-4 Transportation-Related GHG Reduction Measures

The implementing agency shall incorporate the most recent GHG emission reduction measures and/or technologies for reducing VMT and associated transportation related GHG emissions. Current GHG-reducing measures include the following:

- Installation of electric vehicle charging stations beyond those required by State and local codes
- Utilization of electric vehicles and/or alternatively fueled vehicles in company fleet
- Provision of dedicated parking for carpools, vanpool, and clean air vehicles
- Provision of vanpool and/or shuttle service for employees
- Implementation of reduced parking minimum requirements
- Implementation of maximum parking limits
- Provision of bicycle parking facilities beyond those required by State and local codes
- Provision of a bicycle-share program
- Expansion of bicycle routes/lanes along the project site frontage
- Provision of new or improved transit amenities (e.g., covered turnouts, bicycle racks, covered benches, signage, lighting) if project site is located along an existing transit route
- Expansion of existing transit routes
- Provision of transit subsidies
- Expansion of sidewalk infrastructure along the project site frontage
- Provision of safe, pedestrian-friendly, and interconnected sidewalks and streetscapes
- Provision of employee lockers and showers
- Provision of on-site services that reduce the need for off-site travel (e.g., childcare facilities, automatic teller machines, postal machines, food services)
- Provision of alternative work schedule options, such as telework or reduced schedule (e.g., 9/80 or 10/40 schedules), for employees
- Implementation of transportation demand management programs to educate and incentivize residents and/or employees to use transit, smart commute, and alternative transportation options

IMPLEMENTING AGENCIES AND TIMING

Implementing agencies for transportation projects are StanCOG and transportation project sponsor agencies. Implementing agencies for land use projects are cities and the County. This mitigation measure shall, or can and should, be applied during project permitting and environmental review and implemented during project operation, as applicable.

Significance After Mitigation

If implementing agencies adopt and require the mitigation described above, impacts would be reduced because transportation related GHG emissions from transportation and land use projects would be reduced. However, implementation of project-level GHG-reducing measures may not be feasible and cannot be guaranteed on a project-by-project basis. Additionally, it is speculative at this time to forecast whether project-level GHG emission reductions would be sufficient to achieve a countywide reduction in GHG emissions of 40 percent below 1990 levels by 2030. Therefore, this impact would remain significant and unavoidable. No additional feasible mitigation measures are

available that would reduce emissions to trajectories consistent with SB 32, EO S-3-05, and EO B-55-18 GHG reduction targets and goals.

c. Specific Projects that May Result in Impacts

The analysis within this section discusses the potential GHG related impacts associated with the proposed 2022 RTP/SCS. The transportation projects within the proposed 2022 RTP/SCS are evaluated herein in their entirety and are intended to improve circulation rather than cause adverse impacts. However, as described above, the proposed 2022 RTP/SCS would increase GHG emissions as a result of project construction and/or operation. These effects have been found to be significant, as described above. Any number of the proposed 2022 RTP/SCS projects that require construction equipment or include transportation improvement would presumably increase GHG emissions. Thus, no specific projects are listed in this section related to the adverse impacts on GHG emissions in the StanCOG region.

4.9.4 Cumulative Impacts

The impacts of GHG emissions are, by definition, cumulative impacts, as they add to the global accumulation of greenhouse gases in the atmosphere. The cumulative impact analysis area for GHG emissions consists of the StanCOG region, adjoining counties, and the entire State of California. The entire state is included in the analysis area because GHG emissions from the StanCOG region and adjoining counties would influence the ability for the State to achieve its GHG reduction targets. The analysis presented in Section 4.9.3, *Impact Analysis*, evaluates both plan-level impacts as well as the contribution of the proposed 2022 RTP/SCS to the existing cumulative impact related to GHG emissions, the effects of which are outlined in Section 4.9.1(c), *Potential Effects of Climate Change*.

As discussed under Impact GHG-1, construction activities associated with transportation improvement projects and future land use projects envisioned by the proposed 2022 RTP/SCS would generate temporary GHG emissions. The temporary construction GHG emissions would occur concurrent with ongoing GHG emissions in the cumulative impact analysis area, such as GHG emissions ongoing agricultural activities in surrounding Valley counties such as San Joaquin County and Merced County. As described under Impact GHG-1, construction-related GHG emissions associated with buildout under the proposed 2022 RTP/SCS would be significant even after implementation of Mitigation Measure GHG-1. Therefore, the contribution of the proposed 2022 RTP/SCS construction emissions to the cumulative impact of total GHG emissions would be cumulatively considerable, pre- and post-mitigation.

As discussed under Impacts GHG-2 through GHG-4, the transportation projects and land use scenario envisioned in the proposed 2022 RTP/SCS would also generate operational GHG emissions. Overall, implementation of the proposed 2022 RTP/SCS would reduce total regionwide mobile emissions; however, land use emissions may increase compared to existing conditions. Implementation of Mitigation Measure GHG-2 would reduce GHG emissions from land use projects, however impacts would remain significant and unavoidable. Therefore, the contribution of land use project emissions to the cumulative impact of total GHG emissions would be cumulatively considerable, pre- and post-mitigation.

The proposed 2022 RTP/SCS would not conflict with SB 375 because per capita emissions reductions would meet the regional target of a 16 percent reduction by 2035 compared to 2005 levels. However, reductions achieved by the proposed 2022 RTP/SCS would not be sufficient to achieve the 2030 target of a 40 percent reduction in overall emissions set forth by SB 32, and therefore would also be inconsistent with EO S-3-05 and B-55-18 goals. Other ongoing land uses and operation of

future development in the cumulative impact analysis area would also generate GHG emissions. Implementation of Mitigation Measures GHG-2 through GHG-4 would reduce the proposed 2022 RTP/SCS impacts related to consistency with state GHG reduction targets and goals; however, emissions would remain in exceedance of applicable significance thresholds. Therefore, the proposed 2022 RTP/SCS would have a cumulatively considerable contribution to the cumulative impact of inconsistency with state GHG reduction targets and goals, both pre- and post- mitigation.

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4.10 Hazards and Hazardous Materials

This section analyzes impacts related to hazardous materials and airport safety hazards in the StanCOG region. Impacts related to impairment or interference of emergency response or evacuation plans are discussed in detail in Section 4.15, *Transportation*. Impacts related to wildfire are discussed in Section 4.17, *Wildfire.*

4.10.1 Setting

a. Physical Setting

Hazardous Materials and Waste

The term "hazardous material" is defined in the State of California's Health and Safety Code (HSC), Chapter 6.95, Section 25501(o) as:

> Any material that, because of its quantity, concentration, or physical or chemical characteristics, poses a significant present or potential hazard to human health and safety or to the environment if released into the workplace or the environment. "Hazardous materials" include, but are not limited to, hazardous substances, hazardous waste and any material that a handler or the administering agency has a reasonable basis for believing that it would be injurious to the health and safety of persons or harmful to the environment if released into the workplace or the environment.

Hazardous waste is hazardous material generated, intentionally or unintentionally, as a byproduct of some process or condition. Hazardous wastes are defined in California HSC Section 25141(b) as wastes that:

> …because of their quantity, concentration, or physical, chemical, or infectious characteristics, [may either] cause, or significantly contribute to an increase in mortality or an increase in serious illness [or] pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, disposed of, or otherwise managed.

According to the U.S. Environmental Protection Agency (U.S. USEPA) waste may be considered hazardous if it is specifically listed as known hazardous waste or if it meets the one or more of the following characteristics of a hazardous waste:

- **Toxicity.** Poisonous, harmful when ingested or absorbed.
- **Ignitability.** Capable of being ignited by open flame, liquids with flash points[1] below 60 degrees Celsius.
- **Corrosivity.** Capable of corroding other materials, aqueous wastes with a pH of 2 or less or greater than or equal to 12.5.
- **Reactivity.** May be unstable under normal conditions, may react with water, may give off toxic gases or may be capable of detonation or explosion under normal conditions or when heated.

[1] Flash point is the lowest temperature at which the vapors of a volatile combustible substance ignite in the air when exposed to flame.

Generation and Disposal of Hazardous Materials and Waste

Many chemicals used in household cleaning, construction, light and heavy industry, dry cleaning, landscaping, and automotive maintenance and repair are considered to generate hazardous materials and waste. Additionally, in some cases, past industrial or commercial uses on a site may have resulted in spills or leaks of hazardous materials and petroleum that have caused contamination of the underlying soil and groundwater. Federal and state laws require that soils and groundwater having concentrations of contaminants that are higher than certain acceptable levels are handled and disposed as hazardous waste during excavation, transportation, and disposal. The California Code of Regulations (CCR), Title 22, Sections 66261.20-24 contains technical descriptions of characteristics that would cause a soil to be classified as a hazardous waste. Hazardous materials require special methods of disposal, storage, and treatment, and the release of hazardous materials requires an immediate response to protect human health and safety, and the environment. Improper disposal can harm the environment and people who work in the waste management industry.

Businesses that handle or generate hazardous materials in the StanCOG region are monitored by USUSEPA; the Stanislaus County Department of Environmental Resources; the Central Valley Regional Water Quality Control Board (CVRWQCB); the Stanislaus County Environmental Health Department (EHD); Local Enforcement Agency (LEA) programs; and San Joaquin Valley Air Pollution Control District (SJVAPCD). Generators of hazardous waste fall into two categories: large-quantity generators (LQG) and small-quantity generators (SQG). An LQG is defined as a person or facility generating more than 2,200 pounds of hazardous waste per month. An SQG is defined as generating greater than 100 kilograms (kg) and less than 1,000 kg (2,200 pounds) of hazardous waste per month. LQGs include industrial and commercial facilities, such as manufacturing companies, petroleum refining facilities and other heavy industrial businesses.

LQGs must comply with federal and state requirements for managing hazardous waste. LQGs need an U.S. USEPA identification number that is used to monitor and track hazardous waste activities. SQGs include facilities such as service stations, automotive repair, dry cleaners, and medical offices. The regulatory requirements for SQGs are less stringent than the requirements for LQGs; however, SQGs must also obtain an U.S. USEPA identification number, which must be used for traceability on all hazardous waste documentation. Pursuant to federal law (40 CFR 262.41-43), all such generators must register with U.S. USEPA for record-keeping and reporting.

Transportation of Hazardous Materials and Waste

Hazardous materials, hazardous wastes, medical waste and petroleum products are a subset of the goods routinely shipped along the transportation corridors in the StanCOG region. In California, unless specifically exempted, it is unlawful for any person to transport hazardous wastes unless the person holds a valid registration issued by the California Environmental Protection Agency (CalUSEPA) Department of Toxic Substances Control (DTSC). The DTSC maintains a list of active registered hazardous waste transporters throughout California, and the California Department of Public Health regulates the haulers of hazardous waste. There are 13 active registered hazardous waste transporters in the StanCOG region (DTSC 2022a). Transportation of hazardous materials and wastes in the StanCOG region occurs through a variety of modes, such as, but not limited to: truck, rail, air, and pipeline, which are described further below.

Transportation of hazardous materials by truck is regulated by the DOT. The DOTs Federal Motor Carrier Safety Administration identifies several highways in the StanCOG region as a Hazardous

Materials Route in its National Hazardous Materials Route Registry. The heaviest traveled highways and roads that have been identified as Hazardous Materials Routes include sections of State Highways 99, 108, 120, and 132, State Route 33, and Interstate 5 (DOT 2022). There are no county or city roads within the StanCOG region that are designated as Hazardous Materials Routes.

According to the U.S. DOT Pipeline and Hazardous Materials Safety Administration and Office of Hazardous Materials Safety, hazardous materials traffic in the U.S. now exceeds 8000,000 shipments per day and results in more than 3.1 billion tons of hazardous materials annually (FHWA 2021). Considering the primary use of roads compared to rail and pipelines in the StanCOG region, trucks are likely responsible for transporting most hazardous materials. According to the DOT (2022), truck transport consistently accounts for the largest share of reportable incidents each year. For example, in 2020, truck transport accounted for approximately 1,270 reportable incidents in the State, while rail and air transport accounted for 51 and 103 incidents, respectively. While hazardous waste incidents account for a small percentage of overall highway incidents, the impact of these incidents can be more severe due to the nature of the material(s) involved.

The transport of hazardous materials by rail is also regulated by DOT. Freight railroads have employee safety training requirements and operating procedures that govern the handling and movement of hazardous goods, including crude oil. Federal regulations and self-imposed safety practices dictate train speeds, equipment and infrastructure inspections, and procedures for how to handle and secure trains carrying hazardous materials. The freight rail industry provides instruction to local public safety officials at the Transportation Technology Center's Security and Emergency Response Training Center, a 52 square mile training facility where cargo trucks and freight trains are routinely used in large-scale hazardous response trainings. Individual railroads conduct additional local training for first responders. Freight railroads also work with State emergency planning committees and local first responders to develop municipal emergency response plans. In accordance with a February 2014 agreement between the DOT and Association of American Railroads (AAR), railroads have developed an inventory of emergency response resources and provided the DOT with information on the deployment of those resources. This information is available upon request to appropriate emergency responders. A list of the rail facilities in the StanCOG region is provided in Section 4.13, *Noise*.

Pipelines, primarily underground, are used to transport a variety of potentially hazardous substances, including natural gas, crude oil, and other petroleum products throughout the StanCOG region. For example, Pacific Gas & Electric maintains and operates a natural gas pipeline that is roughly parallel to Interstate 5 through most of the State, and Kinder Morgan operates several petroleum product pipelines parallel to State Route 99 in the central portion of the county, among others. Pipelines in the County run through both urban areas and agricultural areas, primarily along locally important roads with few exceptions. The majority of pipelines are either sections of larger lines or lie within the Modesto-Riverbank-Oakdale urban area (NPMS 2022). The American Petroleum Institute recommends setbacks of 50 feet from petroleum and hazardous liquids lines for new homes, businesses, and places of public assembly. It also recommends 25 feet for garden sheds, septic tanks, and water wells; and 10 feet for mailboxes and yard lights (Transportation Research Board 2004). The Transportation Research Board (2004) encourages the use of zoning regulations to minimize casualties in the event of a catastrophic pipeline rupture. Possible land use techniques include, for example, establishing setbacks; regulating or prohibiting certain types of structures and uses near transmission pipelines; and encouraging, through site and community planning, other types of activities and facilities, such as mini-storage businesses, linear parks and recreational paths, within or in the vicinity of pipeline rights-of-way.

There are no major shipping ports or marine oil terminals in the StanCOG region, and transport by ship on the open sea or rivers is generally not a mode of hazardous materials or waste transport in the region. However, the StanCOG region does contain marinas, boat storage facilities and other similar boat-based service businesses where petroleum products, paints, cleaning solvents and other substances used in the daily operation and maintenance of boats may be stored and handled.

Potential for Hazardous Materials and Hazardous Materials Sites

Many activities in the StanCOG region involve the use of hazardous materials. The use of hazardous materials is commonplace in commercial, industrial, and manufacturing activities, and many businesses within the StanCOG region are permitted to handle and transport hazardous materials. There are historic and existing land uses that have generated hazardous waste as part of daily business operations. LQGs and SQGs include such commercial uses as painters, dry cleaners and photographers, and industrial uses such as automotive service stations, sheet metal works, metal scrap yards, truck yards, cement and lime warehouses, coal yards, battery manufacture and Pacific Gas & Electric substations. In addition, older structures may contain building materials that are considered hazardous, such as asbestos and lead-based paint. In general, these historic and current uses and building materials are located throughout the StanCOG region.

California Government Code Section 65962.5 requires the California Environmental Protection Agency (CalUSEPA) to prepare an annual Hazardous Waste and Substances List, commonly referred to as the Cortese List. The addition or inclusion of a site on the Cortese List has bearing on the local permitting process and compliance with CEQA. For example, projects proposed at a site on the Cortese List are not eligible for categorical exemptions to CEQA per Section 15300.2(e) of the *State CEQA Guidelines*. The Cortese List is not maintained as a centralized list, however, and a variety of governmental data sources identify sites where hazardous substances may have been released or may have created a hazardous condition on-site. These include:

- DTSC Active Transporter County Search Report (2022a);
- DTSC EnviroStor database (DTSC 2022b) (Cortese List) for tracking hazardous waste facilities and site with known contamination or sites where there may be reasons to investigate further;
- State Water Resources Control Board's (SWRCB) GeoTracker database (SWRCB 2022) of records for sites that require cleanup, such as leaking underground storage tank (UST) sites, Department of Defense sites, landfill sites and Cleanup Program sites;
- The DOT's Hazardous Materials Incident Report System database (DOT 2022), which is maintained by the U.S. USEPA and contains data on hazardous material spill incidents;
- California Department of Resources Recycling and Recovery's (CalRecycle) Solid Waste Inventory System database (CalRecycle 2022) of active and closed solid waste sites;
- The U.S. USEPA Envirofacts database (USUSEPA 2022) of Resource Conservation and Recovery Act (RCRA) sites, as well as other hazardous sites, such as superfund and brownfield sites; and
- The USACE list of Formerly Used Defense Sites for California (USACE 2022).

All of the databases listed above have identified sites within the StanCOG region. Nine sites in the StanCOG region are identified on the USACE list of Formerly Used Defense Sites for California (USACE 2022). According to CalRecycle's Solid Waste Inventory System database, there is one active landfill (Fink Road Landfill), 32 other recycling, transfer, and compost sites, and an additional 15 sites that are closed or inactive. None are currently on the list of sites that are violating minimum

standards, 19 are operating without permits or are under notification of permit expiration (CalRecycle 2022).

For some databases, such as the DTSC's EnviroStor database and the U.S. USEPA Envirofacts database, the list of identified sites is too exhaustive to provide in its entirety for purposes of this EIR because it is not necessary for programmatic impact analysis. For example, the EnviroStor identifies hundreds of sites in the StanCOG region, including closed sites that have been fully remediated; sites where contamination is contained but land use restrictions are in place; and sites under evaluation, active remediation, and monitoring. Among these sites are superfund sites, state response hazardous sites, contaminated soil sites, and school cleanup sites and leaking UST sites. The U.S. USEPA Envirofacts database also identifies hundreds of RCRA sites in the region, including some that are also listed in the EnviroStor database. Examples of some of the RCRA sites identified in the region include gas stations, dry cleaners, automotive repair shops, pharmacies, automobile dealerships, paint stores, trucking companies, agricultural operations, and heavy industrial sites (USUSEPA 2022). The SWRCB GeoTracker database also identifies many leaking UST sites, some have been which remediated and cleaned, and some of which have yet to be cleaned. For purposes of this EIR, it is more important to note that many sites on the Cortese list exist throughout the StanCOG region, typically within proximity to the transportation network and more densely populated areas in the region.

To address the potential for documented and undocumented hazards on a site, the American Society for Testing and Materials has developed widely accepted practice standards for the preliminary evaluation of site hazards (E-1527-13) (ASTM 2013). Phase I Environmental Site Assessments (ESAs) include an on-site visit to determine current conditions; an evaluation of possible risks posed by neighboring properties; interviews with persons knowledgeable about the site's history; an examination of local planning files to check prior land uses and permits granted; file searches with appropriate agencies having oversight authority relative to water quality and/or soil contamination; examination of historic aerial photography of the site and adjacent properties; a review of current topographic maps to determine drainage patterns; and an examination of chain-of-title for environmental lines and/or activity and land use limitations. If a Phase I ESA indicates the presence, or potential presence of contamination, a site-specific Phase II ESA is generally conducted to test soil and/or groundwater. Based on the outcome of a Phase II ESA, remediation of contaminated sites under federal and state regulations may be required prior to development. Phase I ESAs can also be used to identify the potential for presence of hazardous building materials in situations where older structures intended for demolition could contain lead-based paint, asbestos containing materials, mercury, or polychlorinated biphenyls.

Naturally Occurring Asbestos

Asbestos is not a formal mineralogical term, but rather a commercial and industrial term historically applied to a group of silica-containing minerals that form long, very thin mineral fibers (termed amphiboles), which generally form in bundles, that were once widely used in commercial products. Naturally occurring asbestos includes minerals in their natural state, such as in bedrock or soils. Naturally occurring asbestos, which was identified as a toxic air contaminant by CARB in 1986, is of concern due to potential exposures to the tiny fibers that can become airborne if asbestos-bearing rocks are disturbed by natural erosion or human activities, such as road building, excavations, and other ground-disturbing activities. Once disturbed, microscopic fibers can become lodged in the lungs, which can potentially lead to serious health problems. The StanCOG region contains ultramafic rocks, such as serpentinite, which can contain asbestos fibers. Naturally occurring

asbestos sites are most concentrated in the western area of the County (USGS 2011). In general, naturally occurring asbestos fibers do not pose a threat unless disturbed and introduced into the air as fugitive dust.

Schools

Children are particularly susceptible to long-term effects from emissions of hazardous materials. Therefore, locations where children spend extended periods of time, such as schools, are particularly sensitive to hazardous air emissions and accidental release associated with the handling of extremely hazardous materials, substances, or wastes. The Stanislaus County Office of Education (SCOE) oversees 25 school districts, compromised of 16 elementary school districts and nine unified districts. There are approximately 108,000 students enrolled in SCOE districts, and school districts range from small to large.

Airports

Potential hazards in relationship to airport operations are generally regulated by the Federal Aviation Administration (FAA), with local planning and evaluation of proposed projects (in terms of a proposed project's compatibility in relationship to air and ground operations and the safety of the public) under the authority of the applicable airport land use commission (ALUC) through an airport land use compatibility plan (ALUCP). The ALUC with authority in the StanCOG region is the Stanislaus County Airport Land Use Commission and the applicable ALUCP in the StanCOG region is discussed in Section 4.10.2 below.

There are five airports in the StanCOG region: Modesto City-County Airport (Harry Sham Field); Oakdale Municipal Airport; Turlock Airpark; Crows Landing Air Facility; and Patterson Airport. Two of the airports are publicly owned and open to public use, the Modesto City-County Airport and the Oakdale Municipal Airport, while other airports are privately owned. Heliports exist at major area hospitals in Modesto, Oak Valley, and Turlock and there are two small private heliports used for crop dusting. A further description of aviation facilities is provided in Section 4.13, *Noise.*

4.10.2 Regulatory Setting

a. Federal Laws, Regulations, Policies

The USEPA is the lead agency responsible for enforcing federal regulations that affect public health or the environment. The primary federal laws and regulations include the RCRA of 1976 and the Hazardous and Solid Waste Amendments enacted in 1984, the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA), and the Superfund Act and Reauthorization Act of 1986 (SARA). Federal statutes pertaining to hazardous materials and wastes are contained in the CFR Title 40 - Protection of the Environment.

Toxic Substances Control Act

The Toxic Substances Control Act of 1976 (15 U.S. Code Section 2601 et seq.) grants USUSEPA the authority to develop reporting, record-keeping, and testing requirements for, as well as restrictions on, the manufacture, use, and sale of chemical substances. Pursuant to Title II of the Toxic Substances Control Act, the USEPAUSUSEPA adopted the Asbestos Model Accreditation Plan in 1994. The Model Accreditation Plan requires that all persons who inspect for asbestos-containing materials or design or conduct response actions with respect to friable asbestos obtain accreditation

by completing a prescribed training course and passing an exam. Section 403 of the Toxic Substances Act establishes standards for lead-based paint hazards in paint, dust, and soil.

Resource Conservation and Recovery Act

RCRA Subtitle C regulates the generation, transportation, treatment, storage and disposal of hazardous waste by LQGs (1,000 kilograms per month or more) through comprehensive life cycle or "cradle to grave" tracking requirements. The requirements include maintaining inspection logs of hazardous waste storage locations, records of quantities being generated and stored, and manifests of pick-ups and deliveries to licensed treatment/storage/disposal facilities. RCRA also identifies standards for treatment, storage, and disposal, which is codified in 40 CFR 260.

Comprehensive Environmental Response Compensation and Liability Act

Congress enacted CERCLA, setting up what has become known as the Superfund program, in 1980 to establish prohibitions and requirements concerning closed and abandoned hazardous waste sites; provide for liability of persons responsible for releases of hazardous waste at these sites; and establish a trust fund to provide for cleanup when no responsible party can be identified. Generally, CERCLA authorizes two kinds of response actions:

- Short-term removals, where actions may be taken to address releases or threatened releases requiring prompt response.
- Long-term remedial response actions that permanently and significantly reduce the dangers associated with releases or threats of releases of hazardous substances that are serious, but not immediately life threatening.

Superfund Amendments and Reauthorization Act

SARA amended the CERCLA in 1986, emphasizing the importance of permanent remedies and innovative treatment technologies to clean up hazardous waste sites; requiring Superfund actions to consider the standards and requirements found in other state and federal environmental laws and regulations; providing new enforcement authorities and settlement tools; increasing involvement of the states in every phase of the Superfund program; increasing the focus on human health problems posed by hazardous waste sites; encouraging greater citizen participation in making decisions on how sites should be cleaned up; and increasing the size of the trust fund to $8.5 billion.

Hazardous Materials Transportation Act

The transportation of hazardous materials is regulated by the Hazardous Materials Transportation Act (49 CFR § 101 et seq.), which is administered by the Research and Special Programs Administration of U.S. DOT. The Hazardous Materials Transportation Act governs the safe transportation of hazardous materials by all modes. The DOT regulations that govern the transportation of hazardous materials are applicable to any person who transports, ships, causes to be transported or shipped, or who is involved in any way with the manufacture or testing of hazardous materials packaging or containers. The DOT regulations govern every aspect of the movement, including packaging, handling, labeling, marking, placarding, operational standards, and highway routing.

Emergency Planning Community Right-to-Know Act

The Emergency Planning Community Right-to-Know Act (EPCRA), or SARA Title III, was enacted in October 1986. SARA Title III requires any infrastructure at the State and local levels to plan for chemical emergencies, including identifying potential chemical threats. Reported information is then made publicly available so that interested parties may become informed about potentially dangerous chemicals in their community. EPCRA Sections 301–312 are administered by USEPA's Office of Emergency Management. USEPA's Office of Information Analysis and Access implements EPCRA's Section 313 program. In California, SARA Title III is implemented through the California Accidental Release Prevention Program (CalARP).

Federal Disaster Mitigation Act

The Disaster Mitigation Act of 2000 provided a new set of mitigation plan requirements that encourage state and local jurisdictions to coordinate disaster mitigation planning and implementation. States are encouraged to complete a "Standard" or an "Enhanced" Natural Mitigation Plan. "Enhanced" plans demonstrate increased coordination of mitigation activities at the state level and, if completed and approved, increase the amount of funding through the Hazard Mitigation Grant Program.

FAA Regulations

The primary role of the FAA is to promote aviation safety and control the use of airspace. Public use airports that are subject to the FAA's grant assurances must comply with specific FAA design criteria, standards, and regulations. Land use safety compatibility guidance from the FAA is limited to the immediate vicinity of the runway, the runway protection zones at each end of the runway, and the protection of navigable airspace.

14 CFR 77, *Safe Efficient Use and Preservation of the Navigable Airspace*, establishes the federal review process for determining whether proposed development activities in the vicinity of an airport have the potential to result in a hazard to air navigation. 14 CFR Part 77 identifies standards for determining whether a proposed project would represent an obstruction "that may affect safe and efficient use of navigable airspace and the operation of planned or existing air navigation and communication facilities." Objects that are identified as obstructions based on these standards are presumed to be hazards until an aeronautical study conducted by the FAA determines otherwise.

b. State Laws, Regulations, and Policies

California Asbestos Regulations

In 1990, CARB issued an Airborne Toxic Control Measure (ATCM), which prohibited the use of serpentine aggregate for surfacing if the asbestos content was 5 percent or more. In July 2000, CARB adopted amendments to the existing ATCM prohibiting the use or application of serpentine, serpentine-bearing materials, and asbestos-containing ultramafic rock for covering unpaved surfaces unless it has been tested using an approved asbestos bulk test method and determined to have an asbestos content that is less than 0.25 percent. In July 2001, CARB adopted a new ATCM for construction, grading, quarrying, and surface mining operations in areas with serpentine or ultramafic rocks. These regulations are codified in Title 17, Section 93105 of the CCR. The regulations require preparation and implementation of an Asbestos Dust Mitigation Plan for construction or grading activities on sites greater than 1 acre in size with known NOA soils. The air

districts enforce this regulation. In October 2000, the Governor's Office of Planning and Research issued a memorandum providing guidance to lead agencies in analyzing the impacts of NOA on the environment through the CEQA review process. In November 2000, the California Department of Real Estate added a section to subdivision forms that includes questions related to NOA on property proposed for development. In 2004, as part of its school-site review program, DTSC's School Property Evaluation and Cleanup Division released interim guidance on evaluating NOA at school sites. In addition, California Health and Safety Code Section 19827.5 prohibits issuance of demolition permits by local and State agencies without assessment of the potential for the structure to contain asbestos.

Lead Regulations

The California Division of Occupational Safety and Health Administration (Cal/OSHA) lead standard for construction activities is implemented under Title 8 of the CCR. The standard applies to any construction activity that may release lead dust or fumes, including, but not limited to, manual scraping, manual sanding, heat gun applications, power tool cleaning, rivet busting, abrasive blasting, welding, cutting, or torch burning of lead-based coatings. Unless otherwise determined by approved testing methods, all paints and other surface coatings are assumed to contain lead at prescribed concentrations, depending on the application date of the paint or coating.

California Fire Code

The California Fire Code is Chapter 9 of CCR Title 24. It is the primary means for authorizing and enforcing procedures and mechanisms to ensure the safe handling and storage of any substance that may pose a threat to public health and safety. The California Fire Code regulates the use, handling, and storage requirements for hazardous materials at fixed facilities. The California Fire Code and the California Building Code use a hazard classification system to determine what protective measures are required to protect fire and life safety. These measures may include construction standards, separations from property lines and specialized equipment. To ensure that these safety measures are met, the California Fire Code employs a permit system based on hazard classification.

California Accidental Release Prevention Program

The CalARP Program addresses facilities that contain specified hazardous materials, known as "regulated substances," that, if involved in an accidental release, could result in adverse off-site consequences. The CalARP Program defines regulated substances as chemicals that pose a threat to public health and safety or the environment because they are highly toxic, flammable, or explosive.

California Unified Program Administration

The Unified Program consolidates, coordinates, and makes consistent the administrative requirements, permits, inspections and enforcement activities of six environmental and emergency response programs, as listed below:

- Hazardous Materials Release Response Plans and Inventories (Business Plans);
- CalARP Program;
- Underground Storage Tank Program;
- Aboveground Petroleum Storage Act Program;

- Hazardous Waste Generator and Onsite Hazardous Waste Treatment (tiered permitting) Programs; and
- California Uniform Fire Code: Hazardous Material Management Plans and Hazardous Material Inventory Statements.

The state agency partners involved in the Unified Program have the responsibility of setting program element standards, working with CalUSEPA on ensuring program consistency and providing technical assistance to the Certified Unified Program Agencies (CUPA). The following state agencies are involved with the Unified Program:

- CalUSEPA is directly responsible for coordinating the administration of the Unified Program. The Secretary of the CalUSEPA certifies CUPAs
- DTSC provides technical assistance and evaluation for the hazardous waste generator program including onsite treatment (tiered permitting)
- OES is responsible for providing technical assistance and evaluation of the Hazardous Material Release Response Plan (Business Plan) Program and the CalARP Programs
- The Office of the State Fire Marshal is responsible for ensuring the implementation of the Hazardous Material Management Plans and the Hazardous Material Inventory Statement Programs. These programs tie in closely with the Business Plan Program
- SWRCB provides technical assistance and evaluation for the UST program in addition to handling the oversight and enforcement for the aboveground storage tank program

The CUPA for Stanislaus County is the Stanislaus Department of Environmental Resources (DER). The DER is responsible for implementing the federal and state laws and regulations pertaining to the handling of hazardous wastes and hazardous materials.

California Land Environmental Restoration and Reuse Act of 2001

The California Land Environmental Restoration and Reuse Act of 2001 established California Human Health Screening Levels (CHHSLs) as a tool to assist in the evaluation of contaminated sites for potential adverse threats to human health. The CHHSLs were developed by the Office of Environmental Health Hazard Assessment, an agency under the umbrella of CalUSEPA. The thresholds of concern used to develop the CHHSLs are an excess lifetime cancer risk of one in 1 million and a hazard quotient of 1.0 for non-cancer health effects. The CHHSLs were developed using standard exposure assumptions and chemical toxicity values published by USEPA and CalUSEPA. The CHHSLs can be used to screen sites for potential human health concerns where releases of hazardous chemicals to soils have occurred. Under most circumstances, the presence of a chemical in soil, soil gas, or indoor air at concentrations below the corresponding CHHSLs can be assumed to not pose a significant health risk to people who may live (residential CHHSLs) or work (commercial/ industrial CHHSLs) at the site.

California Multi-Hazard Mitigation Plan

The State Hazard Mitigation Plan (SHMP) represents the state's primary hazard mitigation guidance document - providing an updated analysis of the state's historical and current hazards, hazard mitigation goals and objectives, and hazard mitigation strategies and actions. The plan represents the state's overall commitment to supporting a comprehensive mitigation strategy to reduce or eliminate potential risks and impacts of disasters in order to promote faster recovery after disasters

and, overall, a more resilient state. State Hazard Mitigation Plans are required to meet the Elements outlined in FEMA's State Mitigation Plan Review Guide (revised March 2015, effective March 2016).

OES is responsible for the development and maintenance of the State's plan for hazard mitigation. The State's multi-hazard mitigation plan was last approved by the Federal Emergency Management Agency (FEMA) as an Enhanced State Mitigation Plan in 2018. The plan is designed to reduce the effects of disasters caused by natural, technological, accidental, and adversarial/human-caused hazards. The SHMP sets the mitigation priorities, strategies, and actions for the state. The plan also describes how risk assessment and mitigation strategy information is coordinated and linked from local mitigation plans into the SHMP and provides a resource for local planners of risk information that may affect their planning area. The State of California is required to review and revise its mitigation plan and resubmit for FEMA approval at least every five years to ensure continued funding eligibility for certain federal grant programs.

California Public Resources Code 21151.4

Pursuant to Public Resources Code Section 21151.4, projects that can be reasonably anticipated to produce hazardous air emissions or handle extremely hazardous materials, substances, or waste within 0.25 mile of an existing or proposed school must consult with the potentially affected school district and provide written notification not less than 30 days prior to the proposed certification or adoption of an environmental document. Where a school district proposes property acquisition or the construction of a school, the environmental document must address existing environmental hazards, and written findings must be prepared regarding existing pollutant sources.

California Education Code

Sections 17071.13, 17072.13, 17210, 17210.1, 17213.1-3 and 17268 of the California Education Code became effective January 1, 2000. Together, they establish requirements for assessments and approvals regarding toxic and hazardous materials that school districts must follow before receiving final site approval from the DOE and funds under the School Facilities Program. These requirements are consistent with those described above for certification or adoption of an environmental document under Public Resources Code Section 21151.4.

California Education Code Section 17213(b) establishes requirements for assessments and approvals that address the potential for existing contamination on the site, and whether nearby land uses might reasonably be anticipated to emit hazardous air emissions or handle hazardous materials. Assessment of existing contamination is conducted in coordination with DTSC's School Property Evaluation and Cleanup Division, which is responsible for assessing, investigating, and cleaning up proposed school sites. This Division ensures that selected properties are free of contamination or, if the properties were previously contaminated, that they have been cleaned up to a level that protects the students and staff who will occupy a new school.

Carpenter-Presley-Tanner Hazardous Substances Account Act

The Carpenter-Presley-Tanner Hazardous Substance Account Act imposes liability for hazardous substances removal or remedial actions and requires the State Attorney General to recover from the liable person, as defined, certain costs incurred by the DTSC or any of the state's nine RWCQBs, upon the request of the DTSC or RWQCB. The act authorizes, except as specified, a party found liable for any costs or expenditures recoverable under the act for those actions to establish, as specified, that only a portion of those costs or expenditures are attributable to the party and requires the party to pay only for that portion. If each party does not establish its liability, the act

requires a court to apportion those costs or expenditures, as specified, among the defendants and the remaining portion of the judgment is required to be paid from the Toxic Substances Control Account. Existing law authorizes the money deposited in the Toxic Substances Control Account in the General Fund to be appropriated to the DTSC for specified purposes, including the payment of the costs incurred by the state for those actions.

Lempert-Keene-Seastrand Oil Spill Prevention and Response Act

The Lempert-Keene-Seastrand Oil Spill Prevention and Response Act of 1990 granted the Office of Spill Prevention and Response the authority to direct prevention, removal, abatement, response, containment, and cleanup efforts regarding all aspects of any oil spill in marine waters of California. The Office of Spill Prevention and Response implements the California Oil Spill Contingency Plan, consistent with the National Contingency Plan, which pays special attention to marine oil spills and impacts to environmentally- and ecologically sensitive areas. In 2014, the Office of Spill Prevention and Response program was expanded to cover all statewide surface waters at risk of oil spills from any source, including pipelines and the increasing shipments of oil transported by railroads.

Local Community Rail Security Act

The Local Community Rail Security Act of 2006 (Public Utilities Code Sections 7665-7667) requires all rail operators to provide security risk assessments to California Public Utilities Commission, the Director of Homeland Security and the Catastrophic Event Memorandum Account that describe the following:

- Location and function of each rail facility;
- Types of cargo stored at or typically moved through the facility;
- Hazardous cargo stored at or moved through the facility;
- Frequency of hazardous movements or storage;
- Description of sabotage-terrorism countermeasures;
- Employee training programs;
- Emergency response procedures; and
- Emergency response communication protocols.

c. Regional and Local Laws, Regulations, Policies

San Joaquin Valley Air Pollution Control District

The San Joaquin Valley Air Pollution Control District (SJVAPCD) attains and maintains air quality conditions in the San Joaquin Valley Air Basin (SJVAB), which comprises the San Joaquin, Stanislaus, Merced, Madera, Fresno, Kings, Tulare, and western Kern County counties. SJVAPCD is responsible for air monitoring, permitting, enforcement, long-range air quality planning, regulatory development, education, and public information activities related to air pollution, as required by the Clean Air Act and California Clean Air Act. Projects in the SJVAB are subject to SJVAPCD's rules and regulations, including rules pertaining to asbestos and toxic air contaminants. SJVAPCD Rule 4002, National Emission Standards for Hazardous Air Pollutants, sets emissions standards for stationary source emissions, including asbestos emission from building demolition.

City and County General Plans

Local planning policies related to hazards and hazardous materials are established in each jurisdiction's general plan, generally in the Safety Element or equivalent chapter. Safety Elements are required to address geologic hazards, fire hazards, dam failure, evacuation routes, flooding, and emergency response among other issues. For emergency services, some of the relevant policies may include coordinating with other agencies that are responsible for planning medical facilities to meet the health care needs of residents in the region, retaining hospitals, evaluating medical facility proposals, providing emergency response services, and participating in mutual-aid agreements.

Incorporated cities within the County each have a General Plan which includes a Safety Element or equivalent chapter. For projects within the municipal area of these cities these Plans would supersede the elements of the County General Plan. Outlined below are the goals for Stanislaus County and major cities within the StanCOG region as representative of local planning regarding hazards.

STANISLAUS COUNTY

The Stanislaus County General Plan Safety Element (Chapter 5) includes goals in an effort to minimize the impacts of man-made or natural disasters, hazardous materials, or other safety concerns. Relevant goals to the proposed 2022 RTP/SCS EIR include the following (Stanislaus County 2015):

- **Goal 2**: Minimize the effects of hazardous conditions that might cause loss of life and property.

CITY OF MODESTO

The City of Modesto's Community Facilities and Services Element of the General Plan includes goals that aim to improve public safety and provision of City services. Relevant goals to the proposed 2022 RTP/SCS EIR include the following (City of Modesto 2019):

- **Goal VI.K**: Provide responsive fire and life safety protection to the community through control of hostile fire, fire prevention, emergency medical services, emergency preparedness, and mitigation of hazardous materials incidents.

CITY OF TURLOCK

The City of Turlock's Safety Element of the General Plan identifies the natural and manmade hazards that exist within the city and seeks to mitigate their potential impacts through both preventative and response measures. Relevant goals to the proposed 2022 RTP/SCS EIR include the following (City of Turlock 2012):

- **Guiding Policy 10.1-a: Protect Lives and Property**. Prevent loss of lives, injury, illness, and property damage due to hazardous materials and wastes.
- **Guiding Policy 10.1-b: Protect Natural Resources.** Protect soils, surface water, and groundwater from contamination from hazardous materials.
- **Guiding Policy 10.1-c: Coordinate Efforts to Minimize Risks**. Cooperate with State agencies and the Stanislaus County Environmental Resources Department efforts to identify hazardous materials users, implement hazardous materials plans, provide safe waste disposal sites, and minimize risks associated with hazardous cargoes, agricultural spraying, and electromagnetic fields.

- **Guiding Policy 10.1-d: Incorporate Safety Considerations Into Land Use Policies**. Coordinate land use policies with concerns about potential hazards.
- **Guiding Policy 10.4-a: Protect from Hazards**. Continue to protect people and property from natural and manmade hazards.

Local Hazard Mitigation Plans

Local jurisdictions develop, adopt, and update hazard mitigation plans to establish guiding principles for reducing hazard risk, as well as specific mitigation actions to eliminate or reduce identified vulnerabilities. Stanislaus County OES's Local Hazard Mitigation Plan (LHPM) was last updated in July 2017 and is currently under update as of June 2022. The LHPM recognized earthquakes, floods, dam inundation, landslides and wildfire as the local natural hazards. The LHMP also states mitigation strategies and actions that serve as the long-term blueprint for reducing potential losses. Activities such as issuing building permits, repairing roads and training first responders are examples of specific actions which can be taken to prevent or minimize damage. Such activities have been identified for each hazard in the LHMP (Stanislaus County OES 2017).

Airport Land Use Compatibility Plans

There are three public-use airports included in the Stanislaus County ALUCP: Modesto City-County Airport, Oakdale Municipal Airport, and Crows Landing Airport (Stanislaus County 2016). The Crows Land Airport has since closed and the property is intended for other development by the County. The ALUCP establishes areas of influence within which airport operations are likely to affect land uses or land uses could affect airport operations. The goals of the ALUCPs are to protect residents from the negative environmental noise, safety and traffic impacts that can potentially be induced by airports. Safety and noise criteria are identified in the ALUCP so that land use conflicts with airport operations are minimized. Prior to amending a general plan, a local agency must refer the proposed action to the ALUC (Pub. Util. Code Sec. 21676, et seq.) County and city general plans must be consistent with the ALUCP (Government Code Section 65302.2).

4.10.3 Impact Analysis

a. Methodology and Significance Thresholds

Appendix G of the State CEQA Guidelines identifies criteria for determining whether a project's impacts would have a significant impact to hazards and hazardous materials:

1. Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials;
2. Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment;
3. Emit hazardous emissions or handles hazardous or acutely hazardous materials, substances or waste within one-quarter mile of an existing or proposed school;
4. Be located on a site which is included on a list of hazardous materials compiled by the Government Code Section 65962.5 and, as a result, would create a significant hazard to the public or the environment;
5. For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, result in a safety hazard or excessive noise for people residing or working in the project area;

6. Impair implementation or physically interfere with an adopted emergency response plan or emergency evacuation plan; or
7. Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires.

Impacts related to impairment or interference of emergency response or evacuation plans are discussed in detail in Section 4.15, *Transportation*, under Impact T-4. Impacts related to Impacts related to exposure to wildland fires (Criterion 7), are discussed in detail Section 4.17, *Wildfire,* under Impact WF-1.

The methodology used for the following evaluation is based on a review of documents and publicly available information about hazardous and potentially hazardous conditions in the StanCOG region to determine the potential for implementation of the 2022 RTP/SCS to result in an increased health or safety hazard to people or the environment. This includes city and county planning documents, and hazardous materials database information maintained by various state and federal agencies, such as DTSC and SWRCB. Due to the large area of the StanCOG, known sites of current or former contamination were not evaluated in detail, and physical surveys were not conducted. Rather, this program-level analysis is based on hazards typically associated with certain land uses and an overall understanding of the key safety concerns that could result from implementation of the 2022 RTP/SCS.

The evaluation of hazards and hazardous materials impacts assumes that the construction and development under the 2022 RTP/SCS would adhere to the latest federal, state, and local regulations, and conform to the latest required standards in the industry, as appropriate for individual projects.

b. Project Impacts and Mitigation Measures

The following section discusses potential impacts and mitigation measures that may be associated with transportation projects and the land use scenario contained within the proposed 2022 RTP/SCS. Section 4.10.3.c summarizes the impacts associated with capital improvement projects proposed in the proposed 2022 RTP/SCS. Due to the programmatic nature of the proposed 2022 RTP/SCS, a precise, project-level analysis of the specific impacts associated with individual transportation and land use projects is not possible at this time. In general, however, implementation of proposed transportation improvements and future projects under the land use scenario envisioned by the proposed 2022 RTP/SCS could result in the impacts as described in the following section.

Threshold 1:	Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials
Threshold 2:	Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment

Impact HAZ-1 TRANSPORTATION IMPROVEMENT PROJECTS AND LAND USE SCENARIO ENVISIONED BY THE 2022 RTP/SCS MAY FACILITATE THE ROUTINE TRANSPORT, USE, OR DISPOSAL OF HAZARDOUS MATERIAL, AND MAY RESULT IN REASONABLY FORESEEABLE UPSET AND ACCIDENT CONDITIONS. IMPACTS WOULD BE LESS THAN SIGNIFICANT.

Land use and transportation projects associated with implementation of the 2022 RTP/SCS would temporarily increase the regional transport, use, storage and disposal of hazardous materials and petroleum products commonly used at construction sites, such as diesel fuel, lubricants, paints and solvents and asphalt and cement products containing strong basic or acidic chemicals. Hazardous waste generated during construction may consist of welding materials, fuel and lubricant containers, paint and solvent containers and discarded asphalt and cement products.

Construction associated with implementation of the 2022 RTP/SCS could result in impacts related to use of hazardous materials and disturbance of potentially hazardous materials, including asbestos. However, the most likely incidents involving construction-related hazardous materials are generally associated with minor spills or drips. Small fuel or oil spills are possible but would have a negligible impact on public health. All hazardous materials would be stored, handled, and disposed of according to the manufacturers' recommendations and spills would be cleaned up in accordance with applicable regulations. Hazardous materials spills or releases, including petroleum products such as gasoline, diesel, and hydraulic fluid, regardless of quantity spilled, must be immediately reported if the spill has entered or threatens to enter a water of the State, including a stream, lake, wetland, or storm drain, or has caused injury to a person or threatens injury to public health. Immediate notification must be made to the local emergency response agency, or 911, and the OES Warning Center. For non-petroleum products, additional reporting may be required if the release exceeds federal reportable quantity thresholds over a release period of 24 hours as detailed in HSC Section 25359.4 and in 40 CFR 302.4.

The DOT has identified several highways within the StanCOG region as hazardous material routes (DOT 2022). Additionally, trucks transporting hazardous material would also have to use local collector and arterial streets to access individual project sites in the StanCOG region. Transportation projects would also require the temporary storage and use of hazardous materials at locations along project roads. Thus, trucks transporting hazardous materials for project construction would use many of the same freeways, arterials, and local streets as other traffic. This would create a risk of accidents and associated release of hazardous materials for other drivers and for people along these routes, as well as truck drivers. Although the transportation of hazardous materials could result in accidental spills, leaks, toxic releases, fire, or explosion, the DOT prescribes strict regulations for the safe transportation of hazardous materials, as described in Title 49 of the CFR and the Hazardous Materials Transportation Act. These standard accident and hazardous materials recovery training and procedures are enforced by the state and followed by private state-licensed, certified, and bonded transportation companies and contractors.

The construction of land use and transportation projects included in the 2022 RTP/SCS that require demolition of existing structures, particularly older structures, would have the potential to expose

workers and the public to asbestos containing materials or dust containing asbestos. Construction could also occur in areas of naturally occurring asbestos, which could expose construction workers to asbestos. HSC Section 19827.5 requires that local agencies not issue demolition or alteration permits until an applicant has demonstrated compliance with notification requirements under applicable federal regulations regarding hazardous air pollutants, including asbestos. Mandatory compliance with asbestos abatement and disposal regulations and requirements, including SJVAPCD Rule 7050, would minimize the risk of exposure.

Land use projects facilitated by the 2022 RTP/SCS would increase population, jobs, and households and a variety of land uses including residential, commercial, and industrial. Specific uses such as dry cleaners, gas stations, and certain industrial uses would involve routine transport, use, and disposal of hazardous materials such as household hazardous wastes (e.g., paints, cleaning supplies, solvents, and petroleum products) and commercial and industrial hazardous waste. The operation of businesses facilitated by land use projects included in the 2022 RTP/SCS that use, create, or dispose of hazardous materials would be regulated and monitored by federal, state, and local regulations that provide a high level of protection to the public and the environment from the hazardous materials manufactured within, transported to, and disposed within the StanCOG region. Use of hazardous materials at these businesses would also require permits and monitoring to avoid hazardous waste release through the local CUPA. During operation, businesses that store hazardous materials could potentially experience accidents or upset conditions that result from their routine use. These businesses would be required to prepare spill prevention, containment, and countermeasures plans (pursuant to 40 CFR 112) or, for smaller quantities, a spill prevention and response plan. These plans identify best management practices for spill and release prevention and provide procedures and responsibilities for rapidly, effectively, and safely cleaning up and disposing of any spills or releases. Oversight is provided by the CUPA. Pursuant to the requirements and liabilities of applicable regulations, the routine use or accidental spill of hazardous materials at business and industrial uses facilitated by the land use projects included in the 2022 RTP/SCS would not pose a substantial hazard to the public or the environment. Disposal of hazardous waste generated by these businesses would be subject to compliance with DTSC and Cal USEPA regulations.

Transportation projects included in the 2022 RTP/SCS include a variety of transportation modifications such as new travel lanes, auxiliary lanes, roadway widening, increased transit service and expansion, and other maintenance and rehabilitation projects. The projects may increase the capacity of roadways to transport hazardous materials. Roadway projects in the 2022 RTP/SCS would also improve road safety, as well as pedestrian and bicycle safety, thereby potentially reducing transportation-related hazardous materials risks because fewer accidents would occur on safer roads. Based on the requirements of Title 49 CFR 171–180, construction and operation of transportation projects would provide for the safe transport and disposal of hazardous waste.

The proposed 2022 RTP/SCS encourages infill development and increased population and employment density near public transit stops, including rail. There could also be increased urbanization along transportation corridors. Thus, the number of people potentially exposed to hazardous conditions could increase as a result of land use projects included in the proposed 2022 RTP/SCS. Although exposure to hazardous conditions could increase, the routine transport, use, and storage of potentially hazardous materials such as fuels, lubricants, solvents, and oils would be required to be conducted in accordance with all applicable State and federal laws, such as the Hazardous Materials Transportation Act, Resource Conservation and Recovery Act, the California Hazardous Material Management Act, and the CCR, Title 22. As described in Section 4.9.2,

Regulatory Setting, the DOT regulates the transport of hazardous materials by all modes, including rail and highway under the regulations of the Hazardous Materials Transportation Act. The Local Community Rail Security Act of 2006 requires all rail operators to provide security risk assessments to California Public Utilities Commission, which includes emergency response procedures and communication protocols. Mandatory implementation of additional federal, state, and local requirements such as Cal ARP Program and the Lempert-Keene-Seastrand Oil Spill Prevention and Response Act would minimize potential exposure to the public and the environment from accidental releases. Therefore, although population density would increase in proximity to major transportation corridors that are used to transport hazardous and flammable materials, the increased risk of hazard from routine transport or accidental upsets during transport would be minimal.

In conclusion, both planned land use projects and transportation projects could increase the routine transport, use, storage, and disposal of hazardous wastes in the StanCOG region. The planned land use projects and transportation projects could also increase the potential for unintentional upset and accident conditions. Because of the existing federal, state, and local regulations and oversight in place that would effectively reduce the inherent hazard associated with routine transport, use, storage and disposal activities, and regulations that effectively reduce the potential for individual projects to create a hazard to the public or the environment through reasonably foreseeable upset and accident conditions, impacts would be less than significant.

Mitigation Measures

No mitigation measures are required.

Threshold 3:	Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances or waste within one-quarter mile of an existing or proposed school

Impact HAZ-2 TRANSPORTATION IMPROVEMENT PROJECTS AND THE LAND USE SCENARIO ENVISIONED IN THE 2022 RTP/SCS WOULD NOT EMIT HAZARDOUS EMISSIONS OR HANDLE HAZARDOUS OR ACUTELY HAZARDOUS MATERIALS, SUBSTANCES OR WASTE WITHIN ONE-QUARTER MILE OF AN EXISTING OR PROPOSED SCHOOL. IMPACTS WOULD BE LESS THAN SIGNIFICANT.

As discussed in Impact HAZ-1, the land use projects included in the proposed 2022 RTP/SCS could include uses such as dry cleaners, gas stations, and certain industrial uses that would involve routine handling of hazardous materials and waste. Therefore, the proposed 2022 RTP/SCS could increase the amounts of hazardous materials handled within 0.25 mile of schools, depending on the specific location of land uses relative to schools in the region. There are over 108,000 students enrolled in SCOE schools county-wide. Certain industrial uses, such as chemical plants, may also generate hazardous emissions as byproducts, typically in the form of air emissions.

Any new commercial or industrial operations in proximity to existing schools would be required to comply with regulations related to the routine use, storage, and transport of hazardous materials. Land uses that would generate emissions or involve the handling of extremely hazardous materials, substances, or waste within one-quarter mile of an existing school must notify the affected school district pursuant to Public Resources Code Section 21151.4. As discussed in detail above, compliance with existing regulations would reduce the exposure to potential hazards associated with these land uses.

For new schools that may be developed to address the population distribution changes resulting from the land use scenario included in the proposed 2022 RTP/SCS, the California Education Code,

as discussed in Section 4.10.2, Regulatory Setting, would ensure that school sites would be free of contamination or cleaned up to a level that would protect students and staff that would occupy a new school site. Therefore, hazardous emissions and handling impacts on schools related to land use projects included in the proposed 2022 RTP/SCS would be less than significant.

The transportation projects included in the proposed 2022 RTP/SCS could increase the capacity to transport hazardous materials on roads within the StanCOG region, including within 0.25 mile of schools. However, all materials must be used, stored, and disposed of in accordance with applicable federal, state, and local laws, which would effectively reduce the potential impacts associated with hazardous emissions or handling of hazardous or acutely hazardous materials, substances, or waste within 0.25 mile of an existing or potential future school. Transportation projects in the proposed 2022 RTP/SCS may also improve road safety, thereby reducing the potential for accidents in proximity of schools related to hazardous materials. Therefore, the hazardous materials impacts related to existing and proposed schools from implementation of the transportation projects included in the proposed 2022 RTP/SCS would be less than significant.

Mitigation Measures

No mitigation measures are required.

Threshold 4:	Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment

Impact HAZ-3 THE PROPOSED 2022 RTP/SCS INCLUDES TRANSPORTATION IMPROVEMENT PROJECTS AND A LAND USE SCENARIO THAT COULD OCCUR ON SITES ON THE LIST OF HAZARDOUS MATERIAL SITES COMPILED BY GOVERNMENT CODE SECTION 65962.5. THIS IMPACT WOULD BE SIGNIFICANT AND UNAVOIDABLE.

Throughout the StanCOG region there are many sites where historical releases of hazardous materials or wastes have occurred; these are listed in environmental databases pursuant to Government Code Section 65962.5. As described In Section 4.10.1.a, there are hundreds of documented sites of contamination in some stage of DTSC or SWRCB oversight in the region. These sites range from small releases that have had localized effects on private property and have already been remediated to large scale releases from long-term historical industrial practices that have had wider ranging effects on groundwater. Specific sites of documented contamination are not evaluated in this analysis because this is a programmatic level document. Because the precise timing of future land use developments is unknown, an evaluation of the potential for specific sites of known contamination within the StanCOG region to be affected by land use projects included in the proposed 2022 RTP/SCS cannot be conducted. However, land use can be used to generally characterize the potential for release of hazardous materials (i.e., hazardous materials releases are more likely to have occurred in areas that currently or historically supported industrial uses). In addition, construction activities that disturb subsurface materials could encounter previously unidentified contamination from past practices or placement of undocumented fill or even unauthorized disposal of hazardous wastes. Encountering these hazardous materials could expose workers, the public or the environment to adverse effects depending on the volume, materials involved, and concentrations.

Development on identified hazard sites within the StanCOG region would be preceded by investigation, remediation and cleanup under the supervision of the RWQCB, DTSC, or the

applicable hazardous materials division (e.g., local oversight or Stanislaus County Department of Environmental Resources) before construction activities could begin. The agency responsible for oversight would determine the types of remediation and cleanup required and could include excavation and off-haul of contaminated soils, installation of vapor barriers beneath habitable structures, continuous monitoring wells onsite with annual reporting requirements, or other mechanisms to ensure the site does not pose a health risk to workers or future occupants. In addition, in many instances implementing and/or permitting agencies require submittal of a Phase I ESA prior to approval or implementation of a project. These studies include research in a variety of government databases to determine whether the site has had prior underground tanks or other industrial uses that could result in hazardous materials on or below the ground surface. However, with the exceptions for streamlining projects in transit priority areas and siting public schools, there are no general regulatory requirements to conduct a Phase I ESA, or subsequent investigation of potential contamination. Therefore, because it cannot be assumed these practices would regularly occur, the impacts related to land use projects included in the proposed 2022 RTP/SCS are potentially significant because there could be significant hazard to the public or the environment.

Development on sites listed in environmental databases pursuant to Government Code Section 65962.5 would be required to undertake remediation procedures prior to grading and development under the supervision of the applicable agency, depending upon the nature of any identified contamination. Nevertheless, the impacts of transportation projects included in the proposed 2022 RTP/SCS would be significant because there could be significant hazard to the public or the environment related to projects located on sites listed pursuant to Government Code Section 65962.5. The following mitigation measures would reduce this impact.

Mitigation Measures

For transportation projects under their jurisdiction, StanCOG shall implement, and transportation project sponsor agencies can and should implement, the following mitigation measures where applicable for transportation projects that would result in impacts that would potentially be located in areas with existing contamination. The County and cities in the StanCOG region can and should implement these measures, where relevant to land use projects implementing the proposed 2022 RTP/SCS. Project-specific environmental documents may adjust these mitigation measures as necessary to respond to site-specific conditions.

HAZ-3 Site Remediation

If an individual project included in the proposed 2022 RTP/SCS is located on or near a hazardous materials and/or waste site pursuant to Government Code Section 65962.5, the implementing agency shall prepare a Phase I ESA in accordance with the American Society for Testing and Materials' E-1527-05 standard. For work requiring any demolition or renovation, the Phase I ESA shall make recommendations for any hazardous building materials survey work that shall be done. All recommendations included in a Phase I ESA prepared for a site shall be implemented. If a Phase I ESA indicates the presence or likely presence of contamination, the implementing agency shall require a Phase II ESA, and recommendations of the Phase II ESA shall be fully implemented. Examples of typical recommendations provided in Phase I/II ESAs include removal of contaminated soil in accordance with a soil management plan approved by the local environmental health department; covering stockpiles of contaminated soil to prevent fugitive dust emissions; capturing groundwater encountered during construction in a holding tank for additional testing and characterization and disposal based on its characterization; and development of a health and safety plan for construction workers.

For any project located on or near sites that are not listed and do not have the potential for residual hazardous materials as a result of historic land uses, no action is required unless unknown hazards are discovered during development. In that case, the implementing agency shall discontinue development until DTSC, RWQCB, SJVAPCD, and/or other responsible agency issues a determination, which would likely require a Phase I ESA as part of the assessment.

IMPLEMENTING AGENCIES AND TIMING

Implementing agencies for transportation projects are StanCOG and transportation project sponsor agencies. Implementing agencies for land use projects are cities and the County. This mitigation measure shall, or can and should, be applied during permitting and environmental review and implemented during construction, as applicable.

Significance After Mitigation

Implementation of Mitigation Measure HAZ-3 would reduce site-related hazardous materials impacts to a less than significant because project sites with hazardous material contamination that on the list compiled by the Government Code Section 65962.5 would be identified prior to commencement of project construction. Additionally, prior to commencement of construction, measures to remediate contamination, such as containment and disposal of contaminated soil pursuant to federal and state regulations would be required. However, it cannot be guaranteed that all future project level impacts can be mitigated to a less than significant level. There additional mitigation measures to reduce this impact to less than significant levels are feasible. Therefore, this impact would remain significant and unavoidable.

Threshold 5:	For a project located within an airport land use plan or, where such a plan has not be adopted, within two miles of a public airport or public use airport, result in a safety hazard or excessive noise for people residing or working in the project area

IMPACT HAZ-4 TRANSPORTATION IMPROVEMENT PROJECTS AND THE LAND USE SCENARIO ENVISIONED IN THE PROPOSED 2022 RTP/SCS LOCATED WITHIN AN AIRPORT LAND USE PLAN OR WITHIN TWO MILES OF A PUBLIC OR PUBLIC USE AIRPORT WOULD NOT RESULT IN A SAFETY HAZARD OR EXCESSIVE NOISE FOR PEOPLE RESIDING OR WORKING IN THE PROJECT AREA. IMPACTS WOULD BE LESS THAN SIGNIFICANT.

The land use scenario and transportation projects included in the 2022 RTP/SCS may be located at or near a public use airport or a private airstrip. Impacts associated with development at or near existing airports are largely dependent upon site- and project-specific information that is not currently available and would be provided in the future as projects within the 2022 RTP/SCS undergo project level environmental review. However, any development and subsequent planning decisions in proximity to airports would be subject to review under the State Aeronautics Act provided under Public Utilities Code § 21167 et seq. Specific projects that may affect navigable airspace are also subject to FAA review, as outlined under 14 CFR Parts 77.5, 77.7, and 77.9. Additionally, the 2022 RTP/SCS would not change existing land use designations or zoning, and land use development would be subject to existing zoning regulations, including height restrictions and restrictions on residential development within the identified noise contours of an airport that exist in any General Plan that features an airport within its service area. Because there are existing federal, State, and local regulations and oversight in place that would effectively reduce the inherent hazard associated with development near airports to an acceptable and safe level, the impacts of the 2022 RTP/SCS would be less than significant.

Mitigation Measures

No mitigation measures are required.

c. Specific 2022 RTP/SCS Projects That May Result in Impacts

None of the transportation projects identified in the proposed 2022 RTP/SCS are on road segments that U.S. DOT has identified as hazardous material routes as there are none identified in the StanCOG region (FMCSA 2022). All proposed 2022 RTP/SCS transportation projects listed in Section 2, *Project Description*, that are located on the site list compiled by the Government Code Section 65962.5 would have the potential to result in hazardous materials impacts described in Impacts HAZ-1 and HAZ-3. Specific analysis would be required as individual land use projects are implemented to determine the project specific magnitude of exposure to or potential release of hazardous materials. Construction of any number of the transportation projects would require the use of petroleum products and other hazardous materials. For Impact HAZ-3, additional specific analysis described in the above mitigation measures would need to be conducted for listed sites as individual projects are implemented in order to determine the magnitude of project-specific impacts.

4.10.4 Cumulative Impacts

The cumulative impact analysis area for the hazards and hazardous materials analysis consists of the StanCOG region and adjoining counties. Information regarding these adjoining counties can be found in Section 3, *Environmental Setting*, Subsection 3.3.3.1, *Cumulative Impact Methodology*. Future development in this region relative to exposure to hazards is considered in the analysis. This cumulative extent is used to evaluate potential impacts from the increase of hazards and hazardous materials within the context of regional development.

The potential impacts related to hazards and hazardous materials are generally related to site specific and project specific characteristics and conditions; however, hazardous sites or releases can occur across multiple adjoining property or jurisdictions. Although the transport of hazardous materials may occur on rail or on roadways, such as SR 99, that traverse both the StanCOG region and adjacent counties, there are existing federal, state, and local regulations and oversight in place that would effectively reduce the inherent hazard associated with routine transport of such materials. Regulations and oversight, as outlined above in Section 4.10.2, would also effectively reduce the potential for individual projects to create a hazard to the public or the environment through reasonably foreseeable upset and accident conditions, within the StanCOG region as well as adjoining counties. Land use development envisioned as part of the proposed 2022 RTP/SCS could result in the development of sites listed in environmental databases pursuant to Government Code Section 65962.5. Although development of listed sites would be required to undergo remediation and comply with Mitigation Measure HAZ-3, cumulative impacts related to hazards and hazardous materials would be significant, and implementation of the proposed 2022 RTP/SCS would result in cumulatively considerable impacts pre-mitigation, and less-than-cumulatively considerable post-mitigation.

Impacts related to airport hazards are also site-specific, depending on the characteristics and design of individual projects and their location relative to distance and location of nearby airports. Existing regulations place limitations on the types of development that can be permitted within various aircraft zones surrounding an airport, such as building height restrictions or prohibiting residential occupancy. Mandatory compliance with these regulations would prevent substantial hazards related

to airports. Cumulative impacts would be less than significant and implementation of the proposed 2022 RTP/SCS would not result in cumulatively considerable impacts.

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4.11 Hydrology and Water Quality

This section evaluates the potential effects on hydrology and water quality resulting from implementation of the 2022 RTP/SCS.

4.11.1 Setting

Hydrological Setting

The StanCOG region (Stanislaus County and all cities within the County) is located in the San Joaquin Valley, which typically has cool, wet winters and warm, dry summers. The County receives an average of approximately 12 inches of precipitation per year, with the majority falling from November through April. Precipitation is higher in the eastern part of the County, near to the Sierra Nevadas, averaging 17 inches a year at the station in Knight's Ferry (Western Regional Climate Center 2021).

The StanCOG region is contained entirely within the San Joaquin River Hydrologic Region (HR), which includes all or part of 15 counties, four groundwater basins, and eleven subbasins. The HR stretches from the Sierra Nevadas in the east to the Coastal Range in the west. It's northern border roughly follows the Cosumnes River to Folsom Lake and then lies between the Cosumnes and South Fork American Rivers. Fresno County marks the southern extent of the HR (DWR 2021). The San Joaquin Valley is a broad alluvial plain which comprises the southernmost portion of the Great Valley Geomorphic Province of California. The Great Valley is a broad structural trough bounded by the tilted block of the Sierra Nevada on the east, the uplifted Klamath Mountains to the north, and the complexly folded and faulted Coast Ranges on the west (California Geological Survey 2002).

Three major rivers are located in the StanCOG region: the San Joaquin, Stanislaus, and Tuolumne. The San Joaquin River originates in the Sierra Nevada mountains in Fresno County and runs northwest through the Central Valley where it converges with the Sacramento River in the Sacramento-San Joaquin Delta. The Stanislaus River is a tributary to the San Joaquin River and originates in the central Sierra Nevada range. It divides San Joaquin and Stanislaus Counties. The Tuolumne River is another tributary to the San Joaquin River, originating in Yosemite National Park at the crest of the Sierra Nevada and running southwest through the central portion of the StanCOG region. There are several major water storage reservoirs within the StanCOG region, including the Modesto, Woodward, Turlock, and La Grange reservoirs, as well as numerous dams that divert water from the creeks and streams throughout the StanCOG Region, primarily for agricultural use.

There are four groundwater Subbasins that lie within the StanCOG region: Eastern San Joaquin Subbasin, Modesto Subbasin, Turlock Subbasin, and the Delta-Mendota Subbasin. All extend outside the region area, but the Modesto Subbasin lies almost entirely within the region with only a tiny portion extending into Tuolumne County (DWR 2021). The Delta-Mendota lies primarily to the south and extends through large portions of Merced and Fresno Counties as well as stretching into San Joaquin and Madera Counties. Hydrographic data through 2018 indicates that groundwater levels have remained fairly stable in the Modesto area since then, but levels throughout the rest of the Modesto Subbasin continue to decline at various rates (STRGBA 2021).

Water Agencies and Management Regions The StanCOG region lies within the Central Valley Regional Water Quality Control Board (CVRWQCB) boundaries. CVRWQCB is the primary agency responsible for overseeing water quality issues in the region.

The Eastern Stanislaus Regional Water Management Group is the largest Integrated Regional Water Management (IRWM)[1] agency in the StanCOG region and covers virtually all of the Modesto and Turlock Subbasin areas. The Delta-Mendota Subbasin is part of the Westside-San Joaquin Regional Water Management Group IRWM region, which extends outside the borders of the StanCOG region. The northern part of the StanCOG region has no IRWM agencies.

Water Supply

Supply Sources

The StanCOG region relies on the conjunctive use of surface water and groundwater to meet a variety of water demands. Conjunctive use of water, in general, refers to injecting surface water into groundwater aquifers or storing stormwater and runoff in ponds where it can infiltrate aquifers. Water supply within the StanCOG region is discussed under Section 4.18, *Less Than Significant Environmental Factors*, and only groundwater management as it relates to the impact analysis of this section is discussed here.

Groundwater is the major source of water for urban areas. The cities of Modesto, Oakdale, and Riverbank and the communities of Salida, Empire, and Waterford use groundwater as their primary potable water supply (MSGSP 2020). Groundwater is also the major source of agricultural irrigation water for the StanCOG region.

Regional Usage

The four Subbasins within the StanCOG region were all deemed high priority by DWR during the priority assignment phase of the beginnings of Sustainable Groundwater Management Act (SGMA) implementation (see Section 4.11.2, *Regulatory Setting).* The Delta-Mendota and Eastern San Joaquin Subbasins were deemed in critical overdraft and required to form Groundwater Sustainability Agencies (GSAs) and submit Groundwater Sustainability Plans (GSPs) for approval to DWR. The Northern-Central Delta Mendota GSA is part of the larger Delta-Mendota Subbasin groundwater planning and adopted their GSA in 2019; the Eastside San Joaquin Groundwater Authority became one of the member agencies of the Eastern San Joaquin Groundwater Authority, covering much of the Subbasin, and their joint GSP was adopted in 2019. Both plans have been deemed 'Incomplete' by DWR and are in the process of revision. The Modesto and Turlock Subbasins were not deemed in critical overdraft, but are still high priority, and as such joint GSAs have formed for both Subbasins and both have submitted draft GSPs that are awaiting DWR review. Table 4.11-1 below gives estimated groundwater pumping amounts from the four subbasins from 2015.

Table 4.11-1 Groundwater Pumping in Stanislaus County (2015)

Groundwater Subbasin	Agricultural Pumping (AFY)	Municipal Domestic Pumping (AFY)	Rural Domestic Pumping (AFY)	Water Budget (AFY)
Eastern San Joaquin	66,315	0	770	67,085
Modesto	170,892	45,968	5,870	222,730
Turlock	405,274	38,199	6,058	449,531
Delta-Mendota	233,864	5,644	1,467	240,975
Total				**980,321**

Source: Stanislaus County 2017

[1] IRWM regions serve to coordinate regional water project funding applications and planning and serve as a primary source of budgetary planning for multi-jurisdictional water infrastructure projects.

Although the use of the four Subbasins in the StanCOG region have been managed, all four Subbasins have experienced severe depletions during drought conditions in the region. Future concerns include an increased groundwater demand to supply the growing agricultural population. Demands have also increased due to limited surface water deliveries for the western portion of the StanCOG region during continued drought.

Water Quality

Water quality is a concern due to its potential impact on human health, enterprise, organisms, and ecosystem conditions. Quality is determined by factors such as native condition of surface water and groundwater, and by the amount and sources of contamination (natural and human induced).

Surface Water

A major source of pollution to surface waters is polluted storm water and both urban and agricultural runoff discharges. Urban runoff pollutants are generally collected by stormwater conveyance systems and often discharge from point sources such as outflow pipes into local water bodies and surface waters without any form of treatment. Agricultural runoff can both percolate directly into groundwater over large areas as nonpoint discharge or similarly be collected and conveyed into discharge infrastructure. Common pollutants impairing surface waters from agricultural or urban stormwater runoff can include pesticides, fertilizers, green waste, animal waste, human waste, petroleum hydrocarbons (gasoline, motor oil), trash, and other constituents.

Under Section 303(d) of the Clean Water Act, States are required to develop and update a list of all water bodies under their jurisdiction which fail to meet water quality standards even after point sources of pollution have utilized the minimum levels of pollution control (see Section 4.9.2, *Regulatory Setting,* below). These are referred to as '303(d) impaired' bodies. There are numerous 303(d) impaired water bodies within Stanislaus County, as depicted in Table 4.11-2 below.

Table 4.11-2 303(d) Impaired Waterbodies in Stanislaus County

Water Body	Impairment Constituent
Del Puerto Creek	Bifenthrin, Chlorpyrifos, Diazinon, Dieldrin, Dimethoate, Diuron, E. coli, Pyrethroids, Salinity, Sediment, Toxicity, pH, Nitrates/nitrites,
Delta Waterways (Southern)	DDT, Chlorpyrifos, Group A Pesticides, Toxicity, EC, IS, Diazinon, Mercury
Dry Creek	Chlorpyrifos, Diazinon, E. coli, Toxicity, DO
Duck Creek	Chlorpyrifos, E. coli, Mercury
Grassland/Marshes	Selenium, EC
Harding Drain	Chlorpyrifos, DDE, E. coli, Hexachlorobenzene/HCB, Lindane
Hospital Creek	DDE, DDT, Dieldrin, Dimethoate, E. coli, Pyrethroids, Salinity, Sediment, Toxicity, Trifluralin, EC, Arsenic, Chlorpyrifos
Ingram Creek	Chlorpyrifos, DDE, DDT, Diazinon, Dieldrin, Dimethoate, E. coli, Pyrethroids, Salinity, Sediment, Toxicity, Arsenic, Nitrates/nitrites
Littlejohns Creek	E. coli, Toxicity, Chlorpyrifos
Lone Tree Creek	Chlorpyrifos, E. coli, DO, Ammonia
Merced River	Chlorpyrifos, Diazinon, E. coli, Group A Pesticides, Mercury, Temperature, Toxicity
Modesto Reservoir	Mercury
Orestimba Creek	Chlorpyrifos, DDD, DDE, DDT, Diazinon, Dieldrin, Dimethoate, Diuron, E. coli, Malathion, Sediment, Toxicity, DO, EC,

Water Body	Impairment Constituent
Ramona Lake	Toxicity, E. Coli, EC, DO, Sediment, pH
Salado Creek	E. coli, Salinity
Stanislaus River, Lower	Chlorpyrifos, Diazinon, Group A Pesticides, Mercury, Temperature, Toxicity
San Joaquin River	Boron, Chlorpyrifos, DDT, DDE, Diazinon, EC, E. coli, Group A Pesticides, Mercury, Selenium, Temperature, Toxicity
Tuolumne River, Lower	Chlorpyrifos, Diazinon, Group A Pesticides, Mercury, Temperature, Toxicity
Turlock Lake	Mercury
Westley Wasteway	Chlorpyrifos, Dimethoate, E. coli, Sediment, Toxicity
Woodward Reservoir	Mercury

Source: SWRCB 2018 303(d) List Database
EC: Electrical Conductivity IS: Invasive Species DO: Dissolved Oxygen

Surface water quality is impaired from anthropogenic pollution primarily in the valley floor area of the western County and major point sources of contamination include municipal wastewater, oil field wastewater, winery discharges, and solid waste sites, while the primary non-point source of pollutants is agricultural runoff (CVRWQCB 2018). To address surface water quality impairments, the CVRWQCB has prescribed total maximum daily loads (TMDLs) in the Central Valley for diazinon and chlorpyrifos concentrations and nitrates/nitrates, which are contaminants associated with agricultural pesticides, as well as numerous TMDLs throughout the greater San Joaquin River watershed including TMDLs for mercury and methylmercury, dissolved oxygen, salinity, and boron (CVRWQCB 2018).

Groundwater

Water quality in the regional groundwater basins has degraded over the years from continual pumping and use. This is particularly true in areas where the water table has been substantially lowered. Additional factors that contribute to the decline of groundwater quality include percolation of agricultural runoff contaminated with fertilizers and pesticides into the water table, percolation of water from public and private sewage treatment systems, and percolation of contaminated urban runoff.

The entire San Joaquin Valley is underlain by the San Joaquin aquifer. Groundwater quality on the east and west sides of the San Joaquin River is vastly different. On the east side of the San Joaquin River, the water table depth varies from less than 20 feet around Turlock to greater than 200 feet elsewhere (DWR 2018 a, 2018b). Specific constituents of concern for groundwater quality in the Modesto area includes total dissolved solids (TDS), pesticides, nitrate, and volatile organic compounds (VOCs) (STRGBA 2020). The Turlock Subbasin has experienced increased salinity levels due to an upward migration of saline brine originating from a confined saline aquifer (TSGSA 2021). In addition, constituents such as perchloroethylene (PCE), pesticides, ethylene dibromide (EDB), uranium, nitrates, manganese, and iron have been found in a few water supply wells within the Turlock Subbasin. Some of these constituents are naturally occurring, such as manganese and uranium, while others are products of agricultural contamination.

To the west of the San Joaquin River, including throughout the Delta- Mendota Subbasin, high natural salinity in the groundwater caused by recharge from the Coast Range mountains has been exacerbated by ongoing agricultural irrigation and groundwater depletion (NCDM 2019). The high water table and poorly-draining soils restrict groundwater movement, causing salinity buildup. The

major groundwater quality concern is from TDS and nitrates, but levels of pesticides and other contaminants are also found in the groundwater, as well as naturally occurring selenium and boron in the grasslands and marshes.

Flooding and Dam Inundation

Streams and Floodplains

Flooding can occur as a result of storm events and excessive rainfall. Pursuant to Title 23, California Code of Regulations (23 CCR) Section 112, the Central Valley Flood Protection Board maintains jurisdiction over four regulated streams, including: Dry Creek from Tuolumne River to the Atchison, Topeka and Santa Fe (AT&SF) Railroad; Laird Slough; Stanislaus River; and Tuolumne River. According to Stanislaus County Office of Emergency Services' (OES) Local Hazard Mitigation Plan, existing dams on the Tuolumne and Stanislaus rivers substantially reduce the risk of flooding on surrounding lands (OES 2017). However, major flooding tends to occur along the San Joaquin River and isolated stretches of the Tuolumne River, as well as on Orestimba, Salado, and Sand Creeks (Stanislaus County 2016). Figure 4.11-1 shows the 100- and 500-year floodplains in in the StanCOG region.

Dam Inundation

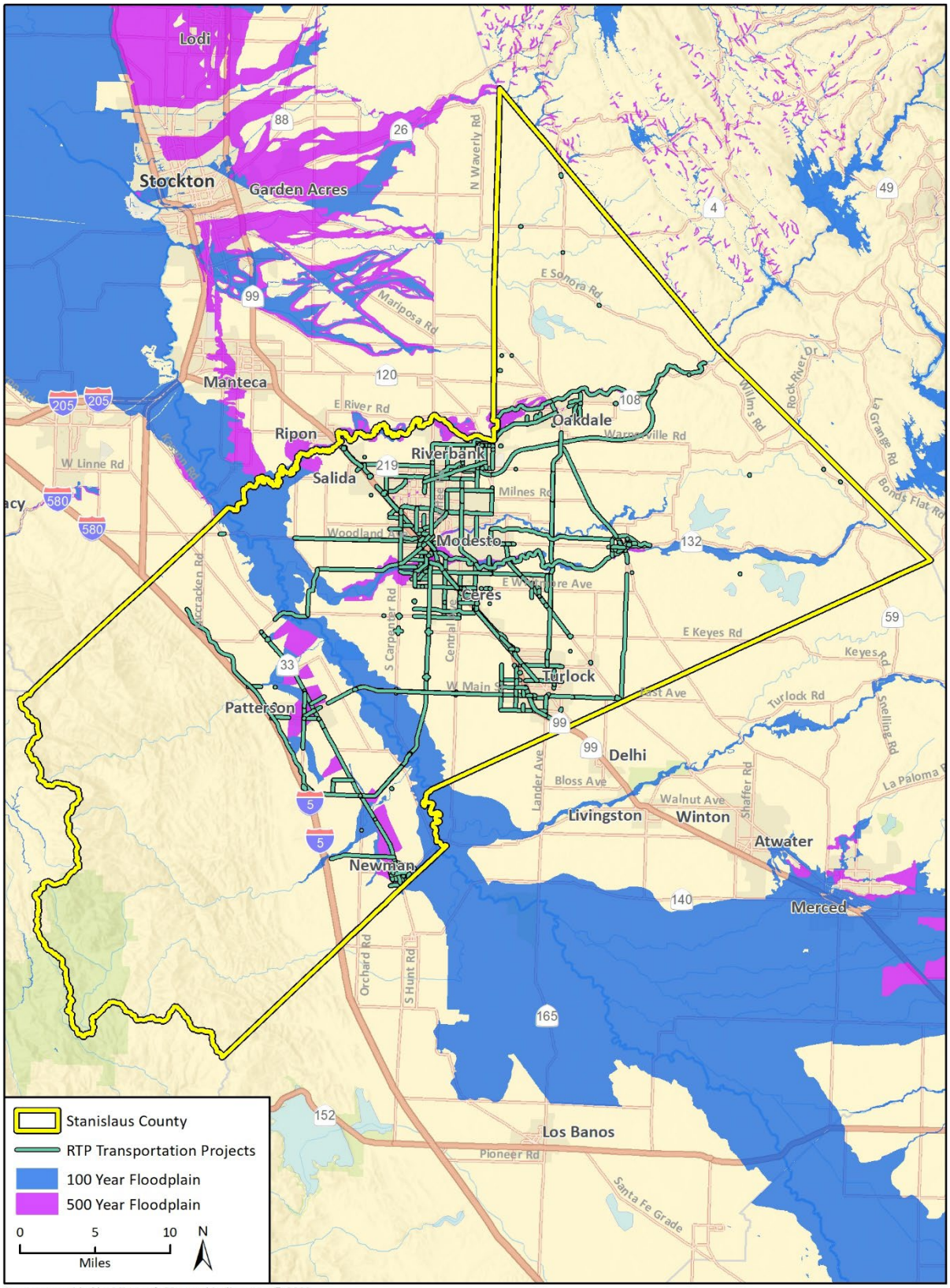
Inundation can result from dam failure, which refers to the breakdown, collapse or other failure of a dam structure characterized by the uncontrolled release of impounded water. The most common cause of dam failure is prolonged rainfall that produces flooding, although other causes include natural events such as earthquakes or landslides. DWR maintains inundation maps that depict the potential severity of flooding from dam failure. In Stanislaus County the DWR has categorized flooding damage as being Extremely High from Modesto Reservoir and the ConAgra Settling Ponds, High from Turlock Lake and Woodward, and Significant from Modesto Effluent Storage.

According to the Local Hazard Mitigation Plan (OES 2017), dams outside the StanCOG region that pose a risk of inundation in Stanislaus County include Don Pedro and New Exchequer. Inundation modeling indicates that if any of these dams were to fail, flooded areas would extend into Stanislaus County and maximum water elevation in areas could reach over 110 feet above mean sea level (amsl). The failure of any of the aforementioned dams would have severe consequences that include injury and death, limited transportation routes, and a decrease in vital utilities. Dam failure has never occurred in Stanislaus County and the probability for future failure is unlikely (OES 2017).

Urban Stormwater

During heavy rains, flooding can also occur on streets and roads within urbanized areas when stormwaters cannot permeate into the soil due to impermeable surfaces such as asphalt pavement or building footprints. Flooding can also occur when stormwater drainage systems are overwhelmed due to unanticipated rain events, insufficient size, or damage, and clogging from lack of maintenance. Flooding can also occur alongside or on major road systems such as highways due to similar issues of impermeable surfaces and/or insufficient drainage.

Figure 4.11-1 Stanislaus County 100- and 500-Year Flood Map



Imagery provided by Microsoft Bing and its licensors © 2022.
Additional data provided by FEMA, 2021.

Tsunami and Seiche

Tsunamis are high sea waves that are caused by earthquake, submarine landslide, or other disturbances. Stanislaus County is an inland region separated from the ocean by the Coast Range and, as such, is not at risk of flooding from a tsunami.

A seiche is a temporary disturbance or oscillation in water level of a lake or partially enclosed body of water, usually caused by changes in atmospheric pressure. In the Modesto, Turlock, and Woodward Reservoirs, an earthquake of sufficient magnitude could cause a seiche, or standing wave, in which case people using a reservoir for recreation would be at risk. Although an earthquake could generate a seiche in these reservoirs, potential inundation would remain localized to low-lying areas along the perimeter of the reservoirs. Additionally, personnel at the reservoirs are trained to handle water-related emergencies, and no privately-owned residences are located along the shorelines of these reservoirs (Stanislaus County 2016).

4.11.2 Regulatory Setting

a. Federal Laws, Regulations, and Policies

Clean Water Act

Congress enacted the Clean Water Act (CWA), 33 U.S.C. § 1251 et seq., formerly the Federal Water Pollution Control Act of 1972, with the intent of restoring and maintaining the chemical, physical and biological integrity of the waters of the United States (WOTUS). The CWA requires states to set standards to protect, maintain and restore water quality through the regulation of point source and non-point source discharges to surface water and the setting of water quality standards (CWA Section 303). Point source discharges are regulated by the National Pollutant Discharge Elimination System (NPDES) permit process (CWA Section 402). NPDES permitting authority is administered by the State Water Resource Control Board (SWRCB) and the nine RWQCBs (CWA Section 401).

CLEAN WATER ACT SECTION 303(D)

Under Section 303(d) of the CWA, States are required to develop and update a list of all water bodies under their jurisdiction which fail to meet water quality standards even after point sources of pollution have utilized the minimum levels of pollution control These are referred to as '303(d) impaired' bodies. Jurisdictions must establish priority rankings for 303(d) impaired water bodies and develop action plans to improve water quality to minimum standards. The plans include the setting of Total Maximum Daily Loads (TMDLs) for the pollutants which are impairing the water bodies; these limits are stricter than the normal minimum standards in order to bring the impaired bodies into compliance over time.

CLEAN WATER ACT SECTION 401

Under Section 401 of the CWA, the RWQCBs have regulatory authority over actions in waters of the U.S. (WOTUS) through the issuance of water quality certifications, which are issued in conjunction with any federal permit (e.g., permits issued by the USACE under Section 404 of the CWA, described below). This section requires the issuance of certification by the RWQCB that state water quality standards will not be violated.

CLEAN WATER ACT SECTION 402

Section 402 of the CWA regulates point-source discharges to surface waters, among other provisions, requires that all construction sites on an acre or greater of land, and all municipal, industrial, and commercial facilities discharging wastewater or stormwater directly from a point source (e.g., pipe, ditch, or channel) into WOTUS must obtain an NPDES permit. All NPDES permits are written to ensure that the surface water receiving discharges will achieve specified water quality standards.

In California, the NPDES program is administered by the SWRCB through the RWQCBs and requires municipalities to obtain permits that outline programs and activities to control wastewater and stormwater pollution. The CWA prohibits discharges of stormwater or wastewater unless the discharge is in compliance with an NPDES permit. Municipal stormwater and wastewater discharges from Municipal Separate Storm Sewer Systems (MS4s) and all other discharges are regulated by the local permitting authority where USEPA has approved the agency. Most MS4 Permits are tailored versions of general USEPA permits, while many industrial discharge permits are individual permits created for the specific discharge requirements of the project. Stanislaus County discharges that do not fall under specific municipal MS4 permits are regulated under the Region 5 Region-Wide MS4 Permit (Order R5-2016-0040).

The SWRCB is the permitting authority in California, issues general MS4 permits, and adopted an NPDES General Permit for Stormwater Discharges Associated with Construction and Land Disturbance Activities (Construction General Permit) (Order 2009-0009, as amended by Orders 2010-0014-DWQ and 2012-006-DWQ). The order applies to construction sites or other projects that include one or more acre of soil disturbance, as required by the CWA, but also to projects that disturb less than one acre but which, in the RWQCBs' determination, may pose a threat to water quality. Containment and spill cleanup are encompassed in the Storm Water Pollution Prevention Plan (SWPPP) which is required to be developed as a condition of permit issuance. The SWPPP must include measures to ensure that: all pollutants and their sources are controlled; non-stormwater discharges are identified and eliminated, controlled, or treated; site best management practices (BMPs) are effective and result in the reduction or elimination of pollutants in stormwater discharges and authorized non-stormwater discharges; and BMPs installed to reduce or eliminate pollutants after construction are completed and maintained. Any project implementing the proposed 2022 StanCOG RTP/SCS that disturbs more than an acre, or that the CVRWQCB determines presents a potential impact to water quality, would be required to obtain coverage under either a specific permit or the Construction General Permit.

Small amounts of construction-related dewatering is mostly covered under the Construction General Permit, but large amounts of dewatering would be required to comply with the CVRWQCB's General Dewatering Permit (Order R5-2013-0074). Dewatering related to projects implementing the proposed 2022 RTP/SCS is likely to be limited in scope, but larger projects or those which are longer in duration may require coverage under the Low Threat Discharge and Dewatering Permit from the CVRWQCB.

CLEAN WATER ACT SECTION 404

Under Section 404 of the Clean Water Act, proposed discharges of dredged or fill material into WOTUS require USACE authorization. The USACE identifies wetlands using a multi-parameter approach, which requires positive wetland indicators in three distinct environmental categories: hydrology, soils, and vegetation. According to the *Corps of Engineers Wetlands Delineation Manual* (1987), except in certain situations, all three parameters must be satisfied for an area to be

considered a jurisdictional wetland. The *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region* (2008) is also used when conducting jurisdictional wetland determinations in areas identified within the boundaries of the Region, including Stanislaus County.

National Flood Insurance Act / Flood Disaster Protection Act

The National Flood Insurance Act of 1968 made flood insurance available for the first time. The Flood Disaster Protection Act of 1973 made the purchase of flood insurance mandatory for the protection of property located in Special Flood Hazard Areas. These laws are relevant because they led to mapping of regulatory floodplains and to local management of floodplain areas according to guidelines that include prohibiting or restricting development in flood hazard zones. As shown in Figure 4.11-1 above, virtually all of the San Joaquin River area in the western StanCOG region, as well as many other portions of the StanCOG region along the major waterways including portions of Modesto, lie in a 100-year floodplain.

Federal Emergency Management Agency

FEMA administers the NFIP to provide subsidized flood insurance to communities that comply with FEMA regulations limiting development in floodplains. FEMA also issues Flood Insurance Rate Maps (FIRMs) that identify which land areas are subject to flooding. These maps provide flood information and identify flood hazard zones. FEMA's minimum level of flood protection for new development is the 100-year flood event.

FEMA has also developed requirements and procedures for evaluating earthen levee systems and mapping the areas affected by those systems. Levee systems are evaluated for their ability to provide protection from 100-year flood events and the results of this evaluation are documented in the FEMA Levee Inventory System (FLIS). Levee systems must meet minimum standards and must be maintained according to an officially adopted maintenance plan. Other FEMA levee system evaluation criteria include structural design and interior drainage.

Executive Order 11988

Executive Order (EO) 11988 Floodplain Management directs federal agencies to avoid short- and long-term adverse impacts associated with the occupancy and modification of floodplains and to avoid direct and indirect support of floodplain development whenever there is a practicable alternative. Additionally, EO 11988 requires the prevention of uneconomic, hazardous, or incompatible use of floodplains; protection and preservation of the natural and beneficial floodplain values; and consistency with the standards and criteria of the National Flood Insurance Program.

b. State Laws, Regulations, and Policies

Porter Cologne Water Quality Control Act

The Porter Cologne Water Quality Control Act of 1967 (Water Code § 13000 et seq.) is the primary water-quality legislation in California and the mechanism for implementation of California's authority under Sections 303, 401, and 402 of the CWA. The Porter-Cologne Water Quality Control Act requires the SWRCB and the nine RWQCBs to adopt water quality criteria to protect State waters. These criteria include the identification of beneficial uses, narrative and numerical water quality standards, and implementation procedures. The Water Quality Control Plan, or Basin Plan, protects designated beneficial uses of State waters through the issuance of Waste Discharge Requirements (WDRs) and through the development of TMDLs. Any entity proposing to discharge

waste that could affect the quality of the waters of the State must make a report of the waste discharge to the RWQCB or SWRCB, which in turn issues WDRs, in compliance with the Porter-Cologne Act.

The CVRWQCB's Basin Plan for The Sacramento River Basin and the San Joaquin River Basin covers the region and is the Basin Plan considered in this analysis. It includes water quality objectives and TMDLs for the 303(d) bodies listed in Table 4.11-2, beneficial uses for waters within the region, and an implementation plan.

Under the Porter-Cologne Act's authority, SWRCB adopted a State Wetland Definition and Procedures for Discharges of Dredged or Fill Material to Waters of the State (SWRCB 2021), for inclusion in the forthcoming Water Quality Control Plan for Inland Surface Waters and Enclosed Bays and Estuaries and Ocean Waters of California. The policy consists of four major elements: 1) a wetland definition; 2) a framework for determining if a feature that meets the wetland definition is a water of the state; 3) wetland delineation procedures; and 4) procedures for the submittal, review, and approval of applications for Water Quality Certifications and Waste Discharge Requirements for dredge or fill activities (SWRCB 2021).

Antidegradation Policy

California's antidegradation policy, formally known as the Statement of Policy with Respect to Maintaining High Quality Waters in California, restricts degradation of surface and ground waters. It protects waters where existing water quality is higher than necessary for the protection of beneficial uses. Any actions with the potential to adversely affect water quality must be consistent with the maximum benefit to the people of the State; not unreasonably affect present and anticipated beneficial use of the water; and not result in water quality less than prescribed in water quality plans and policies.

Caltrans Statewide NPDES Permit

The California Department of Transportation (Caltrans) was issued the nation's first statewide stormwater NPDES permit (Order 99-06-DWQ) in 1999 by the SWRCB. The Caltrans Permit requires Caltrans to regulate nonpoint source discharge from its properties, facilities, and activities. The Caltrans Permit requires development of a program for communication with local agencies and coordination with other municipal separate storm sewer system (MS4) programs where those programs overlap geographically with Caltrans facilities. As part of the permit, Caltrans is required to create and annually update a Stormwater Management Plan (SWMP) that is used to outline the regulation of pollutant discharge caused by current and future construction and maintenance activities. SWMP requirements apply to discharges from Caltrans stormwater conveyances, including catch basins and drain inlets, curbs, gutters, ditches, channels, and storm drains. The SWMP must be approved by the SWRCB, and as specified in the permit, it is an enforceable document. Compliance with the permit is measured by implementation of the SWMP. Caltrans' policies, manuals and other guidance related to stormwater are intended to facilitate implementation of the SWMP. Caltrans also requires all contractors to prepare and implement a program to control water pollution effectively during the construction of all projects.

Urban Water Management Planning Act

In 1983, the California Legislature enacted the Urban Water Management Planning Act (Water Code, Section 10610 et seq.), which requires urban water suppliers to develop Urban Water Management Plans (UWMP) to actively pursue the efficient use of available supplies as well as

conduct drought assessments and planning. This Act also requires the provision of water service to be affordable to lower income households (Section 10631.1). Similarly, Government Code Section 65589.7 (Senate Bill [SB] 1087) requires water service providers to reserve water allocations for low-income housing. Every five years, water suppliers are required to update their UWMPs to identify short-term and long-term water demand management measures to meet growing water demands.

Sustainable Groundwater Management Act

In September 2014, the state passed legislation requiring that California's critical groundwater resources be sustainably managed by local agencies. SGMA gives local agencies the power to sustainably manage groundwater. It required DWR to establish priority levels for groundwater basins within the State based on their level of overdraft and required GSAs to develop GSPs for medium- and high-priority groundwater basins that would bring the basins into sustainability by 2040 or 2042. Basins determined to be in critical overdraft were required to develop GSPs first. As discussed under *Water Management* above, all four Subbasins are high priority, but only two are in critical overdraft. The plans reviewed by DWR have been deemed incomplete, and those for the non-critical subbasins are undergoing review with decisions from DWR due in 2024.

Along with mandating the formation of GSAs, SGMA provided the newly formed GSAs a set of tools to assist with groundwater management, including the ability to conduct investigations, levy fees, determine a basin's sustainable yield, and measure and limit groundwater extraction within their area. However, none of the GSPs approved to-date include actions beyond public outreach/education, conducting investigations, and levying fees; some propose voluntary extraction measurement programs and clearly envision mandatory measurement programs being implemented in regional and local codes, but none dictate groundwater limits. Such action would have to be preceded by the determination of a basins' sustainable yield through exercising of GSA statutory investigative powers and would have to be implemented through the promulgation of regulations in a traditional legislative process. In general, adopted GSPs call for increased data-gathering, including through expanded use of voluntary metering of individual wells. Many local governments already require metering on new wells, and where this is the case, many GSAs are beginning to collect that information as part of their investigative power. SGMA requires GSAs to update their GSPs every five years once approved.

Senate Bill 610 and 221

Senate Bill (SB) 610 of 2001 improves the link between information on water supply availability and certain land use decisions made by cities and counties. SB 610 promotes more collaborative planning between local water suppliers and cities and counties. Under SB 610, water supply assessments (WSAs) must be furnished to local governments for inclusion in any environmental documentation for certain projects subject to CEQA. A similar framework, SB 221, provides a method for applying similar considerations to certain land use entitlements. WSA requirements would be determined at the project level for projects implementing the proposed 2022 RTS/SCS which requires further CEQA analysis.

Assembly Bill 1881—Water Conservation in Landscaping Act

Assembly Bill (AB) 1881, the Water Conservation in Landscaping Act of 2006, enacted many landscape efficiency requirements for improving the efficiency of water use in new and existing urban irrigated landscapes in California. AB 1881 required DWR to update the existing Model Local Water Efficient Landscape Ordinance and local agencies to adopt the updated model ordinance or

an equivalent. The law also required the adoption of performance standards and labeling requirements for landscape irrigation equipment, including irrigation controllers, moisture sensors, emission devices, and valves to reduce the wasteful, uneconomic, inefficient, or unnecessary consumption of energy or water. AB 1881 would apply to any of the proposed projects implementing the proposed 2022 RTP/SCS which featured landscaping greater than 2,500 sf, including a limit to plant types used which restricts potential evapotranspiration to 70 percent of the local reference values—in effect requiring landscaping to lose less water to evapotranspiration than native plants.

2022 Water Conservation Emergency Regulation

Due to the prolonged drought throughout the State, in January 2022 SWRCB adopted the Water Conservation Emergency Regulation. Requirements for the duration of the emergency regulations (currently authorized from January 18, 2022 to January 18, 2023) include turning off decorative water fountains, prohibiting using water hoses to clean sidewalks, and turning off irrigation systems during rain and for two days after rain. SWRCB is developing draft proposed updates to the regulation consistent with Executive Order N-7-22 issued on March 28, 2022, including extending the duration and banning the irrigation of non-functional turf.

Cobey-Alquist Floodplain Management Act

The Cobey-Alquist Floodplain Management Act (Water Code § 8400 -8415) gives support to the NFIP by encouraging local governments to plan, adopt and enforce land use regulations for floodplain management, to protect people and property from flooding hazards. The Act discourages the construction of most types of development on 'designated floodways' and requires local agencies to set and enforce development restrictions for development within 'restricted zones.' Implementation of floodplain development regulations is a prerequisite for any agency to obtain State funding assistance with flood control projects or infrastructure of certain types.

c. Local Laws, Regulations, and Policies

Stanislaus County General Plan and Regulations

The Stanislaus County General Plan (Stanislaus County 2016) Conservation and Open Space Element contains goals and policies related to water conservation, water quality improvement, riparian habitat protection, and fish and wildlife protection. Specifically, Goal 2 is in place to protect and replenish groundwater aquifers and recharge systems. The Agricultural Element describes water resources and prioritizes maintaining groundwater quality, conserving water, and soil management in order to maintain low salinity and mineral levels.

The Stanislaus County Code contains numerous chapters on water quality and management, including Chapter 9.36 and 9.37, which address groundwater well construction and groundwater use and export; Chapters 14.12 and 14.14, which address water conservation and LID measures as well as stormwater management, and Chapter 16 which addresses floodplain regulations. Section 9.36.060 requires that groundwater wells be designed and constructed to prevent surface water entry and contamination of groundwater..

City General Plans and Regulations

The general plans and local codes for the cities in the County also generally address the protection of water quality and water resources. For example, the City of Oakdale General Plan contains Policy

NR-4.6, which regulates stormwater collection and conveyance to ensure pollutants in runoff have been reduced to the maximum extent practicable (City of Oakdale 2013). The Oakdale Municipal Code addresses stormwater management in Chapter 29 and details prohibitions on water waste and conservation regulations in Chapter 35, Article VI. Policy 3.3-y of the City of Turlock General Plan requires stormwater system infrastructure to be designed and constructed as necessary to safely convey, detain, and dispose of current and future stormwater flows, protect water quality, and meet regulatory requirements (City of Turlock 2012). The Turlock Municipal Code collects most of its water quality and conservation regulations in Chapter 6, Sanitation and Health, including Sections 6-5 which collects the general Water Code, Section 6-7, which addresses water conservation requirements, and Section 6-8 which contains stormwater management and runoff control measures.

Additionally, cities in the County aside from the greater Modesto area are also covered under the Statewide Phase II MS4 General Permit, as discussed under State Laws, Regulations, and Policies above, which requires post-construction stormwater management.

The City of Modesto has coverage under its own NPDES permit. The City General Plan addresses water-related goals and policies in Chapter VI, Community Facilities and Services. Goal VI.C contains policies to actively engage City planning with the regional GSAs, Goal VI.E includes policies to ensure compliance with NPDES limits and to increase reclaimed water usage and conservation measures, and Goal VI.F collects policies related to stormwater quality and flood control measures. The City Code contains numerous regulations to ensure compliance with the City's Phase I MS4 Permit within Chapter 10.

4.11.3 Impact Analysis

a. Methodology and Significance Thresholds

Appendix G of the State CEQA Guidelines identifies the following criteria for determining whether a project's impacts would have a significant impact related to hydrology and water quality:

1. Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality;
2. Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin;
3. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would:
    a. Result in substantial erosion or siltation on- or off-site;
    b. Substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site;
    c. Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or
    d. Impede or redirect flood flows;
4. In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation; or
5. Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan.

b. Project Impacts and Mitigation Measures

The following section discusses potential impacts and mitigation measures that may be associated with transportation projects and the land use scenario contained within the proposed 2022 RTP/SCS. Section 4.11.3.c summarizes the impacts associated with capital improvement projects in the proposed 2022 RTP/SCS. Due to the programmatic nature of the proposed 2022 RTP/SCS, a precise, project-level analysis of the specific impacts associated with individual transportation and land use projects is not possible at this time. In general, however, implementation of proposed transportation improvement projects and future projects under the land use scenario envisioned by the proposed 2022 RTP/SCS could result in the impacts as described in the following section.

Threshold 1:	Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality

Impact HYD-1 IMPLEMENTATION OF PROPOSED TRANSPORTATION PROJECTS AND FUTURE PROJECTS INCLUDED IN THE LAND USE SCENARIO ENVISIONED IN THE PROPOSED 2022 RTP/SCS WOULD NOT VIOLATE WATER QUALITY STANDARDS OR WASTE DISCHARGE REQUIREMENTS, OR OTHERWISE SUBSTANTIALLY DEGRADE SURFACE OR GROUND WATER QUALITY. IMPACTS WOULD BE LESS THAN SIGNIFICANT.

Implementation of proposed transportation and land use projects envisioned in the proposed 2022 RTP/SCS would result in both short-term and long-term impacts to surface and groundwater water quality. For program-level analyses, water-related impacts are often similar among individual projects within project classes (e.g., constructing new roadways, widening existing roadways, etc.). For example, when a new roadway is constructed, it will tend to have a greater impact than the widening of an existing roadway as it would generate runoff and contamination issues where there previously were none, as well as tend to create a larger amount of new impermeable surfaces than a widening project would. Similarly, improvements within built-up urban areas are less likely to generate concerns over water body pollution than improvements outside the urban landscape, as urban areas frequently have better stormwater drainage (and potential treatment) than countryside roadways, where stormwater capture may consist of a ditch or swale along the road.

Ground Water Quality

Ground water quality can be impaired in a variety of ways, including through drawdown of shallow, nutrient-polluted agricultural runoff near over-pumped wells; overall untreated runoff from agricultural and animal operations that percolates directly into shallow aquifers; percolation of wastes from septic systems; and percolation into the water table from polluted surface water where such interchange occurs. The proposed 2022 RTP/SCS does not feature alterations to the region's agricultural land uses, and the land use proposals feature increased urban density which would not be likely to include septic usage. Therefore, the primary potential impact to regional ground water quality would be associated with impacts to surface water quality in areas where surface water is directly connected to underlying ground water supplies. Potential impacts associated with increased overdraft of ground water are discussed in Impact HYD-2.

Surface Water Quality

Certain transportation improvements would increase overall impervious surface area throughout the StanCOG region. For example, the multiple road and highway widening projects would introduce increased pavement in areas that are currently undeveloped, with corresponding increases in runoff. Construction activities for transportation projects facilitated by the proposed 2022 RTP/SCS

may include soil disturbance, excavation, grading, and similar activities with a high potential to generate sediment and other pollutants. Sediment especially would not require stormwater to transport it into the environment; a high wind would be sufficient. Such projects would also serve to encourage increased use of the improved transportation network and facilitate the planned growth of the County population, leading to an increase in operational contamination from transportation use.

Development projects envisioned under the land use scenario could also introduce impervious surfaces, including infill sites, if the infill site is currently unpaved. However, it is likely that most infill sites are already developed, thus minimizing the increase of impervious surfaces. These and other more outlying projects that would increase impervious surfaces may generate adverse impacts to surface water quality. Pollutants and chemicals associated with urban activities would run off new roadway surfaces or other new impervious surfaces flowing into nearby bodies of water during storm events. These pollutants would include but are not limited to heavy metals from auto emissions, oil, grease, debris, and air pollution residues. Such contaminated urban runoff may result in the incremental long-term degradation of water quality.

Most transportation improvement projects would enhance and upgrade existing and outdated stormwater infrastructure, improving runoff quality: such benefits may be outweighed by the increases in current levels of pollutants caused by increase of traffic flows encouraged by better transportation systems. Similarly, any proposed 2022 RTP/SCS projects with landscaping may require fertilizer/pesticide application, which could enter nearby bodies of water and cause adverse effects to water quality.

As discussed under Section 4.11.2, Regulatory Setting, the federal CWA requires that coverage under an NPDES permit be obtained for construction projects that would disturb greater than one acre, or that are part of a larger plan of development that itself covers more than one acre. Acquisition of coverage under the Construction General Permit is dependent on the preparation of a SWPPP that contains project specific BMPs to control the discharge of pollutants, including sediment, into the local surface water drainages as well as post-construction measures to ensure continued permit compliance. In addition, all transportation projects for which Caltrans is the sponsor agency would comply with the Caltrans Statewide NPDES permit that regulates all stormwater discharges from Caltrans owned conveyances, maintained facilities and construction activities. Most proposed 2022 RTP/SCS transportation projects, such as state highway widenings and interchange construction, would disturb more than one acre and therefore subject to these regulations.

Coverage under the Statewide Phase II MS4 Permit would be required for all projects and land uses during their operation that discharged to an MS4 system outside the area covered by the City of Modesto's Phase I MS4 Permit. As described above, Stanislaus County and the cities in the County participate in a SWMP established by the SWRCB for the Statewide Phase II MS4 Permit. The Phase II MS4 General Permit requires certain new development and applicable redevelopment projects to incorporate post-construction stormwater control measures into their design that include low-impact development and hydromodification techniques. Stormwater discharges from the project site must be minimized and must be treated at the project site prior to discharge.

In addition, planning and approval of the various future projects envisioned by the proposed 2022 RTP/SCS would require the lead agencies and project sponsors to ensure compliance with existing local jurisdiction requirements, including applicable municipal code sections such as the City of Modesto's stormwater regulations in Chapter 10 of the Municipal Code and the stormwater and water quality regulations of Chapters 9 and 14 of the County Code.

In addition, the land use scenario included in the 2022 RTP/SCS would generate new sources of wastewater, which would also be conveyed to wastewater treatment facilities in the region Discharges of treated wastewater, also called effluent, from the treatment plants are regulated as point sources by the RWQCB and must meet water quality effluent limitations established in the NPDES permit issued by the RWQCB for the treatment plant. Thus, although implementation of the 2022 RTP/SCS would increase the volume of point-source wastewater discharges in the StanCOG region, required compliance and monitoring of effluent prior to discharge from treatment facilities would ensure impacts would be less than significant.

Compliance with the various regulations and restrictions of the multiple types of permits individual projects may fall under, as well as conformity with applicable County or municipal General Plan policies, would serve to reduce impacts from project construction and operational lifespan by requiring measures to prevent runoff and pollutants from leaving a project site wherever it was located within the StanCOG Region, and ensuring all non-point and point source discharges to surface water standards of the applicable NPDES Permits and Water Quality Control Plans such as the Basin Plan. These measures and permit requirements may not serve to eliminate impacts to water quality for certain individual projects; however, permit coverage would ensure that the transportation and land use projects implementing the proposed 2022 RTP/SCS would not violate any water quality standards or waste discharge requirements; therefore, impacts from violation of water quality standards or waste discharge requirements, or other impairment of water quality, would be less than significant.

Mitigation Measures

Mitigation measures are not required.

Threshold 2:	Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin

Impact HYD-2 TRANSPORTATION AND LAND USE PROJECTS IMPLEMENTING THE PROPOSED 2022 RTP/SCS WOULD SUBSTANTIALLY DECREASE GROUNDWATER SUPPLIES AND INTERFERE WITH GROUNDWATER RECHARGE SUCH THAT IT MAY IMPEDE SUSTAINABLE GROUNDWATER MANAGEMENT OF THE BASIN. IMPACTS WOULD BE SIGNIFICANT AND UNAVOIDABLE.

In undeveloped conditions, natural vegetation can intercept and retain precipitation and limit surface runoff, and runoff that occurs over large areas is often unconcentrated and able to percolate down into the ground and replenish groundwater supplies naturally. When natural areas, including bare dirt, are covered over by impermeable surfaces such as pavement, this natural infiltration is obstructed. Runoff from such areas is concentrated and may increase volumes and flow rate greater than the natural infiltration rate of the surrounding soil, leading to saturated ground which cannot accept any more water and ultimately impair natural recharge due to loss of otherwise rechargeable rainwater to evaporation or discharge to streams that flow to areas unable to assist recharge.

Major proposed 2022 RTP/SCS transportation projects and the land use scenario envisioned by proposed 2022 RTP/SCS could affect groundwater supplies by incrementally reducing groundwater recharge potential. This reduction in groundwater recharge could occur because the impermeable surfaces associated with the proposed improvements would increase surface water runoff at the expense of natural infiltration. The proposed 2022 RTP/SCS encourages infill development within

urbanized areas of the StanCOG region, and the land development envisioned could interfere with groundwater recharge by increasing the extent of impervious surfaces already present in this area. Urbanized areas are typically characterized by extensive impervious surfaces such as buildings and paved roads; as such, infill development would have minimal potential to further alter the rates and patterns of groundwater recharge to the overall basin. However, infill as well as any outlying development on currently unpaved sites would result in a net increase of impervious surfaces in the area and could have associated impacts on site specific runoff and infiltration patterns.

Land Use Projects

As development under the proposed 2022 RTP/SCS occurs, site specific drainage features would be designed to retain, capture, and convey increased runoff in accordance with the city or county design standards and State requirements, such as the post-construction site control features and hydromodification requirements of the Statewide MS4 Permit and the Modesto Phase I MS4 Permit, as discussed under Section 4.11.2, Regulatory Setting, and Impact HYD-1, above. Compliance with these standards and regulations typically includes the use of LID features which, as described above, are designed to simulate natural processes of runoff and infiltration to minimize or avoid potential adverse effects associated with new development. Most land use development would not occur on currently permeable surface and uses that did would incorporate design features in order to reduce impacts to recharge; therefore, impacts to groundwater recharge from land use projects implementing the proposed 2022 RTP/SCS would be less than significant.

Transportation Projects

In addition to the development that would occur under the proposed 2022 RTP/SCS, transportation projects could also increase the extent of impervious surfaces. Many of the planned transportation projects, such as the addition of new lanes to existing roads or highways, would have negligible effect on the overall extent of impervious surfaces, as they would occur in areas already characterized by paved surfaces. In addition, transportation improvements often serve to increase infiltration and recharge as outdated (or nonexistent) runoff infrastructure and design is replaced by modern drainage and LID features. As with the infill development discussed above, transportation projects would also be implemented with project specific drainage plans for new features would be designed to retain, capture, and convey runoff in accordance with the city or county design standards, where applicable, and federal and State requirements. As many projects may serve to improve recharge in their area, or would be required to implement design features to reduce impacts to groundwater recharge, impacts to groundwater recharge from transportation projects proposed by the proposed 2022 RTP/SCS would be less than significant.

Groundwater Supply Management

Implementation of transportation and land use projects envisioned in the proposed 2022 RTP/SCS would result in both short-term and long-term impacts to groundwater management throughout the StanCOG region.

Activities would be implemented under California regulations governing use of groundwater, including SGMA, as well as groundwater provisions of applicable local general plans. Taken as a whole, these regulations and plans are intended to reduce groundwater use and subsequent overdraft of groundwater basins.

Regional municipal UWMPs provide strategies for reducing water usage and increasing available supply, such as investing in reclaimed water infrastructure and increasing user education and

awareness of conservation practices UWMPs cannot impose any mandatory regulations or limits on water use, and any improvements in future proposals are currently speculative.

As described above, the high-priority basins in the StanCOG region are being managed by the four regional GSAs, each of which is responsible for developing and updating a GSP for its respective basin(s). As discussed in Section 4.11.1, Setting, and 4.11.2, Regulatory Setting, the GSPs for the two critically overdrafted subbasins were deemed 'Incomplete' by DWR and require revision, and the GSPs submitted for the two high-priority but not critically overdrafted basins are under review, with a determination due from DWR by January 31, 2024. The GSPs are required to provide mechanisms that allow the sustainable use of groundwater, with growth projections considered.

During grading and general construction activities, water would be needed to suppress fugitive dust generated by construction equipment, for the mixing of concrete or other materials, for cleaning, and for a variety of other uses. Given the current StanCOG region-wide state of overdraft within the areas underlain by the four groundwater subbasins in the study area, and the likelihood that more than one project would be constructed simultaneously in areas with over-drafted basins, the short-term groundwater supply impact of projects implementing the proposed 2022 RTP/SCS would be significant.

Over the long term, the water use of the proposed transportation projects would primarily include irrigation uses for project landscaping components. Such use would be incrementally minor for individual projects. As most transportation improvements involve modification of existing facilities and would not result in a substantial increase in landscaped areas that require irrigation, some projects would not increase operational water use at all. Those projects which incorporate landscaping, including vegetating graded areas for slope stability and maintenance, for use as noise barriers, or as part of stormwater control, such water use may constitute a significant draw on regional supplies by full buildout at 2046 In addition, many of the transportation improvements in the 2022 RTP/SCS involve construction of new facilities including the anticipated train station and airport fire station in Modesto. Thus, a long-term increase in water demand associated with new potable water facilities, restrooms, and landscaped areas might occur for these projects. Although several of the major urbanized areas throughout the StanCOG region currently use, or have the capability to use, reclaimed water for agricultural irrigation, park landscaping, and other uses, in more remote areas, reclaimed water sources are not located within a reasonable distance of landscaping needs. As such, it may not be economically feasible to convey reclaimed water to outlying areas.

For land use projects under the proposed 2022 RTP/SCS, including municipal and industrial projects, measures contained within the Statewide MS4 Permit and/or local General Plans may serve to reduce water use impacts. The Statewide MS4 NPDES Permit would require many projects to incorporate LID strategies such as stormwater reuse and onsite infiltration under Section E.12 (Post Construction Stormwater Management Program). General Plan policies and ordinances at the local and regional level, such as Green Building Codes, would encourage or require consideration of reclaimed water and drought-resistant landscaping, and AB 1881 would apply to most landscaped areas over 2,500 sf. These and similar measures may not apply to every planned improvement under the proposed 2022 RTP/SCS, and increased demands on ground water supplies from additional land use projects are likely.

Per Assembly Bill 1881, water use efficiency will be a focus of the 2022 RTP/SCS projects in order to meet drought resilience and preparedness. Where feasible, 2022 RTP/SCS projects would enact measures contained either within the Model Landscape Ordinance or stricter local ordinances which

will serve, in general, to reduce water usage but cannot eliminate it or reduce it to less than significant over the scale of a currently impacted groundwater subbasin.

Summary

Existing regulatory requirements at the local, State, and federal level include measures to minimize any increases in off-site stormwater runoff by encouraging on-site infiltration, which would minimize the potential reduction in groundwater recharge. Conformity with applicable GSPs and SGMA requirements in specific project areas is discussed under Impact HYD-5. As discussed in Section 4.11.2, *Regulatory Setting*, and further under Impact HYD-5, GSPs in the StanCOG region do not contain regulatory groundwater extraction limits; most require investigations, and some impose fees though local propositions and ordinances. The GSAs in general are part of lager regional management groups and coordination may increase in the future, and the existing GSPs espouse a variety of goals, options, and plans, but at present there is no overarching sustainable management structure for any of the basins.

Due to the current over-drafted state of the basins, the magnitude of change from the current conditions caused by any additional overdraft of groundwater supply would be significant. Therefore, short- and long-term water uses associated with the proposed 2022 RTP/SCS would substantially decrease groundwater supplies and thereby impede sustainable groundwater management. The below mitigation measures would reduce this impact as they are not included in most LID or conservation regulatory schemes that apply within the region.

Mitigation Measures

Transportation project sponsor agencies can and should implement the following mitigation measures for applicable transportation projects. The County and cities in the StanCOG region can and should implement these measures, where relevant to land use projects implementing the proposed 2022 RTP/SCS. Project-specific environmental documents may adjust these mitigation measures as necessary to respond to site-specific conditions.

HYD-2(a) Construction Dust Suppression Water Supply

For all proposed 2022 RTP/SCS projects, where feasible, implementing agencies shall use reclaimed and/or recycled water for dust suppression during construction activities. This includes use of such reclaimed water in water trucks utilized for project construction occurring outside developed areas and away from water infrastructure which would otherwise provide such reclaimed water. This measure shall be noted on construction plans and shall be spot checked by the local jurisdiction.

HYD-2(b) Landscape Watering

In jurisdictions that do not already have an appropriate local regulatory program related to landscape watering, implementing agencies shall design proposed 2022 RTP/SCS projects that include landscaping shall be designed with drought tolerant plants and drip irrigation. When feasible, native plant species shall be used. In addition, landscaping associated with proposed improvements shall be maintained using reclaimed water when feasible. If reclaimed water could feasibly be utilized for project landscape watering due to proximity of reclaimed water sources but is unavailable due to lack of connecting infrastructure, implementing agencies shall conduct an analysis of the upgrades needed to provide such infrastructure, which will include the potential for new connections to existing reclaimed water systems to provide reclaimed water to other nearby

sources besides the proposed project in the analysis, and shall perform such steps as necessary to utilize available reclaimed water if feasible.

IMPLEMENTING AGENCIES AND TIMING

Implementing agencies for transportation projects are StanCOG and transportation project sponsor agencies. Implementing agencies for land use projects are cities and the County. These mitigation measures shall, or can and should, be applied during permitting and environmental review and implemented during construction where appropriate.

Significance After Mitigation

Implementation of the above measures would reduce proposed Project impacts on water supply and groundwater overdraft in the StanCOG region. However, due to the programmatic nature of this proposed 2022 RTP/SCS EIR, a precise, project-level analysis of specific water demand and supply impacts associated with individual transportation and land use projects is not possible. The land use scenario envisioned by the proposed 2022 RTP/SCS along with transportation projects would result in the need for additional water supply, even with the implementation of mitigation measures listed above. Given the severe overdraft conditions of area groundwater basins, impacts would remain significant and unavoidable. No additional feasible mitigation measures to reduce this impact to a less than significant levels is available.

Threshold 3:	Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would: a. Result in substantial erosion or siltation on- or off-site; b. Substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site; c. Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or d. Impede or redirect flood flows;

Impact HYD-3 TRANSPORTATION AND FUTURE LAND USE PROJECTS IMPLEMENTING THE PROPOSED 2022 RTP/SCS WOULD NOT SUBSTANTIALLY ALTER THE EXISTING DRAINAGE PATTERN OF A SITE OR AREA THROUGH ALTERATION OF THE COURSE OF A STREAM OR RIVER OR THROUGH THE ADDITION OF IMPERVIOUS SURFACES IN A MANNER WHERE DRAINAGE CHANGES WOULD RESULT IN FLOODING ON- OR OFF-SITE, REDIRECT OR IMPEDE FLOOD FLOWS, EXCEED THE CAPACITY OF STORMWATER SYSTEMS, OR PROVIDE ADDITIONAL POLLUTED RUNOFF. IMPACTS WOULD BE LESS THAN SIGNIFICANT.

Construction of transportation and land use projects under proposed 2022 RTP/SCS could result in the change of existing drainage patterns on individual project sites or within a project area, which could impact hydrology or water quality. Project grading and construction of impervious surfaces for transportation projects may alter existing drainage patterns by altering slopes and reducing infiltration. Additionally, land use projects included in the SCS land use scenario could also increase impervious surfaces and develop structures that may alter existing drainages. Projects that include

improvements on or near bridges may result in fill material being placed within stream channels, although it is unlikely that any of the future transportation projects would necessitate or result in actual alteration of a streambed or course as no entirely new bridges, river crossings, or alterations are proposed. Additionally, many projects would feature some level of risk of sediment loading and erosion which could further alter drainage patterns within the immediate area. Implementation of transportation and land use projects implementing the proposed 2022 RTP/SCS may increase stormwater flows, resulting in increased volume and/or velocity of stormwater runoff. Potential increases in stormwater volume and/or velocity could result in on- or off-site flooding.

However, planned transportation and land use projects would be designed to comply with existing State and local jurisdiction hydromodification requirements, including applicable County and municipal code sections related to stormwater runoff and drainages, such as curb and gutter design, and would be required to build drainage infrastructure if necessary to control and accommodate any increase in stormwater flows. Effects of increased polluted runoff have already been examined in this EIR, including under Impact HYD-1 specifically, and runoff from drainage changes would be included under those runoff impacts. Any streambed filling would be required to comply with the terms of any applicable USACE 404 or RWQCB permit which would include an analysis of any impacts from flooding or drainage alteration; in addition, County General Plan Policy WR 1.10 would apply to any projects in the unincorporated County involving stream filling or construction near streams. Oversight of projects within flood areas or affecting flood control infrastructure would be provided by the Stanislaus County Flood Control District and would help to minimize potential impacts related to alteration of future flood flows.

Land use projects under proposed 2022 RTP/SCS would require drainage control and hydromodification measures required either under an individual MS4 NPDES Permit or under the Region-Wide MS4 Permit and would include adherence to the Region-Wide MS4 Permit's hydromodification requirements and implementation of LID drainage control features if required under Program Requirement Part F. These measures would typically include incorporation of permeable paving, vegetated swales, infiltration retention basins, or other features that would minimize stormwater runoff and volume, and are selected from sets of feasible options based on project-specific site or engineering characteristics. Similar sets of requirements may further be imposed by local regulatory programs as discussed under 4.11.2,, *Regulatory Setting,* above.

Compliance with the existing suite of applicable policies and regulations minimize impacts related to on- or off-site flooding, stormwater drainage capacity, polluted runoff, and redirection or impedance of flood, and such impacts would therefore be less than significant.

Mitigation Measure

No mitigation measures are required.

Threshold 4:	In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation

Impact HYD-4 TRANSPORTATION AND LAND USE PROJECTS IMPLEMENTING THE PROPOSED 2022 RTP/SCS WOULD NOT RISK RELEASE OF POLLUTANTS DUE TO PROJECT INUNDATION IN FLOOD HAZARD, TSUNAMI, OR SEICHE ZONES. IMPACTS WOULD BE LESS THAN SIGNIFICANT.

Transportation and land use projects implementing the proposed 2022 RTP/SCS could be subject to flooding hazards due to storm events and/or dam failure.

Flooding/Dam Failure

Transportation and land use projects implementing the proposed 2022 RTP/SCS in low-lying areas, 100-year and 500-year flood plains, and in proximity to waterways and/or dam inundation zones as depicted in Figure 4.11-1 may be subject to flood hazard. In general, throughout the StanCOG region, the dam inundation areas lie within natural floodplains; therefore, this analysis considers the effects of flooding and dam failure to be similar. In the StanCOG region, transportation improvements and future development projects under the land use scenario of the RTP/SCS would be most susceptible to flooding along the San Joaquin River, isolated stretches of the Tuolumne River, as well as on Orestimba, Salado, and Sand Creeks. The effects of flooding could include temporary inundation of a facility that impedes its use or causes long-term damage to the facility. Flooding may also cause immediate damage to roadways, bikeways, and bridges, particularly during high-velocity flood events that wash away or erode facilities, typically occurring adjacent to rising rivers or streams, or if located in a dam inundation area. Unpaved roads are particularly vulnerable, although any facility within the flood zone of a stream would be subject to impacts. Erosion caused by flooding can damage paved facilities, and bridge supports can be undermined or washed away.

There are several federal, state, and local programs to reduce flooding and control the flow of floodwaters, as well as to encourage proper flood planning within the region as discussed in the Regulatory Setting. The National Flood Insurance Act makes the purchase of flood insurance mandatory for properties in Special Flood Hazard Areas to prevent the loss of property from flooding. The Cobey-Alquist Floodplain Management Act encourages local governments to plan, adopt and enforce land use regulations for floodplain management to protect people and property from flood hazards. The California Division of Dam Safety inspects dams across the State, including in the StanCOG region, on a yearly schedule to ensure that they are performing and being maintained in a safe manner. Locally, the County and each city in the County have flood prevention ordinances requiring building standards in flood zones, as discussed further in 4.11.2,, *Regulatory Setting*.

Land use changes envisioned within the SCS would mostly occur within developed areas or on the edges of such areas and would therefore be connected to existing or planned stormwater and flood control infrastructure and be required to conform with applicable regulations regarding runoff control and pollution control, including the mitigation measures proposed in this EIR. Such development would not substantially interfere with existing flood infrastructure without separate project-specific analysis of such impacts and the impacts of potential runoff to water quality have already been examined and mitigated to the greatest extent feasible. The impacts of urban development increase the risk of flood inundation and the release of pollutants due to such inundation due to the increase in impermeable surfaces. This impact would be less than significant. A greater risk of impact would arise from the transportation projects in less developed areas with less extensive flood protection or capability to deal with potential polluted runoff from roadways during a flood event.

However, all such projects within floodplain or dam inundation areas would be required to adhere to any development restrictions or regulations, and projects within areas that are outside the floodplain areas would need to comply with hydromodification regulations of the municipal Flood Control or Public Works Department for drainage and stormwater flooding. The implementation of SWPPP plans and BMPs imposed through these or other regulatory plans, as well as the requirements to improve local stormwater flow capacity if needed, would serve to mitigate the risks of flooding to these projects to the greatest extent feasible. Unlike in an urban area, where floodwaters might put pollutants normally safe from rain flows at risk, except in extraordinary

circumstances, the amount of pollution being washed off a roadway in a flood would be the same as that washed off in a heavy rain, as most pollutants on roads are contaminants like motor oil, metals from brake pads, trash, and similar debris. It is possible floodwaters would rise high enough to overcome drainage ditches, bioswales and similar pollution-capturing systems alongside roadways and bridges but such situations would distribute relatively few pollutants (those immediately extant on the road stretch being flooded) over a large area and would have a lesser impact than the long-term impacts of constant runoff from the roadways that is already mitigated by runoff control devices.

Although individual projects implementing the proposed 2022 RTP/SCS have the potential to adversely affect water quality at a project-specific level due to floodwater inundation, projects would adhere to existing regulations regarding risks from water quality pollutants and flood surges. The risks from polluted runoff during flood events would be similar to those of rain events on countryside roadways, and while greater in developed areas, would likewise be more regulated and surrounded by infrastructure better able to deal with such flows.

The types of development that would be most likely to result in release of pollutants during inundation include uses such as wastewater treatment plants, chemical manufacturing plants, or hazardous materials landfills. Generally, the proposed 2022 RTP/SCS envisions land development in already urbanized areas where wastewater treatment plants, landfills, and chemical manufacturing plants already exist to serve existing development. Accordingly, the land use projects envisioned in the proposed 2022 RTP/SCS would not substantially increase the risk of release of pollutants into the environment as a result of inundations.

Based on the above analysis, water quality impacts of the proposed 2022 RTP/SCS due to flooding or dam failure would be less than significant.

Tsunami and Seiche

The StanCOG region is not subject to tsunami hazards due to its distance from the Pacific Ocean. Seiches could be possible in the larger lakes and reservoirs after a major earthquake or similar event that causes large-scale disturbance to the waters. Due to the size of the lakes and reservoirs within the StanCOG region, seiche waves topping a dam and flowing downstream from a lake would be expected to be much smaller than the flood from dam failure or flooding from heavy rains; the primary difference would be the sudden nature of a seiche which may catch local populations and agencies unawares. The regulations and structures already in place to control development on floodplains and within dam inundation areas which serve to reduce impacts on floodplains would apply equally to reduce seiche impacts within the region as they would apply in the same locations. Therefore, impacts from tsunami or seiche behavior would be the same as impacts from other types of flooding and would be less than significant.

Mitigation Measures

No mitigation measures are required.

Threshold 5:	Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan

Impact HYD-5 TRANSPORTATION AND LAND USE PROJECTS IMPLEMENTING THE PROPOSED 2022 RTP/SCS COULD CONFLICT WITH OR OBSTRUCT IMPLEMENTATION OF A WATER QUALITY CONTROL PLAN OR SUSTAINABLE GROUNDWATER MANAGEMENT PLANS. IMPACTS WOULD BE SIGNIFICANT AND UNAVOIDABLE.

Implementation of transportation and land use projects implementing the proposed 2022 RTP/SCS would affect water quality, but there is nothing in the proposed 2022 RTP/SCS which would prevent the CVRWQCB or any applicable local agency from carrying out the regulatory provisions of the Basin Plan. The transportation projects included in the proposed 2022 RTP/SCS would not conflict with the beneficial uses for water identified in the Basin Plan. For example, transportation projects would not interfere with the beneficial use of water for municipal and domestic supplies, agricultural supply, or wildlife habitat supply. Likewise, the land use scenario envisioned in the proposed 2022 RTP/SCS would not obstruct or conflict with beneficial uses of water in the water quality control plan. The land use scenario in the proposed 2022 RTP /SCS focuses on infill development and locating people and employment near transit. The infill characteristics of the land use scenario would generally be consistent with the past use of water in these areas, and supportive of the beneficial uses identified in the water quality control plan, such as municipal and domestic supplies. But this increase in development would result in an increase in demand for groundwater.

The stated primary goals of the Basin Plan include management of the 303(d) listed bodies, maintenance of water throughout the region for designated beneficial uses, and management of salt concentrations within the groundwater subbasins (CVRWQCB 2018). It is unlikely that proposed Project implementation would have any effect on the attainment of these main goals, and new development and improvements facilitated by the project would be required to maintain adherence with changes in the Basin Plan as they are planned in the future. Transportation or land use projects with a potential for affecting 303(d) impaired water bodies would be strictly regulated and are unlikely in general to produce the kinds of pollutants for which the bodies are mostly impaired, which tend to be the result of agriculture and not transportation or urban pollution. Impacts to beneficial uses of 303(d) impaired bodies would be expected to be less than significant in the same vein as impacts to listed pollutant levels. Similarly, to constituents of concern in the 303(d) bodies, various salts and constituents increasing ionic content and specific conductivity in receiving waters are more commonly associated with agriculture than with transportation (in areas that do not regularly freeze and require heavy applications of road salts). Should individual projects be likely to cause potential substantial impacts to the salinity of receiving waters, the CVRWQCB would have authority to mandate limitations or monitoring of discharges for salinity under the SWPPP required by the General Permit (or imposed by CVRWQCB for smaller projects deemed a threat for salinity).

The land use pattern included in the proposed 2022 RTP/SCS would generate new sources of wastewater, which would also be conveyed to wastewater treatment facilities in the region for secondary or tertiary treatment. Discharges of treated wastewater, also called effluent, from the treatment plants are regulated by the CVRWQCB and must meet water quality effluent limitations established in the applicable NPDES/WDR permits for point source discharges, as also discussed under Impact HYD-1, above. Thus, although implementation of the proposed 2022 RTP/SCS would increase the volume of point-source wastewater discharges in the StanCOG region, required compliance and monitoring of effluent prior to discharge from treatment facilities would ensure Basin Plan compliance and impacts would be less than significant.

Implementation of the proposed 2022 RTP/SCS would not obstruct or hinder CVRWQCB or municipal agencies from fulfilling their regulatory duties and would be required to comply with all statues, codes, and regulations that applied. Further, the land use projects envisioned in the proposed 2022 RTP/SCS would not conflict with the stated goals of the Basin Plan. Therefore, impacts of the proposed project to implementation of any water quality control plan would be less than significant.

Regarding impacts on sustainable groundwater management plans, as discussed under Impact HYD-2, implementation of the proposed 2022 RTP/SCS would likely have an impact on groundwater levels and supply. As detailed under Section 4.11.2, *Regulatory Setting*, groundwater management within California in general falls under SGMA. Four overall GSPs are in effect within the StanCOG region at varying stages of either initial DWR review or revision after having been deemed 'Incomplete' by DWR.

As discussed under Section 4.11.2, *Regulatory Setting,* along with information-gathering, setting of fees, and determining sustainable yields, the primary regulatory tool provided to GSAs under SGMA is the ability to set and enforce area-specific mandatory groundwater pumping limitations through regular updates to GSPs for medium- and high-priority groundwater basins. DWR-approved GSPs are required to provide mechanisms that allow the sustainable use of groundwater, with growth projections considered. The current GSPs under review or revision are focused on measuring extractions to obtain the necessary data to determine sustainable yields and examining fees for their information gathering plans, as well as seeking public and stakeholder input.

As GSPs determine sustainable yields through their current cycles and begin to incorporate pumping limitations or other groundwater sustainability policies based on their determined sustainable yields, projects being implemented under the proposed 2022 RTP/SCS would be required to conform with any new applicable regulations supporting groundwater use and sustainable groundwater management. However, water use facilitated by the proposed 2022 RTP/SCS could obstruct any current GSP in the StanCOG region, as an increase in water demand could result from projects implementing the proposed 2022 RTP/SCS land use scenario (refer to Impact HYD-2). Although those projects would be subject to monitoring requirements as set forth in the applicable GSPs, overdraft of groundwater could still occur in conflict with adopted GSPs. Therefore, this impact would be significant and unavoidable.

Mitigation Measures

For transportation projects under their jurisdiction, StanCOG shall implement, and transportation project sponsor agencies can and should implement Mitigation Measures HYD-2(a) and HYD-2(b) above where applicable for projects implementing the proposed 2022 RTP/SCS with the potential to impact conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plans. Cities in the StanCOG region and the County can and should implement these measures, where relevant to land use projects implementing the proposed 2022 RTP/SCS. Project specific environmental documents may adjust these mitigation measures as necessary to respond to site specific conditions.

Implementing Agencies and Timing

Implementing agencies for transportation projects are StanCOG and transportation project sponsor agencies. Implementing agencies for land use projects are cities and the County. These mitigation measures shall, or can and should, be applied during permitting and environmental review and implemented during construction where appropriate.

Significance After Mitigation

Implementation of Mitigation Measures HYD-2(a) and HYD-2(b) would reduce proposed project impacts on water supply and groundwater overdraft in the StanCOG region as it relates to conflicts with or obstructs implementation of a water quality control plan or sustainable groundwater management plans. However, due to the programmatic nature of this proposed 2022 RTP/SCS EIR, a precise, project-level analysis of specific water demand and supply impacts associated with individual transportation and land use projects is not possible. The land use scenario envisioned by the proposed 2022 RTP/SCS along with transportation projects would result in the need for additional water supply, even with the implementation of mitigation measures listed above. Given the severe overdraft conditions of area groundwater basins, impacts would remain significant and unavoidable. No additional feasible mitigation measures to reduce this impact to a less than significant levels is available.

c. Specific RTP/SCS Projects That May Result in Impacts

All proposed 2022 RTP/SCS transportation projects that require new construction or landscaping would result in at least some of the impacts discussed in impacts HYD-1 through HYD-4; and therefore, are not specifically identified as having individual potential impacts. The proposed 2022 RTP/SCS projects are listed in Table 2-1 through 2-5 in Chapter 2 of this EIR. Additional specific analysis would be required as individual projects are implemented to determine the project specific magnitude of impact.

4.11.4 Cumulative Impacts

The cumulative impact analysis area for hydrology and water quality encompasses the watersheds and groundwater basins affected by the transportation projects and land use pattern envisioned in the proposed 2022 RTP/SCS, including creeks and drainages, floodplains, and aquifers. Therefore, the cumulative impact assessment area consists of the StanCOG region and the counties adjacent to Stanislaus County, as further described in Section 3.3.4. This geographic extent is appropriate for the issue area of hydrology and water quality because it includes the watersheds applicable to the StanCOG region, and these watersheds are in general hydrologically connected. Any surface water quality impacts in one part of the watershed could potentially affect surface water quality elsewhere downstream in the watershed. In addition, this cumulative extent fully encompasses the groundwater Subbasins that occur within the StanCOG region, all of which have portions outside the StanCOG region and some of which (such as the Delta-Mendota and Eastern San Joaquin) extend over multiple counties and have a high level of importance to the State.

Cumulative development would increase erosion and sedimentation resulting from grading and construction, as well as changes in drainage patterns which could degrade surface and ground water quality. In addition, new development would increase the generation of urban pollutants that may adversely affect water quality in the long term. As with the proposed 2022 RTP/SCS, individual construction projects within the cumulative impact area would be required to comply with applicable water quality regulations. Compliance with these existing requirements would reduce project level impacts throughout the cumulative impact area; as such, cumulative impacts related to water quality would be less than significant, and the proposed 2022 RTP/SCS contribution to this impact would not be cumulatively considerable.

Development within the cumulative impact area would increase impervious surfaces and reduce groundwater infiltration. However, counties and cities in the cumulative impact area have

regulatory requirements for stormwater management, effectively requiring minimization of stormwater runoff. Because the volume of runoff would be reduced by these regulations, as well as State and federal regulations, precipitation would be retained on individual project sites and infiltrated or treated and discharged to swales, creeks, or other drainages. The proposed 2022 RTP/SCS contribution to cumulative groundwater recharge impacts would not be cumulatively considerable. Development within the cumulative impact area would substantially decrease groundwater supplies by increasing the amount of overdraft throughout critically over-drafted basins, impeding sustainable groundwater management. The subbasins within the StanCOG region that are in critical overdraft extend far beyond its borders, and the Delta-Mendota in particular is still attempting to achieve unity of management structure and goals amongst the many GSAs and GSPs extant within the subbasin. Therefore, cumulative impacts related to groundwater supply would be significant and the proposed 2022 RTP/SCS contribution to this impact would be cumulatively considerable pre -mitigation. Mitigation measures HYD-2(a) and HYD-2(b) would reduce this impact, but it would remain cumulatively considerable after mitigation.

Development within the cumulative impact area could result in incremental modifications over time that can have cumulative adverse effects on drainage in the cumulative impact area by impeding and displacing flood flows, contributing incrementally to surface drainage runoff or degrading water quality, and the capacity of a drainage way to carry flood flows and/or the overall quality of the water may be cumulatively affected. New development envisioned under the proposed 2022 RTP/SCS and associated impervious cover could also be potentially significant on a cumulative basis if it would contribute to a significant increase in the overall net impervious surface throughout the region which leads to changes in regional drainage patterns. Projects implementing the proposed 2022 RTP/SCS would be required to maintain pre-project hydrology and projects that would disturb more than one acre would be subject to requirements that prevent increase in runoff flows. These drainage requirements would minimize the contribution of the proposed 2022 RTP/SCS to cumulative drainage impacts, and the contribution of the proposed 2022 RTP/SCS to these impacts would not be cumulatively considerable.

Development within the cumulative impact area may occur within floodplains and floodways, and may include development of projects such as industrial parks, wastewater treatment plants, hazardous materials storage, or other infrastructure which may pose a release of pollutants as a result of inundation. Implementing agencies would conduct or require project-specific hydrology studies for projects proposed to be constructed within floodplains to demonstrate compliance with Executive Order 11988 (for federally funded projects), the NFIP, the National Flood Insurance Act, and the Cobey-Alquist Floodplain Management Act, as well as any further FEMA or State requirements that are adopted at the local level. These studies would identify project design features that reduce impacts on either floodplains or flood flows that would be required through the permitting process, as well as requiring measures to reduce the risk of pollutant release from inundation. Therefore, the cumulative effects of risk of polluted runoff from flood inundation is less than significant. The land use development envisioned in the proposed 2022 RTP/SCS would not substantially increase the risk of release of pollutants into the environment as a result of inundations, as it would have to comply with the local, state, and federal requirements described above and there are no projects proposed which pose a release of pollutants as a result of inundation. Therefore, the contribution of the proposed 2022 RTP/SCS to these impacts would not be cumulatively considerable.

All of the cumulative impact area lies within the CVRWQCB and falls under the Basin Plan. All development within the Basin Plan area must comply with the goals, beneficial uses, and 303(d)

limitations outlined in the Plan, as well as falling under the authority of any Orders issued by CVRWQCB. Therefore, the cumulative impact to obstruction of the Basin Plan is less than significant, and the proposed 2022 RTP/SCS's contribution to this impact would not be cumulatively considerable. There are dozens of individual GSAs within the cumulative impact area. Each development within the cumulative area would only fall under management actions required by the GSA's GSP approved within its individual area. Although each GSP is local, some of the groundwater basins within the cumulative impact area are hydrologically connected. Each individual basin has multiple GSPs covering different portions of the basin which could create significant cumulative impacts among adopted GSPs, specifically through groundwater overdraft as identified in HYD-2. Although projects implementing the 2022 RTP/SCS would only conflict with those GSPs in their basin, this cumulative impact would be significant across the entire basin. Cumulative impacts related to conflicts with GSPs would be significant and the proposed 2022 RTP/SCS contribution to this impact would be cumulatively considerable pre-mitigation. Mitigation measures HYD-2(a) and HYD-2(b) would reduce this impact, but it would remain cumulatively considerable after mitigation.

4.12 Land Use

This section evaluates potential impacts to land use from development facilitated by the proposed 2022 RTP/SCS.

4.12.1 Setting

a. Land Use Patterns

The StanCOG region encompasses the entirety of Stanislaus County, including nine incorporated cities and 13 unincorporated communities (Figure 4.12-1). Stanislaus County's population is approximately 555,968 (California Department of Finance 2021). The City of Modesto is the most populated area of the County, with approximately 39 percent of all residents, followed by Turlock and Ceres. Turlock's growth and development pattern is similar Modesto; however, Turlock is less densely populated. California State, Stanislaus is also located in Turlock. Ceres has grown considerably over the past 15 years; however, it is not as populated as Turlock and Modesto. Other cities within the County are generally smaller. Modesto has an established commercial downtown area surrounded by older residential neighborhoods.. Each of these cities contain higher-density commercial and industrial uses. Riverbank, Hughson, Waterford, and Newman are primarily suburban areas that also contain agricultural uses. Each of these smaller cities have comparatively smaller downtown areas with older, established neighborhoods.

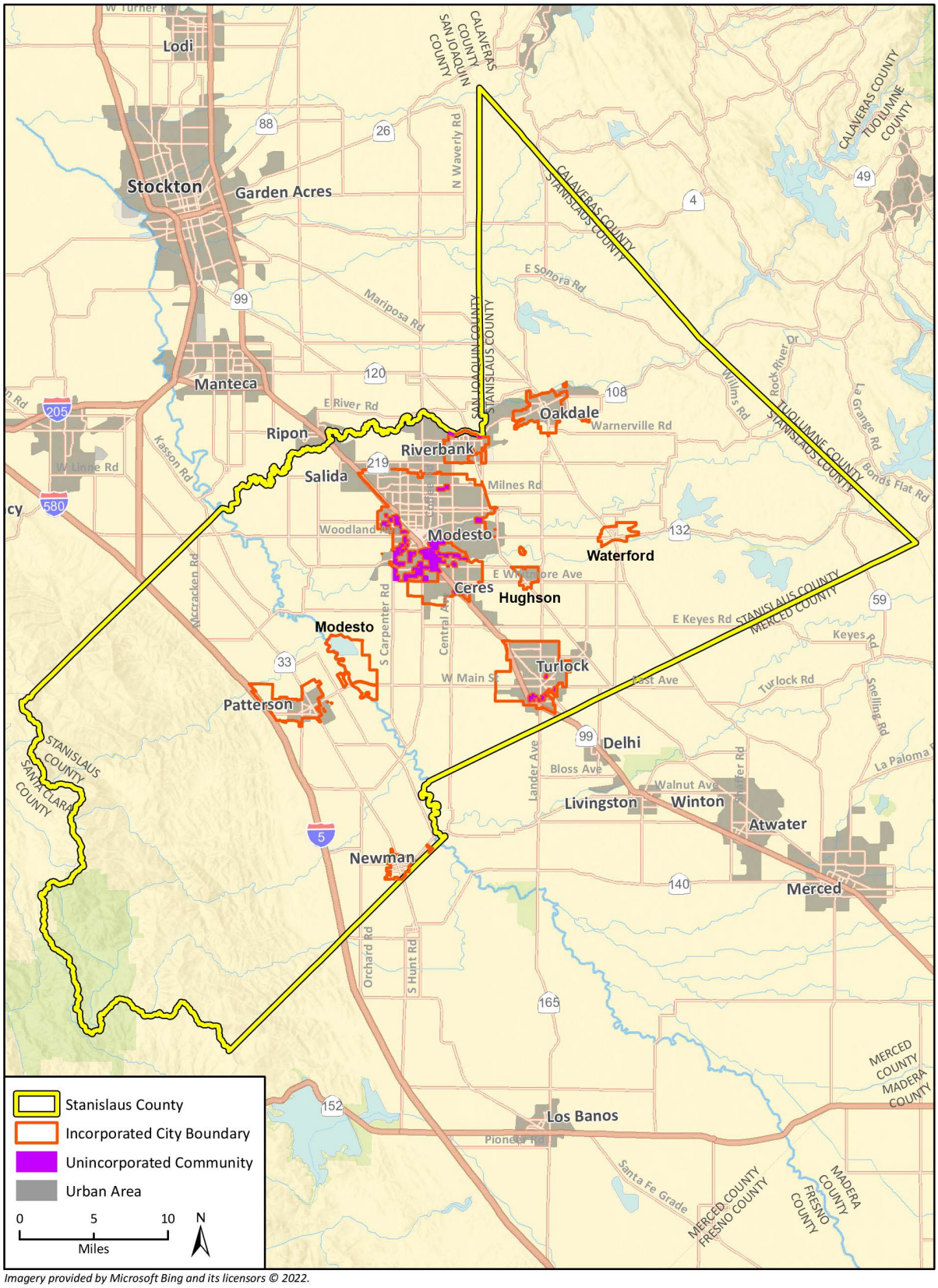
The StanCOG region is predominantly agricultural; much of the unincorporated County is either zoned or designated as agricultural land by the Stanislaus County General Plan. The County's major transportation routes include Interstate (I) 5, State Route (SR) 4, SR 33, SR 99, SR 108, SR 120, SR 132, SR 165, and SR 219. Incorporated cities along these routes are Patterson and Newman on SR 33; Modesto at the crossroads of SR 99, SR 108, and SR 132; Turlock and Ceres on SR 99; Riverbank on SR 108; Oakdale along SR 108 and SR 120; and Waterford on SR 132. Some unincorporated areas include Crows Landing on SR 33; Empire along SR 132, Keyes on SR 99; La Grange on SR 132; Salida on SR 99 and SR 219; and Westley on SR 33. The most populated area of the county is located along the SR 99 corridor.

There are a total of nine unincorporated communities within Stanislaus County. These areas include Crows Landing, Del Rio, Denair, Hickman, Keyes, Knights Ferry, La Grange, Salida, Westley. Stanislaus County is divided into five individual Supervisorial Districts, each responsible for the communities within that specific district.

4.12.2 Regulatory Setting

Numerous federal, State, and local laws, regulations, policies, programs, plans, codes, and ordinances regulate land use in the StanCOG region. Local land use issues are regulated by the general plans, specific plans, and zoning ordinances adopted by the County and the various incorporated cities within the County. The County itself is landlocked, surrounded by Fresno County to the north, Kern County to the south, Kings County to the west, and Inyo County to the east. Thus, it is not within the immediate proximity of any local, state, or national costal zones.

Figure 4.12-1 StanCOG Planning Area



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Additional data provided by Stanislaus County, 2022.

a. State Laws, Regulations, and Policies

Sustainable Communities Strategy and Climate Protection Act (SB 375)

SB 375 is a California law passed in 2008 that requires each MPO to demonstrate, through the development of a Sustainable Communities Strategy (SCS), how its region will integrate transportation, housing, and land use planning to meet the greenhouse gas (GHG) reduction targets set by the State.

In addition to creating requirements for MPOs, it also creates requirements for CTC and CARB. Some of the requirements include the following:

- CTC must maintain guidelines for the travel demand models that MPOs develop for use in the preparation of their RTPs or MTPs.
- CARB must develop regional GHG emission reduction targets for automobiles and light duty trucks for 2020 and 2035 by September 30, 2010. These targets were approved on September 23, 2010. CARB is tasked to update the regional targets every eight years, with the option of revising them every four years. The latest targets were approved on March 18, 2018 and went into effect October 1, 2018.
- Each MPO must prepare an SCS as part of its RTP or MTP to demonstrate how it will meet the regional GHG targets.
- Each MPO must adopt a public participation plan for development of the SCS that includes informational meetings, workshops, public hearings, consultation, and other outreach efforts.
- If an SCS cannot achieve the regional GHG target, the MPO must prepare an Alternative Planning Strategy (APS) showing how it would achieve the targets with alternative development patterns, infrastructure, or transportation measures and policies.
- Each MPO must prepare and circulate a draft SCS at least 55 days before it adopts a final RTP or MTP.
- After adoption, each MPO must submit its SCS to CARB for review.
- CARB must review each SCS to determine whether, if implemented, it would meet the GHG targets. CARB must complete its review within 60 days.

StanCOG measured an 11.1 percent reduction in GHG per capita emissions in 2020 (base year/2020) and projected an 11.7 percent reduction by 2035. The StanCOG region's GHG emissions target was an 11 percent per capita reduction by 2020 and a 10 percent reduction per capita by 2035 (CARB 2020). These targets apply to the entire StanCOG region for all on-road light duty trucks and passenger vehicles emissions, and not to individual cities or sub-regions. The proposed 2022 RTP/SCS includes the years for which the regional targets are required (base year/2021 and 2035) and the proposed 2022 RTP/SCS also includes the additional scenario year of 2045 to comply with federal law. The proposed 2022 RTP/SCS meets the 2035 and would very likely meet the 2045 GHG targets.

SB 375 specifically states that nothing in the law changes local governments local land use authorities. The proposed 2022 RTP/SCS provides a regional policy foundation that local governments may build upon if they so choose. The proposed 2022 RTP/SCS includes and accommodates the growth projections for the region. SB 375 also requires that forecasted development patterns for the region be consistent with the eight-year regional housing needs as

allocated to member jurisdictions through the Regional Housing Needs Allocation (RHNA) process under State housing law.

In addition, this proposed 2022 RTP/SCS EIR lays the groundwork for the streamlined review of qualifying development projects. Qualifying projects that meet statutory criteria and are consistent with the proposed 2022 RTP/SCS are eligible for streamlined environmental review pursuant to CEQA under SB 375 and other laws.

Office of Planning and Research 2017 General Plan Guidelines

The 2017 General Plan Guidelines (Governor's Office of Planning and Research 2017) is the first comprehensive update to the guidelines since 2003 and addresses numerous new laws, requirements, resources, and research that affect long-range planning in California. The 2017 update includes links to external documents and additional resources. This includes guidance for implementing the following legislation: Environmental Justice (SB 1000), Climate Change (SB 379), Sustainable Communities Strategies (SB 375), Flood Management (SB 5), Vehicle Miles Traveled (SB 743), Island or Fringe Communities (SB 244), Tribal Consultation (AB 52) and Local Hazard Mitigation Plans (AB 2140). Beyond State law requirements, the 2017 General Plan Guidelines also provide direction on topics including healthy communities, equitable and resilient communities, economic development, climate change and renewable energy.

Smart Mobility 2010 Framework

The Smart Mobility Framework, formally known as *Smart Mobility 2010: A Call to Action for the New Decade* (Caltrans 2010), was prepared by Caltrans in partnership with the U.S. EPA, the Governor's Office of Planning and Research, and the California Department of Housing and Community Development to address both long-range challenges and short-term programmatic actions to implement multi-modal and sustainable transportation strategies in California. The Smart Mobility Framework helps guide and assess how well various levels plans, programs, and projects (e.g., RTPs, General Plans, specific development proposals, etc.) meet a definition of "smart mobility". The Smart Mobility Framework is intended to move people and freight while enhancing California's economic, environmental, and human resources by emphasizing:

- Convenient and safe multimodal travel
- Speed suitability
- Accessibility
- Management of the circulation network
- Efficient use of land

Planning and Zoning Law

California Government Code Section 65000, et seq., regulates the substantive and topical requirements of general plans. State law requires each city and county to adopt a general plan "for the physical development of the county or city, and any land outside its boundaries which bears relation to its planning." The California Supreme Court has called the general plan the "constitution for future development." The general plan expresses the community's development goals and embodies public policy relative to the distribution of future land uses, both public and private.

Zoning authority originates from city and county police power and from the Planning and Zoning Law, which sets minimum requirements for local zoning ordinances. Zoning ordinances must be

consistent with the general plan and specific plans. The consistency requirement does not apply to charter cities other than Los Angeles unless the charter city adopts a consistency rule.

Senate Bill 743

SB 743 changed the way that public agencies evaluate the transportation impacts of projects under CEQA, recognizing that roadway congestion, while an inconvenience to drivers, is not itself an environmental impact (see Pub. Resource Code, § 21099, subd. (b)(2)). SB 743 provides opportunities to streamline CEQA for qualifying urban infill development near major transit stops in metropolitan regions statewide. A transit-oriented infill project can be exempt from CEQA if consistent with a specific plan for which an EIR was prepared, and consistent with the use, intensity, and policies of an SCS or Alternative Planning Strategy that is certified by the CARB as meeting its greenhouse gas reduction targets. A city or county may designate an "infill opportunity zone" by resolution if it is consistent with the general plan and any applicable specific plan and is a transit priority area within the adopted SCS or Alternative Planning Strategy. This infill opportunity zone is then exempt from level of service standards in the congestion management plan.

State Open Space Standards

State planning law (Government Code Section 65560) provides a structure for the preservation of open space by requiring every city and county in the State to prepare, adopt, and submit to the Secretary of the Resources Agency a "local open-space plan for the comprehensive and long-range preservation and conservation of open-space land within its jurisdiction." The following open space categories are identified for preservation:

- **Open space for public health and safety,** including, but not limited to, areas that require special management or regulation because of hazardous or special conditions;
- **Open space for the preservation of natural resources,** including, but not limited to, natural vegetation, fish and wildlife, and water resources;
- **Open space for resource management and production,** including, but not limited to, agricultural and mineral resources, forests, rangeland, and areas required for the recharge of groundwater basins;
- **Open space for outdoor recreation,** including, but not limited to, parks and recreational facilities, areas that serve as links between major recreation and open space reservations (such as trails, easements, and scenic roadways), and areas of outstanding scenic and cultural value; and
- **Open space for the protection of Native American sites,** including, but not limited to, places, features, and objects of historical, cultural, or sacred significance, such as Native American sanctified cemeteries, places of worship, religious or ceremonial sites, or sacred shrines located on public property (further defined in PRC Sections 5097.9 and 5097.993). The following section focuses on the key plans that regulate land use in the StanCOG region, which are the county and city general plans. This section outlines the status of those plans.

b. Local Laws, Regulations, and Policies

The following section focuses on the key plans that regulate land use in the StanCOG region, which are the county and city general plans and the Airport Land Use Compatibility Plans. A city or county may also provide for land use planning by developing community or specific plans for smaller, more specific areas within its jurisdiction. These more localized plans provide for focused guidance for

developing a specific area, with development standards tailored to the area, as well as systematic implementation of the general plan.

Stanislaus County General Plan

The Stanislaus County General Plan was adopted in August 2016 (Stanislaus County 2016). The General Plan has a 20-year planning horizon through 2035. The Land Use Element of the General Plan designates the type, intensity, and general distribution of uses of land for housing, business, industry, open space, agriculture, natural resources, recreation, education, public buildings and grounds, solid and liquid waste disposal facilities, and other categories of public and private uses of land. A summary of the goals from the Land Use Element are as follows:

- **Goal One.** Provide for diverse land use needs by designating patterns which are responsive to the physical characteristics of the land as well as to environmental, economic and social concerns of the residents of Stanislaus County.
- **Goal Two.** Ensure compatibility between land uses.
- **Goal Three.** Foster stable economic growth through appropriate land use policies.
- **Goal Four.** Ensure that an effective level of public service is provided in unincorporated areas.
- **Goal Five.** Complement the general plans of cities within the County.
- **Goal Six.** Provide for direct citizen participation in land-use decisions involving the expansion of residential uses into agricultural and open-space areas in order to encourage compact urban form and to preserve agricultural land.

City of Ceres General Plan 2035

The City of Ceres General Plan 2035 was adopted on February 1997 and updated in May 2018 (City of Ceres 2018). Approximately 39 percent of land within the City and 46 percent of land in the larger Planning Area is utilized for residential use. Residential uses are increasingly mixed in the City's downtown and in some areas along SR 99; there are larger areas that consist of single-family residential uses in newer neighborhoods north, northeast, and southeast of downtown. The City's public facilities and parks are located throughout residential neighborhoods within the City.

City of Hughson General Plan

The Hughson General Plan was adopted on December 12, 2005 (City of Hughson 2005). The City of Hughson can be characterized as a residential community. It has a downtown area that is mostly surrounded by single-family residential neighborhoods. However, the few employment centers that are within the City are located in the downtown and industrial areas (City of Hughson 2005).

City of Modesto General Plan

The City of Modesto Urban Area General Plan was adopted on October 2008 and updated in 2011. The General Plan's community growth strategy divides the City into three areas: the Downtown area, the Baseline Developed Area, and the Planned Urbanizing Area. The Downtown area is a mixture of residential, commercial, and industrial uses. Although the Baseline Developed Area is located within City limits, it is mostly developed but contains vacant areas. The Planned Urbanizing Area is mostly outside of city limits, and is predominately vacant or developed for agricultural use (City of Modesto 2011).

City of Newman 2030 General Plan

The City of Newman 2030 General Plan was adopted on April 10, 2007. The City of Newman has a historic downtown area that is mostly surrounded predominately by single family residential neighborhoods, then agricultural ranch land. Downtown consists of one- and two-story commercial buildings. East of Highway 33, from the center of town to the southern City limits, land uses are almost exclusively industrial and commercial (City of Newman 2007).

City of Oakdale 2030 General Plan

The Oakdale 2030 General Plan was adopted in August 2013. The downtown business district goal is continued renewal that will transform the area as more pedestrian oriented. Commercial corridors along the City's major roadways, with an assorted pattern of; The General Plan emphasizes intensification, revitalization, and expansion of these commercial areas. Industrial land uses are concentrated in the southern portion of the City. The Stanislaus River open space corridor is located on the northern edge of the City. Of note is a Greenbelt consisting of agricultural and rural lands separating Oakdale from Riverbank and the expanding Modesto area (City of Oakdale 2013).

City of Patterson 2010 General Plan

The City of Patterson 2010 General Plan was adopted in November 2010. Highway services are concentrated on the west side of the City along I-5. Further to the east, central Patterson consists of a business park and single-family neighborhoods. Downtown Patterson consists of a mixture of industrial, downtown residential, and commercial land uses. East Patterson is primarily commercial with low-density residential neighborhoods.

City of Riverbank General Plan

The City of Riverbank General Plan 2005-2025 (adopted 2009, amended 2014) intent is to enhance the City of Riverbank's quality of life as the City grows and evolves. Riverbank City Hall, Riverbank Library, the Stanislaus Consolidated Fire Protection District station, and Riverbank Police Services are public facilities located downtown. The west and east planning area are designated as agriculture resource reserve areas. The city primarily consists of low-density residential land use. Industrial uses are limited to the southeastern portion of the City, and there are community commercial uses in the south and east areas of the city. Of note, there is a greenbelt starting in the northeast corner of the City which extends through central, eastern, and southern Riverbank (City of Riverbank 2014).

City of Turlock General Plan

The Turlock General Plan was adopted in September 2012. The City's growth has mainly occurred north of the downtown area and east of the railroad. Turlock's residential development has occurred north of Monte Vista Avenue on the east side of the railroad. Northwest Turlock is a major commercial area, and the City has allocated over 2,600 acres for industrial and business land uses west of SR 99 (City of Turlock 2012).

Waterford Vision 2025 General Plan

Waterford's Vision 2025 General Plan was adopted in October 2006. The General Plan's defines policies and goals is to manage future growth, development, and conservation of resources through 2025. The Land Use Element dictates the implementation actions for new development which will occur. Residential land uses comprise the majority of the City. Downtown Waterford contains a

mixture of multi-family, commercial, and public government uses. Industrial zones are located solely in the northwest area of the City. All other land use plans and regulations and capital improvement plans, including specific plans, redevelopment plans, zoning, subdivision, and capital improvement decisions, must be consistent with the General Plan (City of Waterford 2006).

Airport Land Use Compatibility Plans

The California State Aeronautics Act requires counties with public-use airport to create an Airport Land Use Commission (ALUC) and prepare an airport land use compatibility plan (ALUCP) for each public use airport. The purpose of the code is to "protect public health, safety and welfare by ensuring the orderly expansion of airports and the adoption of land use measures that minimize the public's exposure to noise and safety hazards within areas around public airports to the extent that these areas are not already devoted to incompatible uses" (Public Utilities Code Section 21670 et. seq.). Cities and counties with jurisdiction within the areas included in an ALUCP (i.e., Airport Influence Area) must submit their general and specific plans to the ALUC for review upon adoption or amendment to determine whether they are consistent with the ALUCP.

The Stanislaus County ALUCP provides compatibility policies for the Modesto City-County Airport and the Oakdale Municipal Airport (Stanislaus County 2016). The Merced County ALUCP provides such policies for the Turlock Municipal Airport (Merced County ALUC 2012).

4.12.3 Impact Analysis

a. Methodology and Significance Thresholds

Appendix G of the State CEQA Guidelines identifies the following criteria for determining whether a project would have a significant impact on land use:

1. Physically divide an established community; and/or
2. Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation (including, but not limited to, the General Plan or Zoning Ordinance) and result in a physical change to the environment not already addressed in the other resource chapters of this EIR.

The proposed 2022 RTP/SCS was assessed to determine whether the transportation projects and StanCOG land use pattern and strategies could conflict with any applicable land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect. This review focused on the process used by StanCOG to develop regional growth projections, the transportation network and programs, housing needs estimates, and the SCS land use strategies. This evaluation of land use assumes that construction and development under the 2022 RTP/SCS would adhere to applicable federal, State, and local regulations and would conform to appropriate standards in the industry, as relevant for individual projects. Land use impacts related to implementation of the 2022 RTP/SCS land use development pattern and transportation projects would be inherently operational in nature and the following analysis discusses effects of the proposed Plan following implementation.

Impacts related to population and housing are discussed in Section 4.14, *Population and Housing.*

b. Project Impacts and Mitigation Measures

The following section discusses potential impacts and mitigation measures that may be associated with transportation improvements and the land use scenario contained within the proposed 2022 RTP/SCS. Impacts and associated mitigation measures would apply in the StanCOG region and all cities within the County. Section 4.12.3(c) summarizes the impacts associated with capital improvement projects proposed in the 2022 RTP/SCS. Due to the programmatic nature of the 2022 RTP/SCS, a precise, project level analysis of the specific impacts associated with individual transportation and land use projects is not possible at this time. In general, implementation of proposed transportation improvements and future projects under the land use scenario envisioned by the 2022 RTP/SCS could result in the impacts as described in the following section.

Threshold 1: Physically divide an established community

Impact LU-1 IMPLEMENTATION OF PROPOSED TRANSPORTATION IMPROVEMENTS AND THE LAND USE SCENARIO ENVISIONED BY THE PROPOSED 2022 RTP/SCS WOULD NOT PHYSICALLY DIVIDE AN ESTABLISHED COMMUNITY. THIS IMPACT WOULD BE LESS THAN SIGNIFICANT.

In general, 2022 RTP/SCS implements roadway projects and transportation improvements that will decrease traffic congestion, increase mobility, and improve alternative transportation infrastructure. Construction of additions to existing facilities and new facilities routinely involve temporary disruptions within established communities such as lane or road closures along roads and highways and service delays or detours for bus routes and passenger rail. Local jurisdictions routinely require traffic control plans and related measures to ensure that construction activities accommodate vehicular and pedestrian access, such as designating alternate routes or scheduling disruptive activities late at night or on weekends. With these controls, construction activities would not result in the physical division of established communities.

The proposed 2022 RTP/SCS intends to improve the system for all modes of transit so vehicles and non-motorized transit can use the streets simultaneously and safely. As a result, roads would be expanded, widened, and reconstructed under the 2022 RTP/SCS. These and/or other planned projects would include improvements to bicycle and pedestrian facilities. Because the existing roads subject to expansion or widening are already part of the communities in which they are located, such projects would not have the potential to divide those communities. The projects are intended to achieve goals of 2022 RTP/SCS to increase mobility and decrease VMT, therefore the projects should result in bringing communities closer together rather than dividing them. New roadway, roadway rehabilitation projects, bridge repairs, bicycle lanes, public transportation projects and ADA accessibility projects included in 2022 RTP/SCS. Collectively, these are long-planned projects that are typically included in local circulation elements. As such, they have been anticipated and accommodated in local land use planning and would be integrated into the community infrastructure. These projects are expected to increase community connectivity and mobility and decrease congestion and GHG emissions.

The existing and new road projects contained in the proposed 2022 RTP/SCS originate from either local circulation plans or state projects supported by cities and counties. The projects have therefore been coordinated with and integrated into local plans that support and connect communities consistent with state planning law.

The land use scenario envisioned by the 2022 RTP/SCS would encourage infill, mixed use, and transit-oriented development within existing urbanized areas along transportation corridors,

although development could still occur in more suburban and rural areas as well. The land use scenario follows adopted city plans, taking into consideration recent updates and buildout scenarios, following existing regulations to promote infill development in existing communities along with planned growth in other areas. In general, this infill type of development would not divide a community; rather it would promote the development of existing vacant or underutilized properties. Other types of development would be consistent with the localized planning as well. This infill development would locate people closer to existing employment, goods and services within established communities. Buildout of the SCS land use scenario would result in more compact development in those established communities. The existing and new road projects contained in 2022 RTP/SCS originate from either local circulation plans or state projects supported by individual cities and/or the County. The projects have therefore been coordinated with and integrated into local plans that support and connect communities consistent with state planning law. Therefore, impacts related to dividing an established community would be less than significant.

Mitigation Measures

No mitigation measures are required.

Threshold 2:	Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation (including, but not limited to, the General Plan or Zoning Ordinance) and result in a physical change to the environment not already addressed in the other resource chapters of this EIR

Impact LU-2 PROPOSED TRANSPORTATION IMPROVEMENTS AND LAND USE PROJECTS ENVISIONED BY THE 2022 RTP/SCS WOULD NOT CAUSE A SIGNIFICANT ENVIRONMENTAL IMPACT DUE TO A CONFLICT WITH ANY LAND USE PLAN, POLICY, OR REGULATION (INCLUDING, BUT NOT LIMITED TO, THE GENERAL PLAN OR ZONING ORDINANCE) AND RESULT IN A PHYSICAL CHANGE TO THE ENVIRONMENT NOT ALREADY ADDRESSED IN THE OTHER RESOURCE CHAPTERS OF THIS EIR. THIS IMPACT WOULD BE LESS THAN SIGNIFICANT.

In planning for projected growth in the region, 2022 RTP/SCS represents a voluntary growth strategy that retains local government land use autonomy. Neither SB 375 nor any other law requires local member agency general plans or land use regulation to implement the land use policies in 2022 RTP/SCS. Thus, implementation of 2022 RTP/SCS is dependent on local government policy decisions and voluntary action. The proposed 2022 RTP/SCS includes a list of planned and programmed projects including local and regional capital improvements that have been anticipated or accounted for in local general plans. These plans are summarized above in the Regulatory Setting section.

The vision for 2022 RTP/SCS is built on a set of integrated policies, strategies, and investments to maintain and enhance the transportation system to meet the diverse needs of the region through 2050. 2022 RTP/SCS was prepared with the specific intent to comply with the SB 375 goal to reduce GHG emissions. The proposed 2022 RTP/SCS was assessed to determine whether the SCS land use pattern and strategies could conflict with any applicable land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect. This review focused on the process used by StanCOG to develop regional growth projections, the transportation network and programs, housing needs estimates and the SCS land use strategies.

Proposed 2022 RTP/SCS transportation projects encourage a multi-modal transportation network in high quality transit areas and public transportation improvements, while the envisioned land use scenario encourages mixed-use and infill development. Broadly speaking, these land use patterns

reduce the distance between trip destinations. This approach is consistent with the general provisions of the FAST Act, and the Caltrans Smart Mobility 2010 framework.

In addition, 2022 RTP/SCS would help the region reach its GHG emission reduction targets established by CARB under AB 32, SB 32, and SB 375, as discussed in Section 4.8, *Greenhouse Gas Emissions/Climate Change*. 2022 RTP/SCS encourages development patterns in areas to reduce automobile traffic, automobile congestion, and commute lengths. 2022 RTP/SCS would meet the CARB-established goal of a net zero per capita increase in GHG emissions from passenger vehicles and light trucks in 2020 and 2035 (see Section 4.9, *Greenhouse Gas Emissions/Climate Change*). At the local level, 2022 RTP/SCS builds on and incorporates regional and local planning efforts of its member agencies, including local general plans. Other key regional and local examples include, but are not limited to:

- Non-motorized Transportation Plan,
- Stanislaus County's 2015-2023 Housing Element Goals,
- Stanislaus County's Urban Growth Boundary,
- Stanislaus County's Five-Year Capital Improvement Program.

The land use scenario envisioned in 2022 RTP/SCS was developed in close coordination with StanCOG member agency planning staff and also builds on local general plans and general plan updates currently in process or completed. Central to the SCS is a land use plan identifying the general location of uses, residential densities, and building intensities within the region. Starting with land uses allowed by existing, adopted local General Plans, the land use plan envisioned by 2022 RTP/SCS provides for intensification of residential and commercial land uses, investment in alternative transportation modes, mixed-use neighborhoods in urban areas, and a compact development pattern within existing mixed-use centers and in new neighborhoods. In addition, the proposed 2022 RTP/SCS would help the region reach its GHG emission reduction targets established by CARB under AB 32, SB 32, and SB 375, as discussed in Section 4.9, *Greenhouse Gas and Climate Change*.

The proposed 2022 RTP/SCS was assessed to determine whether the SCS land use pattern and strategies could conflict with any applicable land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect. This review focused on the process used by StanCOG to develop regional growth projections, the transportation network and programs, housing needs estimates, and the SCS land use strategies. The SCS land use and transportation projects envisioned within the proposed 2022 RTP/SCS would result in conflicts with land use plans, policies, or regulations. However, the proposed 2022 RTP/SCS would not result in a physical change to the environment that has not already been addressed in the other resource chapters of this EIR. The impacts of any such conflicts are described throughout those sections of the EIR.

Mitigation Measures

Mitigation measures are provided for applicable resources throughout their respective environmental issue area sections of the EIR to reduce impacts. No additional mitigation is required for this impact.

a. Specific RTP Projects That May Result in Impacts

All proposed transportation projects listed in Appendix B and summarized in Section 2, *Project Description*, would associate with Impacts LU-1 and LU-2.

4.12.4 Cumulative Impacts

Intensified development of cities in the StanCOG region could influence land uses in adjoining counties. Accordingly, the cumulative impact analysis area for land use and planning consists of the StanCOG region and adjoining counties. Future development in this region that could divide an established community or conflict with any major land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect is considered in the analysis. This cumulative extent is used to evaluate potential impact from the combined growth in this region.

The StanCOG region shares a border with seven counties: Alameda, Calaveras, Mariposa, Merced, San Joaquin, Santa Clara, and Tuolumne. Land between each of these counties and the StanCOG region is undeveloped agricultural land, grazing land, or open space. The existing land use scenarios in the StanCOG region would continue to develop the region and could result in expansion of urban areas into undeveloped land. However, because there are no urban growth areas at or near the boundaries of the StanCOG region, cumulative impacts would be less than significant. Implementation of the proposed 2022 RTP/SCS would concentrate development in infill areas and as such, would not result in the division of established communities. Therefore, cumulative impacts related to physically dividing an established community would be less than significant. The contribution of the proposed 2022 RTP/SCS to this impact would not be cumulatively considerable.

Each of the seven neighboring counties have adopted general plans that direct new growth to existing developed areas, strongly support agricultural land preservation, and are part of other regional transportation plans. These general plans include goals, policies and programs adopted for the purpose of avoiding or mitigating environmental effects. Development under these existing plans would, therefore, be required to comply with existing goals, policies, and programs within existing plans. Cumulative impacts would be less than significant.

Implementation of the proposed 2022 RTP/SCS would result in significant and unavoidable impacts in several environmental issue areas, as outlined in Sections 4.1 through 4.17 of this EIR. The transportation projects and envisioned land use scenario would not result in additional impacts beyond the findings of significant and unavoidable impacts already analyzed in respective environmental issue area sections within this EIR and would not result in a physical change to the environment that has not already been addressed in this EIR. Implementation of mitigation as listed throughout resource chapters of this EIR would reduce impacts of the proposed 2022 RTP/SCS. Implementation of the proposed 2022 RTP/SCS would not result in a cumulatively considerable contribution to a significant cumulative impact.

4.13 Noise

This section evaluates potential noise and vibration impacts from development facilitated by the proposed 2022 RTP/SCS.

4.13.1 Setting

a. Overview of Noise and Vibration

The following discussion describes the characteristics of noise and vibration. These characteristics are used to assess potential impacts at sensitive land uses. Noise- and vibration-sensitive land uses include locations where people reside or where the presence of unwanted sound could adversely affect the use of the land. Residences, senior facilities, schools, hospitals, guest lodging, libraries and some passive recreation areas are examples of typical noise- and vibration-sensitive land uses.

Noise

Sound is a vibratory disturbance created by a moving or vibrating source, which is capable of being detected by the hearing organs. Noise is defined as sound that is loud, unpleasant, unexpected, or undesired and may therefore be classified as a more specific group of sounds. The effects of noise on people can include general annoyance, interference with speech communication, sleep disturbance, and, in the extreme, hearing impairment (California Department of Transportation [Caltrans] 2013).

Noise levels are commonly measured in decibels (dB) using the A-weighted sound pressure level (dBA). The A-weighting scale is an adjustment to the actual sound pressure levels so that they are consistent with the human hearing response, which is most sensitive to frequencies around 4,000 Hertz and less sensitive to frequencies around and below 100 Hertz (Kinsler, et. al. 1999). Decibels are measured on a logarithmic scale that quantifies sound intensity in a manner similar to the Richter scale used to measure earthquake magnitudes. A doubling of the energy of a noise source, such as doubling of traffic volume, would increase the noise level by 3 dBA; reducing the energy in half would result in a 3 dBA decrease (Crocker 2007).

Human perception of noise has no simple correlation with sound energy: the perception of sound is not linear in terms of dBA or in terms of sound energy. Two sources do not “sound twice as loud” as one source. It is widely accepted that the average healthy ear can barely perceive changes of 3 dBA, increase or decrease (i.e., twice the sound energy); that a change of 5 dBA is readily perceptible (8 times the sound energy); and that an increase (or decrease) of 10 dBA sounds twice (half) as loud ([10.5x the sound energy] Crocker 2007).

Sound changes in both level and frequency spectrum as it travels from the source to the receiver. The most obvious change is the decrease in level as the distance from the source increases. The manner in which noise reduces with distance depends on factors such as the type of sources (e.g., point or line, the path the sound will travel, site conditions, and obstructions). Noise levels from a point source typically attenuate, or drop off, at a rate of 6 dBA per doubling of distance (e.g., construction, industrial machinery, ventilation units). Noise from a line source (e.g., roadway, pipeline, railroad) typically attenuates at about 3 dBA per doubling of distance (Caltrans 2013). The propagation of noise is also affected by the intervening ground, known as ground absorption. A hard site, such as a parking lot or smooth body of water, receives no additional ground attenuation and the changes in noise levels with distance (drop-off rate) result from simply the geometric spreading

of the source. An additional ground attenuation value of 1.5 dBA per doubling of distance applies to a soft site (e.g., soft dirt, grass, or scattered bushes and trees) (Caltrans 2013). Noise levels may also be reduced by intervening structures; the amount of attenuation provided by this "shielding" depends on the size of the object and the frequencies of the noise levels. Natural terrain features such as hills and dense woods, and man-made features such as buildings and walls, can significantly alter noise levels. Generally, any large structure blocking the line of sight will provide at least a 5-dBA reduction in source noise levels at the receiver (Federal Highway Administration [FHWA] 2011). Structures can substantially reduce exposure to noise as well. The FHWA's guidelines indicate that modern building construction generally provides an exterior-to-interior noise level reduction of 20 to 35 dBA with closed windows.

The impact of noise is not a function of loudness alone. The time of day when noise occurs, and the duration of the noise are also important factors of project noise impact. Most noise that lasts for more than a few seconds is variable in its intensity. Consequently, a variety of noise descriptors have been developed. One of the most frequently used noise metrics is the equivalent noise level (L_{eq}); it considers both duration and sound power level. L_{eq} is defined as the single steady A-weighted level equivalent to the same amount of energy as that contained in the actual fluctuating levels over time. Typically, L_{eq} is summed over a one-hour period. Lmax is the highest root mean square (RMS) sound pressure level within the sampling period, and Lmin is the lowest RMS sound pressure level within the measuring period (Crocker 2007).

Noise that occurs at night tends to be more disturbing than that occurring during the day. Community noise is usually measured using Day-Night Average Level (L_{dn}), which is the 24-hour average noise level with a +10 dBA penalty for noise occurring during nighttime (10:00 p.m. to 7:00 a.m.) hours; it is also measured using Community Noise Equivalent Level (CNEL), which is the 24-hour average noise level with a +5 dBA penalty for noise occurring from 7:00 p.m. to 10:00 p.m. and a +10 dBA penalty for noise occurring from 10:00 p.m. to 7:00 a.m. (Caltrans 2013). Noise levels described by L_{dn} and CNEL usually differ by about 1 dBA. The relationship between the peak-hour L_{eq} value and the L_{dn}/CNEL depends on the distribution of traffic during the day, evening, and night. Quiet suburban areas typically have CNEL noise levels in the range of 40 to 50 dBA, while areas near arterial streets are in the 50 to 60-plus CNEL range. Normal conversational levels are in the 60 to 65-dBA L_{eq} range; ambient noise levels greater than 65 dBA L_{eq} can interrupt conversations (Federal Transit Administration [FTA] 2018).

Vibration

Groundborne vibration of concern in environmental analysis consists of the oscillatory waves that move from a source through the ground to adjacent structures. The number of cycles per second of oscillation makes up the vibration frequency, described in terms of Hz. The frequency of a vibrating object describes how rapidly it oscillates. The normal frequency range of most groundborne vibration that can be felt by the human body starts from a low frequency of less than 1 Hz and goes to a high of about 200 Hz (Crocker 2007).

While people have varying sensitivities to vibrations at different frequencies, in general they are most sensitive to low frequency vibration. Vibration in buildings, such as from nearby construction activities, may cause windows, items on shelves, and pictures on walls to rattle. Vibration of building components can also take the form of an audible low frequency rumbling noise, referred to as groundborne noise. Groundborne noise is usually only a problem when the originating vibration spectrum is dominated by frequencies in the upper end of the range (60 to 200 Hz), or when foundations or utilities, such as sewer and water pipes, physically connect the structure and the

vibration source (FTA 2018). Although groundborne vibration is sometimes noticeable in outdoor environments, it is almost never annoying to people who are outdoors. The primary concern from vibration is that it can be intrusive and annoying to building occupants and vibration-sensitive land uses.

Vibration energy spreads out as it travels through the ground, causing the vibration level to diminish with distance away from the source. High-frequency vibrations diminish much more rapidly than low frequencies, so low frequencies tend to dominate the spectrum at large distances from the source. Discontinuities in the soil strata can also cause diffractions or channeling effects that affect the propagation of vibration over long distances (Caltrans 2020b). When a building is impacted by vibration, a ground-to-foundation coupling loss will usually reduce the overall vibration level. However, under rare circumstances, the ground-to-foundation coupling may actually amplify the vibration level due to structural resonances of the floors and walls.

Vibration amplitudes are usually expressed in peak particle velocity (PPV) or RMS vibration velocity. The PPV and RMS velocity are normally described in inches per second. PPV is defined as the maximum instantaneous positive or negative peak of a vibration signal. PPV is often used in monitoring of blasting vibration because it is related to the stresses that are experienced by buildings (Caltrans 2020b).

b. Noise and Vibration Sources

The principal noise generators in the StanCOG region are associated with transportation (i.e., major roads, airports, and rail lines). Local collector streets are not typically significant noise sources as traffic volume and speeds are generally much lower than for freeways and arterial roadways.

Similar to the environmental setting for noise, the vibration environment is typically dominated by traffic from nearby roadways and activity on construction sites. Heavy trucks typically operate on major streets and can generate groundborne vibration that varies depending on vehicle type, weight, and pavement conditions. Nonetheless, vibration due to roadway traffic is typically not perceptible. The major noise and vibration sources in the region are described below.

Motor Vehicle Traffic

Motor vehicles, including cars/light trucks, buses, and various types of trucks, are the most substantial source of noise in most of the StanCOG region. This can be attributed to the extensive network of major, primary, and secondary arterials located throughout the region, as well as the large number of vehicle trips that occur each day.

The primary roadway corridor noise sources in the StanCOG region are Interstate 5 and State Route (SR) 99 due to the high traffic volumes and high traffic speed of these roadways. In 2017, daily traffic on Interstate 5 averaged approximately 45,000 vehicles per day through the StanCOG region, ranging from a low of 40,000 vehicles near Stuhr Road and Fink Road to a high of 50,300 vehicles at Ingram Creek (Howard Road) near the Stanislaus/San Joaquin County line (Caltrans 2022). Daily traffic on SR 99 averaged approximately 100,000 vehicles per day, ranging from a low of 60,000 vehicles near SR 165 South/Lander Avenue to a high of 137,000 vehicles at Carpenter Road and Beckwith Road in Modesto (Caltrans 2022). As a result, noise levels along the Interstate 5 and SR 99 corridors in the region exceed 65 dBA CNEL.

Traffic on other major transportation corridors in the StanCOG region, such as SR 33, 108, 120, 132, 132, 165, and 219, also generates noise in excess of 65 dBA CNEL within certain distances from the

centerline of the freeway/roadway. Traffic on several regional arterial roads in the region also generates noise in excess of normally acceptable standards for noise-sensitive uses.

Aircraft Operation

Air facilities in the StanCOG region serve a number of needs, including scheduled commercial air passenger service, recreational flights, military operations, agricultural crop dusting services, cargo services and private business flights. There are five major facilities of concern for circulation and transportation purposes: Modesto City-County Airport (Harry Sham Field); Oakdale Municipal Airport; Turlock Airpark; Crows Landing Air Facility; and Patterson Airport. The Modesto-Stanislaus County Airport is currently the only airport that provides regularly scheduled air passenger service. Because of the level of activity at this airport, noise generated at these airports is audible in the surrounding communities. Therefore, land uses in the surrounding areas have been planned to ensure that noise levels remain at acceptable levels for the various uses. The remaining airfields in the County are either private, not open to the public, or used purely for agricultural purposes, with no commercial traffic and no jet operations. While these airports do not generate as much noise as the Modesto-Stanislaus County Airport, flight operations have also had impacts on nearby residential areas.

General aviation aircraft operations occur during daytime hours. The 60 dB CNEL contour for annual average operations at most regional airports is located relatively close to the runway due to relatively low numbers of operations and an aircraft fleet consisting primarily of smaller propeller aircraft. However, it should be noted that maximum noise levels from individual operations by high performance single and twin-engine aircraft, aerial application aircraft, fire suppression aircraft and some corporate jets may result in significant short term noise impacts for persons located near the approach, departure or local training patterns of an airport.

In addition to airplanes, helicopter flights occur throughout the StanCOG region. These flights typically follow major and primary arterials with the exception of police patrol activities. Other flight-related activities include tourist sightseeing, Stanislaus County Sheriff's Office for search and rescue operations, Southern California Edison for power infrastructure work, and helicopter emergency medical services. Although single-event noise exposure resulting from helicopter operations may be considered a nuisance, the relatively low frequency and short duration of these operations do not significantly affect average daily noise levels anywhere in the region.

Railroad Operations

Train operations on the Altamont Corridor Express (ACE) and Amtrak generate noise within proximity to the railroad lines. Noise is generated during rail operations by locomotives starting and stopping, trains braking, the connection and disconnection of cars, train whistles, and track noise (the trains' wheels running on the track). The ACE commuter rail connects Manteca north of the StanCOG region to Merced to the south. The Amtrak originates in the City of Bakersfield and travels north towards Stockton.

Freight rail operations in the StanCOG region include high speed mainline operations on the Burlington Northern and Santa Fe (BNSF) Railway and Union Pacific Railroad (UPRR) and low speed mainline and switching operations on the BNSF Railway, UPRR, Sierra Railroad, California Northern Railroad, Modesto and Empire Traction Company Railroad, and Tidewater Southern Railroad.

Railroad operations generate high, relatively brief, intermittent noise events. These noise events are an environmental concern for sensitive uses located along rail lines and near sidings and switching

yards. According to the FTA Transit Noise and Vibration Impact Assessment guidance document (2018), vehicle propulsion rail units generate the following noises: (1) whine from electric control systems and traction motors that propel rapid transit cars, (2) diesel-engine exhaust noise from locomotives, (3) air-turbulence noise generated by cooling fans and (4) gear noise. Additional noise of motion is generated by the interaction of wheels/tires with their running surfaces. The interaction of steel wheels and rails generates three types of noise: (1) rolling noise due to continuous rolling contact, (2) impact noise when a wheel encounters a discontinuity in the running surface, such as a rail joint, turnout or crossover and (3) squeal generated by friction on tight curves.

When comparing electric- and diesel-powered trains, speed dependence is strong for electric-powered transit trains because wheel/rail noise dominates, and noise from this source increases strongly with increasing speed. On the other hand, speed dependence is less for diesel-powered commuter rail trains, particularly at low speeds where the locomotive exhaust noise dominates. As speed increases, wheel-rail noise becomes the dominant noise source and diesel- and electric-powered trains will generate similar noise levels. For transit vehicles in motion, close-by sound levels also depend upon other parameters, such as vehicle acceleration and vehicle length, plus the type/condition of the running surfaces. For very high-speed rail vehicles, air turbulence can also be a significant source of noise. In addition, the guideway structure can also radiate noise as it vibrates in response to the dynamic loading of the moving vehicle.

Rail operations generate varying noise levels depending on the type of rail activity. Heavier commuter or freight trains, which are diesel-powered, generate more noise than electrically-powered light-rail vehicles. According to the FTA, six commuter trains traveling at 50 miles per hour with a horn blowing generate a noise level of 81 dBA L_{eq} at 50 feet. This same activity without a horn generates a noise level of 68 dBA L_{eq} at 50 feet. In comparison, 12 light rail transit trains traveling 40 miles per hour generate a noise level of 65 dBA L_{eq} at 50 feet. These same light rail transit trains generate a noise level of 57 dBA L_{eq} at 20 miles per hour at 50 feet (FTA 2018).

In much of the StanCOG region, much of the rail corridor is located in open areas. In the central part of the region, train tracks are generally located closer to existing roadway corridors and to residences.

Industrial and Manufacturing

Noise from industrial complexes and manufacturing plants are characterized as stationary or point sources even though they may include mobile sources like heavy equipment. Local governments typically regulate noise from industrial, manufacturing and construction equipment and activities through enforcement of noise ordinance standards, implementation of general plan policies and imposition of conditions of approval for building or grading permits.

In general, in the StanCOG region and throughout California, industrial complexes and manufacturing plants are located away from sensitive land uses and, as such, noise generated from these sources has less of an effect on surrounding properties.

Construction Noise and Vibration

Noise and vibration from construction sites are characterized as stationary or point sources even though heavy construction equipment is often mobile. Construction activities typically generate high, intermittent noise and vibration on and adjacent to construction sites and related noise and vibration impacts are short-term, occurring primarily on weekdays and during daylight hours. The dominant source of noise from most construction equipment is their diesel engine. During pile

driving or pavement breaking events, impact noise is the dominant source and equipment produces the highest vibration levels. Construction equipment operates in two modes, stationary and mobile. Stationary equipment operates in one location for one or more days at a time and can generate a constant noise level (e.g., pumps, generators, and air compressors) or variable noise levels (e.g., pile drivers and pavement breakers). Mobile equipment moves around the construction site (e.g., dozers, tractors). Noise levels vary depending on the power cycle being used. Mobile equipment such as trucks, move to and from the site using adjacent streets/roads.

4.13.2 Regulatory Setting

a. Federal Laws, Regulations, and Policies

Relevant federal regulations include those established by the FHWA, FTA, Federal Aviation Administration (FAA), and Department of Housing and Urban Development (HUD).

Federal Highway Administration

Title 23, Part 772 of the Code of Federal Regulations - Traffic Noise

Traffic noise impacts, as defined in 23 CFR § 772.5, occur when the predicted noise level in the design year approach or exceed the noise abatement criteria (NAC) specified in 23 CFR § 772, or a predicted noise level substantially exceeds the existing noise level (a "substantial" noise increase). A "substantial increase" is defined as an increase of 12 dB L_{eq} during the peak hour of traffic. For sensitive uses, such as residences, schools, churches, parks, and playgrounds, the NAC for interior and exterior spaces is 57 dB L_{eq} and 66 dB L_{eq}, respectively, during the peak hour of traffic noise. Table 4.13-1 summarizes NAC corresponding to various land use activity categories. Activity categories and related traffic noise impacts are determined based on the actual land use in a given area.

Title 40, Part 205, Subpart B of the Code of Federal Regulations – Medium and Heavy Trucks

Federal regulations establish noise limits for medium and heavy trucks (more than 4.5 tons, gross vehicle weight rating) under 40 CFR Part 205, Subpart B. The federal truck passby noise standard is 80 dB at 15 meters from the vehicle pathway centerline. These controls are implemented through regulatory controls on truck manufacturers. The FHWA regulations for noise abatement apply to federal or federally-funded projects involving the construction of a new highway or significant modification of an existing freeway when the project would result in a substantial noise increase or when the predicted noise levels approach or exceed the NAC.

Table 4.13-1 Noise Abatement Criteria (NAC)

Activity Category	Hourly L_{eq}	Hourly L10[1]	Analysis Location	Description of Activity Category
A	57	60	Exterior	Lands on which serenity and quiet are of extraordinary significance and serve an important public need and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose
B	67	70	Exterior	Residential

Activity Category	Hourly L_{eq}	Hourly L10[1]	Analysis Location	Description of Activity Category
C	67	70	Exterior	Active sport areas, amphitheaters, auditoriums, campgrounds, cemeteries, day care centers, hospitals, libraries, medical facilities, parks, picnic areas, places of worship, playgrounds, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, recreation areas, Section 4(f) sites, schools, television studios, trails and trail crossings
D	52	55	Interior	Auditoriums, day care centers, hospitals, libraries, medical facilities, places of worship, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, schools and television studios
E	72	75	Exterior	Hotels, motels, offices, restaurants/bars and other developed lands, properties or activities not included in A-D or F
F	–	–	–	Agriculture, airports, bus yards, emergency services, industrial, logging, maintenance facilities, manufacturing, mining, rail yards, retail facilities, shipyards, utilities (water resources, water treatment, electrical) and warehousing
G	–	–	–	Undeveloped lands that are not permitted

[1] L10 is the level of noise exceeded for 10% of the time.
Source: FHWA 2018

Title 23, Part 772 of the Code of Federal Regulations – Federal and Federal-Aid Highway Projects

Title 23 of the Code of Federal Regulations (23 CFR § 772) provides procedures for preparing operational and construction noise studies and evaluating noise abatement for federal and federal-aid highway projects. Under 23 CFR § 772.5, projects are categorized as Type I, II, or III projects.

FHWA defines a Type I project as a proposed federal or federal-aid highway project for the construction of a highway on a new location or the physical alteration of an existing highway which significantly changes either the horizontal or vertical alignment or increases the number of through-traffic lanes. A Type II project is a noise barrier retrofit project that involves no changes to highway capacity or alignment.

Type I projects include those that create a completely new noise source, increase the volume or speed of traffic, or move the traffic closer to a receiver. Type I projects include the addition of an interchange, ramp, auxiliary lane, or truck-climbing lane to an existing highway, or the widening an existing ramp by a full lane width for its entire length. Projects unrelated to increased noise levels, such as striping, lighting, signing and landscaping projects, are not considered Type I projects.

Under 23 CFR § 772.11, noise abatement must be considered for Type I projects if the project is predicted to result in a traffic noise impact. In such cases, 23 CFR § 772 requires that the project sponsor “consider” noise abatement before adoption of the environmental document. This process involves identification of noise abatement measures that are reasonable, feasible and likely to be incorporated into the project as well as noise impacts for which no apparent solution is available.

Type III projects are Federal or Federal-aid highway projects that do not meet the classification of a Type I or Type II project. Noise analysis is not required for Type III projects. Projects unrelated to

increased noise levels, such as striping, lighting, signing, and landscaping projects, are considered Type III projects.

Federal Aviation Administration

Title 14, Part 36 of the Code of Federal Regulations - Aircraft Noise

Aircraft operated in the U.S. are subject to federal requirements regarding noise emissions levels. These requirements are set forth in Title 14 CFR, Part 36. Part 36 establishes maximum acceptable noise levels for specific aircraft types, taking into account the model year, aircraft weight and number of engines.

Federal Transit Administration

The FTA has developed guidance to evaluate noise impacts from operation of surface transportation modes (i.e., passenger cars, trucks, buses, and rail) in the 2018 FTA *Transit Noise Impact and Vibration Assessment* (FTA 2018). All mass transit projects receiving federal funding must use these guidelines to predict and assess potential noise and vibration impacts. As ambient levels increase, smaller increments of change are allowed to minimize community annoyance related to transit operations.

Department of Housing and Urban Development

Title 24, Part 51, Subpart B of the Code of Federal Regulations – Noise Abatement and Control

The mission of HUD includes fostering "a decent, safe, and sanitary home and suitable living environment for every American." Accounting for acoustics is intrinsic to this mission as safety and comfort can be compromised by excessive noise. To facilitate the creation of suitable living environments, HUD has developed a standard for noise criteria. The basic foundation of the HUD noise program is set out in the noise regulation 24 CFR Part 51 Subpart B, Noise Abatement and Control.

HUD's noise policy requires noise attenuation measures be provided when proposed projects are to be located in high noise areas. Within the HUD Noise Assessment Guidelines, potential noise sources are examined for projects located within 15 miles of a military or civilian airport, 1,000 feet from a road or 3,000 feet from a railroad.

HUD exterior noise regulations state that 65 dBA L_{dn} noise levels or less are acceptable for residential land uses and noise levels exceeding 75 dBA L_{dn} are unacceptable. HUD's regulations do not contain standards for interior noise levels. The HUD regulations establish a goal of 45 decibels, and the attenuation requirements are focused on achieving that goal. The HUD guidelines assume that with standard construction methods and materials, any building will provide sufficient attenuation so that if the exterior level is 65 dBA L_{dn} or less, the interior level will be 45 dBA L_{dn} or less. Noise criteria are consistent with FHWA and related state requirements

b. State Laws, Regulations, and Policies

Land Use Compatibility Guidelines

The Governor's Office of Planning and Research is required to adopt and periodically revise guidelines for the preparation and content of local general plans. The 2017 General Plan Guidelines (Governor's Office of Planning and Research 2017) establish land use compatibility guidelines. Where a noise level range is denoted as "normally acceptable" for the given land use, the highest noise level in that range should be considered the maximum desirable for conventional construction that does not incorporate any special acoustic treatment. The acceptability of noise environments classified as "conditionally acceptable" or "normally unacceptable" will also depend on the anticipated amount of time that will normally be spent outside the structure and the acoustic treatment to be incorporated in structural design.

With regard to noise-sensitive residential uses, the recommended exterior noise limits are 60 dBA CNEL for single-family residences and 65 dBA CNEL for multi-family residences. The recommended maximum interior noise level is 45 dBA CNEL, which could normally be achieved using standard construction techniques if exterior noise levels are within the levels described above.

Caltrans

Caltrans establishes noise limits for vehicles licensed to operate on public roads (Caltrans 2013). For heavy trucks, the State passby standard is consistent with the federal limit of 80 dB. The State pass-by standard for light trucks and passenger cars (less than 4.5 tons gross vehicle rating) is also 80 dB at 15 meters from the centerline. For new roadway projects, Caltrans uses the NAC discussed above in connection with FHWA. In addition, Caltrans has published the Traffic Noise Analysis Protocol for assessing noise levels associated with roadway projects (Caltrans 2020a).

Caltrans has a *Transportation and Construction Induced Vibration Manual* that provides general guidance on vibration issues associated with construction and operation of projects in relation to human perception and structural damage (Caltrans 2020b).

Section 216 of the California Streets and Highways Code relates to the noise effects of a proposed freeway project on public and private elementary and secondary schools. Under this code, a noise impact occurs if, as a result of a proposed freeway project, noise levels exceed 52 dBA L_{eq} in the interior of public or private elementary or secondary classrooms, libraries, multipurpose rooms, or spaces. If a project results in a noise impact under this code, noise abatement must be provided to reduce classroom noise to a level that is at or below 52 dBA L_{eq}. If the noise levels generated from roadway sources exceed 52 dBA L_{eq} prior to the construction of the proposed freeway project, then noise abatement must be provided to reduce the noise to the level that existed prior to construction of the project.

California's Airport Noise Standards and Compatibility Planning

The State of California has the authority to establish regulations requiring airports to address aircraft noise impacts near airports. The State of California's Airport Noise Standards, found in Title 21 of the California Code of Regulations, identify a noise exposure level of 65 dB CNEL as the noise impact boundary around airports. Within the noise impact boundary, airport proprietors are required to ensure that all land uses are compatible with the aircraft noise environment, or the airport proprietor must secure a variance from Caltrans.

California Noise Insulation Standards

The California Noise Insulation Standards found in Title 24 of the California Code of Regulations set requirements for new multi-family residential units, hotels, and motels that may be subject to relatively high levels of transportation-related noise. For exterior noise, the noise insulation standard is 45 dBA L_{dn} in any habitable room and requires an acoustical analysis demonstrating how dwelling units have been designed to meet this interior standard where such units are proposed in areas subject to noise levels greater than 60 dBA L_{dn}.

California Aeronautics Act

The State Aeronautics Act (Public Utilities Code, Section 21670 et seq.) requires the establishment of Airport Land Use Commissions (ALUCs), which are responsible for developing airport land use compatibility plans (ALUCPs) for noise-compatible land uses in the immediate proximity of a commercial or public airport (Section 21675). ALUCs have two major roles: preparation and adoption of ALUCPs, which address policies for both noise and safety and review of certain local government land use actions and airport plans for consistency with the land use compatibility plan.

The ALUCP is the major tool for ALUC land use regulation. The intent of the ALUCP is to encourage compatibility between airports and the various land uses that surround them. ALUCPs typically include the development of noise contours to identify excessive airport-related noise levels and measures to reduce noise levels.

The Aeronautics Division of Caltrans has published the *California Airport Land Use Planning Handbook* (Caltrans 2011). The purpose of the *California Airport Land Use Planning Handbook* is to provide guidance for conducting airport land use compatibility planning. This handbook includes a section related to noise and states, “The basic strategy for achieving noise compatibility in the vicinity of an airport is to prevent or limit development of land uses that are particularly sensitive to noise. Common land use strategies are ones that either involve few people (especially people engaged in noise-sensitive activities) or generate significant noise levels themselves (such as other transportation facilities or some industrial uses).”

Within the StanCOG region, Stanislaus County Planning Commission, along with the addition of two other members with expertise in aviation, serves as the Stanislaus County ALUC. The ALUC is responsible for protecting public health, safety, and welfare by ensuring that vacant lands in the vicinity of airports are planned and zoned for uses compatible with airport operations. The ALUC adopted ALUCP addresses the following public-use airports located within the StanCOG region: Modesto City-County Airport, Oakdale Municipal Airport, and Crows Landing Airport. The ALUC adopted an update to the ALUCP on October 6, 2016. The plan was amended in 2018 to include airport-specific compatibly policies for the Crows Landing Airport (Stanislaus County 2022).

c. Regional and Local Laws, Regulations, and Policies

To identify, appraise and remedy noise and vibration problems in local communities, Stanislaus County, and incorporated cities in the StanCOG region are each required to adopt a noise element as part of their General Plan. Local governments use the Governor’s Office of Planning and Research’s General Plan Guidelines (2017), including land use compatibility guidelines, to prepare General Plan noise elements.

Each noise element is required to analyze and quantify current and projected noise levels associated with local noise sources, including, but not limited to: highways and freeways, primary arterials and major local streets, rail operations, air traffic associated with the airports; local industrial plants; and

other ground stationary sources that contribute to the community noise environment. Beyond statutory requirements, local jurisdictions are free to adopt their own goals and policies in their noise elements, although most jurisdictions have chosen to adopt noise/land use compatibility guidelines that are similar to those recommended by the State. Land use compatibility considers both existing noise levels in a community, as well as community attitudes toward dominant noise sources.

In addition to regulating noise through noise element policies, local jurisdictions regulate noise through enforcement of local ordinance standards. These standards generally relate to noisy activities (e.g., use of loudspeakers and construction) and stationary noise sources and facilities (e.g., air conditioning units and industrial activities). The StanCOG region has nine incorporated cities, each of which has its own adopted noise standards. Noise standards for the County and incorporated cities in the region typically apply land-use compatibility criteria of 60-65 dBA L_{dn} as being the normally acceptable range for new residential developments, and interior noise criteria of 45 dBA L_{dn}, consistent with the overall State recommendations.

As discussed above, the State Aeronautics Act (Public Utilities Code, Section 21670 et seq.) requires the preparation of an ALUCP for nearly all public-use airports in the State (Section 21675). The Stanislaus County ALUCP addresses aviation related matters such as safety, noise, overflight, and height policies and safety zones (Stanislaus County 2016b). The ALUCP establishes areas of influence within which airport operations are likely to affect land uses or land uses could affect airport operations. The goal of the ALUCP is to protect residents from the negative environmental noise, safety and traffic impacts that can potentially be induced by airports. Safety and noise criteria are identified in the ALUCP so that land use conflicts with airport operations are minimized.

4.13.3 Impact Analysis

a. Methodology and Significance Thresholds

The analysis of noise impacts considers the effects of both temporary construction-related noise and long-term noise associated with proposed transportation system improvements. Temporary construction noise was estimated based upon levels presented in the FTA Transit Noise and Vibration Impact Assessment.

Appendix G of the State CEQA Guidelines identifies the following criteria for determining whether a project's impacts would have a significant impact related to noise; StanCOG has added a threshold related to absolute noise increases:

1. Generate a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies;
2. Generate a substantial absolute increase in ambient noise;
3. Generate excessive groundborne vibration or groundborne noise levels; or
4. For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels.

Stanislaus County and the nine incorporated cities within the StanCOG region each have their own noise standards that can be used to determine impact significance. These local noise standards

typically apply land-use compatibility criteria of 60-65 dBA CNEL as the normally acceptable range for residential developments, and interior noise criteria of 45 dBA CNEL, consistent with the overall State recommendations and the recommendations of HUD for residential uses.

The analysis of potential impacts assumes implementation of all applicable standards, including those established by local jurisdictions, counties, the State of California, and federal agencies, where appropriate.

This EIR analyzes noise impacts on a program level only. Future project-level analyses for various projects implementing the proposed 2022 RTP/SCS would be included in project-level CEQA analysis.

b. Project Impacts and Mitigation Measures

The following section discusses potential impacts and mitigation measures that may be associated with transportation projects and the land use scenario contained within the proposed 2022 RTP/SCS. Section 4.13.4 summarizes the impacts associated with capital improvement projects proposed in the proposed 2022 RTP/SCS. Due to the programmatic nature of the proposed 2022 RTP/SCS, a precise, project-level analysis of the specific impacts associated with individual transportation and land use projects is not possible at this time. In general, however, implementation of proposed transportation improvement projects and future projects under the land use scenario envisioned by the proposed 2022 RTP/SCS could result in the impacts as described in the following section.

Threshold 1:	Generate a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies
Threshold 2:	Generate a substantial absolute increase in ambient noise

Impact N-1 CONSTRUCTION ACTIVITY ASSOCIATED WITH TRANSPORTATION IMPROVEMENTS AND LAND USE PROJECTS ENVISIONED BY THE PROPOSED 2022 RTP/SCS WOULD GENERATE A SUBSTANTIAL TEMPORARY INCREASE IN AMBIENT NOISE LEVELS IN EXCESS OF STANDARDS ESTABLISHED IN LOCAL GENERAL PLANS OR NOISE ORDINANCES AND WOULD GENERATE A SUBSTANTIAL ABSOLUTE NOISE INCREASE OVER EXISTING NOISE LEVELS. THIS IMPACT WOULD BE SIGNIFICANT AND UNAVOIDABLE.

The operation of equipment during the construction of roadway infrastructure, as well as land-use development envisioned in 2022 RTP/SCS would result in temporary increases in noise in the immediate vicinity of individual construction sites. As shown in Table 4.13-2, average noise levels associated with the use of heavy equipment at construction sites typically range from 76 to 88 dBA at 50 feet from the source, depending upon the types of equipment in operation at any given time and the phase of construction. For projects that require pile driving, construction noise levels may reach 101 dBA at 50 feet from the source. For projects that do not require pile driving, the highest noise levels typically occur during excavation and foundation development, which involves the use of such equipment as backhoes, bulldozers, pile drivers, and front-end loaders.

Table 4.13-2 Typical Noise Levels for Construction Equipment (dBA)

Equipment	Typical Level 25 feet from the Source	Typical Level 50 feet from the Source	Typical Level 100 feet from the Source
Air Compressor	86	80	74
Backhoe	86	80	74
Concrete Mixer	91	85	79
Dozer	91	85	79
Grader	91	85	79
Jack Hammer	94	88	82
Loader	86	80	74
Paver	91	85	79
Pile-drive (Impact)	107	101	95
Pile-driver (Sonic)	101	95	89
Roller	91	85	79
Saw	82	76	70
Scarified	89	83	77
Scraper	91	85	79
Truck	90	84	78

Source: FTA 2018

Noise generated by construction projects would vary depending on the project and intensity of equipment use. Roadway widening projects and new roadway projects would likely require the operation of multiple pieces of heavy-duty equipment that generate high noise levels. Alternatively, repainting/restriping projects typically requiring minimal use of heavy equipment. This conservative analysis assesses construction noise based on the operation of heavy-duty equipment. Noise levels from point sources such as individual construction sites associated with land use projects envisioned in the proposed 2022 RTP/SCS typically attenuate at a rate of 6 dBA per doubling of distance. Therefore, areas within 800 feet of a construction site with heavy-duty equipment may be exposed to noise levels exceeding 65 dBA. Areas within 3,200 feet of impact pile drivers may be exposed to noise levels exceeding 65 dBA.

Some local agencies in the StanCOG region include specific regulations in their municipal code to reduce construction noise impacts. In most cases, these regulations restrict construction activities to specific times and days. Such local policies serve to reduce the impacts of noise on surrounding communities by prohibiting construction during the night when people are engaged in noise-sensitive activities like sleeping. Nevertheless, this impact is significant because applicable noise standards would be exceeded, or because a substantial temporary increase in ambient noise levels in the project vicinity would occur.

Mitigation Measures

For transportation projects under their jurisdiction, StanCOG shall implement, and transportation project sponsor agencies can and should implement, the following mitigation measure developed

for the proposed 2022 RTP/SCS program where applicable for transportation projects that would result in noise impacts, and where feasible and necessary based on project and site-specific considerations. Stanislaus County and incorporated cities in the County can and should implement this measure where relevant to land use projects implementing the proposed 2022 RTP/SCS. Project-specific environmental documents may adjust this measure as necessary to respond to site-specific conditions.

N-1 Construction Noise Reduction

To reduce construction noise levels to achieve applicable standards, implementing agencies for transportation and land use projects shall implement the measures identified below where feasible.

a. **Compliance with local Construction Noise Regulations.** Implementing agencies shall ensure that, where residences or other noise sensitive uses are located within 800 feet of construction sites without pile driving, appropriate measures shall be implemented to ensure consistency with local noise ordinance requirements relating to construction. Specific techniques may include, but are not limited to, restrictions on construction timing, use of sound blankets on construction equipment, and the use of temporary walls and noise barriers to block and deflect noise.

b. **Noise Complaint and Enforcement Manager.** Designate an on-site construction complaint and enforcement manager for projects within 800 feet of sensitive receivers. Implementing agencies shall post phone numbers for the on-site enforcement manager at construction sites along with complaint procedures and who to notify in the event of a problem.

c. **Pile Driving**. For any project within 3,200 feet of sensitive receptors that requires pilings, the implementing agency shall require caisson drilling or sonic pile driving as opposed to pile driving, where feasible. This shall be accomplished through the placement of conditions on the project during its individual environmental review.

d. **Construction Equipment Noise Control**. Implementing agencies shall ensure that equipment and trucks used for project construction utilize the best available noise control techniques (including mufflers, use of intake silencers, ducts, engine enclosures, and acoustically attenuating shields or shrouds).

e. **Impact Equipment Noise Control.** Implementing agencies shall ensure that impact equipment (e.g., jack hammers, pavement breakers, and rock drills) used for project construction be hydraulically or electrically powered wherever feasible to avoid noise associated with compressed air exhaust from pneumatically powered tools. Where use of pneumatically powered tools is unavoidable, use of an exhaust muffler on the compressed air exhaust can lower noise levels from the exhaust by up to about 10 dBA. When feasible, external jackets on the impact equipment can achieve a reduction of 5 dBA. Whenever feasible, use quieter procedures, such as drilling rather than impact equipment operation.

f. **Construction Activity Timing Restrictions.** Except where timing restrictions are already established in local codes or policies, construction activities shall be limited to:
   - Monday through Friday: 7 a.m. to 6 p.m.
   - Saturday: 9 a.m. to 5 p.m.

g. **Placement of Stationary Noise Sources.** Locate stationary noise sources as far from noise-sensitive receptors as possible. Stationary noise sources that must be located near existing receptors will be equipped with the best available mufflers.

IMPLEMENTING AGENCIES AND TIMING

Implementing agencies for transportation projects are StanCOG and transportation project sponsor agencies. Implementing agencies for land use projects are Stanislaus County and incorporated cities within the County. This mitigation measure shall, or can and should, be applied during project permitting and environmental review and implemented during construction, as applicable.

Significance After Mitigation

Implementation of Mitigation Measure N-1 would reduce construction noise impacts. However, even with implementation of Mitigation Measure N-1, construction noise from all 2022 RTP/SCS projects may not be reduced below applicable thresholds and impacts would remain significant and unavoidable. No additional mitigation measures to reduce this impact to less than significant levels are feasible.

Threshold 1:	Generate a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies
Threshold 2:	Generate a substantial absolute increase in ambient noise

Impact N-2 TRANSPORTATION IMPROVEMENTS ENVISIONED BY THE PROPOSED 2022 RTP/SCS WOULD GENERATE A SUBSTANTIAL PERMANENT INCREASE IN AMBIENT NOISE LEVELS IN EXCESS OF STANDARDS OR OVER EXISTING NOISE LEVELS AND GENERATE A SUBSTANTIAL ABSOLUTE NOISE INCREASE OVER EXISTING NOISE LEVELS. THIS IMPACT WOULD BE SIGNIFICANT AND UNAVOIDABLE.

Traffic

Overall traffic levels on highways and roadways in the StanCOG region are projected to increase as a result of regional growth through the year 2046 (refer to Section 4.16, *Transportation and Circulation*).

The proposed 2022 RTP/SCS includes several projects that would potentially increase traffic noise by increasing traffic levels along and in the vicinity of affected facilities. Such projects include intersection/interchange improvements, widening existing roadways, widening and replacing ramps and bridge structures, constructing new interchanges, and road improvements that would allow increased traffic volumes. These projects are intended to relieve current or projected future traffic congestion or unacceptable safety conditions. However, in some cases, projects that expand roadway capacity would accommodate additional traffic volumes and/or relocate noise sources closer to sensitive receptors. Therefore, this impact is significant because applicable noise standards would be exceeded, or because a substantial permanent increase in ambient noise levels in the project vicinity would occur.

Rail Operations

The proposed 2022 RTP/SCS includes investments in passenger rail and train service, such as rail crossing improvements, construction of new passenger rail stations (in Modesto and Turlock), and improvements to the ACE corridor throughout the County. The FTA has developed a screening procedure to identify locations where a rail project may cause a noise impact. The screening distances for requiring noise assessments for various types of projects are presented in Table 4.13-3.

Table 4.13-3 Screening Distances for Noise Assessments – Rail Transit Projects

Type of Project		Screening Distance (Feet)	
		Unobstructed	Intervening Buildings
Commuter Rail Mainline		750	375
Commuter Rail Station	With Horn Blowing	1,600	1,200
	Without Horn Blowing	250	200
Commuter Rail -Highway Crossing with Horns and Bells		1,600	1,200
Light Rail Transit		350	175
Street car		200	100
Access Roads		100	50
Low- and Intermediate-Capacity Transit	Steel Wheel	125	50
	Rubber Tire	90	40
	Monorail	175	70
Yards and Shops		1,000	650
Parking Facilities		125	75
Access Roads to Parking		100	50
Ventilation Shafts		200	100
Power Substations		250	125

Source: FTA 2018

Rail transit projects included in the proposed 2022 RTP/SCS would be located primarily in urban areas near to facility ridership. Sensitive land uses located within the screening distances presented in Table 4.13-3 of new and expanded rail corridors would potentially be exposed to noise levels that exceed acceptable standards.

Overall, ambient noise levels would increase in excess of standards or over existing noise levels generating a substantial absolute noise increase over existing noise levels. This impact would be potentially significant.

Bus Operations

The proposed 2022 RTP/SCS includes projects to improve existing bus service, such as capital improvements at existing transit centers, purchasing of replacement buses, fleet maintenance, and new bus rapid transit and express routes, which could indirectly increase bus operations. The FTA has developed a screening procedure to identify locations where a bus project may cause a noise impact. The screening distances for requiring noise assessments for various types of projects are presented in Table 4.13-4.

Table 4.13-4 Screening Distances for Noise Assessments – Bus Transit Projects

Type of Project		Screening Distance (Feet)	
		Unobstructed	Intervening Buildings
Busway		500	250
BRT on Exclusive Roadway		200	100
Bus Facilities	Access Roads	100	50
	Transit Center	225	150
	Storage and Maintenance	350	225
	Park and Ride Lots with Buses	225	150

Source: FTA 2018

Increased frequency of bus operations along existing corridors would increase noise for existing sensitive receptors along bus routes. However, the addition of local buses is unlikely to increase noise by significant levels as bus routes would be in urban areas with high ambient noise levels. Sensitive land uses located within the screening distances presented in Table 4.13-4 of new bus activity would potentially be exposed to noise levels that exceed acceptable standards.

Overall, ambient noise levels would increase in excess of standards or over existing noise levels generating a substantial absolute noise increase over existing noise levels. This impact would be potentially significant.

Mitigation Measures

For transportation projects under their jurisdiction, StanCOG shall implement, and transportation project sponsor agencies can and should implement, the following mitigation measure developed for the proposed 2022 RTP/SCS program where applicable for transportation projects that would result in traffic noise impacts, and where feasible and necessary based on project and site-specific considerations. Project-specific environmental documents may adjust this measure as necessary to respond to site-specific conditions.

N-2 Noise Assessment and Control for Mobile and Point Source Reduction

Implementing agencies for 2022 RTP/SCS projects shall complete detailed noise assessments using applicable guidelines (e.g., Caltrans Traffic Noise Analysis Protocol) for roadway projects that may impact noise sensitive receptors. The implementing agency shall ensure that a noise survey is conducted that, at minimum:

- Determines existing and projected noise levels
- Determines the amount of attenuation needed to reduce potential noise impacts to applicable State and local standards
- Identifies potential alternate alignments that allow greater distance from, or greater buffering of, noise-sensitive areas
- If warranted, recommends methods for mitigating noise impacts, including:
  - Appropriate setbacks
  - Sound attenuating building design, including retrofit of existing structures with sound attenuating building materials
  - Use of sound barriers (earthen berms, sound walls, or some combination of the two)

- Locate transit-related passenger stations, central maintenance facilities, decentralized maintenance facilities, and electric substations away from sensitive receptors to the maximum extent feasible.

Where new or expanded transportation projects are found to expose receptors to noise exceeding normally acceptable levels, the individual project lead agency shall implement techniques as recommended in the project-specific noise assessments. The preferred methods for mitigating noise impacts shall include the use of appropriate setbacks and sound attenuating building design, including retrofit of existing structures with sound attenuating building materials where feasible. In instances where use of these techniques is not feasible, the use of sound barriers (earthen berms, sound walls, or some combination of the two) shall be considered. Long expanses of walls or fences may be interrupted with offsets and provided with accents to prevent monotony. Landscape pockets and pedestrian access through walls may be provided. Whenever possible, a combination of elements shall be used, including open grade paving, solid fences, walls, and landscaped berms. Other techniques such as rubberized asphalt or "quiet pavement" shall be used where feasible to reduce road noise for new roadway segments or modifications requiring repaving. The effectiveness of noise reduction measures shall be monitored by taking noise measurements and installing adaptive mitigation measures to achieve applicable standards.

IMPLEMENTING AGENCIES AND TIMING

Implementing agencies for transportation projects are StanCOG and transportation project sponsor agencies. This mitigation measure shall, or can and should, be applied during project permitting and environmental review and implemented during construction, as applicable.

Significance After Mitigation

Implementation of Mitigation Measure N-2 would reduce noise from mobile sources. However, even with implementation of Mitigation Measure N-2, mobile source noise from buildout of the proposed 2022 RTP/SCS may continue to impact nearby noise sensitive receivers and exceed acceptable standards. Impacts would remain significant and unavoidable. No additional mitigation measures to reduce this impact to less than significant levels are feasible.

Threshold 3:	Generate excessive groundborne vibration or groundborne noise levels

Impact N-3 CONSTRUCTION ACTIVITIES ASSOCIATED WITH TRANSPORTATION PROJECTS UNDER THE PROPOSED 2022 RTP/SCS WOULD GENERATE EXCESSIVE GROUNDBORNE VIBRATION LEVELS. NEW TRUCK, BUS, AND TRAIN TRAFFIC RESULTING FROM THE PROPOSED 2022 RTP/SCS WOULD GENERATE EXCESSIVE VIBRATION LEVELS. THESE IMPACTS WOULD BE SIGNIFICANT AND UNAVOIDABLE.

Construction

Construction-related vibration has the potential to damage structures, cause cosmetic damage (e.g., crack plaster), or disrupt the operation of vibration-sensitive equipment. Vibration can also be a source of annoyance to individuals who live or work close to vibration-generating activities. Heavy construction operations can cause substantial vibration near the source. Table 4.13-5 shows vibration levels associated with typical construction equipment. Similar to construction noise, vibration levels would be variable depending on the type of construction project and related equipment use.

Table 4.13-5 Vibration Source Levels for Construction Equipment

Equipment		Approximate Vibration Level (VdB)			
		25 feet from Source	50 feet from Source	100 feet from Source	200 feet from Source
Caisson Drilling		87	78	69	60
Jackhammer		79	70	61	52
Large Bulldozer		87	78	69	60
Loaded Truck		86	77	68	58
Pile Driver (impact)	Upper range	112	103	94	84
	Typical	104	95	86	77
Pile Driver (sonic)	Upper range	105	96	87	78
	Typical	93	84	75	65
Small Bulldozer		58	48	39	30
Vibratory Roller		94	85	76	67

Source: FTA 2018

Typical project construction activities, such as the use of jackhammers, other high-power or vibratory tools, compactors, and tracked equipment, may also generate substantial vibration (i.e., greater than 0.2 inches per second PPV) in the immediate vicinity, typically within 15 feet of the equipment. Through the use of scheduling controls, typical construction activities would be restricted to hours with least potential to affect nearby properties. Thus, perceptible vibration can be kept to a minimum and not result in human annoyance or structural damage.

Some specific construction activities result in higher levels of vibration. Pile driving has the potential to generate the highest vibration levels and is the primary concern for structural damage to nearby structures, especially when near fragile and/or historic structures. Vibration levels generated by pile driving activities would vary depending on project conditions, such as soil conditions, construction methods and equipment used. Depending on the proximity of existing structures to each construction site, the structural soundness of the affected buildings and construction methods, vibration caused by pile driving or other foundation work with a substantial impact component such as blasting, rock or caisson drilling, and site excavation or compaction may be high enough to be perceptible outside the construction area and potentially damage existing structures.

Stanislaus County and some of the incorporated cities in the StanCOG region include regulations in their municipal code that reduce construction noise and vibration impacts. In most cases, these regulations restrict vibration-generating construction activities to specific times and days. Such local policies reduce the impacts of vibration on surrounding communities by prohibiting construction during the night when people are engaged in vibration-sensitive activities like sleeping. Nevertheless, this impact is significant because some project-specific transportation project construction could cause excessive groundborne vibration or groundborne noise levels.

Operation

The primary vibration sources associated with transportation system operations include heavy truck and bus traffic along roadways and train traffic along rail lines. However, vehicle traffic, including heavy trucks traveling on a highway, rarely generate vibration amplitudes high enough to cause structural or cosmetic damage, except in rare cases (e.g., where heavy truck traffic passes near fragile older buildings). Heavy trucks traveling over potholes or other pavement irregularities can

cause vibration high enough to result in complaints from nearby residents. These conditions are commonly addressed by smoothing the roadway surface. Based on vibration measurements throughout California by Caltrans, worst-case traffic vibrations were shown to drop below the threshold of perception at distances of 150 feet or greater (Caltrans 2020b). Given that sensitive receptors are located within 150 feet of transportation facilities within the StanCOG region, and that 2022 RTP/SCS transportation projects include roadway expansion and construction of high occupancy vehicle lanes on SR 99, significant impacts related to vibration associated with truck traffic could occur.

Rail activity is also a source of vibration. Caltrans conducted measurements of vibration levels associated with train activity throughout the State and found a peak vibration level of 0.36 inches per second PPV at ten feet from the track (Caltrans 2004). Based on this reference vibration level, vibrations from train activity drop below the threshold of perception at distances greater than 250 feet. The proposed 2022 RTP/SCS includes rail crossing improvements, construction of new passenger rail stations (in Modesto and Turlock), and improvements to the ACE corridor throughout the County. These improvements would potentially increase rail activity along existing lines and also introduce rail activity to new areas. These changes may expose nearby sensitive receptors and fragile buildings to a substantial increase in vibration levels relative to the existing condition. Impacts would be significant because excessive groundborne vibration or groundborne noise levels would be generated.

Mitigation Measures

For transportation projects under their jurisdiction, StanCOG shall implement, and transportation project sponsor agencies can and should implement, the following mitigation measures developed for the proposed 2022 RTP/SCS program where applicable for transportation projects that would result in vibration impacts, and where feasible and necessary based on project and site-specific considerations. Project-specific environmental documents may adjust these measures as necessary to respond to site-specific conditions.

N-3(a) Vibration Mitigation for Construction of Transportation Projects

Where local vibration and groundborne noise standards do not apply, implementing agencies of 2022 RTP/SCS projects utilizing heavy construction equipment shall estimate vibration levels generated by construction activities and use the Caltrans vibration damage potential threshold criteria to screen for and screen out projects as to their potential to damage buildings on site or near a project.

Caltrans Vibration Damage Potential Threshold Criteria

	Maximum PPV (in/sec)	
Structure and Condition	**Transient Sources**	**Continuous/Frequent Intermittent Sources**
Extremely fragile historic buildings	0.12	0.08
Fragile buildings	0.20	0.10
Historic and some old buildings	0.50	0.25
Older Residential structures	0.50	0.30
New residential structures	1.00	0.50
Modern industrial structures	2.00	0.50

Source: Transportation and Construction Vibration Guidance Manual (2020b)

If construction equipment would generate vibration levels exceeding acceptable levels as established by Caltrans, implementing agencies shall, or can and should, complete the following tasks:

- Prior to construction, survey the project site for vulnerable buildings, and complete geotechnical testing (preconstruction assessment of the existing subsurface conditions and structural integrity), for any older or historic buildings within 50 feet of pile driving. The testing shall be completed by a qualified geotechnical engineer and qualified historic preservation professional and/or structural engineer.
- Prepare and submit a report to the lead agency that contains the results of the geological testing. If recommended by the preconstruction report implementing agencies shall require ground vibration monitoring of nearby historic structures. Methods and technologies shall be based on the specific conditions at the construction site. The preconstruction assessment shall include a monitoring program to detect ground settlement or lateral movement of structures in the vicinity of pile-driving activities and identify corrective measures to be taken should monitored vibration levels indicate the potential for building damage. In the event of unacceptable ground movement with the potential to cause structural damage, all impact work shall cease, and corrective measures shall be implemented to minimize the risk to the subject, or adjacent, historic structure.
- To minimize disturbance withing 550 feet of pile-driving activities, implement "quiet" pile-driving technology, such as predrilling of piles and the use of more than one pile driver to shorten the duration of pile driving), where feasible, in consideration of geotechnical and structural requirements and conditions as defined as part of the geotechnical testing, if testing was feasible.
- Use cushion blocks to dampen noise from pile driving.
- Phase operations of construction equipment to avoid simultaneous vibration sources

N-3(b) Vibration Mitigation for Operation of Transportation Projects

Where local vibration and groundborne noise standards do not apply, implementing agencies of 2022 RTP/SCS projects shall comply with all applicable local vibration and groundborne noise standards, or in the absence of such local standards, comply with guidance provided by the FTA in *Transit Noise and Vibration Impact Assessment* (FTA 2018) to assess impacts to buildings and sensitive receptors and reduce vibration and groundborne noise. FTA recommended thresholds shall be used except in areas where local standards for groundborne noise and vibration have been established. Methods that can be implemented to reduce vibration and groundborne noise impacts include, but are not limited to:

- Rail Traffic
  - Maximizing the distance between tracks and sensitive uses
  - Conducting rail grinding on a regular basis to keep tracks smooth
  - Conducting wheel truing to re-contour wheels to provide a smooth-running surface and removing wheel flats
  - Providing special track support systems such as floating slabs, resiliently supported ties, high-resilience fasteners and ballast mats;
  - Implementing operational changes such as limiting train speed and reducing nighttime operations.

- Bus and Truck Traffic
  - Constructing of noise barriers
  - Use noise reducing tires and wheel construction on bus wheels
  - Use vehicle skirts (i.e., a partial enclosure around each wheel with absorptive treatment) on freight vehicle wheels

IMPLEMENTING AGENCIES AND TIMING

Implementing agencies for transportation projects are StanCOG and transportation project sponsor agencies. These mitigation measure shall, or can and should, be applied during project permitting and environmental review and implemented during construction, as applicable.

Significance After Mitigation

Implementation of Mitigation Measure N-3(a) would reduce potential construction vibration impacts. However, even with implementation of Mitigation Measure N-3(a), construction vibration from all 2022 RTP/SCS projects may not be reduced below applicable thresholds and impacts would remain significant and unavoidable. No additional mitigation measures to reduce this impact to less than significant levels are feasible. Implementation of Mitigation Measure N-3(b) would reduce potential operational vibration impacts. However, even with implementation of Mitigation Measure N-3(b), vibration from buildout of the proposed 2022 RTP/SCS may continue to be excessive. Impacts would remain significant and unavoidable. No additional mitigation measures to reduce this impact to less than significant levels are feasible.

Threshold 1:	Generate a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies
Threshold 2:	Generate a substantial absolute increase in ambient noise

Impact N-4 LAND USE PROJECTS ENVISIONED BY THE PROPOSED 2022 RTP/SCS MAY PLACE SENSITIVE RECEPTORS IN AREAS WITH NOISE LEVELS IN EXCESS OF STANDARDS ESTABLISHED IN THE LOCAL GENERAL PLAN OR NOISE ORDINANCE. THIS IMPACT WOULD BE SIGNIFICANT AND UNAVOIDABLE.

The proposed 2022 RTP/SCS is based on a land use and transportation scenario which defines a pattern of future growth and transportation system investment for the region emphasizing transit-oriented development (TOD) and infill development near transit and other transportation facilities, but development outside these areas could occur as well. Population and job growth is allocated principally within existing urban areas near public transit and existing transit corridors. New noise-sensitive development in infill areas could be exposed to noise levels exceeding County or incorporated city noise standards for residential land uses, specifically, the 65 dBA L_{dn} standard, with a lesser potential in more suburban and rural areas. Potential sources of noise exposure include traffic, rail and/or bus operations, commercial activity, and industrial activity. New development in infill areas near transit may also expose existing noise-sensitive uses to noise levels exceeding local noise thresholds. Impacts would be significant because applicable noise standards could be exceeded, or because infill project residents could be exposed to a substantial increase in ambient noise levels.

Mitigation Measure

Stanislaus County and incorporated cities within the County can and should implement the following mitigation measure where relevant to land use projects implementing the proposed 2022 RTP/SCS, and where feasible and necessary based on project and site-specific considerations. Project-specific environmental documents may adjust this measure as necessary to respond to site-specific conditions.

N-4 Noise Mitigation for Land Uses

If a land use project is located in an area with exterior ambient noise levels above local noise standards, the implementing agency shall ensure that a noise study is conducted to determine the existing exterior noise levels in the vicinity of the project. If the project would be impacted by ambient noise levels, feasible attenuation measures shall be used to reduce operational noise to meet acceptable standards. In addition, noise insulation techniques shall be utilized to reduce indoor noise levels to thresholds set in applicable State and/or local standards. Such measures may include but are not limited to: dual-paned windows, solid core exterior doors with perimeter weather stripping, air conditioning system so that windows and doors may remain closed, and situating exterior doors away from roads. The noise study and determination of appropriate mitigation measures shall be completed during the project's individual environmental review.

IMPLEMENTING AGENCIES AND TIMING

Implementing agencies for land use projects are Stanislaus County and incorporated cities within the County. This mitigation measure shall, or can and should, be applied during project permitting and environmental review and implemented during construction, as applicable.

Significance After Mitigation

Implementation of Mitigation Measure N-4 would reduce noise for sensitive land uses in areas that exceed noise standards. However, even with implementation of Mitigation Measure N-4, noise from buildout of 2022 RTP/SCS may continue to impact nearby noise sensitive receptors and exceed acceptable standards. This impact would remain significant and unavoidable. No additional mitigation measures to reduce this impact to less than significant levels are feasible.

Threshold 4:	For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, expose people residing or working in the project area to excessive noise levels

Impact N-5 TRANSPORTATION IMPROVEMENTS AND LAND USE PROJECTS ENVISIONED BY THE PROPOSED 2022 RTP/SCS WOULD BE LOCATED IN CLOSE PROXIMITY TO EXISTING AIRPORTS SUCH THAT APPLICABLE EXTERIOR AND INTERIOR NOISE THRESHOLDS WOULD BE EXCEEDED. IMPACTS WOULD BE SIGNIFICANT AND UNAVOIDABLE.

The proposed 2022 RTP/SCS emphasizes infill development near transit and other transportation facilities. Public airports typically service entire regions, whereas smaller private airports or airstrips tend to serve local users. However, like other noise sources, noise from airports and aircraft flight events have the greatest effect on nearby land uses. As shown in Table 4.13-6, there are three public use and two private use airports in the StanCOG region that serve commercial and general aviation users.

Table 4.13-6 Public and Private Airports within the StanCOG Region

Airport	Public/Private Use	Airport Land Use Compatibility Plan (YES/NO)
Modesto-Stanislaus County Airport (Harry Sham Field)	Public	Yes
Oakdale Municipal Airport	Public (Agricultural)	Yes
Crows Landing Airport	Public (Agricultural)	Yes
Turlock Airpark	Private	No
Patterson Airport	Private	No

Modesto City-County Airport, Oakdale Municipal Airport, and Crows Landing Airport have an active ALUCP to discourage incompatible land uses within the vicinity of the airport. However, even with ALUCPs the potential still exists for forecasted development consistent with the proposed 2022 RTP/SCS to occur in areas of 70 dBA CNEL, exceeding recommended airport noise thresholds of 65 dBA CNEL for residential land uses and the project-specific land use compatibility thresholds of 70 dBA CNEL.

In addition to consideration of exterior CNEL noise levels, increases in interior noise levels near airports have the potential to result in sleep disturbance at nearby sensitive land uses. This discussion addresses aviation related noise issues; impacts related to exposure to aviation related safety hazards are discussed in detail in Section 4.10, *Hazards and Hazardous Materials*. In accordance with the Federal Interagency Committee on Noise (FICON) guidance, aircraft-generated interior single-event noise levels of 65 dBA could result in a 5 percent or less chance of awakening someone (FICON 1992). Local land use compatibility standards contained in city and county general plans would typically dictate whether specific site review was required for construction of sensitive land uses in areas potentially affected by aircraft noise. However, given the regional scale of the proposed 2022 RTP/SCS, it is possible that the plan's forecasted land use development pattern could result in exposure to exterior and interior noise levels from existing airports or airstrips that exceed applicable thresholds. There would be a potentially significant impact resulting from excessive airport noise levels if projected development were to occur in close proximity to existing airports or airstrips. Because implementation of the proposed 2022 RTP/SCS land use development pattern could potentially result in land use development being located in close proximity to existing airports such that applicable exterior and interior noise thresholds would be exceeded, people residing or working in the area may be exposed to excessive noise levels. This is a significant impact that would require mitigation.

Some transportation projects in the proposed 2022 RTP/SCS would be within the vicinity of a private airstrip or an airport land use plan. Individuals would not be exposed to airport-related noise during operation of these projects, as they would not entail habitable structures or other facilities in which people would work or visit. However, during construction of these projects, construction personnel would be exposed to excessive noise levels. Such exposure would be temporary, and therefore considered less than significant.

Mitigation Measures

Stanislaus County and incorporated cities within the County can and should implement the following mitigation measure where relevant to land use projects implementing the proposed 2022 RTP/SCS near existing public or public use airports, and where feasible and necessary based on

project and site specific considerations. Project-specific environmental documents may adjust this measure as necessary to respond to site-specific conditions.

N-5 Noise Mitigation Near Airports

Implementing agencies for all new development proposed to be located within an existing airport influence zone, as defined by the locally adopted ALUCP or local general plan, or within two miles of a private use airport, shall require a site specific noise compatibility study. The study shall consider and evaluate existing aircraft noise, based on specific aircraft activity data for the airport in question, and shall include recommendations for site design and building construction. Such measures may include but are not limited to: dual-paned windows, solid core exterior doors with perimeter weather stripping, air conditioning system so that windows and doors may remain closed, and situating exterior doors away from roads, such as dual paned windows. The noise study and determination of appropriate mitigation measures shall be completed during the project's individual environmental review.

IMPLEMENTING AGENCIES AND TIMING

Implementing agencies for land use projects are Stanislaus County and incorporated cities within the County. This mitigation measure shall, or can and should, be applied during project permitting and environmental review and implemented during construction, as applicable.

Significance After Mitigation

To the extent that a local agency requires an individual project to implement Mitigation Measure N-5, the appropriate design and building construction would ensure compliance with relevant plans or codes, and this impact would be reduced to a less than significant level. However, even with implementation of Mitigation Measure N-5, noise from buildout of the proposed 2022 RTP/SCS may continue to impact nearby noise sensitive receptors and exceed acceptable standards. This impact would remain significant and unavoidable. No additional mitigation measures to reduce this impact to less than significant levels are feasible.

4.13.4 Specific RTP Projects That May Result in Impacts

All proposed 2022 RTP/SCS transportation projects listed in Appendix B and summarized in Section 2, *Project Description*, would have the potential to result in noise impacts described in Impacts N-1, N-2, N-3, N-4, and N-5. All projects that involve construction activities would result in temporary increases in noise and vibration associated with Impacts N-1 and N-3. The individual projects that would accommodate additional roadway or freeway traffic, or bus or rail activity could create significant noise and vibration impacts associated with Impact N-2 and N-3. In addition, road widening/extension projects or construction of new roadways have the potential to place roadway traffic noise closer to sensitive receptors. With the number of projects meeting those categories few, this potential impact would be minimal. Land use projects that would include TOD, infill, or other land use development may create significant impacts associated with Impact N-4. Additional specific analysis described in the above mitigation measures would need to be conducted as individual projects are implemented in order to determine the magnitude of project-specific impacts.

4.13.5 Cumulative Impacts

Noise resulting from roadway improvement projects envisioned in the proposed 2022 RTP/SCS could influence ambient noise levels in adjoining counties, if and where the projects are located in proximity to adjoining counties. Information regarding these adjoining counties can be found in Section 3, *Environmental Setting*. Therefore, the cumulative impact analysis area for noise consists of the StanCOG region and the adjoining counties. Future development in this region that would result in cumulative significant and unavoidable noise impacts is considered in the analysis.

Construction of the transportation projects and the land use scenario envisioned in the proposed 2022 RTP/SCS would generate temporary noise impacts. The transportation projects are generally far enough away from adjoining counties that construction noise would generally not combine with ambient noise levels in these counties. The proposed 2022 RTP/SCS concentrates development in urban areas of the StanCOG region, which is also generally far enough from adjoining counties that construction noise would not affect these counties. However, construction noise resulting from either the transportation projects or the land use scenario could combine with other ongoing noise or additional construction noise within the StanCOG region, resulting in localized construction noise levels exceeding local standards. Cumulative impacts of construction noise would be significant. Implementation of Mitigation Measure N-1 would reduce some construction noise impacts; however, the proposed 2022 RTP/SCS contribution to the cumulative impact would be cumulatively considerable pre- and post-mitigation.

Operation of the transportation projects would generate noise. Noise would predominantly be from vehicles, such as the noise of engines or the noise generate from the friction between tires and the roadway surface. Generally, these noises affect ambient noise levels near the roadways. However, some of the proposed 2022 RTP/SCS transportation projects would increase inter-regional travel, because the proposed 2022 RTP/SCS addresses accommodating projected growth and because some projects are on regional roadways, such as Interstate 5 or SR 99. Therefore, the proposed 2022 RTP/SCS would contribute to traffic noise outside the region. The cumulative impact would be significant, and the overall contribution of the proposed 2022 RTP/SCS to significant cumulative traffic noise impacts, despite implementation of Mitigation Measures N-2 and N-4, would be cumulatively considerable pre- and post-mitigation.

Impacts associated with noise and vibration related to implementation of the proposed 2022 RTP/SCS would be generally experienced locally and are not cumulative in nature. These effects occur independently of one another, related to site-specific and project-specific characteristics and conditions. However, increased traffic from implementation of the proposed 2022 RTP/SCS could contribute to a significant increase in traffic noise levels on roadway segments throughout the cumulative impact analysis area, beyond accepted thresholds in various communities outside of the region. With implementation of Mitigation Measures N-3(a) and N-3(b) the proposed 2022 RTP/SCS contribution to this cumulative impact would be cumulatively considerable pre- and post-mitigation.

Transportation projects of the proposed 2022 RTP/SCS would not entail habitable structures or other facilities in which people would work or visit. However, construction of transportation projects in close proximity to existing airports would temporarily expose construction personnel to excessive noise levels. Due to the temporary nature of construction of transportation projects, impacts would be less than significant. Given the regional scale of the proposed 2022 RTP/SCS, it is possible that the plan's forecasted land use development pattern could result in exposure to exterior and interior noise levels from existing airports or airstrips that exceed applicable thresholds. People residing or working in close proximity to existing airports could be exposed to

excessive noise levels. Therefore, the proposed 2022 RTP/SCS would contribute to the exposure of people residing or working in the area to excessive noise levels. The cumulative impact would be significant, and the overall contribution of the proposed 2022 RTP/SCS to exposure of people residing or working in the area to excessive noise levels, despite implementation of Mitigation Measure N-5. Impacts would be cumulatively considerable pre- and post-mitigation.

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4.14 Population and Housing

This section analyzes the impacts of the proposed 2022 RTP/SCS relative to population and housing. In addition, this section includes a discussion of employment, as it pertains to population and housing factors in the region.

4.14.1 Setting

Existing Population, Housing, and Employment

Existing population, housing units and employment for unincorporated Stanislaus County and the 8 cities in the StanCOG region are shown in Table 4.14-1. As of 2021, the region contains 547,024 residents, 181,058 housing units and 238,362 jobs, with a jobs to housing ratio of 1.33 (StanCOG 2021). From 2015 to 2021, the number of housing units in the region increased by approximately four percent and is estimated to increase approximately 28 percent through 2050. There are an estimated 3.17 persons per household in the StanCOG region as of 2021 (California Department of Finance, 2021). The median housing price in the StanCOG region is $437,047 and home values have increased 22 percent from 2020 to 2021 (Zillow 2021).

Table 4.14-1 2021 Population, Housing and Employment for the StanCOG Region

Jurisdiction	Population	Housing Units	Persons Per Household	Jobs
Ceres	49,565	13,318	3.66	15,384
Hughson	7,443	2,499	3.30	1,373
Modesto	219,571	74,508	2.96	105,365
Newman	11,334	3,320	3.49	2,085
Oakdale	22,862	7,823	2.90	8,256
Riverbank	24,926	7,291	3.53	4,144
Patterson	22,284	6,020	3.74	6,673
Turlock	75,015	25,788	3.05	33,001
Waterford	9,181	2,558	3.54	1,040
Balance of County	118,401	36,151	3.35	61,041
StanCOG Total	**560,582**	**179,276**	**3.17**	**238,362**

Source: StanCOG 2022 Regional Growth Forecast

Growth Forecasting

The 2022 Regional Growth Forecast projects the region's population, housing, and employment to 2046. The 2022 Regional Growth Forecast is used to support regional planning efforts such as the Regional Travel Demand Model and the proposed 2022 RTP/SCS as well as local planning such as the development of General Plans and project review.

Developing population, housing, and employment forecast estimates for the StanCOG region consists of data from the University of the Pacific Center for Business and Policy Research. They used a methodology. They developed a methodology that measured population, housing and employment forecasts for the Stanislaus region for use in StanCOG's 2022 RTP/SCS Update. The economic and demographic forecasts were prepared using the REMI model (Regional Economic

Models, Inc.), an econometric regional forecasting model. One of the strongest features of the REMI model is its integrated dynamic feedback between economic and demographic variables. The REMI model uses historical data from several government sources to estimate economic and demographic forecast predictions at national and regional levels. The model first makes projections at the national level, because the national forecast is an input used for the regional forecasts. The UOP's REMI model forecasts were generated at the County level, the smallest geography available for the REMI model. The County level forecast was then broken down to local areas using growth trends from available local data, with adjustments for consideration of local market factors and plans, based on UOP's local knowledge and consultation with local officials.

4.14.2 Regulatory Setting

a. Federal Laws, Regulations, and Policies

Federal Uniform Relocation and Real Property Acquisition Policies Act of 1970

The Federal Uniform Relocation and Real Property Acquisition Policies Act (Uniform Act), 42 U.S.C. § 4601 et seq., passed by Congress in 1970, is a federal law that establishes minimum standards for federally funded programs and projects that require the acquisition of real property (real estate) or displace persons from their homes, businesses, or farms. The Uniform Act's protections and assistance apply to the acquisition, rehabilitation, or demolition of real property for federal or federally funded projects.

b. State Laws, Regulations, and Policies

California Relocation Assistance Act

The California Relocation Assistance Act of 1971 (Government Code § 7260 et seq.) is similar to the Uniform Relocation Assistance Act of 1970 (federal). However, it applies to State and local programs and projects that receive State funding, regardless of whether they receive federal funding. The Act requires notification, counseling, social services, and financial assistance for persons displaced by transportation and land redevelopment projects. These procedural protections and benefits apply when the project causing the displacement has received State funding during any phase of the program or project, even if it did not receive federal funding.

Homeowners and Private Property Protection Act of 2008

Proposition 99, the Homeowners and Private Property Protection Act, was approved by voters in 2008. Proposition 99 amended the State Constitution and prohibits local agencies from using eminent domain to acquire owner-occupied residences and transferring it to private entities.

California Government Code, Section 65583

California Government Code Section 65583 specifies the State Housing Element requirements. The Housing Element is one of the State-mandated elements of the General Plan and is updated every eight years. The State Department of Housing and Community Development (HCD) is responsible for reviewing Housing Elements to ensure compliance with State law.

Housing Element Law

First enacted in 1969, housing element law (Government Code §§ 65580–65589.8) mandates that local governments adequately plan to meet the existing and projected housing needs of all economic segments of the community. The law acknowledges that in order for the private market to adequately address housing needs and demand, local governments must adopt land use plans and regulatory systems that provide opportunities for, and do not unduly constrain, housing development. As a result, housing policy in the State rests largely upon the effective implementation of local general plans and, in particular, local housing elements. Housing element law also requires HCD to review local housing elements for compliance with State law and to report its written findings to the local government.

Government Code Section 65583 (SB 2, Chapter 633, Statutes of 2007) strengthens State housing element law (Government Code Section 65583) by ensuring that every jurisdiction identifies potential sites where new emergency shelters can be located without discretionary review by the local government. It also increases protections for providers seeking to open a new emergency shelter, transitional housing, or supportive housing development by limiting the instances in which local governments can deny such developments.

Regional Housing Needs Allocation

California Government Code Sections 65583(a)(1) and 65584 require that each Council of Government (COG) consult with the California Department of Housing and Community Development (HCD) who determine each region's existing and projected housing need through preparation of a Regional Housing Needs Determination (RHND). The COG is then responsible for allocating a share of the regional housing need to each city and county based on a COG approved

. The Regional Housing Needs Allocation (RHNA) Plan documents the preparation of the RHNA methodology and each jurisdiction's housing allocation. The existing and future need for housing is determined primarily by the forecasted growth in households in a community, based on historical growth patterns, job creation, household formation rates, and other factors to estimate how many households will be added to each community over the projection period. The housing need for new households is then adjusted to account for an ideal level of vacancy needed to promote housing choice, maintain price competition, and encourage acceptable levels of housing upkeep and repair. The RHND also accounts for units expected to be lost because of demolition, natural disaster, or conversion to non-housing uses. The sum of these factors—household growth, vacancy need, overcrowding, cost burden, and replacement need—form the "determination" assigned to each region. Finally, RHNA considers how each jurisdiction might grow in ways that will decrease the concentration of low income households in certain communities. The need for new housing is distributed among income groups so that each community moves closer to the regional average income distribution. StanCOG prepares RHNA Plan for Stanislaus County.

Senate Bill 375

Senate Bill 375 (SB 375) (Chapter 728, Statutes of 2008) focuses on aligning transportation, housing, and other land uses to achieve regional greenhouse gas (GHG) emission reduction targets established under the California Global Warming Solutions Act, also known as Assembly Bill 32 (AB 32). SB 375 requires California metropolitan planning organizations to develop an SCS as part of the RTP, with the purpose of identifying policies and strategies to reduce per capita automobiles and light duty trucks generated GHG emissions. The SCS must:

- Identify the general location of land uses, residential densities, and building intensities within the region;
- Identify areas within the region sufficient to house all the population of the region;
- Identify areas within the region sufficient to house an 8-year projection of the regional housing need;
- Identify a transportation network to service the regional transportation needs;
- Gather and consider the best practically available scientific information regarding resources areas and farmland in the region; and
- Consider the State housing goals; set forth a forecasted development pattern for the region; and allow the RTP to comply with the federal Clean Air Act of 1970 (42 U.S. Code Section 7401 et seq.).

SB 375 now synchronizes the schedules of the RHNA and RTP processes. The RHNA, which is adopted concurrently with the RTP, must also allocate housing units within the region consistent with the development pattern included in the SCS.

Existing law requires local governments to adopt a housing element as part of their general plan. Unlike the rest of the general plan, where updates sometimes occur at intervals of 20 years or longer, under previous law the housing element was required to be updated as frequently as needed and no less than every five years. Under SB 375, this period has been lengthened to eight years and timed so that the housing element period begins no less than 18 months after adoption of the RTP to encourage closer coordination between the housing and transportation planning completed by local governments and metropolitan planning organizations. SB 375 also changes the implementation schedule required in each housing element. Previous law required the housing element to contain a program that set forth a five-year schedule to implement the goals and objectives of the housing element. The new law instead requires this schedule of actions to occur during the eight-year housing element planning period and requires that each action have a timetable for implementation.

c. Local Laws, Regulations, and Policies

General plans can be described as a city or county's "blueprint" for future development. They represent the community's view of its future; a constitution made up of the goals and policies upon which the planning commission and the city council and/or board of supervisors will base their land use decisions. To illustrate its importance, all subdivisions, public works projects, and zoning decisions (except in charter cities) must be consistent with the general plan. State law requires that each city and each county adopt a general plan containing the following seven components or "elements": land use, circulation, housing, conservation, open-space, noise, and safety (California Code sections 65300 et seq.). At the same time, each jurisdiction is free to adopt a wide variety of additional elements covering subjects of particular interest to that jurisdiction such as recreation, urban design, or public facilities. The general plan of the largest jurisdictions that would receive the most impact from the proposed 2022 RTP/SCS, Stanislaus County, is discussed in some detail below.

Stanislaus County General Plan

The County General Plan guides the physical development, preservation, and conservation of areas within the unincorporated areas of Stanislaus County. It is comprehensive both in geographic coverage as well as range in subjects addressed. It is long term in perspective ranging from 15 to 30 years. The General Plan identifies adopted goals, policies and implementation that govern

development in unincorporated Stanislaus County. This document helps to ensure that decisions are in conformance with the long-range program designed to protect and further the public interests related to Stanislaus County's growth and development. It lays out goals to have a safe community, a healthy community, a strong local economy, effective partnerships, a strong agricultural economy/heritage, a well-planned infrastructure system, and efficient delivery of public services by providing a land-use framework responsive to the needs and conditions of the unincorporated area of Stanislaus County in compliance with State General Plan laws.

It also lays out specific policies to guide and improve the county's employment. The General Plan contains principles, policies and implementations that aim to improve the housing supply and the range of housing types and housing affordability levels. Just the General Plan goals are listed here for brevity:

- **Goal 1.** Encourage the provision of adequate, affordable housing, including units for rent and for ownership for residents of all income groups, including extremely low-, very low-, low-, and moderate-income households
- **Goal 2.** Maximize housing choices and opportunities throughout Stanislaus County.
- **Goal 3.** Conserve and improve Stanislaus County's Existing Housing Stock
- **Goal 4**. Designate sufficient sites for all types of residential development required to meet projected housing needs.
- **Goal 5.** Minimize governmental constraints to affordable housing in Stanislaus County.

City General Plans

Incorporated cities within the StanCOG region are Ceres, Hughson, Modesto, Newman, Oakdale, Riverbank, Patterson, Turlock, and Waterford are the most urbanized cities in the region. However, those cities, along with the vast majority of Stanislaus County, include areas of farmland. Population growth in Stanislaus County has led to, and will continue to lead to, land use conflicts between conflicting uses. This has led to several cities in the StanCOG region to incorporate policies within their general plans to address this growing issue.

Therefore, most cities have incorporated policies in their general plan updates that acknowledge population growth while protecting agricultural lands. In conjunction with an emphasis on infill development, avoiding land use conflicts when possible, and the conversion of farmland when no other option is available, cities within the StanCOG region have been able to manage to balance this issue with similar goals and policies. Noise, safety, circulation, and open space are common to each city's general plan and work towards this goal.

4.14.3 Impact Analysis

d. Methodology and Significance Thresholds

Appendix G of the State CEQA Guidelines identifies the following criteria for determining whether a project's impacts would have a significant impact to population and housing:

1. Induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure); /or
2. Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere.

e. Project Impacts and Mitigation Measures

The following section discusses potential impacts and mitigation measures that may be associated with transportation projects and the land use scenario contained within the proposed 2022 RTP/SCS. Section 4.14.3.c summarizes the impacts associated with the proposed 2022 RTP/SCS. Due to the programmatic nature of the proposed 2022 RTP/SCS, a precise, project-level analysis of the specific impacts associated with individual transportation and land use projects is not possible at this time. In general, however, implementation of proposed transportation improvements and future projects under the land use scenario envisioned by the proposed 2022 RTP/SCS could result in the impacts as described in the following section.

Threshold 1:	Induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)

Impact POP-1 TRANSPORTATION AND LAND USE PROJECTS IMPLEMENTING THE PROPOSED 2022 RTP/SCS WOULD NOT INDUCE SUBSTANTIAL UNPLANNED POPULATION GROWTH, EITHER DIRECTLY OR INDIRECTLY. THIS IMPACT WOULD BE LESS THAN SIGNIFICANT.

From 2020 to 2050, the region's total population is forecasted to increase by 128,003 residents to 688,585 total residents. Table 4.14-2 shows the forecasted population growth for the region as a whole and by jurisdiction.

Table 4.14-2 Forecasted StanCOG Population Growth 2020-2050

Jurisdiction	2020	2030	2050
Cere	49,565	54,361	62,093
Hughson	7,443	8,699	10,726
Modesto	219,571	235,617	261,492
Newman	11,334	12,829	15,240
Oakdale	22,862	25,237	29,066
Patterson	22,284	27,585	36,134
Riverbank	24,926	30,048	38,310
Turlock	75,015	83,293	96,641
Waterford	9,181	9,975	11,257
Balance of County	118,401	121,932	127,626
StanCOG Total	**560,582**	**609,576**	**688,585**

Source: StanCOG 2021 Regional Growth Forecast

The regional population and populations within individual cities are forecasted to increase by approximately 23 percent from 2020 to 2050. The proposed 2022 RTP/SCS would induce planned population growth directly through the development of the SCS land use scenario and indirectly as a result of the transportation projects included in the proposed 2022 RTP/SCS. Between 2020 and 2050, the StanCOG region would grow by 128,003 people; 50,796 housing units; and 64,266 jobs. As shown in the Section 2, *Project Description*, growth is projected to occur across the region. The land use scenario envisioned by the proposed 2022 RTP/SCS would encourage infill, mixed use, and TOD within existing urbanized areas. This scenario also consists of an intensified land use distribution

approach that concentrates the forecasted population and employment growth in existing urban areas. The scenario emphasizes compact, mixed-use development, especially in the downtown areas of the County's existing urban areas. This focus intends to limit growth outside of the city boundaries in order to minimize impacts on rural areas which contain the majority of agricultural land throughout the County. The transportation network includes additional highway, local street, active transportation, and transit investments to serve a more concentrated urban growth pattern. The preferred scenario also shifts investment towards bicycle and pedestrian improvements, which complement public transit and other non-vehicle alternatives.

As mentioned above, population growth in the cities of Ceres, Hughson, Modesto, Newman, Oakdale, Patterson, Riverbank, Turlock, Waterford, and the unincorporated territory of Stanislaus County, would increase at the same rate as the Stanislaus region as a whole. Consistent with the goals of the proposed 2022 RTP/SCS, the denser growth within existing urban centers with high accessibility to transit options allows for the creation of communities that are more sustainable, walkable, transit oriented, and compact. The 2022 RTP/SCS is intended to accommodate growth and distribute it. The project list's main goal consists of system preservation, capacity enhancement, safety, operations, complete streets improvements, and active transportation, transit, and aviation improvements. To measure the degree to which projects were abopted, scenario planning had to take place. Scenario planning is a method, by which sever scenarios are developed, studied for future impacts, and then evaluated against each other. The 2022 RTP/SCS scenario development process prioritized five key Guiding Principles to inspire *how* and *where* future growth in the region happens. Below is a short summary of each Guiding Principle:

1. **Ensure jobs-housing balance:** scenarios should seek to develop more housing near existing and future jobs. Improving jobs-housing balance can lead to shorter trips and lower VMT.
2. **Focus growth in low VMT areas:** scenarios should focus dwelling unit and job growth in areas of below-average regional VMT. Focusing growth in these areas will reduce per capita VMT and supports the goals of SB 743.
3. **Increase access to opportunity:** scenarios should seek to place more multifamily housing in areas of opportunity (TCAC Opportunity Maps).
4. **Preserve farmland:** scenarios should minimize the loss of agricultural land to development. This guiding principle will preserve the valley's agricultural economy, reduce competition for scarce water resources, and contribute to lower VMT.
5. **Grow in "infill areas":** scenarios should take advantage of opportunities to develop within the existing developed footprint of the Stanislaus region's communities. This will reduce VMT by providing more housing choices close to jobs.

Transportation improvements associated with the proposed 2022 RTP/SCS would not result in direct population growth beyond anticipated growth in the region, and projects are designed to fully support the transportation needs of the growing population while implementing the infill development approach outlined in the Sustainable Community Strategy of the Chapter 2 *Project Description*.

Government Code Section 65080(b)(2)(B)(ii) requires that an RTP/SCS must accommodate all the population of the region, including all economic segments of the population, over the course of the planning period of the regional transportation plan. In compliance with the requirements, the proposed 2022 RTP/SCS includes strategies to accommodate new housing units through 2046. The housing strategies would continue the StanCOG region's commitment to growth in infill areas but are also intended to protect current residents from displacement, preserve existing affordable

housing, and produce new housing to secure long-term affordability for lower income populations. As mandated by State Housing Law as part of the periodic (every eight years) process of updating local General Plan Housing Elements, the California Department of Housing and Community Development provides a regional housing need determination (RHND) to StanCOG. StanCOG is responsible for developing a methodology for the allocation of the RHND regional to jurisdictions in Stanislaus County. StanCOG must have enough housing capacity to accommodate the current RHNA allocations for the current (5th Cycle), and local governments will be responsible for accommodating their 5th Cycle RHNA allocations in their housing element updates.

Implementation of the proposed 2022 RTP/SCS land use development pattern would in some cases result in greater density/intensity of growth than included in current adopted local general plans. The proposed 2022 RTP/SCS would not change local land use policies; individual jurisdictions retain land use authority. As such, implementation of the proposed 2022 RTP/SCS would require the local jurisdiction to consider and resolve those differences through appropriate amendments to local planning documents, including Housing Element updates, and appropriate environmental review, thus avoiding impacts related to unplanned growth at the local level.

The proposed 2022 RTP/SCS would accommodate forecasted growth through implementation of the envisioned proposed 2022 RTP/SCS land use strategies to intensify density in developed areas, rather than induce unplanned growth. Transportation projects included in the proposed 2022 RTP/SCS would not induce population growth as these projects would be growth accommodating and are generally intended to improve existing transportation networks. The transportation projects included in the proposed 2022 RTP/SCS would result in increased transit use and an increase in regional VMT above the Baseline (2020) Conditions. The proposed 2022 RTP/SCS would result in a small decrease in VMT per capita below the Baseline(2020). Regional VMT and VMT per capital impacts from the implementation of the proposed 2022 RTP/SCS would be significant and unavoidable. Section 4.15*, Transportation*, has additional information regarding transportation impacts.

The land use and transportation projects in the proposed 2022 RTP/SCS would therefore not result in substantial unplanned population growth. Impacts from implementation of the proposed 2022 RTP/SCS would be less than significant.

Mitigation Measures

No mitigation measures are required.

Threshold:	Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere.

Impact POP-2 TRANSPORTATION AND LAND USE PROJECTS INCLUDED IN THE PROPOSED 2022 RTP/SCS WOULD TEMPORARILY DISPLACE EXISTING HOUSING AND PEOPLE BUT WOULD NOT NECESSITATE THE CONSTRUCTION OF REPLACEMENT HOUSING ELSEWHERE. IMPACTS WOULD BE LESS THAN SIGNIFICANT.

Land use development included in the proposed 2022 RTP/SCS would likely displace existing housing and people, primarily low and medium density single family, multi-family, or mobile home dwelling units, as existing housing units are demolished to make way for new development. However, new residential development would generally occur at higher densities and with more modern housing, frequently as part of mixed use development. During construction of individual projects, residents may be temporarily displaced. However, there are normal factors in the marketplace to offset this impact. Historically, vacancies within the existing housing stock absorb displacement of residents.

Transportation project under the proposed 2022 RTP/SCS would also not result in any significant impacts. Existing laws and regulations would provide assistance in relocating households for federally funded transportation projects. As described in Section 4.14.2, *Regulatory Setting,* the Federal Uniform Relocation and Real Property Acquisition Policies Act requires public agencies to provide relocation assistance when an action by the agency displaces residences. Thus, impacts from short-term displacement would be reduced through both existing regulation and normal market factors.

In the long run, the proposed 2022 RTP/SCS would result in a net increase in housing units. Between 2021 and 2046, the projected increase in housing capacity in the region would be 43,108 units, or an increase of 26 percent. The RTP/SCS would result in a net increase in housing units, but would displace existing housing or people temporarily, as some residential structures are demolished to make way for new development. However, displacement would not be substantial, and would be minimized through existing housing programs within the StanCOG region. Displacement would not necessitate the construction of replacement housing. In effect, the RTP/SCS includes the replacement housing that would be necessitated by individual projects.

Some transportation network improvements, such as road widening or extension projects, would require acquisition of right-of-way in areas with high density housing or business along transportation corridors and may displace residential or commercial units. Specific projects would be required to undergo separate environmental review under CEQA. The corresponding project specific environmental documentation would identify potentially significant impacts with regard to displacement of private property, if any, and provide the appropriate mitigation measures. Impacts from transportation improvements would consider relocation assistance in accordance with the Federal Uniform Relocation and Real Property Acquisition Policies Act of 1970. In addition, as noted above, the proposed 2022 RTP/SCS would result in a net increase of 43,108 housing units in the region. Therefore, in effect, the RTP/SCS includes the replacement housing that would be necessitated by individual projects. As a result, impacts related to housing and population displacement would be less than significant.

Mitigation Measures

No mitigation measures are required.

f. Specific Projects That May Result In Impacts

As discussed above, the proposed 2022 RTP/SCS would result in less than significant impacts related to displacement of housing or people. Although some transportation network improvements, such as road widening or extension projects, would require acquisition of right-of-way in areas with high density housing or business along transportation corridors, it cannot feasibly be determined whether such widening or right-of-way acquisition would displace housing units or residents without project specific design details.

4.14.4 Cumulative Impacts

The cumulative impact analysis area for the hazards and hazardous materials analysis consists of the StanCOG region and adjoining counties. Information regarding these adjoining counties can be found in Section 3, *Environmental Setting*, Subsection 3.3.3.1, *Cumulative Impact Methodology*. Future development in this region relative to population and housing is considered in the analysis. This cumulative extent is used to evaluate potential unplanned population growth or displacement of housing, within the context of region.

Development in the cumulative impacts analysis area would result in population growth. Generally, the population growth in the cumulative impacts analysis area is planned for in general plans developed and adopted by counties and cities in the area. For example, the City of Modesto is currently updating its General Plan to accommodate growth expected in the City through 2050. The general plans and zoning ordinances of counties and cities also designate areas for housing development to accommodate planned population growth. While some development may require the demolition of existing housing, each county and city in the cumulative impacts assessment area must continue to demonstrate it can meet housing requirements established through the RHNA program, enacted throughout the state. Therefore, cumulative induced growth impacts, and population and housing displacement impacts, would be less than significant.

Additional population, housing, and employment, as forecasted, would occur with or without implementation of the proposed 2022 RTP/SCS. The proposed 2022 RTP/SCS provides a strategy to accommodate growth in such a way as to achieve a more balanced jobs/housing ratio and to optimize transportation projects that support those land uses. The land use growth footprint assumes a number of residential units adequate to meet the forecasted demand, taking into account localized displacement of some households within the region. Therefore, implementation of the proposed 2022 RTP/SCS would not result in displacement at the regional scale, and localized displacement would not be expected to increase development in areas surrounding the StanCOG region. Cumulative induced growth impacts, and population and housing displacement impacts, would be less than significant, and the contribution of the proposed 2022 RTP/SCS to cumulative population and housing displacement impacts would not be cumulatively considerable.

4.15 Transportation

This section examines the impacts of the proposed 2022 RTP/SCS on transportation conditions.

4.15.1 Setting

The environmental setting is a description of existing conditions relevant to transportation within the StanCOG region, including nine incorporated cities (Ceres, Hughson, Modesto, Newman, Oakdale, Patterson, Riverbank, Turlock, and Waterford) as well as the unincorporated communities in Stanislaus County. The existing transportation system in the StanCOG region consists of a complex network of State highways, County-maintained roads, and local streets; transit services; a series of bicycle paths and pedestrian walkways; railroad lines; and a number of aviation facilities.

Roadway Network

Stanislaus County contains more than 1,500 miles of road infrastructure in unincorporated areas (County of Stanislaus 2015), along with approximately 1,200 miles in incorporated cities (StanCOG 2018). The regional roadway network in the unincorporated areas of Stanislaus County is primarily organized as a grid-based system of rural two-lane roads connecting individual communities and providing access to agricultural fields, while urban development is mainly concentrated in the central and western portions of the county within the nine incorporated cities (County of Stanislaus 2016a). Road infrastructure includes approximately 183 miles of US Highway and State Routes, 1,546 miles of county roads, and 1,245 miles of local roads and streets maintained by incorporated cities (StanCOG 2014).

The primary transportation corridors in the StanCOG region include Interstate 5 (I-5), a four-lane freeway that traverses the western side of Stanislaus County in a north-south corridor, and State Route (SR)-99, a six-way freeway that traverses the central portion of Stanislaus County in a north-south corridor (County of Stanislaus 2016a). Both I-5 and SR-99 serve all of the county's major population centers. Other multi-lane state highways in the county include SR-4, a two-lane east-west facility that runs through the northeastern part of the county; SR-33, a two-lane north-south facility that parallels I-5 on the western side of the county; SR-108, a primarily east-west facility that travels through the center of the cities of Modesto, Riverbank, and Oakdale; SR-120, an east-west facility that travels through the city of Oakdale and near the unincorporated community of Knights Landing in the northeastern part of the county; SR-132, a primary east-west facility that travels the width of the County from Interstate 580 and I-5 just west of the San Joaquin County line to Coulterville in Mariposa County; SR-165, a north-south facility located in the southern portion of the county; and, SR-129, a short east-west facility that begins at an interchange with SR-99 in the unincorporated community of Salida and ends at an interchange with SR-108 east of the unincorporated community of McHenry (County of Stanislaus 2016). Smaller arterial facilities that provide for regional travel and connect the cities and unincorporated communities within Stanislaus County include Santa Fe Avenue (county Route J7), Geer/Albers Road (J14), Howard/Grayson Road (J16), Keyes Road (J16), West Main Street/Las Palmas Avenue (J17), Crows Landing Road, and a portion of McHenry Avenue (J6). (County of Stanislaus 2016a).

The functional classification system of roadways within the StanCOG region is generally based upon the Federal Highway Administration (FHWA) Functional Classifications System of Streets and Highways. The local classifications used by each of the nine major incorporated cities in the StanCOG region also generally follow the FHWA functional classification system, with each city

maintaining a variety of arterials, collectors, and local streets. The design standards, geometrics, and the overall specific design criteria for each street classification varies slightly between each jurisdiction. Figure 4.15-1 identifies the major roadways within the StanCOG region along with the classification of each.

Operations

A variety of performance measures are used to assess transportation systems. Depending on the type of performance evaluation required, performance measures may be very specific and focus on intersections or roadway segments, or performance measures may be aggregated to evaluate the overall operation of a regional transportation system. A regional travel model typically only contains information on the number of lanes, posted speed and link capacity on roadway segments and lacks information detailed enough to calculate accurate intersection information.

Because of the programmatic nature of the proposed 2022 RTP/SCS, the performance measures discussed herein are aggregated as a region to evaluate the overall performance of the transportation system. Roadway transportation performance measures that address performance goals include:

- Total vehicle miles traveled (VMT); and,
- VMT per capita.

The basic measure of the amount of roadway transportation generated is VMT. One vehicle traveling one mile constitutes one vehicle mile traveled, regardless of the size of the vehicle or the number of passengers in the vehicle. Increases in VMT are associated with regional growth that would occur with or without implementation of the proposed 2022 RTP/SCS. Thus, VMT data may not reflect deficient traffic operations,[1] although VMT may have a strong correlation with congestion.

Baseline VMT data for the StanCOG region is shown in Table 4.15-1, below. The 2020 Base Year is used as the baseline for analysis within this EIR. Total VMT data accounts for all vehicle types and all travel within the region, including trips that originate and/or end outside of the StanCOG region, and that pass-through the region without having an origin or destination within the StanCOG region.

An area's per capita (or per person) VMT, as applied in this EIR, is the total VMT divided by the population of that area and is a measure of the average vehicle miles each person travels on a typical weekday. Per capita VMT tends to increase as a result of greater overall economic activity in the region, higher levels of per-household automobile ownership, and/or a jobs-housing imbalance that contributes to longer average commute distances.

Table 4.15-1 Baseline VMT for StanCOG Region

Base Year	Regional VMT	VMT per Capita[1]
2020 (2022 RTP/SCS Base Year)	9,159,585	16.34

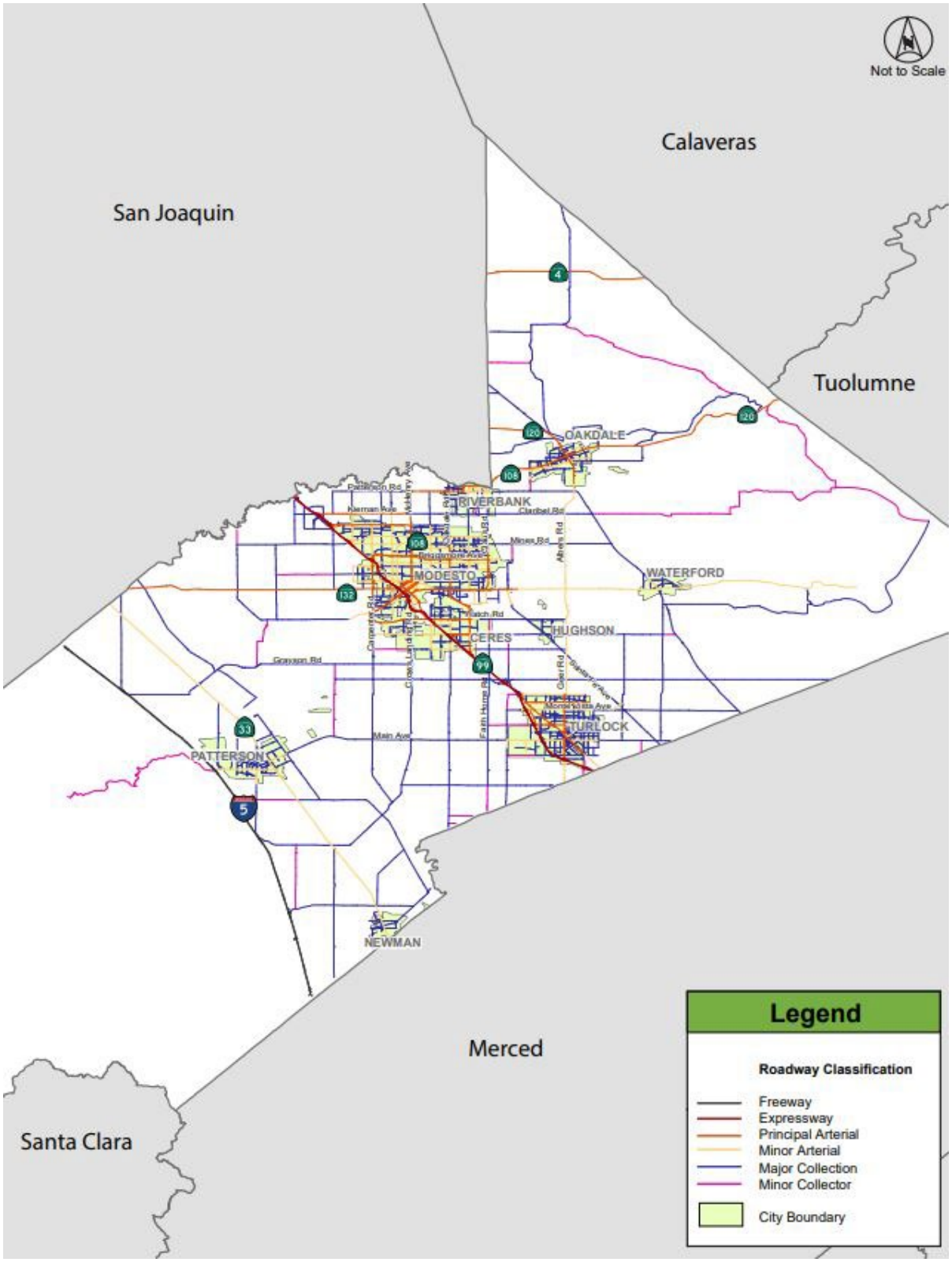
Source: StanCOG Model, Appendix M

[1] VMT per capita is based on a population size of 560,582 persons (StanCOG 2021a)

Comprehensive documentation of the modeling methodology, assumptions, calibration, and inputs used for the StanCOG Model is provided in Appendix M of this EIR.

[1] Traffic operational measures such as roadway congestion and delay are not considered CEQA impacts.

Figure 4.15-1 Major Roadways and Classifications



Source: County of Stanislaus 2016a

Public Transit

On July 1, 2021, Modesto Area Express and Stanislaus Regional Transit consolidated their transit services to create the Stanislaus Regional Transit Authority (StanRTA). StanRTA operates 32 reliable and convenient fixed-route transit services in addition to intercity shuttle services, commuter shuttles, Medivan services, Dial-a-Ride services, and Americans with Disabilities Act (ADA)-complementary paratransit services. A majority of StanRTA's service area is within the Cities of Modesto, Ceres, and Turlock along SR-99. However, StanRTA also provides exclusive service to other rural areas in the region, as well as to areas in unincorporated Stanislaus County. StanRTA's weekday service begins as early as 3:00 a.m. and ends as late as 11:30 p.m. Saturday service is provided as early as 7:00 a.m. and ends as late at 10:00 p.m., while Sunday service operates from 8:45 a.m. to 8:15 p.m. (StanCOG 2022). Specific route and schedules can be references on the StanRTA website (https://www.stanrta.org/246/Maps Schedules?pk_campaign=WebBtn&pk_kwd=routes).

In addition to StanRTA, a single intra-city bus line still operates within the StanCOG region. The City of Turlock operates Turlock Transit, offering six fixed-routes in addition to Dial-A-Ride services. General weekday hours of operation are from 6:00 a.m. to 9:00 p.m., and Saturday service is provided from 9:00 a.m. to 7:00 p.m. on all six fixed routes (StanCOG 2022).

Other public transportation carriers within the StanCOG region include the Altamont Commuter Express, a commuter train that runs between Stockton and San Jose with stations in Stockton, Lathrop-Manteca, Tracy and various stops in the Bay Area; San Francisco Bay Area Rapid Transit, a commuter train service running from Dublin-Pleasanton to various Bay Area locations; Amtrak, a commuter train that runs through the San Joaquin Valley and throughout the United States; and, Greyhound, a passenger bus service with stops in both Modesto and Turlock (StanCOG 2021b; StanCOG 2022).

Rail

Passenger rail in the StanCOG region is facilitated by the Altamont Commuter Express, San Francisco Bay Area Rapid Transit, and Amtrak. Rail freight operations in Stanislaus County include high speed mainline operations on the BNSF Railway and Union Pacific Railroad as well as low speed mainline and switching operations on the BNSF Railway, Union Pacific Railroad, Sierra Railroad, California Northern Railroad, Modesto and Empire Traction Company Railroad, and Tidewater Southern Railroad (Stanislaus County 2016a).

The Union Pacific Railroad in Stanislaus County includes operations on the main line which passes through Salida, Modesto, Ceres, Keyes, and Turlock. The Union Pacific Railroad also operates on the California Northern Railroad line located on the west side of the Stanislaus County, passing through Westley, Patterson, Crows Landing, and Newman. Operations on the BNSF Railway in Stanislaus County occur on the mainline, which runs through Riverbank, Hughson, Empire, and Denair. A branch line connects the mainline at Riverbank with the Sierra Railroad in Oakdale. The Sierra Railroad operates between Oakdale and Standard in Tuolumne County. The Sierra Railroad freight trains are operated by Union Pacific and BNSF, which typically operate roughly three times per week. The Modesto and Empire Traction Company is a short-line railroad that connects switching operations between the Union Pacific Railroad in Modesto and the BNSF Railway in Empire. Train lengths can vary from one locomotive with four cars to up to several locomotives with 60 cars. The Tidewater Southern Railroad is a branch line operation of the Union Pacific Railroad. The line runs in a general north-south route through Stanislaus County, from the City of Stockton to North Modesto

and from the City of Turlock to South Modesto. The portion of the line from just south of Bangs Avenue through Modesto to Bonniefair was abandoned in 2000, and sections were removed or paved over in 2003. North of Bangs Road, operations typically occur three days per week on Tuesday, Thursday, and Saturday. However, service may be operated more or less frequently depending on demand.

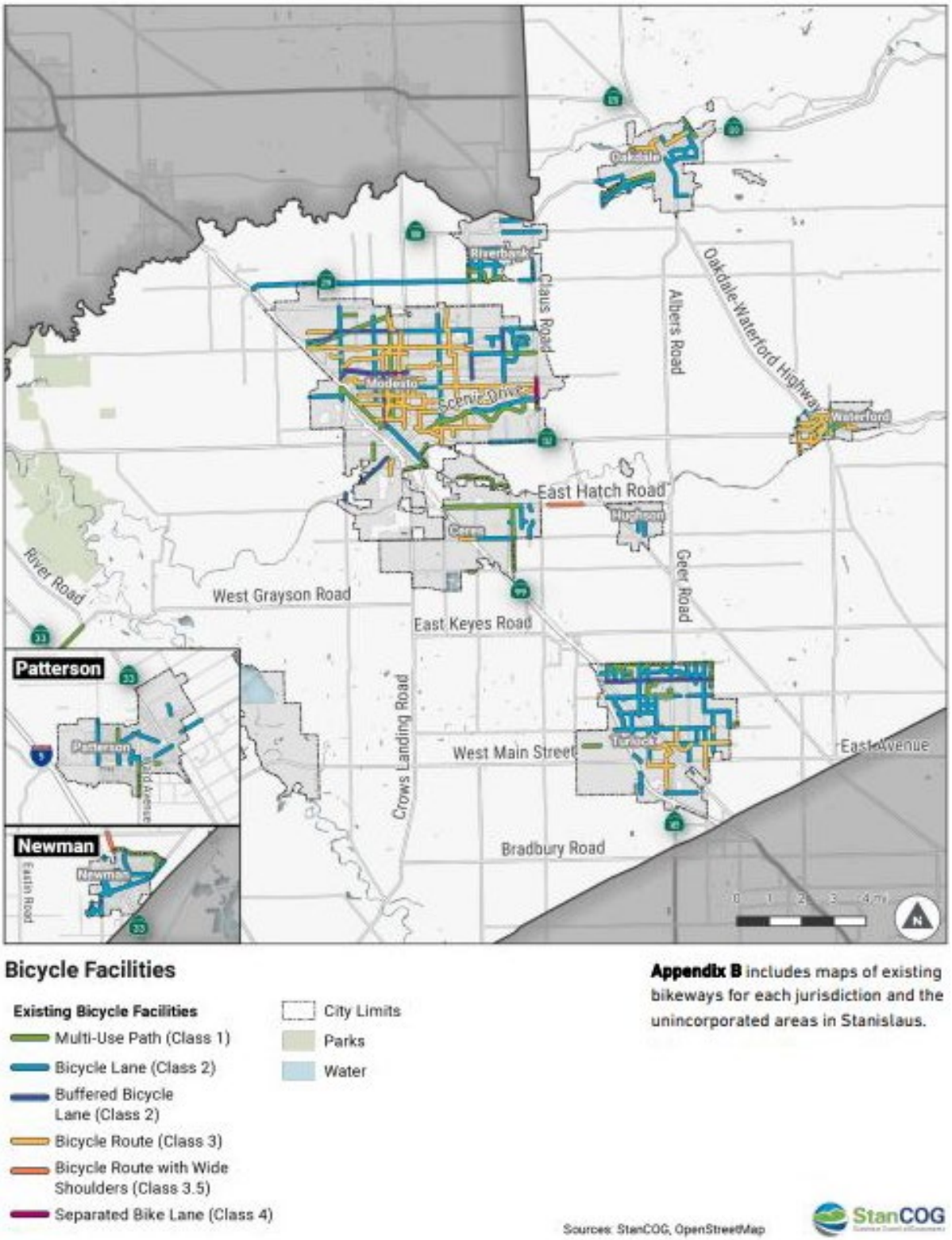
Active Transportation (Bicycle and Pedestrian Facilities)

Both bicycling and walking within the StanCOG region are attractive transportation alternatives due to the relatively flat topography and temperate climate during much of the year. Bikeways are facilities that provide primarily for, and promote, bicycle travel. The five types of bikeways identified by the California Manual on Uniform Traffic Control Devices and recognized in the StanCOG region are identified below (Caltrans 2014).

- **Class I (Off-Street Bike Paths or Multi-Use Paths).** A Class I bikeway provides physical separation from motor vehicles and are often fully separated from the street. Interactions between bicyclists and vehicles are limited to roadway crossings.
- **Class II (On-Street Bicycle Lanes).** A Class II bikeway is striped adjacent to vehicle travel lanes, delineated either by a solid white line or by a larger hatched buffer space.
- **Class III (Bike Routes).** A Class III bikeway designates certain roadways as preferred streets for bicyclists. They typically include wayfinding signage for bicyclists as well as additional signage to increase driver awareness to the potential presence of bicyclists. Bicycle boulevards are a specific type of Class III Bike Route, best suited for low-speed, low- volume neighborhood streets with traffic calming enhancements. Rural bike routes are another type of Class III Bike Route that usually feature wide shoulders, striping, and intermittent rumble strips to provide space for cyclists to ride on rural roads or highways.
- **Class IV (Separated Bike Lanes).** A Class IV bikeway is located on the street, adjacent to vehicular traffic. Separated bike lanes provide more physical separation between bicyclists and motor vehicles than Class II, as separation always includes both vertical separation (parked vehicles, raised concrete curbs, planters, bollards, etc.) and horizontal separation (striped buffer, landscaped areas, etc.).

Information regarding existing bicycle facilities in Stanislaus County was gathered in coordination with local jurisdictions as part of the 2021 StanCOG Non-Motorized Transportation Plan. The existing bicycle facilities in the StanCOG region and their classifications are presented in Figure 4.15-2, below, while the existing mileage of each bikeway classification in the StanCOG region is presented in Table 4.15-2.

Figure 4.15-2 Existing Bicycle Facilities in StanCOG Region.



Source: StanCOG 2021b

Table 4.15-2 Bikeway Mileage in the StanCOG Region by Classification

Bikeway Class	Mileage
Class I (Multi-Use Path)	45
Class II Bicycle Lane	103
Class III (Bike Routes)	57
Class IV	0.7
Total	205.7

Source: StanCOG 2021b

A large majority of roadways in Stanislaus County (95 percent) do not have any designated bikeways. Most roadways with associated bikeways are found in incorporated areas with dense street networks. In general, the existing bicycle network within each incorporated jurisdiction serves only some key destinations and residential areas. While the Cities of Modesto and Turlock have the most bikeway miles within their jurisdictions, these networks still have several gaps that do not provide all communities with access to key destinations. There is very limited bicycle network connectivity between the incorporated cities (StanCOG 2021b).

In addition to bicycling, walking is another active transportation option in the StanCOG region. Common pedestrian facilities include well-connected sidewalks with crossing treatments, multi-use paved trails, unpaved pedestrian trails, pedestrian signals, and paved shoulders. However, there are still many locations in Stanislaus County that lack sidewalks or designated pedestrian walkways (StanCOG 2021b).

Air Transportation

Stanislaus County currently has nine operational private and public airports and heliports (Federal Aviation Administration [FAA] 2018). Stanislaus County also contains the publicly owned and privately used Crows Landing Airport, formerly the Crows Landing Naval Auxiliary Landing Field (County of Stanislaus 2016b); however, this airport is closed indefinitely, according to the FAA (FAA 2018). As shown in Table 4.15-3, one of the nine operational aeronautical facilities in the StanCOG region is a heliport: the privately owned and privately used Emanuel Medical Center heliport. The eight operational airports in Stanislaus County, and their affiliated ownership and use, are also listed in Table 4.15-3, below.

The two publicly owned and operated airports in Stanislaus County include Modesto City-County Airport and Oakdale Municipal Airport. As Stanislaus County's largest airport, the Modesto City-County Airport provides daily commercial service to San Francisco. However, the airport primarily offers general aviation services for non-commercial flights (Stanislaus County 2016b). The airport is located approximately two miles east of downtown Modesto and is regionally accessible by SR-132. Oakdale Municipal Airport is a 117-acre exclusively general aviation facility served by a single runway, located approximately 2.5 miles east of the City of Oakdale (Stanislaus County 2016a). The airport, which is accessible from Sierra Road and Laughlin Road, is classified as an ARC A-I airport, indicating that it can only accommodate small aircraft weighing less than 12,500 pounds (Stanislaus County 2016a).

Table 4.15-3 Airports and Heliports in StanCOG Region

Name of Facility	Type of Facility	Ownership[1]	Use[1]	Airport Status Code[2]
Crows Landing	Airport	PU	PR	CI
Flying Bull	Airport	PR	PR	O
Mapes Ranch	Airport	PR	PR	O
Modesto City-County Airport	Airport	PU	PU	O
Oakdale Municipal Airport	Airport	PU	PU	O
Del Mar Farms	Airport	PR	PR	O
Emanuel Medical Center	Heliport	PR	PR	O
Turlock Airpark	Airport	PR	PR	O
Valley Crop Dusters, Inc	Airport	PR	PR	O
Crows Landing	Airport	PU	PR	CI

1. PU = Public; PR = Private
2. CI = Closed Indefinitely; O = Operational

Source: FAA 2018

Emerging Travel and Mobility Options and Technology

New transportation technologies can have an important influence on regional and national transportation systems, and some have already started to change longstanding transportation behaviors. Several new options that affect vehicle trips have begun emerging around the nation in the last decade. For example, transportation network companies, such as Uber and Lyft, provide ridesharing opportunities, similar to taxi for-hire services but are reserved for on-demand users who can request a ride through a smartphone app. Such services contract drivers using their personal vehicles to provide on-demand rides. These services began operations in roughly 2013 and operations continue today.

Micromobility, in the form of application-reservation-based e-scooters and bikeshare, is another emerging trend that was largely introduced in 2017. The micromobility industry has been highly volatile as many startup companies have emerged, consolidated, and/or discontinued operations over the last few years. Other transportation innovations include the following: connected and autonomous vehicles; mobility aggregation applications that provide users with one source for mobility services (e.g., Moovel, CityMapper); coordinated and adaptive traffic signals; active traffic management, which provides the ability to dynamically manage traffic through use of strategies such as adaptive ramp metering and adaptive traffic signal control; and unmanned aircraft systems. These and other emerging technologies have the potential to transform mobility choices and alter the transportation landscape.

Application-based food delivery services, such as UberEats, Grubhub, Doordash, and Postmates, have also expanded dramatically in recent years. Such services were fueled by the COVID-19 pandemic which limited or periodically closed dining at restaurants through most of 2020 and early 2021. Drivers for such food delivery services may operate trips for multiple food delivery and passenger applications simultaneously, depending on where demand is highest. Delivery of packages and parcels through traditional methods such as the Postal Service, UPS, FedEx, and newcomers like Amazon Prime also saw expansion as a result of the COVID-19 pandemic with trends increasing towards online shopping, resulting in fewer trips to traditional retail centers.

Beyond new travel options, emerging vehicle technology is beginning to influence travel behavior and safety. For example, smartphone applications such as Google Maps and Waze better inform travelers regarding route options, comparative costs, and dynamic routing to avoid significant delays. Safety technology on newer vehicles can include assisted braking, lane guidance, and attentiveness alerts, all of which could reduce risk of collisions. Such features will likely become standard on most vehicles in the coming years. As collisions decline, some congestion-related collisions could be reduced over time.

Transportation Demand Management/Transportation System Management

Transportation Demand Management (TDM) refers to all programs and strategies that are intended to reduce the number of vehicle trips required over the transportation network or shift the distribution of trips between time periods across the network (FHWA 2012). Transportation System Management represents a variety of management techniques designed to improve the efficiency and effectiveness of the transportation system. These techniques improve operations and/or services of existing and future transportation networks (FHWA 2012).

Vehicle Flow Management

The Department of Energy's Fuel-Efficient Traffic Signal Management Program has assisted in increasing the number of synchronized traffic signals within the region to promote free flowing vehicle transportation conditions, less use of vehicle fuel, and decreased pollution due to less vehicle miles traveled. In the past, some jurisdictions have implemented minor design improvements to the existing transportation infrastructure in lieu of costly capital construction or reconstruction. In the future, signalization, channelization, and the construction of acceleration and deceleration lanes with ramp metering at key interchanges are expected to achieve roadway vehicle flow improvements.

Intermodal Transportation

Transportation engineers and planners in the StanCOG region have employed one or more of the following methods of enhancing intermodality to increase the use of the existing transportation capacity more efficiently:

- Coordinate transit routes and schedules with those of inter-city rail and bus service;
- Provide amenities and facilities for bicycle and pedestrian access to transit stops;
- Facilitate and encourage access to the regional air carrier airport by paratransit, transit, taxi, transportation network companies and bicycle; and
- Provide park and ride facilities with bicycle, pedestrian and transit access amenities.

Ridesharing

Rideshare programs help reduce congestion and improve traffic flow. Regionally, StanCOG operates a rideshare program serving the City of Modesto. The rideshare program is designed to facilitate carpooling, vanpooling, bicycling, walking, and riding transit.

Preferential Transit/Carpool Treatment/Electric Vehicle Charging

Methods employed by local jurisdictions to encourage people to reduce their use of single-occupant vehicles include preferential parking for carpools and vanpools; subsidized transit passes; use of

agency vans for vanpooling; and provision of an on-site transportation coordinator. Regional transit agencies strive to ensure that major developments within their service areas are transit accessible and that transit stops are located to promote transit use.

Shared Parking Facilities

Parking management refers to programs that result in more efficient use of parking resources and can either provide an incentive or disincentive to single occupant vehicle use. Parking facilities that are shared between multiple users and destinations are found within the region. Park and ride lots are a form of off-site shared parking facilities that facilitate ridesharing. Park and ride lots within the region have been placed in locations where people can easily meet and form carpool trips, such as the park and ride facility located near the Roger K. Fall Transit Center in Turlock. Parking garages are also associated with shared parking in the StanCOG region and are often located near destinations attracting a large number of visitors. Parking regulations which control when and how long vehicles may park and the cost of the parking in a location is another form of parking management.

4.15.2 Regulatory Setting

a. Federal Laws, Regulations, and Policies

Moving Ahead for Progress in the 21st Century Act

The Moving Ahead for Progress in the 21st Century Act (MAP-21), was enacted in 2012. Through the medium-term plan development process, MAP-21 encourages Metropolitan Planning Organizations (MPOs), such as StanCOG, to consult with officials responsible for other types of planning activities that are affected by transportation in the area (including State and local planned growth, economic development, environmental protection, airport operations and freight movements) or to coordinate its planning process, to the maximum extent practicable, with such planning activities (23 U.S.C. §134(g)(3)(A)).

Specifically, MAP-21 requires that the medium-term planning process provide for consideration of projects and strategies that will:

- Support the economic vitality of the metropolitan area, especially by enabling global competitiveness, productivity and efficiency;
- Increase the safety of the transportation system for motorized and non-motorized users;
- Increase the security of the transportation system for motorized and non-motorized users;
- Increase the accessibility and mobility of people and for freight;
- Protect and enhance the environment, promote energy conservation, improve the quality of life, and promote consistency between transportation improvements and State and local planned growth and economic development patterns;
- Enhance the integration and connectivity of the transportation system, across and between modes, for people and freight;
- Promote efficient system management and operation; and
- Emphasize the preservation of the existing transportation system (23 U.S.C. §134(h)(1)).

Fixing America's Surface Transportation Act

Fixing America's Surface Transportation (FAST) Act builds on the changes made by MAP-21 and was signed into law in December 2015 (Public Law 114-94). The FAST Act authorizes $305 billion through fiscal year 2020 for highways, highway and motor vehicle safety, public transportation, rail and research and technology programs and provides a dedicated source of federal funds for freight projects. The FAST Act expands the scope of consideration of the metropolitan planning process to include consideration of intercity transportation, including intercity buses, intercity bus facilities and commuter vanpool providers; improving transportation system resiliency and reliability; reducing or mitigating the stormwater impacts of surface transportation; and enhancing travel and tourism. In addition, it requires strategies to reduce the vulnerability of existing transportation infrastructure to natural disasters.

Under the FAST Act, the U.S. Department of Transportation requires that MPOs, such as StanCOG, prepare long-range transportation plans and update them every four years if they are in areas designated as "nonattainment" or "maintenance" for federal air quality standards. Before enactment of the FAST Act and its predecessor, MAP-21, the primary federal requirements regarding long-range transportation plans were included in the metropolitan transportation planning rules (23 CFR Part 450 and 49 CFR Part 613). The FAST Act makes a number of changes to the statutes that underpin these regulations. Per federal requirements, long-range transportation plans must:

- Be developed through an open and inclusive process that ensures public input; seeks out and considers the needs of those traditionally under served by existing transportation systems; and consults with resource agencies to ensure potential problems are discovered early in the planning process;
- Be developed for a period of not less than 20 years into the future; long-range transportation plans must reflect the most recent assumptions for population, travel, land use, congestion, employment and economic activity;
- Have a financially constrained element, transportation revenue assumptions must be reasonable, and the long-range financial estimate must take into account construction-related inflation costs;
- Include a description of the performance measures and performance targets used in assessing the performance of the transportation system;
- Include a system performance report evaluating the condition and performance of the system with respect to performance targets adopted by the state that detail progress over time;
- Include multiple scenarios for consideration and evaluation relative to the state performance targets as well as locally-developed measures.
- Conform to the applicable federal air quality plan, called the State Implementation Plan, for ozone and other pollutants for which an area is not in attainment; and
- Consider planning factors and strategies in the local context.

On September 30, 2020, the United States Senate approved H.R. 8337, which provides fiscal-year 2021 appropriations to federal agencies for continuing projects and activities of the federal government. Included in this act is a 1-year, $13.6 billion extension of the FAST Act.

Infrastructure Investment and Jobs Act

The Infrastructure Investment and Jobs Act (IIJA) replaced the expired FAST Act and was signed into law in November 2021 (Public Law 117-58). The IIJA authorizes $973 billion through Fiscal Year 2022 for investment in all modes of transportation as well as investment in water, power and energy, environmental remediation, public lands, broadband, and overall resilience. The Act distributes the federal funds in three ways (National Association of Counties [NACO] 2022):

- Authorizations from the federal Highway Trust Fund for highway and transit programs;
- Authorizations of appropriations from the General Fund of the U.S. Treasury, subject to annual appropriations process; and
- Advanced appropriations over five years, independent of the regular appropriations process.

Of the $973 billion, $550 billion is to be allocated for new investments, such as funding provided through a surface transportation authorization law. Of the $550 billion dedicated to new investments, $284 billion will be distributed to the U.S. Department of Transportation in order to modernize and make improvements across all modes of transportation. Those funds are reserved for the following (NACO 2022):

- Roads & Bridges: $110 billion
- Transit: $39 billion
- Rail: $66 billion
- Safety: $11 billion
- Airports: $25 billion
- Ports & Waterways: $17 billion
- Electric vehicle chargers: $7.5 billion
- Electric buses: $7.5 billion
- Reconnecting Communities: $1 billion

Counties and MPOs, such as StanCOG, can access the IIJA funds competitively, through federal grant programs and competitive processes run by state departments of transportation and MPOs, through suballocations based on populations from state departments of transportation, and through federal formulas such as transit formulas and the formula (entitlement) component of the Airport Improvement Program. Overall, the IIJA establishes a new, long-term surface transportation reauthorization and significantly increases the number of competitive grant opportunities via supplemental appropriations to the U.S. Department of Transportation (NACO 2022).

Specifically, California can expect to receive approximately $29.5 billion over five years in Federal highway formula funding for state highway and bridge projects. The IIJA will assist in repairing and rebuilding roads and bridges with a focus on climate change mitigation, resilience, equity, and safety for all users, including cyclists and pedestrians. Additionally, the IIJA will improve healthy, sustainable transportation options for millions of Americans; California can expect to receive approximately $10.3 billion over five years to improve public transportation options across the state. Finally, the IIJA is expected to help modernize and expand passenger rail in California while improving freight rail efficiency and safety (U.S. Department of Transportation 2022).

Congestion Management Process

Congestion can generally be described as a condition in which the demand for road space exceeds the supply of road space, preventing the free movement of both vehicles and people. Traffic congestion can result in a loss of productivity, present a higher risk to passenger safety, increase fuel consumption and pollution, and impact the economy and the quality of people's lives (StanCOG 2020). The enactment of MAP-21, described above, required all MPOs serving a transportation management area (TMA) maintain a congestion management process (CMP). A CMP is a systematic and regionally accepted approach for managing congestion that provides accurate, up-to-date information on transportation system performance and assesses alternative strategies for congestion management that meet state and local needs. A TMA is an area with a population of over 200,000, such as Stanislaus County. Federal requirements state that in all TMAs, including Stanislaus County, the CMP must be developed and implemented as an integrated part of the metropolitan transportation planning process. The Moving Ahead for Progress in the 21st Century bill expired in 2014 and was replaced by the FAST Act, which subsequently expired in September 2021. StanCOG adopted their Congestion Management Process in 2020, which outlines the following specific objectives based upon goals and objectives in the StanCOG 2018 RTP/SCS (StanCOG 2020):

- Improve the ability of people and goods to move between desired locations, and provide a variety of modal and mobility options;
- Promote equitable access to opportunities by ensuring all populations share in the benefits of transportation improvements and are provided a range of transportation and housing choices;
- Facilitate economic development and opportunities through infrastructure investments that support goods movement within and through the region, including but not limited to the county's strategic freight corridors;
- Provide mix of land uses and compact development patterns, and direct development toward existing infrastructure, to preserve agricultural land, open space and natural resources;
- Support infrastructure investments that facilitate vehicle electrification and the provision of electrification infrastructure in public and private parking facilities and structures;
- Operate and maintain the transportation system to ensure public safety and security; improve health of residents by improving air quality; and provide more transportation options;
- Maintain transportation system in a state of good repair, and protect the region's transportation investments by maximizing the use of existing facilities;
- Coordinate, monitor and integrate planning and programming for ITS, smart infrastructure, demand-responsive transportation, and automated vehicles
- Maintain or improve reliability of the transportation network and maintain or reduce congestion;
- Efficiently use available transportation funding to expedite project delivery of transportation improvements within the region for the benefit of Stanislaus County residents and the general traveling public.

b. State Laws, Regulations, and Policies

California Transportation Plan

The California Transportation Plan is prepared by the California State Transportation Agency every five years to provide a long-range policy framework to meet the State's future mobility needs and reduce greenhouse gas (GHG) emissions to goals set by the California Global Warming Solutions Act of 2006 (Assembly Bill [AB 32], discussed in Section 4.9, *Greenhouse Gas Emissions/Climate Change*) and implementing legislation Senate Bill (SB) 375 (discussed below). The most recent California Transportation Plan was adopted in 2021 (Caltrans 2021). The California Transportation Plan defines goals, performance-based policies, and strategies to achieve the State's collective vision for California's future statewide, integrated, multimodal transportation system by envisioning a sustainable system that improves mobility and enhances quality of life. The California Transportation Plan is developed in collaboration with transportation stakeholders such as StanCOG. Through ongoing engagement, the California Transportation Plan is intended to provide goals and visions to support a fully integrated, multimodal, sustainable transportation system that supports the quality of life, prosperous economy, human and environmental health, and social equity.

California Transportation Commission Regional Transportation Plan Guidelines

The California Transportation Commission (CTC) publishes and periodically updates guidelines for the development of long-range transportation plans, such as StanCOG's proposed 2022 RTP/SCS. Pursuant to Government Code Section 65080(d), each regional transportation planning agency (RTPA) is required to adopt and submit an updated RTP to CTC and Caltrans every four years. StanCOG is the designated RTPA for Stanislaus County.

Under Government Code Section 14522, the CTC is authorized to prepare guidelines to assist in the preparation of RTPs. The most recent update to the RTP guidelines was published in 2017 and includes separate guidance for RTPAs and MPOs and new checklists for RTP content (CTC 2017).

Climate Action Plan for Transportation Infrastructure

The Climate Action Plan for Transportation Infrastructure was adopted on July 12, 2021 (CalSTA 2021). The Climate Action Plan for Transportation Infrastructure details how the state recommends investing billions of discretionary transportation dollars annually to aggressively combat and adapt to climate change while supporting public health, safety, and equity. The Climate Action Plan for Transportation Infrastructure builds on executive orders signed by Governor Gavin Newsom in 2019 and 2020 targeted at reducing GHG emissions in transportation, which account for more than 40 percent of all emissions, to reach the state's ambitious climate goals (CalSTA 2021).

State Regional Transportation Plan Requirements

Government Code Sections 65080 et seq. state that MPOs must prepare and adopt a long-range transportation plan, such as an RTP, directed at achieving a coordinated and balanced regional transportation system, including, but not limited to, mass transportation, highway, railroad, maritime, bicycle, pedestrian, goods movement and aviation facilities and services. The plan must be action-oriented and pragmatic, considering both the short-term and long-term planning, and shall present clear, concise policy guidance to local and state officials. Each transportation planning

agency must consider and incorporate, as appropriate, the transportation plans of cities, counties, districts, private organizations and state and federal agencies.

Pursuant to Government Code section 65080(d), MPOs, such as StanCOG, that are located in nonattainment and monitoring areas must update their long-range transportation plans at least every four years.

The CTC has developed RTP guidelines to assist MPOs with developing their RTPs so that they are consistent with federal and state transportation planning requirements. The guidelines are updated and adopted periodically, as needed. For the first time, two separate guidelines were adopted in January 2017 to guide RTP development in MPOs and RTPAs. Both documents incorporate new legislation and the associated goals, particularly related to reducing GHG emissions and improving air quality. Both the 2017 RTP Guidelines for MPOs and the 2017 RTP Guidelines for RTPAs specify that the requirements outlined in the documents apply to all RTP updates begun following adoption (CTC 2017).

The 2017 RTP Guidelines include guidelines for regional travel demand modeling. The regional travel demand model guidelines are "scaled" to different sizes of MPOs. The guidelines also describe the methods for projecting of future travel demand, as well as the key assumptions typical of transportation demand models. In addition, the guidelines describe the consultation and coordination process, which are designed to foster involvement by all interested parties including air quality agencies, discuss the environmental considerations of an RTP, and list the general contents of an RTP document (CTC 2017).

Senate Bill 375

The Sustainable Communities and Climate Protection Act of 2008 (Chapter 728, Statues of 2008) (SB 375) diversified the areas of study from past RTPs to include land use impacts and climate change issues. Specifically, SB 375 requires MPOs to prepare a SCS that demonstrates how the region will meet its GHG reduction targets through integrated land use, housing, and transportation planning. The SCS must identify a transportation network that, when integrated with the forecasted development pattern for the StanCOG region, will reduce GHG emissions from automobiles and light trucks in accordance with targets set by the California Air Resources Board (CARB).

Under SB 375, some development and transportation projects assumed as a part of the proposed 2022 RTP/SCS may be eligible to use a streamlined version of the environmental review process. Among other criteria, these projects must be consistent with the land use designation, density, intensity, and policies of the proposed 2022 RTP/SCS, and fall within the identified criteria for development and transportation projects. Streamlining under SB 375 is described in more detail in Section 1.5.1, *Streamlining Under SB 375*.

Senate Bill 743

SB 743 (2013) changed the way that public agencies evaluate the transportation impacts of projects under CEQA, recognizing that roadway congestion, while an inconvenience to drivers, is not itself an environmental impact. (See PRC Section 21099(b)(2) ["automobile delay, as described solely by level of service or similar measures of vehicular capacity or traffic congestion shall not be considered a significant impact on the environment pursuant to [CEQA]"].)

Under SB 743, the Governor's Office of Planning and Research (OPR) established VMT as the preferred metric for measuring transportation impacts of most projects in place of vehicle level of service (LOS) or related measures of congestion as the primary metric. The use of VMT for

determining significance of transportation impacts has become commonplace since the certification of this provision and the release of OPR's Technical Advisory on Evaluating Transportation Impacts in CEQA in December 2018 and, as of July 1, 2020, is the required metric statewide (OPR 2018).

For land use projects, SB 743 provides opportunities to streamline transportation analysis under CEQA for qualifying urban infill development near major transit stops in metropolitan regions statewide, as described in more detail in Section 1.5.3, *Streamlining Under SB 743*. Additionally, the legislation establishes that aesthetic and parking impacts of these projects are not considered significant impacts on the environment.

SB 743 can also substantially affect the review of transportation projects under CEQA. Some projects, such as expanding facilities for bicycle, pedestrian, or transit only use, will not result in adverse transportation impacts because they are assumed not to substantially increase automobile trips. However, for roadway capacity projects, the CEQA guidelines (Section 15064.3) give lead agencies some discretion over what metric is used to evaluate transportation impacts, as some roadway expansion projects can induce vehicle travel. If using a metric besides VMT, however, the change in vehicle travel should still be reported. A program-level assessment of roadway projects in a regional plan may also be used to streamline project level analysis (OPR 2018).

Caltrans has provided two guidance documents to address VMT impacts on the state highway system consistent with the requirements of SB 743 and the OPR Technical Advisory:

- The Transportation Analysis under CEQA (TAC) provides information to support CEQA practitioners in making CEQA significance determinations for transportation impacts of projects on the state highway system. These could include land use projects or transportation projects (Caltrans 2020b).
- The Transportation Analysis Framework (TAF) guides the preferred approach for analyzing the VMT attributable to proposed projects (induced travel) in various project settings, with particular focus on the analysis of induced travel associated with transportation projects which would add road capacity to the transportation system (Caltrans 2020c).

State CEQA Guidelines Section 15064.3 and OPR Technical Advisory

State CEQA Guidelines Section 15064.3 implements SB 743 and establishes VMT as the most appropriate measure of transportation impacts. The primary components of Section 15064.3 include:

- Identifies VMT as the most appropriate measure of transportation impacts;
- Declares that a project's effect on automobile delay shall not constitute a significant environmental impact (except for projects increasing roadway capacity);
- Creates a rebuttable presumption of no significant transportation impacts for (a) land use projects within one-half mile of either an existing major transit stop or a stop along an existing high quality transit corridor, (b) land use projects that reduce VMT below existing conditions, and (c) transportation projects that reduce or have no impact on VMT;
- Allows a lead agency to qualitatively evaluate VMT if existing models are not available; and
- Gives lead agencies discretion to select a methodology to evaluate a project's VMT, but requires lead agencies to document that methodology in the environmental document prepared for the project.

CEQA lead agencies were required to comply with the State Guideline Section 15064.3 no later than July 1, 2020. Stanislaus County, and other municipalities and agencies in the StanCOG region, have not formally adopted thresholds for evaluating VMT impacts, but instead generally use thresholds provided by the OPR in its *Technical Advisory on Evaluating Transportation Impacts in CEQA* (OPR 2018). Specifically, a threshold of 15 percent less VMT per capita than existing average VMT for the area is relevant for analyzing impacts related to the 2022 RTP/SCS, pursuant to the following language:

> Based on OPR's extensive review of the applicable research, and in light of an assessment by the CARB quantifying the need for VMT reduction in order to meet the State's long-term climate goals, OPR recommends that a per capita or per employee VMT that is 15 percent below that of existing development may be a reasonable threshold. [¶] Fifteen percent reductions in VMT are achievable at the project level in a variety of place types. [¶] Moreover, a 15 percent reduction is consistent with SB 743's direction to OPR to select a threshold that will help the State achieve its climate goals. As described above, section 21099 states that the criteria for determining significance must "promote the reduction in greenhouse gas emissions." In its document the CARB 2017 Scoping Plan-Identified VMT Reductions and Relationship to State Climate Goals, CARB assesses VMT reduction per capita consistent with its evidence-based modeling scenario that would achieve State climate goals of 40 percent GHG emissions reduction from 1990 levels by 2030 and 80 percent GHG emissions reduction levels from 1990 by 2050. Applying California Department of Finance population forecasts, CARB finds per-capita light-duty vehicle travel would need to be approximately 16.8 percent lower than existing, and overall per-capita vehicle travel would need to be approximately 14.3 percent lower than existing levels under that scenario. Below these levels, a project could be considered low VMT and would, on that metric, be consistent with 2017 Scoping Plan Update assumptions that achieve climate state climate goals… [¶] In summary, achieving 15 percent lower per capita (residential) or per employee (office) VMT than existing development is both generally achievable and is supported by evidence that connects this level of reduction to the State's emissions goals (OPR 2018).

Assembly Bill 1358

AB 1358, also known as the Complete Streets Act of 2008, amended the California Government Code Section 65302 to require that any substantive revisions to a city or county's Circulation Element include provisions for accommodations of all roadway users, including bicyclists and pedestrians.

California Bicycle Transportation Act

The California Bicycle Transportation Act of 1994 requires all cities and counties to have an adopted bicycle master plan to apply for Bicycle Transportation Account funding source. Existing bicycle master plans and other modal plans adopted within the StanCOG region are described below.

c. Regional Laws, Regulations, and Policies

Regional Transportation Planning Agency Transportation Plans

As described in Section 1.2, *Project Background*, StanCOG functions as both the federally-designated MPO and the State-designated regional transportation planning agency RTPA for Stanislaus County. Under federal regulations (23 CFR 450.322(c)) and State law (Government Code 65080(d)), StanCOG is required to prepare a long-range (at least 20-year) transportation planning document, known as

the RTP. The RTP must be updated every four years and must be consistent with the California Transportation Plan. The RTP is generally an action-oriented document used to achieve a coordinated and balanced regional transportation system.

d. Local Laws, Regulations, and Policies

General Plans

State law requires cities and counties to adopt general plans, which must incorporate a circulation element, also often called a transportation element. A general plan's transportation/circulation element is an infrastructure plan and policy document used to determine the needed expansion or modification of the transportation network (including services) to accommodate planned population and employment growth. The elements generally address expectations for transportation network operations and safety based on goals and policies of the city or county. The elements also often address goods movement, public transit, bicycle facilities and pedestrian facilities.

Transportation provisions in applicable county and city general plans for the StanCOG region are discussed below.

Stanislaus County General Plan

The Stanislaus County General Plan's Circulation Element includes goals that focus on providing and maintaining a transportation system throughout the County for the movement of people and goods that also meets land use and safety needs for all modes of transportation; maintaining a safe, balanced, and efficient transportation system that facilitates inter-city and interregional travel and goods movement; and, providing and managing parking to accommodate vehicle usage while minimizing the impacts of excessive parking supply (County of Stanislaus 2015).

City of Ceres General Plan

The Ceres General Plan 2035 Transportation & Circulation Element provides goals and policies aimed at providing mobility choices for travel within and connecting to Ceres, such as providing for the long-range planning, development, and maintenance of the city's roadway system to ensure the safe and efficient movement of people and goods through a variety of travel modes; maintaining acceptable multi-modal travel flow along Ceres' major corridors; protecting residential areas from high-volume and high-speed traffic and its effects and promote bicycling and walking on residential streets; providing a sufficient amount of convenient, safe, and attractive vehicle and bicycle parking to serve existing and new development throughout the city; promoting provision of safe and efficient transit service to reduce congestion, improve the environment, and provide viable non-automotive means of transportation within and connecting to Ceres; providing a safe, comprehensive, and integrated system of facilities for non-motorized transportation; maintaining a balanced freight transportation system to provide for the safe and efficient movement of goods that balances the needs of other roadway system users; and, developing a financially sustainable transportation system that includes planning, design, construction, maintenance and operations funding from a variety of sources (City of Ceres 2018).

City of Hughson General Plan

The Hughson General Plan Circulation Element balances the need to provide safe ways to move people from one place to another through goals and policies focused on providing a safe circulation system, consistent with the General Plan Land Use Element, to provide access and mobility for all of

Hughson's residents and businesses while maintaining the quality of life for residents; minimizing the negative effects of new development on the existing and planned circulation system; developing a Downtown circulation system that is pedestrian-oriented and supports the Downtown as a destination; ensuring that there is adequate on- and off-street parking for residents and visitors to Hughson; supporting public transit service and alternative transportation modes that meet the needs of the community; providing a bicycle and pedestrian network to encourage bicycling and walking for transportation and recreational purposes; ensuring a well-coordinated regional transportation system that serves Hughson and the surrounding region; and, providing adequate railroad and roadway systems to accommodate the safe and efficient movement of goods, while minimizing impacts to residential neighborhoods (City of Hughson 2005).

City of Modesto General Plan

The City of Modesto General Plan Transportation Element includes goals that focus on providing meaningful transportation choices, increasing non-automobile mode share, and facilitates complete streets; reducing trip lengths and vehicle miles traveled; evaluating system changes; increasing walking trips; increasing bicycle trips; increasing transit use; supporting passenger rail; improving the roadway network for safety and public health; and improving air transportation (City of Modesto 2019).

City of Newman General Plan

The Newman 2030 General Plan Transportation and Circulation Element is intended to provide the policy framework for regulation and development of the circulation system in Newman through the implementation of goals and policies that aim to create and maintain a roadway network that provides for the safe and efficient movement of people and goods throughout the City while maintaining the quality of life for residents; promote and maintain public and private transit systems that are responsive to the needs of Newman residents; promote ridesharing and telecommuting; minimize air quality and noise impacts on surrounding land uses resulting from new roadway projects and improvements to existing roadway; promote intergovernmental communication and cooperation concerning transportation-related issues; ensure the adequate provision of both on- and off-street parking; and, provide a bicycle and pedestrian network to encourage bicycling and walking for both transportation and recreation (City of Newman 2007).

City of Oakdale General Plan

The Oakdale 2030 General Plan Mobility Element establishes policies and programs that support a balanced, multi-modal transportation network accommodating motor vehicles, bicyclists, pedestrians, public transit, rail, and air travel. Specifically, the Mobility Element contains goals and policies related to expanded multimodal transportation choices that improve the ability to travel efficiently and safely throughout the city and region; an interconnected roadway/highway system that ensures the safe and efficient movement of people, goods, and services on multiple routes by multiple modes; enhanced bicycle, pedestrian and equestrian facilities that are accessible, safe, and convenient; a safe, comprehensive, and integrated transit system that is an essential component of the City's transportation network; the safe and efficient movement of goods to support commerce in the city and region; expanded use of the Oakdale Municipal Airport within the parameters of compatible surrounding uses; and, sufficient funding to construct and maintain the transportation system in coordination with adjacent jurisdictions and regional planning efforts (City of Oakdale 2013).

City of Patterson General Plan

The City of Patterson 2010 General Plan Circulation Element provides goals and policies aimed at meeting the transportation needs of the City, including the creation and maintenance of a roadway network that will ensure the safe and efficient movement of people and goods throughout the city; promotion and maintenance of public and private transit systems that are responsive to the needs of Patterson residents; promotion of increased efficiency in automobile use; consideration of air quality and noise impacts along with traffic flow efficiency when making decisions about improvements to existing roadways or the construction of new roadways; promotion of intergovernmental communication and cooperation concerning transportation-related issues; adequate provision of both on- and off-street parking; promotion of pedestrian, bicycle and rail travel as alternatives to automobile use; and, involvement in any changes in use patterns of airports within the vicinity of Patterson (City of Patterson 2010).

City of Riverbank General Plan

The City of Riverbank General Plan 2005-2025 Circulation Element provides a balanced approach for a circulation system that will serve the entire community well in the long term and support policies in other elements of the General Plan. Specifically, the Circulation Element contains a variety of goals and policies related to providing convenience and choice among all modes of transportation; supporting all locally available modes of transportation; increasing the availability and use of transit, and; moving freight and passengers efficiently (City of Riverbank 2009).

City of Turlock General Plan

The City of Turlock General Plan Circulation Element provides a framework to guide the growth of Turlock's transportation-related infrastructure over a 20 year planning horizon. The Circulation Element also includes goals and policies related to a safe and efficient roadway system; implementation of planned roadway improvements; design of complete streets; efficient use of existing transportation facilities; coordination of local and regional actions; reduction in VMT; circulation system enhancements, and; funding for improvements, among others (City of Turlock 2012).

City of Waterford General Plan

The City of Waterford General Plan Update Transportation and Circulation Element is concerned with the movement of people and goods through and around the City. The Transportation and Circulation Element contains goals and policies specific to an integrated road system that is safe and efficient; a circulation system that is convenient and flexible; a circulation system that minimizes adverse impacts upon the community; an efficient and comprehensive public transit system; a comprehensive system of safe and convenient bicycle routes (within the community and throughout the urban area); a comprehensive system of safe and convenient pedestrian-ways; living environments which encourage people to use a variety of transportation alternatives; and, a compact urban design for new growth areas; self-sustaining, mixed-use, pedestrian-friendly urban centers (City of Waterford 2007).

Non-Motorized Transportation Plans and Active Transportation Plans

City- and countywide bicycle and pedestrian master plans, active transportation plans and other mode-specific plans serve as policy documents to guide the development and maintenance of the transportation network, support facilities and non-infrastructure programs. These plans describe

the acceptable operating service standards, facility classifications, opportunity sites, and mode-specific goals and policies of a given city or county.

Numerous existing bicycle and other modal plans have been adopted for the StanCOG region. For example, the StanCOG 2021 Non-Motorized Transportation Master Plan was adopted by StanCOG in 2021 and focuses on reducing congestion and vehicle-miles traveled to lower greenhouse gas emissions and improving regional air quality; enhancing opportunities for walking, bicycling, and other forms of non-motorized transportation; increasing access to public transportation; developing a non-motorized transportation network that focuses on equity and inclusivity to address the region's unique needs; and, making the Stanislaus region more competitive for statewide grant funding opportunities (StanCOG 2021b). Other applicable non-motorized transportation master plans and active transportation plans within the StanCOG region include the City of Ceres City-Wide Active Transportation Plan (2021), the City of Hughson Non-Motorized Transportation Plan (2008), the City of Modesto Non-Motorized Transportation Master Plan (2006), the City of Newman Non-Motorized Transportation Plan (2012), the City of Patterson Active Transportation Plan (2022), and the City of Turlock Active Transportation Plan (2015). Furthermore, the City of Riverbank is currently developing their own Bicycle and Pedestrian Master Plan. Each of these plans is, or will be, intended to guide the development of pedestrian and bicycle facilities within each individual jurisdiction's planning area.

4.15.3 Impact Analysis

a. Methodology and Significance Thresholds

The criteria for determining whether the RTP/SCS would have significant environmental impacts related to transportation and traffic were based in part on the environmental checklist in Appendix G of the State CEQA Guidelines (14 CCR 15000 et seq.) and on performance measures established by StanCOG. Significant impacts to transportation would occur if the plan would:

1. Conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities;
2. Conflict with or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b), specifically resulting in
    a. An overall increase in total regional VMT above baseline (2020) conditions;
    b. A change in VMT per capita in the region that fails to reach 15 percent below baseline (2020) VMT per capita conditions; or
    c. A substantial increase in induced travel due to roadway capacity expansions;
3. Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment);
4. Result in inadequate emergency access; or,
5. Impair implementation or physically interfere with an adopted emergency response plan or emergency evacuation plan

StanCOG develops and applies state-of-the-art models integrated into a comprehensive modeling and forecasting framework to develop growth projections, travel forecasts, and emissions estimates intended to support the region's various planning programs. For analysis of the 2022 RTP/SCS, StanCOG developed a sub-area version of the travel demand model used for the previous 2018 RTP/SCS. This sub-area version reduced the 3-County MIP2 travel demand model to a 1-County

model, covering only the StanCOG region, for the purposes of improving model performance and validation. The 1-county StanCOG model was updated with sociodemographic details and existing roadway network refinements to reflect the planned projects included in the 2022 RTP/SCS. The model output was evaluated to confirm that model performance is consistent with the previous version. As such, the results from the previous model can be considered for the purposes of comparison and understanding incremental changes in performance metrics. More details regarding model validation can be found in Appendix M.

When additional capacity is provided on a roadway, a short-term gain in reducing delay on the roadway as typically observed. However, additional capacity will often encourage additional trips amongst existing users in the long term, thus increasing VMT overall. These new trips are generated for a variety of reasons, including drivers who were using an alternative mode previously but now are driving (e.g., driving instead of taking transit), or drivers who now choose to make a trip that previously they had forgone (e.g., someone going shopping or picking up dinner that was previously staying home for dinner). This phenomenon is referred to as induced demand. Induced demand effects are generally considered under two-time frames: short term (0-5 years), which includes effects such as diverted trips, mode shift resulting from driving becoming more attractive, and latent trips (new trips that were previously suppressed by congestions); and long term (5-10 years), which includes effects such as destination changes from new land uses, mode shift resulting from transit service provider impacts, and increasing auto dependency.

To account for induced demand associated with the proposed 2022 RTP/SCS in a manner consistent with CARB requirements, it was determined that the VMT data obtained from the travel demand model should be augmented using the California Induced Travel Calculator[2]. This calculator allows a user to estimate the total (both short-term and long-term) induced demand VMT annually added as the result of the new construction of general-purpose lane miles, high-occupancy vehicle lane miles, or high-occupancy toll lane miles. In particular, induced demand analysis is required by CARB during SB 375 analysis for FHWA functional classifications of Interstate (class 1), other freeway and expressways (class 2), and other principal arterials (class 3). Based on a review of model sensitivities, it was determined that the travel demand adequately accounts for the effects of short term induced demand and, as such, only the long-term effects of induced demand from the calculator were added to VMT results from the travel demand model in order to fully account for induced demand.

b. Project Impacts and Mitigation Measures

The following section discusses potential impacts and mitigation measures that may be associated with transportation projects and the land use scenario contained within the proposed 2022 RTP/SCS. Section 4.15.3.c summarizes the impacts associated with capital improvement projects in the proposed 2022 RTP/SCS. Due to the programmatic nature of the proposed 2022 RTP/SCS, a precise, project-level analysis of the specific impacts associated with individual transportation and land use projects is not possible at this time. In general, however, implementation of proposed transportation improvement projects and future projects under the land use scenario envisioned by the proposed 2022 RTP/SCS could result in the impacts as described in the following section.

[2] https://travelcalculator.ncst.ucdavis.edu

Threshold 1:	The project would conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities

Impact T-1 TRANSPORTATION PROJECTS AND LAND USE PROJECTS ENVISIONED BY THE PROPOSED 2022 RTP/SCS WOULD NOT CONFLICT WITH ANY PROGRAM, PLAN, ORDINANCE OR POLICY ADDRESSING THE CIRCULATION SYSTEM, INCLUDING TRANSIT, ROADWAY, BICYCLE AND PEDESTRIAN FACILITIES. THIS IMPACT WOULD BE LESS THAN SIGNIFICANT.

The proposed StanCOG 2022 RTP/SCS is intended to improve the circulation system for all modes of transportation so that motor vehicles and non-motorized vehicles can use the streets simultaneously and safely. Specifically, the proposed 2022 RTP/SCS includes goals and objectives on a federal, state, and regional level that aim to: achieve a significant reduction in traffic fatalities and serious injuries on all public roads; maintain the highway infrastructure asset system in a state of good repair; achieve a significant reduction in congestion on the National Highway System; improve the efficiency of the surface transportation system; enhance the performance of the transportation system while protecting and enhancing the natural environment; and, improve overall mobility and accessibility. Overall, the goals and objectives included in the proposed 2022 RTP/SCS are intended to ensure that future transportation projects would not conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities.

Transportation projects included under the proposed 2022 RTP/SCS consist of widening existing roadways; constructing expressways and freeways; and installing medians. Such projects would result in capacity increases, congestion relief, safety improvements, and overall circulation improvements. Therefore, the proposed 2022 RTP/SCS would be consistent with the California Transportation Plan and individual jurisdiction General Plans, as well as the goals and objectives outlined within the 2018 RTP/SCS and the proposed 2022 RTP/SCS, which are described above. Active transportation projects included under the proposed 2022 RTP/SCS would add new pedestrian and bicycle facilities including sidewalks, bike lanes, multi-use trails, bicycle and pedestrian bridges, and bike parking facilities; improve existing facilities; improve active transportation signage and striping; implement Safe Routes to School projects; and upgrade pedestrian facilities with ADA modifications. Bicycle and pedestrian improvement projects identified in the proposed 2022 RTP/SCS are aimed primarily at improving bicycle and pedestrian safety and accessibility. Pedestrian and bicycle facilities would be designed and constructed in compliance with applicable safety regulations, such as the California Manual of Uniform Traffic Control Devices (Caltrans 2014). Transit projects included under the proposed 2022 RTP/SCS would construct new rail bridges; extend operational service to Modesto, Ceres, Merced, and Turlock; bolster the existing operational network with added track lengths; improve transit centers; and improve transit facility amenities. Such projects would result in increased transit ridership and improved rider experiences. Therefore, the proposed 2022 RTP/SCS would be consistent with individual jurisdiction General Plans and Non-Motorized Transportation Plans, as well as the goals and objectives included in the 2018 RTP/SCS and the proposed 2022 RTP/SCS.

Since the proposed 2022 RTP/SCS would result in additional and improved facilities to accommodate pedestrian, bicycle, and transit travel modes, there would not be substantial disruption of bicycle, pedestrian, and transit facilities. In addition, the proposed 2022 RTP/SCS would result in roadway capacity increases, congestion relief, safety improvements, and overall circulation improvements. Therefore, the proposed 2022 RTP/SCS would not conflict with a

program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities. This impact would be less than significant.

Mitigation Measures

No mitigation measures are required.

Threshold 2: The project would conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b), specifically resulting in

a. An overall increase in total regional VMT above baseline (2020) conditions would be considered a significant impact;

b. A change in VMT per capita in the region that fails to reach 16 percent below baseline (2020) VMT per capita conditions would be considered a significant impact; or

c. A substantial increase in induced travel due to roadway capacity expansions would be considered a significant impact.

Impact T-2 THE PROPOSED 2022 WOULD RESULT IN AN OVERALL INCREASE IN REGIONAL VMT ABOVE BASELINE (2020) CONDITIONS. THE PROPOSED 2022 RTP/SCS WOULD RESULT IN A SMALL DECREASE IN VMT PER CAPITA BELOW THE BASELINE (2020) CONDITIONS. REGIONAL VMT AND VMT PER CAPITA IMPACTS FROM IMPLEMENTATION OF THE PROPOSED 2022 RTP/SCS WOULD BE SIGNIFICANT AND UNAVOIDABLE. THE INDUCED TRAVEL IMPACT AT THE REGIONAL LEVEL WOULD BE LESS THAN SIGNIFICANT.

Table 4.15-4, below, compares the total daily regional VMT and VMT per capita for baseline conditions in 2020 and for anticipated 2035 and 2046 conditions with implementation of the proposed StanCOG 2022 RTP/SCS on all roadways for the StanCOG region as a whole. The daily VMT and VMT per capita anticipated in 2035 and 2046 without implementation of the proposed 2022 RTP/SCS are also provided in Table 4.15-4 for informational and comparative purposes.

Overall Increase in Regional VMT

The StanCOG Model used to estimate VMT includes the regional transportation system elements shown in Table 4.15-4. Regional VMT data accounts for automobiles and light duty trucks, as well as all travel within the region, including trips that originate or end outside of the StanCOG region. An area's VMT per capita is the total VMT divided by the population of that area and is a measure of the average vehicle miles each person travels on a typical weekday.

Table 4.15-4 VMT Results Summary

Scenario	Regional VMT	VMT per Capita[1]
Baseline Conditions (2020)	9,159,585	16.34
2035 Conditions with proposed 2022 RTP/SCS	10,292,098	16.46
2035 Conditions without proposed 2022 RTP/SCS	10,477,444	16.76
2046 Conditions with proposed 2022 RTP/SCS	13,738,633	20.49
2046 Conditions without proposed 2022 RTP/SCS	14,055,777	20.97

Scenario	Regional VMT	VMT per Capita[1]

Source: StanCOG Model, Appendix M
[1] VMT per capita is based on a 2020 population size of 560,582 persons, a 2035 population size of 625,215 persons, and an interpolated 2046 population size of 670,411 persons (StanCOG 2021a)

As shown in Table 4.15-4, above, the proposed 2022 RTP/SCS is projected to increase the total regional VMT above 2020 baseline conditions. With implementation of the 2022 RTP/SCS, total daily regional VMT would increase by an estimated 1,132,513 miles in 2035 and 4,579,048 miles in 2046, which would be an approximately 12 percent increase from the baseline 2020 conditions for 2035 and an approximately 50 percent increase from the baseline 2020 conditions for 2046. Therefore, this impact would be significant for both 2035 and 2046.

For informational purposes, Table 4.15-4 shows that total regional VMT would also increase without implementation of the proposed 2022 RTP/SCS. Specifically, total daily regional VMT would increase by an estimated 1,287,859 miles for 2035 and 4,896,192 miles for 2046 without implementation of the proposed 2022 RTP/SCS, which would be an approximately 14 percent increase for 2035 and an approximately 53 percent increase for 2046 from the baseline 2020 conditions. This demonstrates that population growth in the StanCOG region would increase daily VMT, regardless of implementation of the proposed 2022 RTP/SCS, and that VMT in 2035 and 2046 with the proposed 2022 RTP/SCS would be approximately two percent lower than 2035 and 2046 conditions without implementation of the proposed 2022 RTP/SCS. Nevertheless, because total regional VMT would increase above baseline (2020) conditions, the impact is considered significant for both 2035 and 2046 conditions.

Per Capita Vehicle Miles Traveled

Table 4.15-4 shows that daily VMT per capita would increase from 16.34 to 16.46 miles by 2035 with implementation of the proposed 2022 RTP/SCS, an increase of approximately 0.73 percent. In addition, Table 4.15-4 shows that daily VMT per capita would increase from 16.34 to 20.49 miles by 2046 with implementation of the proposed 2022 RTP/SCS, an increase of approximately 25.40 percent. As such, the proposed 2022 RTP/SCS would fail to reach 15 percent below baseline (2020) VMT per capita conditions in 2035 and 2046. Therefore, this impact would be significant.

For informational purposes, Table 4.15-4 shows that without implementation of the proposed 2022 RTP/SCS, daily VMT per capita would increase from 16.34 to 16.76 miles by 2035 and from 16.34 miles to 20.97 by 2046. This would be an increase of approximately 2.57 percent for 2035 and approximately 28.34 percent for 2046. As such, VMT per capita in 2035 and 2046 with the proposed 2022 RTP/SCS would be lower than 2035 and 2046 conditions without implementation of the proposed 2022 RTP/SCS. Nevertheless, because VMT per capita for 2035 and 2046 would fail to reach 15 percent below baseline (2020) conditions, the impact is considered significant for both 2035 and 2046 conditions.

Induced Travel

It should be noted that although this is a program-level analysis, and not project specific, some of the proposed 2022 RTP/SCS projects include expanding the capacity of State highways in the region. Such projects include the construction of a two-lane expressway and a four-lane freeway along SR-132 in Modesto, adding additional travel lanes to SR-219 and segments of SR-99 in unincorporated Stanislaus County, and adding additional travel lanes to other county and locally maintained roads in Ceres, Modesto, Oakdale, Patterson, Riverbank, and unincorporated areas of Stanislaus County.

Numerous studies and research suggest that an expansion of highway capacity may induce travel (OPR 2018) According to OPR, the initial reduction in traffic congestion and travel times from increased capacity is attractive to travelers, resulting in more trips on the facility and increasing the total daily VMT.

Regarding land use changes, the proposed 2022 RTP/SCS coordinates land use and transportation projects through the 2046 horizon year. The SCS identifies a land use strategy that supports the objectives of SB 375 to achieve, among other things: increased roadway optimization, increased modes of travel other than single occupancy automobiles, increased access to jobs and amenities, minimized increases in VMT, and reduced GHG emissions. Among the strategies to meet these goals is a mix of land uses balanced to minimize VMT and maximize the ability for residents and visitors of the region to conduct everyday activities without the need to travel by car. As a consequence, the transportation system performance results discussed in the EIR's transportation impact analysis capture the effects of land use changes on overall travel demand in the region.

Given the rural nature of the StanCOG region, the induced vehicle travel effects of roadway expansion projects are anticipated to be substantially dampened. Although the StanCOG Model does not specifically evaluate long-term induced demand effects as described in the previous section, these effects may be negligible at the regional level compared to the overall amount of travel. However, in order to address specific CARB requirements, an induced demand analysis consistent with stated CARB requirements was undertaken. Given the many limitations of this analysis, the additional VMT identified during the course of this analysis should be considered a worst-case scenario and is included strictly for the purpose of demonstrating SB 375 target compliance under those conditions. Note that, based on these considerations, the analysis of induced demand described below was limited to SB 375 analysis requirements within the RTP/SCS and SB 743 analysis requirements within this EIR. Based on the analysis, as shown in Table 4.15-5 below, the additional effect of induced demand adds an addition 234,325 VMT in 2035 and an addition 819,206 VMT in 2046.

Table 4.15-5 Induced Demand Effect on VMT

Scenario	2020	2035	2046
Base VMT			
No Project	9,159,585	10,243,119	13,236,571
Plus Project	9,159,585	10,057,773	12,919,427
Induced VMT			
No Project	0	234,325	819,206
Plus Project	0	234,325	819,206
Total VMT			
No Project	9,159,585	10,477,444	14,055,777
Plus Project	9,159,585	10,292,098	13,738,633

Source: StanCOG Model, Appendix M

Based on the program level analysis of capacity-increasing roadway projects included in the proposed 2022 RTP/SCS, additional VMT resulting specifically from induced travel demand is

determined to be substantial based on CARB requirements, and the induced travel impact is considered significant in both 2035 and 2046

The following mitigation measures would reduce regional VMT and VMT per capita impacts.

Mitigation Measures

For transportation projects under their jurisdiction, StanCOG shall implement, and transportation project sponsor agencies can and should implement, the following mitigation measures developed for the proposed 2022 RTP/SCS where applicable for transportation projects. For land use projects under their jurisdiction, the County and incorporated cities in the StanCOG region can and should implement the following mitigation measures. Project specific environmental documents may adjust these mitigation measures as necessary to respond to site specific conditions.

T-2(a) Regional VMT Reduction Programs

Implementing agencies shall require implementation of VMT reduction strategies through TDM programs, impact fee programs, mitigation banks or exchange programs, in-lieu fee programs, and other land use project conditions that reduce VMT. Programs shall be designed to reduce VMT from existing land uses, where feasible, and from new discretionary residential or employment land use projects. The design of programs and project specific mitigation shall focus on VMT reduction strategies that increase travel choices and improve the comfort and convenience of sharing rides in private vehicles, using public transit, biking, or walking. Modifications may include but are not limited to:

- Provide car-sharing, vanpool, bike sharing, and ride-sharing programs
- Implement or provide access to commute reduction programs, such as the measures included in Rule 9410 adopted by the San Joaquin Valley Air Pollution Control District
- Provide a bus rapid transit system, such as the planned Modesto BRT
- Improve pedestrian or bicycle networks or transit service, such as the planned ACE Forward passenger rail service extension
- Provide transit passes
- Provide a van pool program, such as CalVans
- Encourage telecommute programs
- Incorporate affordable housing into the project
- Increase density
- Increase mixed uses within the project area
- Incorporate improved pedestrian connections within the project/neighborhood
- Incentivize development in low VMT communities
- Incentivize housing near commercial and offices
- Increase access to goods and services, such as groceries, schools, and daycare
- Incorporate neighborhood electric vehicle network and incentivize the installation of electric vehicle chargers in places such as shopping and employment centers
- Orient the project toward transit, bicycle, and pedestrian facilities
- Provide traffic calming
- Provide bicycle parking

- Limit parking
- Separate out parking costs
- Provide parking cash-out programs
- Provide incentives to purchase electric vehicles
- Construct intelligent transportation system management/intelligent transportation system (TSM/ITS) measures such as ramp metering, signalization of intersections, and changeable message signs
- Provide a VMT mitigation bank or exchange program

T-2(b) Project Level VMT Analysis and Reduction

Transportation project sponsor agencies shall evaluate transportation projects that involve increasing roadway capacity for their potential to increase VMT. Where project-level increases are found to be potentially significant, implementing agencies shall, or can and should, identify and implement measures that reduce VMT. Examples of measures that can reduce the VMT associated with increases in roadway capacity include tolling new lanes to encourage carpools and fund transit improvements; converting existing general-purpose lanes to high occupancy vehicle lanes; VMT banks; and implementing or funding offsite travel demand management.

Implementing agencies shall evaluate VMT as part of project specific CEQA review and discretionary approval decisions for land use projects. Where project level significant impacts are identified, implementing agencies shall identify and implement measures that reduce VMT. Examples of measures that reduce VMT include infill development, mixed use and transit-oriented development, TDM strategies, complete streets, reduced parking requirements, and providing alternative transportation facilities, such as bike lanes and transit stops.

IMPLEMENTING AGENCIES AND TIMING

Implementing agencies for transportation projects are StanCOG and transportation project sponsor agencies. Implementing agencies for land use projects are cities and counties. This mitigation measure shall, or can and should, be applied during project permitting and environmental review and implemented during project operation, as applicable.

Significance After Mitigation

If implementing agencies adopt and require the mitigation measures outlined above, impacts would be reduced because less VMT would be added to the StanCOG region. However, the implementation of project-level VMT-reducing measures, such as mixed uses, transit-oriented development, or participation in a VMT Mitigation Banks other fee-based VMT mitigation program may not be feasible or may not be able to fully mitigate an individual project's impact. Therefore, this impact would remain significant and unavoidable. No additional mitigation measures to reduce this impact to less than significant levels are feasible.

Threshold 3:	The Project would substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible use (e.g., farm equipment)

Impact T-3 TRANSPORTATION AND LAND USE PROJECTS IMPLEMENTED UNDER THE PROPOSED 2022 RTP/SCS WOULD NOT SUBSTANTIALLY INCREASE HAZARDS DUE TO GEOMETRIC DESIGN FEATURES OR INCOMPATIBLE USES. THIS IMPACT WOULD BE LESS THAN SIGNIFICANT.

The regional growth pattern of the proposed 2022 RTP/SCS does not define design level features of roadways. While the proposed 2022 RTP/SCS expands development and increases density in growth geographies, this growth would not impact geometric design features or roadway uses in a consistent way, as those design standards and uses are established and enforced at the local jurisdictional level. Specific transportation projects identified in the proposed 2022 RTP/SCS consist of widening existing roadways; constructing expressways and freeways; and installing medians, all of which would result in improved circulation and safety. Future transportation projects would also be subject to design guidelines established by the State or the local jurisdiction with authority over the project, including curve radii on curving road segments, maximum road grade/slope, and minimum separating distance between intersections and driveways.

Construction activities resulting from implementation of the proposed 2022 RTP/SCS would be short term, intermittent, and geographically dispersed. At the regional level, these disruptions would be localized, and impacts would be limited and would not represent a significant impact to the operations of the regional transportation system. At the local level, construction activities could increase travel on local roads and result in detours or increased congestion in certain locations. The actual construction details of land use development projects and proposed transportation projects are not known, because the projects are in the early stages of planning. Construction impacts would be evaluated at the project level as more information about the timing, design, scope, and construction program are available. Generally, construction activities for land use development and transportation projects would be required to be conducted in accordance with, and subject to review by, all applicable State and/or local jurisdictions with authority over the project; thus, ensuring projects would be designed to minimize the potential for hazardous conditions and to ensure safe travel by all modes.

Future transportation projects would be required to conform to the design standards of the public agency responsible for implementation, including safety standards. As such, the proposed 2022 RTP/SCS is would not negatively impact the design of transportation facilities by increasing hazards. Rather, investments would incentivize design improvements to make roadways safer. Therefore, the proposed 2022 RTP/SCS would not substantially increase hazards due to geometric design features or incompatible land uses, and the impact would be less than significant.

Similarly, the proposed StanCOG 2022 RTP/SCS would not adversely impact the compatible use of transportation facilities. Rather, investments would incentivize design improvements to make roadways safer. The SCS does not introduce new agricultural uses or other similar uses that would result in increased incompatible vehicle uses on roadways in the region, such as slow-moving farm equipment. In addition, specific transportation projects under the proposed 2022 RTP/SCS would be subject to and would follow the allowable uses established by the State or the local jurisdiction with authority over the project. Therefore, the proposed 2022 RTP/SCS would not substantially increase hazards due to incompatible uses.

Furthermore, the 2022 RTP/SCS does not include components that would result in changes in air traffic patterns that would result in substantial safety risks. To minimize any unanticipated safety risks, any development and subsequent planning decisions in proximity to airports would be subject to review under the State Aeronautics Act provided under Public Utilities Code §§ 21167 et seq. Specific projects that may affect navigable airspace are also subject to FAA review, as outlined under 14 CFR Parts 77.5, 77.7 and 77.9.

Overall, this impact would be less than significant.

Mitigation Measures

No mitigation measures are required.

Threshold 4: The Project would result in inadequate emergency access

Threshold 5: The Project would impair implementation or physically interfere with an adopted emergency response plan or emergency evacuation plan

Impact T-4 TRANSPORTATION AND LAND USE PROJECTS IMPLEMENTED UNDER THE PROPOSED 2022 RTP/SCS WOULD NOT RESULT IN INADEQUATE EMERGENCY VEHICLE ACCESS, NOR WOULD PROJECTS IMPLEMENTED UNDER THE PROPOSED 2022 RTP/SCS IMPAIR IMPLEMENTATION OR PHYSICALLY INTERFERE WITH AN ADOPTED EMERGENCY RESPONSE PLAN OR EMERGENCY EVACUATION PLAN. THIS IMPACT WOULD BE LESS THAN SIGNIFICANT.

Transportation infrastructure plays a key role in providing access to destinations during emergencies. These systems must be able to accommodate emergency response vehicles, personnel, and equipment. In the event of an emergency or disaster, the StanCOG region's roads and other transportation networks can determine the success or failure of the region during the emergency and in recovery. The proposed 2022 RTP/SCS would not implement specific design features or specifications for new project-level development or other transportation facilities. However, the specific projects and programs identified in the proposed 2022 RTP/SCS would entail upgrades and improvements to existing transportation infrastructure, resulting in increased roadway capacity, congestion relief, circulation improvements, and overall roadway safety improvements. As such, implementation of the proposed 2022 RTP/SCS would improve performance of the transportation system in the StanCOG region, which would improve emergency response and facilitate more effective emergency evacuation.

The actual design details of land use development projects and proposed transportation projects are not known, because the projects are in the early stages of planning. However, both Caltrans and local jurisdictions have design standards for new and existing development and roadways to ensure adequate passage of emergency vehicles. Standards include specifications related to clear width, effective turning radius and turnouts, curve radii on curving road segments, maximum road grade/slope, and minimum separating distance between intersections and driveways. Transportation projects would be subject to review with regard to emergency vehicle requirements by State and/or local jurisdictions with authority over the project as well as responsible emergency service agencies; thus, ensuring projects would be designed to meet all applicable emergency design standards.

Construction activities could temporarily impair emergency access points used for emergency vehicle access. However, standard construction procedures for development of a construction management plan would address these conditions and would require provision of alternative

emergency vehicle access points. Specifically, in accordance with Caltrans permitting requirements, a traffic control plan would be required that adheres to the standards set forth in the California Manual of Uniform Traffic Control Devices (Caltrans 2014). As part of these requirements, there are provisions for coordination with local emergency services, training for flagmen for emergency vehicles traveling through the work zone, temporary lane separators that have sloping sides to facilitate crossover by emergency vehicles, and vehicle storage and staging areas for emergency vehicles. The Caltrans requirements also provide for construction work during off-peak hours and flaggers and include provisions for "Detour for Bike Lanes on Roads with Closure of One Travel Direction." Measures similar to Caltrans requirements are typically applied to local projects, such as requiring at least two points of ingress/egress to residential developments for emergency access.

In addition, while implementation of proposed 2022 RTP/SCS's land use scenario and transportation projects could temporarily impede emergency access at project locations during construction periods, construction projects would conform to State, regional, and local regulations requiring maintenance of emergency access during construction. Based on the above analysis, the impacts of the proposed 2022 RTP/SCS on emergency vehicle access and on interference with an adopted emergency response plan or emergency evacuation plan would be less than significant.

Mitigation Measures

No mitigation measures are required.

c. Specific Proposed 2022 RTP/SCS Projects That May Result in Impacts

The analysis within this section discusses the transportation impacts associated with the transportation improvement projects included in the proposed 2022 RTP/SCS. The projects within the proposed 2022 RTP/SCS are evaluated herein in their entirety and are intended to improve circulation rather than cause adverse impacts. However, as described above, the proposed 2022 RTP/SCS would increase baseline 2020 regional VMT by approximately 1,132,513 miles in 2035 and 4,579,048 miles in 2046, which would be an approximately 12 percent increase from the baseline 2020 conditions for 2035 and an approximately 50 percent increase from the baseline 2020 conditions for 2046. This effect has been found to be a significant and unavoidable impact, as described above. The StanCOG Model used for this analysis does not have the capability to distinguish which project or projects would specifically result in increased regional VMT. However, any number of the proposed 2022 RTP/SCS projects that expand roadway capacity or improve traffic flow and circulation could presumably increase VMT. Thus, there are no specific transportation projects that can be listed in this section related to the adverse impacts of increased regional VMT in the StanCOG region.

4.15.4 Cumulative Impacts

The cumulative impacts analysis area for transportation consists of the StanCOG region and the seven adjoining counties. Movement within, through, and beyond the StanCOG region is necessary for commuters, personal travel, and goods movement. Thus, it is important to consider both the StanCOG region as well as the connection with the adjoining counties.

The federal, State, and regional laws, regulations, and policies outlined in Section 4.15.2, *Regulatory Setting,* apply to surrounding counties in the same manner as they apply to projects within the StanCOG region, thereby avoiding the potential for cumulative conflict between the transportation planning for the StanCOG region and the surrounding counties. Therefore, the potential cumulative impacts resulting from the implementation of the proposed 2022 RTP/SCS related to conflict with

programs, plans, and ordinances or policies addressing the circulation system would be less than significant, and the proposed 2022 RTP/SCS contribution would not be cumulatively considerable.

Development in the cumulative impact analysis area would result in significant and unavoidable increase in regional VMT as well as daily VMT per capita from baseline (2020) conditions, partially due to commuters travelling to and from employment in the adjoining counties. However, the 2022 RTP/SCS is designed to maintain and foster the balance between jobs and housing within the StanCOG region and provides a strategy to allocate growth in such a way as to achieve a more balanced jobs/housing ratio and to optimize transportation investments that support those land uses.

As discussed above, implementation of the 2022 RTP/SCS would increase daily VMT by 1,132,513 miles in 2035 and 4,579,048 miles in 2046 compared to the baseline 2020 conditions, which would be an approximately 12 percent increase from the baseline 2020 conditions for 2035 and 50 percent increase from the baseline 2020 conditions for 2046. While the majority of the VMT would be expected to remain within the StanCOG region, some portion of the VMT would inevitably extend to areas within the adjoining counties. The most reasonable assumption is that VMT to adjoining counties would be concentrated to the most heavily traveled roadways in the counties with the highest relative employment, such as I-5 and SR-99 into San Joaquin and Merced counties, SR-132 into Mariposa County, and SR-120 into Santa Clara County. The increased VMT in adjoining county areas would be in addition to the VMT generated from the increased population growth of such counties into the future. Per capita VMT in the cumulative impact area would be unlikely to reach 15 percent below the baseline VMT per capita by 2035 or 2046 due to increased VMT in the region, both with without implementation of the proposed 2022 RTP/SCS. The implementation of project-level VMT-reducing measures, such as mixed uses and transit-oriented development, may not be feasible and cannot be guaranteed on a project-by-project basis. Regional VMT reduction programs, such as VMT banks, may also not be feasible as there are no procedures or policies in place to establish such programs. Thus, cumulative impacts on VMT would be significant, the proposed 2022 RTP/SCS contribution to cumulative VMT impacts would be cumulatively considerable, and this contribution would remain cumulatively considerable post-mitigation.

Some types of transportation impacts are related to site- and project-specific characteristics and conditions and would not be significantly affected by other development outside of the StanCOG region. As discussed in Impacts T-3 and T-4, there are existing federal, State, and local regulations that govern transportation hazards and emergency access associated with development and infrastructure projects. Regulations and oversight, as outlined in the impact analysis above, would effectively reduce the potential for individual projects to create a transportation hazards or emergency access impact within the StanCOG region and surrounding counties. Thus, cumulative impacts related to the transportation hazards and emergency access would not be significant and the proposed 2022 RTP/SCS contribution would not be cumulatively considerable.

4.16 Tribal Cultural Resources

This section evaluates effects on tribal cultural resources in the StanCOG region that would result from implementation of the proposed 2022 RTP/SCS.

4.16.1 Setting

a. Ethnographic Context

Prior to Euro-American settlement, the StanCOG region was primarily inhabited the Northern Valley Yokuts; however, the county partially overlaps the ancestral territory of two other aboriginal California Native American groups as well: the Plains Miwok and Ohlone (or Costanoan).

Northern Valley Yokut

Most of the StanCOG region is located in an area historically occupied by the Penutian-speaking Yokuts (Kroeber 1925, Wallace 1978, Latta 1999). Three geographical divisions of the Yokuts are the Northern Valley, Southern Valley, and Foothill Yokuts. The distinction between the three groups is primarily based on language dialect (Mithun 2001).

The Yokuts established large permanent village settlements, or closely associated smaller settlements, such as the Tulamniu village. Residential structures were most often of two types: single-family dwellings and larger communal residences that housed ten families or more. Villages frequently included mat-covered granaries and a sweathouse (Mithun 2001; Sutton et al. 2016).

The basic economic unit among the Yokuts was the nuclear family. The nuclear family was linked to totemic lineages based on patrilineal descent. Totem symbols were passed from father to offspring. Families that shared the same totem formed an exogamous lineage. Totems were associated with one of two moieties. This moiety division played a role during ceremonies and other social events (Wallace 1978).

Yokuts were split into self-governing local groups that included several villages. Each group had a chief who directed ceremonies, mediated disputes, handled punishment of those doing wrong, hosted visitors, and provided aid to the impoverished. In certain cases, settlements had two chiefs, one for each moiety. Other political positions included the chief's messenger and the spokesman (Wallace 1978).

Shamans were an important part of Yokut village life. A Yokut Shaman gained power through a dream or vision. If, after this vision, the man accepted the role as shaman, he would pray, fast, and acquire talismans to aid him in his future work. Shamans had the ability to heal the sick and served a primary role in religious life (Wallace 1978).

Yokuts subsistence strategy was based on a mixed economy focused on fishing, collecting, and hunting small game. Fishermen employed tule rafts and caught fish with nets, spears, basket traps, and bow and arrow. They often gathered mussels and hunted turtles in lakes, rivers, and streams. Wild seeds and roots contributed a large portion to the Yokuts diet. Tule roots were gathered, dried, and pounded into a flour which was prepared as a mush. Tule seeds and grass and flowering herb seeds were prepared in the same way. Leaves and stems of certain plants, such as clover and fiddle-neck, were also collected. Acorns, a staple of most California Native Americans, were not readily available in the ethnographic territory of the Yokuts. Some Yokuts tribes traded for acorns with neighboring groups, such as the Salinan and Chumash to the west, the Foothill Yokuts to the east,

and the Kawaiisu and Kitanemuk to the southeast (Kroeber 1925). Waterfowl was frequently hunted with snares, nets, and bow and arrow. Land mammals and birds contributed a smaller part of the Yokuts diet. Small game was occasionally taken in snares or traps or shot with bows and arrows (Wallace 1978; Sutton et al. 2016).

Yokuts technology depended primarily on tule. Stems of the plant served as the raw material for baskets, cradles, boats, housing, and many other items. Manos and metate were used to process food and animal hides (Sutton et al. 2016). Tools such as knives, projectile points, and scraping tools were made from imported lithic materials because stone was not readily available in the Central Valley. Some tools, such as bead drills, could be made from local obsidian (Sutton et al. 2016). Marine shells secured through trade with coastal groups were used as shell money and personal adornment items, such as Olivella beads (Sutton et al. 2016; Wallace 1978).

Plains Miwok

The eastern edge of Stanislaus County overlaps the traditional tribal territory of the Plains Miwok, members of the larger Miwokan subgroup of the Utian language family inhabiting an area along the lower reaches of the Mokelumne and Cosumnes rivers and both banks of the Sacramento River roughly from Rio Vista north to Freeport (Levy 1977). Plains Miwok subsistence practices centered on the use of acorns and of seeds as primary plant food sources and on hunting of mule deer, tule elk, pronghorn antelope, and various species of waterfowl. Hunting was typically done with a sinew-backed bow and arrow. Fishing was a particularly important activity for the Plains Miwok, primarily with various types of nets. Seines were used in large rivers and sloughs where the pace of water flow was slow. Hook and line was typically used to take sturgeon, while harpoons were the most common implement for salmon fishing (Levy 1977).

The Plains Miwok made both twined and coiled basketry, usually from willow and redbud. They also manufactured tule mats used as floor covering. Woven blankets were often made of rabbit skin strips or feathers attached to cordage woven from plant fibers. Tule balsa rafts were crafted and used to navigate rivers and sloughs (Levy 1977).

Plains Miwok settlements typically included thatched, conical houses and semisubterranean earth-covered dwellings in winter, constructed by higher-status families. Houses generally had a central hearth and an earth oven for cooking purposes. Large, semisubterranean assembly houses were constructed for use as a ritual and social gathering place. In summer, a circular brush hut was constructed for use in mourning ceremonies. Other structures included sweathouses for curing disease and purification prior to hunting, small conical structures used by menstruating women, and grinding houses built over bedrock mortars to permit food processing in inclement weather. Acorn granaries were constructed for long-term acorn storage (Levy 1977).

Political organization centered on small tribelets of approximately 300 to 500 people and several distinct settlements. Each tribelet was headed by a chief, and each settlement had a representative of the chief overseeing local affairs. Chiefs acted as advisors and managed use of natural resources by preventing trespassing on tribelet territory and determining the appropriate time to begin acorn harvest each season. The chief also arbitrated any disputes and sanctioned the punishment of criminal offenders.

Miwok social organization followed the moiety pattern, with all living things belonging to one of two categories: land and water. Moieties were typically exogamous and played an important role in many ceremonies (Levy 1977).

Ohlone (Costanoan)

The far western portion of Stanislaus County partially overlaps an area traditionally occupied by the Ohlone (or Costanoan) people. Ohlone territory extends along the California coast from the point where the San Joaquin and Sacramento Rivers merge into the San Francisco Bay to Point Sur. Their inland boundary was limited to the interior Coast Ranges (Kroeber 1925:462). The Ohlone language belongs to the Penutian family, with several distinct dialects throughout the region (Kroeber 1925:462). It is divided into eight regional dialects: Karkin, Chochenyo, Ramaytush, Awaswas, Taymen, Mutsun, Rumsen, and Chalon (Jones 2015)

The pre-contact Ohlone were semi-sedentary, with a settlement system characterized by base camps and seasonal reserve camps composed of tule reed houses with thatched roofs made of matted grass (Schick 1994; Skowronek 1998). Just outside base camps, large sweat houses were built into the ground near stream banks used for spiritual ceremonies and possibly hygiene (Schick 1994, Jones 2015). Villages were divided into small polities, each of which was governed by a chief responsible for settling disputes, acting as a war leader during times of conflict, and supervising economic and ceremonial activities (Skowronek 1998; Kroeber 1925:468). Social organization appeared flexible to ethnographers and any sort of social hierarchy was not apparent to mission priests (Skowronek 1998).

Archaeological investigations inform Ohlone mortuary rituals. Cemeteries were set away from villages and visited during the annual Mourning Anniversary (Leventhal and DiGiuseppe 2009). Ceremonial human grave offerings might include Olivella beads, as well as tools like drills, mortars, pestles, hammerstones, bone awls, and utilized flakes (Leventhal and DiGiuseppe 2009). Ohlone mythology included animal characterization and animism, which was the basis for several creation narratives. Ritually burying of animals, such as a wolf, squirrel, deer, mountain lion, gray fox, elk, badger, grizzly bear, blue goose, and bat ray, was commonly practiced. Similar to human burials, ceremonial offerings were added to ritual animal graves like shell beads, ornaments, and exotic goods (Kroeber 1925; Field and Leventhal 2003; Jones 2010).

Ohlone subsistence strategies were based on hunting, gathering, and fishing (Kroeber 1925:467, Skowronek 1998). Larger animals, like bears, might be avoided, but smaller game was hunted and snared on a regular basis (Schick 1944:17). Like the rest of California, the acorn was an important staple and was prepared by leaching acorn meal in openwork baskets and in holes dug into the sand (Kroeber 1925:467). The Ohlone also practiced controlled burning to facilitate plant growth (Kroeber 1925:467, Skowronek 1998). During specific seasons or in times of drought, the reserve camps would be utilized for gathering seasonal food and accessing food storage (Schick 1994). Fishing would be done with nets and gorge hooks out of tule reed canoes (Schick 1994:16-17). Mussels were a particularly important food resource. Sea mammals such as sea lions and seals were hunted and beached whales were exploited (Kroeber 1925:467).

Seven Franciscan missions were built within Ohlone territory in the late 1700s, and all members of the Ohlone group were eventually brought into the mission system (Kroeber 1925:462, Skowronek 1998). After the establishment of the missions, Ohlone population dwindled from roughly 10,000 people in 1770 to 1,300 by 1814 (Skowronek 1998). In 1973, the population of people with Ohlone descent was estimated at fewer than 300. The descendants of the Ohlone united in 1971 and have since arranged political and cultural organizations to revitalize aspects of their culture (Skowronek 1998).

4.16.2 Regulatory Setting

a. Federal Laws, Regulations, and Policies

Archaeological Resources Protection Act of 1979 (ARPA)

This regulation was enacted to protect archaeological resources and sites that are on public lands and tribal lands, to foster increased cooperation and exchange of information between government representatives, the professional archaeological community, and private individuals. Section 4 of the statute and Sections 16.5-16.12 of the uniform regulations describe the requirements that must be met before federal authorities can issue a permit to excavate or remove any archaeological resource on federal or tribal lands. The curation requirements of artifacts, other materials excavated or removed, and the records related to the artifacts and materials are described in Section 5 of the ARPA. This section also authorizes the Secretary of the Interior to issue regulations describing in more detail the requirements regarding these collections.

American Indian Religious Freedom Act of 1978

The American Indian Religious Freedom Act of 1978 (AIRFA) (42 U.S. Code Section 1996) pledges to protect and preserve the traditional religious rights of American Indians, Aleuts, Eskimos, and Native Hawaiians. It establishes a national policy that traditional Native American practices and beliefs, sites (and right of access to those sites), and the use of sacred objects shall be protected and preserved. If a place of religious importance to American Indians could be affected by a federal undertaking, AIRFA promotes consultation with Indian religious practitioners, which could be coordinated with Section 106 consultation. Amendments to Section 106 of the NHPA in 1992 strengthened the interface between AIRFA and the NHPA by clarifying the following: (1) properties of traditional religious and cultural importance to an Indian tribe or Native Hawaiian organization could be determined to be eligible for inclusion in the NRHP; and (2) in carrying out its responsibilities under Section 106, a federal agency shall consult with any Indian tribe or Native Hawaiian organization that attaches religious and cultural significance to properties described under (1).

Archeological Resources Protection Act of 1979

The Archeological Resources Protection Act of 1979 (ARPA) (43 CFR Section 7) establishes uniform definitions, standards, and procedures to be followed by all federal land managers in providing protection for archaeological resources located on public lands and Native American lands. Under ARPA, additional requirements could apply to agency action if federal or Indian lands are involved. ARPA (1) prohibits unauthorized excavation on federal and Indian lands, (2) establishes standards for permissible excavation, (3) prescribes civil and criminal penalties, (4) requires agencies to identify archeological sites, and (5) encourages cooperation between federal agencies and private individuals.

Native American Graves Protection and Repatriation Act of 1990

The intent of the Native American Graves Protection and Repatriation Act of 1990 (25 U.S. Code Section 3001) is to identify Native American affiliation or lineal descent and ensure the rightful disposition, or repatriation, of Native American human remains, funerary objects, sacred objects, and items of cultural patrimony that are in federal possession or control. The regulations implementing the requirements of Native American Graves Protection and Repatriation Act relating

to the inadvertent discovery of human remains and objects of cultural patrimony of Native American origin on federal or tribal lands are described in 43 CFR Section 10.4.

b. State Laws, Regulations, and Policies

Assembly Bill 52

California Assembly Bill 52 of 2014 (AB 52) expanded CEQA by defining a new resource category, "tribal cultural resources." AB 52 establishes that "a project with an effect that may cause a substantial adverse change in the significance of a tribal cultural resource is a project that may have a significant effect on the environment" (Public Resources Code [PRC] Section 21084.2). AB 52 further states when feasible, the lead agency shall establish measures to avoid impacts that would alter the significant characteristics of a tribal cultural resource (PRC Section 21084.3). PRC Section 21074 (a)(1)(A) and (B) defines tribal cultural resources as "sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a California Native American tribe," and meets either of the following criteria:

a. Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in PRC Section 5020.1(k).
b. A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of PRC Section 5024.1. In applying the criteria set forth in subdivision (c) of PRC Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.

AB 52 also establishes a formal consultation process for California tribes regarding those resources. The consultation process must be completed before a CEQA document can be certified or adopted. AB 52 requires that lead agencies "begin consultation with a California Native American tribe that is traditionally and culturally affiliated with the geographic area of the proposed project." Native American tribes to be included in the process are those that have requested notice of projects proposed in the jurisdiction of the lead agency.

AB 52 (PRC Section 21084.3(b)) describes mitigation measures that may avoid or minimize the significant adverse impacts to TCRs. Examples include:

1. Avoiding and preserving the resources in place, including, but not limited to, planning and constructing to avoid the resources and protect the cultural and natural context, or planning greenspace, parks, or other open space, to incorporate the resources with culturally appropriate protection and management criteria
2. Treating the resource with culturally appropriate dignity, taking into account the tribal cultural values and meaning of the resource, including, but not limited to, the following:
    a. protecting the cultural character and integrity of the resource
    b. protecting the traditional use of the resource
    c. protecting the confidentiality of the resource
3. Establishing permanent conservation easements or other interests in real property, with culturally appropriate management criteria for the purposes of preserving or utilizing the resources or places
4. Protecting the resource

In accordance with the requirements of AB 52, StanCOG conducted AB 52 consultation as the lead agency for implementation of the 2022 RTP/SCS. StanCOG sent letters on June 25, 2021 to eleven Native American organizations (Buena Vista Rancheria of Me-Wuk Indians, Chicken Ranch Rancheria of Me-Wuk Indians, Guidiville Indian Rancheria, Muwekma Ohlone Tribe of the SF Bay Area, Nashville Enterprise Miwok-Maidu-Nishinam Tribe, Northern Valley Yokuts Tribe, Wuksache Indian Tribe/Eshom Valley Band, Tule River Indian Tribe, United Auburn Indian Community of the Auburn Rancheria, Wilton Rancheria, and The Confederated Villages of Lisjan) who had previously requested formal notice to consult. No responses have been received as of the date of this EIR. StanCOG has met their obligations under AB 52 and tribal consultation has been closed. Consultation did not result in identification of any tribal cultural resources.

4.16.3 Impact Analysis

a. Methodology and Significance Thresholds

In accordance with the requirements of AB 52, StanCOG conducted AB 52 consultation for the 2022 RTP/SCS, which consisted of written communication with the: Buena Vista Rancheria of Me-Wuk Indians, Chicken Ranch Rancheria of Me-Wuk Indians, Guidiville Indian Rancheria, Muwekma Ohlone Tribe of the SF Bay Area, Nashville Enterprise Miwok-Maidu-Nishinam Tribe, Northern Valley Yokuts Tribe, Wuksache Indian Tribe/Eshom Valley Band, Tule River Indian Tribe, United Auburn Indian Community of the Auburn Rancheria, Wilton Rancheria, and The Confederated Villages of Lisjan. No response was received. Therefore, AB 52 consultation has concluded.

Appendix G of the State CEQA Guidelines identifies the following criteria for determining whether a project's impacts would have a significant impact to tribal cultural resources:

1. Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:
    a. Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k), or
    b. A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resource Code section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.

b. Project Impacts and Mitigation Measures

The following section discusses potential impacts and mitigation measures that may be associated with transportation projects and the land use scenario contained within the proposed 2022 RTP/SCS. Section 4.16.3.c summarizes the impacts associated with capital improvement projects in the proposed 2022 RTP/SCS. Due to the programmatic nature of the proposed 2022 RTP/SCS, a precise, project-level analysis of the specific impacts associated with individual transportation and land use projects is not possible at this time. In general, however, implementation of proposed transportation improvement projects and future projects under the land use scenario envisioned by the proposed 2022 RTP/SCS could result in the impacts as described in the following section.

Threshold 1:	Cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is: a. Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k), or b. A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resource Code section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.

Impact TCR-1 TRANSPORTATION PROJECTS AND THE LAND USE SCENARIO ENVISIONED IN THE PROPOSED 2022 RTP/SCS WOULD CAUSE A SUBSTANTIAL ADVERSE CHANGE IN THE SIGNIFICANCE OF A TRIBAL CULTURAL RESOURCE. THIS IMPACT WOULD BE SIGNIFICANT AND UNAVOIDABLE.

As stated above, AB 52 consultation did not result in identification of any tribal cultural resources. However, it is possible that Native American burial sites, village or occupation sites, traditional resource gathering locations, and natural landforms of importance to the local tribes could exist in the StanCOG region. Therefore, tribal cultural resources could be encountered during implementation of the transportation improvement projects included in the 2022 RTP/SCS and the land use scenario envisioned by the 2022 RTP/SCS. Effects on tribal cultural resources are highly dependent on the individual project site conditions and the characteristics of a project. Impacts to tribal cultural resources may include damage or destruction of the resources. Adherence to the requirements of AB 52 encourages tribal consultation with local Native Americans and requires the identification of project-specific substantial adverse effects on tribal cultural resources and appropriate project-specific mitigation measures. If the transportation project sponsor agencies determine that a specific transportation or land use project could cause a substantial adverse change in the significance of a tribal cultural resource, the impact would be significant.

Mitigation Measures

For transportation projects under their jurisdiction, StanCOG shall implement, and transportation project sponsor agencies can and should implement Mitigation Measure TCR-1 below and Mitigation Measures CR-2(b) where applicable for projects implementing the proposed 2022 RTP/SCS with the potential to impact tribal cultural resources. Cities in the StanCOG region and the County can and should implement these measures, where relevant to land use projects implementing the 2022 RTP/SCS. Project specific environmental documents may adjust these mitigation measures as necessary to respond to site specific conditions.

TCR-1(a) Identified Tribal Cultural Resources Impact Minimization

Transportation project sponsor agencies shall comply with AB 52, which may require formal tribal consultation. If the implementing agency determines that a project may cause a substantial adverse change to a tribal cultural resource, they shall implement mitigation measures identified in the consultation process required under PRC Section 21080.3.2, or shall implement the following measures where feasible to avoid or minimize the project-specific significant adverse impacts:

- Avoidance and preservation of the resources in place, including, but not limited to: designing and building the project to avoid the resources and protect the cultural and natural context, or planning greenspace, parks, or other open space to incorporate the resources with culturally appropriate protection and management criteria.
- Treating the resource with culturally appropriate dignity, taking into account the tribal cultural values and meaning of the resource, including, but not limited to, the following:
  - Protecting the cultural character and integrity of the resource
  - Protecting the traditional use of the resource
  - Protecting the confidentiality of the resource
- Establishment of permanent conservation easements or other culturally appropriate property management criteria for the purposes of preserving or utilizing the resources or places.
- Native American monitoring by the appropriate tribe during soil disturbance for all projects in areas identified as sensitive for potential tribal cultural resources and/or in the vicinity (within 100 feet) of known tribal cultural resources.

IMPLEMENTING AGENCIES AND TIMING

Implementing agencies for transportation projects are StanCOG and transportation project sponsor agencies. Implementing agencies for land use projects are cities and the County. This mitigation measure shall, or can and should, be applied during permitting and environmental review and implemented during construction where appropriate.

Significance After Mitigation

Mitigation Measure TCR-1(a) would require implementation of mitigation identified through tribal consultation or other feasible mitigation to avoid impacts to identified tribal cultural resources. This measure would protect the resource's character, traditional use, and confidentiality. Mitigation Measure TCR-1(b) would ensure that impacts to unanticipated tribal cultural resources activities would be mitigated in consultation with tribal representatives. Implementation of the above measures would reduce impacts to tribal cultural resources. However, it cannot be guaranteed that all future project-level impacts can be mitigated and as such, impacts would be significant and unavoidable.

a. Specific RTP/SCS Projects that May Result in Impacts

All 2022 RTP/SCS projects that require construction may result in impacts to tribal cultural resources and, therefore, are not specifically identified in table format below. All 2022 RTP/SCS transportation projects are referenced in Section 2, *Project Description*. Additional analyses and AB 52 consultation with local tribes would be needed as the individual projects are implemented to determine the project-specific impact. The mitigation measures discussed above and potentially others requested by tribal representatives on a project-by-project basis would apply to these specific projects.

4.16.4 Cumulative Impacts

The cumulative impact analysis area for tribal cultural resources consists of the StanCOG region and adjoining counties. Information regarding these adjoining counties can be found in Section 3.1, *Environmental Setting*. Tribal cultural resources are regionally specific and determined by the local tribes. However, development in the cumulative impact analysis area would increasingly extend into

previously undeveloped areas. The StanCOG region would continue to develop under the SCS and could result in expansion of urban areas into undeveloped land and that development could encourage development in adjoining counties that have the potential to impact tribal cultural resources near or bordering the StanCOG region that could have an impact on tribal cultural resource in the StanCOG region by impacting the serenity of the tribal site or views from the resource, or projects in the StanCOG region having a similar impact to tribal cultural resources in any of the adjacent counties. The increase in growth in previously undisturbed areas would contribute to regional impacts on tribal cultural resources. Cumulative impacts would be significant.

Development in the StanCOG area would increase under the 2022 RTP/SCS by increasing mobility and growth. The increase in growth in previously undisturbed areas contributes to regional impacts on tribal cultural resources. If there may be tribal cultural resources at the location of a project site, tribal consultation in accordance with AB 52 would help ensure protection of tribal cultural resources. However, tribal territory often crosses the boundaries of multiple jurisdictions within and outside of the StanCOG region, and there could be several minor impacts to tribal cultural resources that together would result in a significant cumulative impact. The cumulative impact would be significant, and the overall contribution of the 222 RTP/SCS to significant cumulative tribal cultural resources impacts, despite implementation of Mitigation Measures CR-2(b) and TCR-1(b), would be cumulatively considerable.

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4.17 Wildfire

This section evaluates impacts on wildfire from implementation of the proposed 2022 RTP/SCS.

4.17.1 Setting

In California, responsibility for wildfire prevention and suppression is shared by federal, State, and local agencies. Federal agencies are responsible for federal lands in Federal Responsibility Areas. California has determined that some non-federal lands in unincorporated areas with watershed value are of statewide interest and have classified those lands as State Responsibility Areas (SRA), which are managed by the California Department of Forestry and Fire Protection (CAL FIRE). All incorporated areas and other unincorporated lands are classified as Local Responsibility Areas (LRA).

a. Wildfire Behavior and Controlling Factors

Human influence on wildfire includes direct influences, such as the ignition and suppression of fires, and indirect influence through climate change, the alteration of native vegetation, fire suppression, and development patterns. Human-induced wildfire ignitions can change fire regime characteristics in two ways: (1) changing the distribution and density of ignitions and (2) changing the seasonality of burning activity. Human-induced ignition sources include escapes from debris and brush-clearing fires, electrical equipment malfunctions, campfires, smoking, fire play (e.g., fireworks), vehicles, and arson. Consequently, areas near human development more frequently experience fires than very remote or urban areas. Figure 4.17-1 displays the Fire Hazard Severity Zones (FHSZ) in the StanCOG region.

Once a fire is started, the spread and behavior of a fire become a function of fuel characteristics, terrain, and weather conditions. People have intervened deliberately and dramatically in the natural fire regime through fire suppression and, more recently, actions that affect fuel connectivity. Historically, fire suppression was used to prevent and limit wildfires. Over time, this land management practice (combined with forest regrowth after extensive logging in the late 19th century) has led to a buildup of forest fuels and an increase in the occurrence and threat of large, severe fires. Contemporary fire management practices include fuel management activities that are intended to reduce the intensity and severity of wildfires. Reducing fuels through mechanical treatments and prescribed fire have been found to be effective at reducing fire frequency, fire severity, and annual area burned when applied at the landscape scale over an extended period of time.

Wildfire activity is closely related to temperature and drought conditions, and in recent decades, increasing drought frequency and warming temperatures have resulted in increased fire activity and the largest, most destructive, and deadliest wildfires in California history. Climate change will continue to produce conditions that facilitate a longer fire season, which, when coupled with human-caused changes in the seasonality of ignition sources, will produce more, longer, and bigger fires during more times of the year. According to California's Fourth Climate Change Assessment, Statewide Summary Report (OPR 2018), if greenhouse gas emissions continue to rise, the frequency of extreme wildfires burning over 25,000 acres could increase by 50 percent by 2100, and the average area burned Statewide could increase by 77 percent by the end of the century.

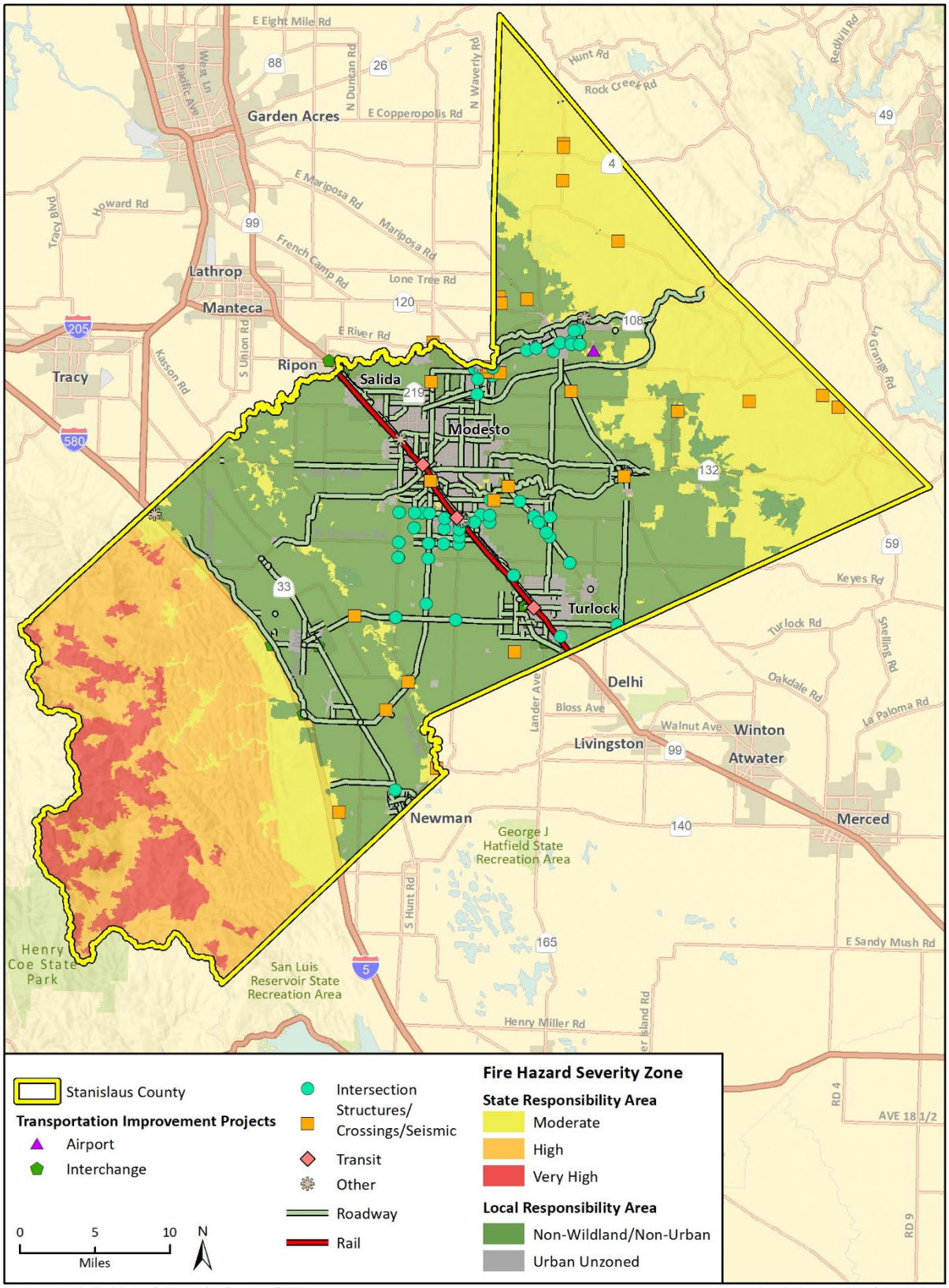
b. California Wildfire Hazards

While all of California is subject to some degree of wildfire hazard, there are specific features that make certain areas more hazardous. CAL FIRE is required by law to map areas of significant fire hazards based on fuels, terrain, weather, and other relevant factors (Public Resources Code [PRC] 4201-4204 and California Government Code 51175-89). Factors that increase an area's susceptibility to fire hazards include slope, vegetation type, and condition and atmospheric conditions. CAL FIRE has identified two types of wildfire risk areas: 1) Wildland Areas That May Contain Substantial Forest Fire Risks and Hazards and 2) Very High Fire Hazard Severity Zones. The first hazard area corresponds with those lands designated as SRAs, as described above, and the second hazard area corresponds with areas designated as Local Responsibility Areas. Each risk area carries with it code requirements to reduce the potential risk of wildfires. Under state regulations, areas within very high fire hazard risk zones must comply with specific building and vegetation management requirements intended to reduce property damage and loss of life within these areas.

Based on the Fire Hazard Severity Zone Map for Stanislaus County, SRAs moderate hazard zones are present in the northeastern portions of the County and along the Interstate 5 (I-5) corridor. High to Very High Fire Hazard Severity Zones are present in SRAs in the western portions of the County (CAL FIRE 2007b). Moderate Fire Hazard Severity Zones have been mapped in Local Responsibility Areas in the County (CAL FIRE 2007a). The location of the 2022 RTP/SCS projects and mapped Fire Hazard Severity Zones in SRAs are shown in Figure 4.17-1.

Development that has spread into less densely populated, often hilly areas, has increased the number of people living in heavily vegetated areas that are prone to wildfire and more difficult to battle due to the hilly terrain. The area where wildlands meet urban development is referred to as the wildland-urban interface (WUI), where urban wildfires occur. The 2020 Santa Clara Unit (SCU) Lightning Complex Fire started in multiple locations throughout Santa Clara County, Alameda County, Contra Costa County, San Joaquin County, Merced, and Stanislaus County and is ranked as the fourth largest wildfire in California history (CAL FIRE 2022). The SCU Lightning Complex Fire resulted in 396,624 burned acres and destroyed 222 structures (CAL FIRE 2022) and is an example of the major losses that can result from a fire in the WUI.

Figure 4.17-1 StanCOG Region Fire Hazards Severity Zone Map



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Additional data provided by Stanislaus County and CalFIRE, 2022.

4.17-1 StanCOG Region Fire Hazards Severity Zones

4.17.2 Regulatory Setting

a. Federal Laws, Regulations, and Policies

International Fire Code

The International Fire Code (IFC), created by the International Code Council (IFCC), is the primary means for authorizing and enforcing procedures and mechanisms to ensure the safe handling and storage of any substance that may pose a threat to public health and safety. The IFC regulates the use, handling, and storage requirements for hazardous materials at fixed facilities. The IFC and the International Building Code use a hazard classification system to determine what protective measures are required for fire and life safety. These measures may include construction standards, separations from property lines, and specialized equipment. To ensure that these safety measures are met, the IFC employs a permit system based on hazard classification. The IFC is updated every three years and is the basis for the California Fire Code (CFC) (also updated triennially). Local jurisdictions, including the StanCOG region cities, then adopt the CFC, in some cases with local amendments (IFCC 2021).

Federal Disaster Mitigation Act

The Disaster Mitigation Act of 2000 provided a new set of mitigation plan requirements that encourage state and local jurisdictions to coordinate disaster mitigation planning and implementation. States are encouraged to complete a “Standard” or an “Enhanced” Natural Mitigation Plan. “Enhanced” plans demonstrate increased coordination of mitigation activities at the state level and, if completed and approved, increase the amount of funding through the Hazard Mitigation Grant Program. The State of California Multi-Hazard Mitigation Plan (SHMP) complies with this act.

National Fire Plan

The U.S. Department of the Interior’s (DOI) National Fire Plan is intended to ensure an appropriate federal response to severe wildland fires, reduce fire impacts on rural communities, and ensure sufficient firefighting capacity in the future. The Rural Fire Assistance program is funded to enhance the fire protection capabilities of rural fire districts and safe and effective fire suppression in the wildland/urban interface. The program promotes close coordination among local, state, tribal, and federal firefighting resources by conducting training, equipment purchase, and prevention activities on a cost-shared basis (DOI 2000).

b. State Laws, Regulations, and Policies

2019 Strategic Plan for California

The 2019 Strategic Plan prepared by CAL FIRE and the California Natural Resources Agency lays out central goals for reducing and preventing the impacts of fire in the State. The goals are meant to establish, through local, State, federal, and private partnerships, a natural environment that is more resilient and human-made assets that are more resistant to the occurrence and effects of wildland fire (CAL FIRE 2019).

In addition to the 2019 Strategic Plan for California, individual CAL FIRE units develop fire plans, which are major strategic documents that establish a set of tools for each CAL FIRE unit for its local

area. Updated annually, unit fire plans identify wildfire protection areas, initial attack success, assets and infrastructure at risk, pre-fire management strategies, and accountability within their unit's geographical boundaries. The unit fire plan identifies strategic areas for pre-fire planning and fuel treatment as defined by the people who live and work locally. The plans include contributions from local collaborators and stakeholders and are aligned with other plans for the area.

California Building Code (2019)

Chapter 7A of the California Building Code (California Code of Regulations, Title 24, Part 2) includes specific requirements related to exterior wildfire exposure. These requirements establish minimum standards to protect buildings located in Fire Hazard Severity Zone within SRAs and Wildland-Urban Interface Fire Areas. This code includes provisions for ignition resistant construction standards for new buildings.

California Fire Code

The 2019 California Fire Code (California Code of Regulations, Title 24, Part 9) establishes the minimum requirements consistent with nationally recognized good practices to safeguard the public health, safety, and general welfare for the hazards of fire, explosion, or dangerous conditions in new and existing buildings, structures and premises, and to provide safety and assistance to firefighters and emergency responders during emergency operations. The provisions of this code apply to the construction, alteration, movement, enlargement, replacement, repair, equipment, use and occupancy, location, maintenance, removal, and demolition of buildings or structures or any appurtenances connected or attached to such building structures throughout California.

California Emergency Services Act

The California Governor's Office of Emergency Services (Cal OES) is responsible for overseeing and coordinating emergency preparedness, response, recovery, and homeland security activities within the California. Section 8687.7 of the California Disaster Assistance Act required the development of a Standard Emergency Management System (SEMS) program, for managing multiagency and multijurisdictional responses to emergencies in California. The Cal OES Emergency Management Systems Unit is a multi-agency group charged with methodical review, evaluation, and approval of needed improvements to SEMS. State agencies are required to use SEMS and local government entities must use SEMS in order to be eligible for any reimbursement of response-related costs under the State's disaster assistance programs.

Cal OES serves as the lead State agency for emergency management and coordinates the State response to major emergencies in support of local government. SEMS provides the mechanism by which local governments request assistance from Cal OES, and Cal OES maintains oversight of the State's mutual aid system.

California Multi-Hazard Mitigation Plan

The California Office of Emergency Services prepares the State Hazard Mitigation Plan (SHMP), which identifies hazard risks and includes a vulnerability analysis and a hazard mitigation strategy (Cal OES 2018). The SHMP is required under the Disaster Mitigation Act of 2000 for the State to receive federal funding. The Disaster Mitigation Act of 2000 requires a State mitigation plan as a condition of disaster assistance.

The SHMP represents the state's primary hazard mitigation guidance document - providing an updated analysis of the state's historical and current hazards, hazard mitigation goals and objectives, and hazard mitigation strategies and actions. The plan represents the state's overall commitment to supporting a comprehensive mitigation strategy to reduce or eliminate potential risks and impacts of disasters in order to promote faster recovery after disasters and, overall, a more resilient state. State Hazard Mitigation Plans are required to meet the Elements outlined in FEMA's State Mitigation Plan Review Guide (revised March 2015, effective March 2016).

Cal OES is responsible for the development and maintenance of the State's plan for hazard mitigation. The State's multi-hazard mitigation plan was last approved by the Federal Emergency Management Agency (FEMA) as an Enhanced State Mitigation Plan in 2018. The plan is designed to reduce the effects of disasters caused by natural, technological, accidental, and adversarial/human-caused hazards. The SHMP sets the mitigation priorities, strategies, and actions for the state. The plan also describes how risk assessment and mitigation strategy information is coordinated and linked from local mitigation plans into the SHMP and provides a resource for local planners of risk information that may affect their planning area. The State of California is required to review and revise its mitigation plan and resubmit for FEMA approval at least every five years to ensure continued funding eligibility for certain federal grant programs.

Senate Bill 1241 (Kehoe) of 2012

Senate Bill 1241 (Chapter 311, Statutes of 2012) requires cities and counties to address fire risk in SRAs and VHFHSZs in the safety element of their general plans. It also requires cities and counties to make certain findings regarding available fire protection and suppression services before approving a tentative subdivision map or parcel map.

Assembly Bill 3074 (Friedman) of 2020

Assembly Bill 3074 (Chapter 259, Statutes of 2020) imposes additional fuel reduction requirements on a person who owns, leases, controls, operates, maintains or builds an occupied dwelling or structure in, upon, or adjoining wild lands within a very high fire hazard severity zone.

SRA Fire Safe Regulations

The State Responsibility Area (SRA) Fire Safe Regulations CCR Title 14, Division 1.5, Section 1270 et seq. establishes CAL FIRE's basic wildland fire protection standards for new development and is applicable in all SRAs in California—areas where CAL FIRE is responsible for wildfire protection. Title 14 establishes minimum standards required for fire protection for emergency access, fuel modification (including a defensible space of 100 feet around structures), setback to property line, signage, and water supply. To comply with the standards, proposed development must include road and street networks that provide safe access for emergency wildland fire equipment and civilian evacuation concurrently. Newly constructed buildings and roads must post clearly visible signs, including names and contact numbers visible from the roadway. Emergency water for wildfire protection must be available and accessible in specified quantities. Finally, to reduce the intensity of a wildfire, strategic siting of fuel modification and greenbelts must meet specific requirements.

c. Local Laws, Regulations, and Policies

County of Stanislaus General Plan

The Stanislaus County Safety Element contains goals and policies with the specific intention of reducing the region's risk of fire hazards. It was adopted in 2016 and demonstrates the County's compliance with fire prevention and protection requirements outlined in State law (County of Stanislaus 2015). Urban fires are generally man-caused fires that can be mitigated through proper building code requirements, fire flow minimums and zoning or subdivision ordinance requirements. Wildland fires are generally limited to the foothills on either side of the County. Although there is less of a hazard to structures and people, controlling such fires is more difficult because of their inaccessibility. The following policies are taken from the safety element and implementation measures show fire's impact specifically but can be grouped with the County's response to other hazards.

City of Ceres General Plan

The City of Ceres's General Plan was adopted in 2018 with a Health and Safety Element that is geared towards providing residents protection from hazards. Its purpose is to identify the natural and man-made public health and safety hazards that exist within the city, and to establish preventative and responsive policies and programs to mitigate their potential impacts (City of Ceres 2018). The main fire threat in Ceres and its Planning Area is urban fire affecting structures and vegetation in areas already developed for urban and agricultural uses. Fire risk in the city is mitigated in a number of ways, including through the enforcement of updated fire codes and involvement of the Fire Department in the development review process. Ceres and the surrounding Planning Area are at very low risk for wildland fires, due to the lack of forest, brush, or grasslands in the vicinity. The Planning Area has minimal surface fuels due to the developed nature of the city and irrigated croplands, and therefore has a low fire hazard. Goal 5.K in the Health and Safety Element calls for preventing and minimizing the risk of loss of life, injury, and damage to property and natural resources resulting from fires.

City of Hughson General Plan

The City of Hughson adopted its General Plan and Public Services and Facilities Element in 2005 which lays out how the Hughson Fire Protection District is responsible for primary provision of fire service and emergency medical response for Hughson and its residents. The Hughson Fire Protection District has a mutual aid agreement with all neighboring fire protection service providers in the County. The Stanislaus Consolidated Fire Protection District also cooperates with the City to reduce the risk of fires in the area. The Stanislaus Consolidated Fire Protection District also is responsible for fire prevention programs and fire investigations.

City of Modesto General Plan

The City of Modesto's Safety Element was adopted in 2019 and provides fire and life safety protection to the community through control of hostile fire, fire prevention, emergency medical services, emergency preparedness, and mitigation of hazardous materials incidents (City of Modesto 2019). The Policy's adopted by Modesto include the following:

City of Newman General Plan

The Public Facilities and Services Element outlines how fire services protect the community and ensure emergency preparedness. The City of Newman is subject to a low risk of wildfires given that the great majority of the Planning Area that is not urbanized is devoted to agriculture. The City of Newman doesn't have any defined policies for addressing fires.

City of Oakdale General Plan

The General Plan's Community Services Element establishes requirements for the delivery of police and fire protection, within the City of Oakdale. The Community Services Element establishes goals and policies that minimize the risk of personal injury, loss of life, and property damage associated with wildfires. The following goals and policies from the City of Oakdale General Plan pertain to wildfire:

- Goal CS-2: Protection of life and property through adequate fire protection and emergency medical services.
- CS-2.14 Weed Abatement. Enforce the City's weed/hazard abatement program and other relevant codes and ordinances designed to abate fire hazards on private residential and non-residential uses and on City-owned properties.
- CS-2.15 Urban/Wildland Interface: Design and construct new development proposed within or adjacent to fire hazards zones, such as the Stanislaus River Corridor, to reduce exposure to fire hazards and facilitate fire suppression efforts in the event of a wildfire.
- CS-2.16 Wildland Fire Education. Educate the public about wildland fire prevention techniques such as site design, landscaping, and defensible space vegetation management practices to minimize potential wildland fire hazards.

City of Patterson General Plan

The City of Patterson adopted their General Plan in 2010. The City has adopted policies and actions within the Health and Safety Element which protects people and property from hazards associated with wildfire.

- Goal: To prevent loss of life, injury, and property damage due to wildland and structural fires, explosions and release of hazardous materials
- Emergency Response Goal HS-4: To ensure that City emergency response procedures are adequate in the event of natural or human-made disasters.

City of Riverbank General Plan

Riverbank's General Plan was adopted in 2005. The General Plan Safety Element contains the following goals and policies related to wildfire:

- Goal SAFE-1: Minimize the loss of life and damage to property natural and human-caused hazards
- Policy SAFE-1.4 The City will require setbacks, ignition resistant building materials, or other measures to reduce exposure to potential wildfires in areas designated for natural open space preservation, in coordination with California Department of Forestry and Fire Protection recommendations and Maintenance of Defensible Space Measures, as appropriate.
- Goal SAFE-2: Provide Adequate Access for Emergency Response

City of Turlock General Plan

The City of Turlock's General Plan Safety Element was adopted in 2012 provides fire and emergency response within the city limits. Areas outside city limits but within the Study Area are served by the Turlock Rural Fire District, the Keyes Fire Department, and the Denair Fire Department. Turlock Fire Department responds to commercial and residential structure fires, vehicle fires, rubbish fires, and vegetation fires. Wildland fire threats are greatest in mountain and foothill areas, where steep slopes, volatile vegetation, and windy conditions increase fire risk. Since the Study Area is almost all flat urbanized or agricultural land, fire risk is low.

City of Waterford General Plan

The City of Waterford adopted their General Plan in 2007. Their Safety Element provide policies and implementing actions aimed at reducing injuries, death, property damage, and the economic and social dislocation resulting from natural hazards (Waterford, 2007). Wildland fire hazards exist to the east of Waterford. The City lays out responses to fires below:

- The Uniform Building Code (UBC) and the Uniform Fire Code (UFC) work together as companion documents to regulate building construction and related items such as the care of vacant lots and the storage of flammable liquids
- The City's weed abatement program requires that vegetation on vacant lots be plowed under or mowed down if it is not irrigated agricultural land.

Local Hazard Mitigation Plan

Due to the extensive history of natural disasters occurring throughout California, the State encourages communities to adopt Local Hazard Mitigation Plans (LHMPs) to gather hazard risk data and ensure local-level mitigation and preparedness. Local jurisdictions develop, adopt and update hazard mitigation plans to establish guiding principles for reducing hazard risk, as well as specific mitigation actions to eliminate or reduce identified vulnerabilities. The Stanislaus Local Hazard Mitigation Plan identifies risks posed by disasters and identifies ways to minimize damage from those disasters. The plan is a comprehensive resource document that serves many purposes, including enhancing public awareness and understanding, creating a decision tool for management, promoting compliance with State and Federal program requirements, enhancing local policies for hazard mitigation capability, and providing inter-jurisdictional coordination. It includes the cities of Ceres, Hughson, Modesto, Newman, Oakdale, Patterson, Riverbank, Turlock, Waterford, and unincorporated areas (Stanislaus County, 2017). The plan vulnerability assessment of wildfires in different areas of Stanislaus and provides mitigation goals and policies geared towards reducing fire severity and intensity in the region through wildfire prevention, fuels management, and coordination with local, State, and federal agencies.

4.17.3 Impact Analysis

a. Methodology and Significance Thresholds

Appendix G of the State CEQA Guidelines identifies the following criteria for determining whether a project's impacts would have a significant impact on wildfire:

If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project:

1. Substantially impair an adopted emergency response plan or emergency evacuation plan.
2. Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire.
3. Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment.
4. Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes.
5. Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires.

Impacts related to impairment or interference of emergency response or evacuation plans (Threshold 1) are discussed in Section 4.18, *Less Than Significant Environmental Factors.*

The methodology used for the following evaluation is based on a review of documents and publicly available information about wildfire conditions in the StanCOG region to determine the potential for implementation of the potential for implementation of the 2022 RTP/SCS to result in increased wildfire risks. This includes city and county planning documents. This program-level analysis is based on an overall understanding of the key fire safety concerns that could result from implementation of the 2022 RTP/SCS. The evaluation of wildfire impacts reasonably assumes that the construction and development under the 2022 RTP/SCS would adhere to the latest federal, state, and local regulations, and conform to the latest required standards in the industry, as appropriate for individual projects.

b. Project Impacts and Mitigation Measures

This section discusses impacts and mitigation measures associated with transportation projects and the land use scenario contained within the 2022 RTP/SCS. Specific projects may generate wildfire impacts during construction and operation. Section 4.17.3.c summarizes the impacts associated with capital improvement projects in the 2022 RTP/SCS. Due to the programmatic nature of the 2022 RTP/SCS, a precise, project-level analysis of the specific impacts associated with individual transportation and land use projects is not possible at this time. In general, however, implementation of proposed transportation improvement projects and future projects under the land use scenario envisioned by the 2022 RTP/SCS could result in the impacts as described in the following sections.

Threshold 2:	Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire
Threshold 3:	Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment
Threshold 4:	Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes
Threshold 5:	Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?

Impact WF-1 PROPOSED TRANSPORTATION IMPROVEMENTS AND LAND USE PROJECTS ENVISIONED BY THE 2022 RTP/SCS WOULD BE LOCATED IN OR NEAR AN SRA OR VERY HIGH FIRE HAZARD SEVERITY ZONE, AND SIGNIFICANT RISKS OF LOSS, INJURY, OR DEATH FROM WILDFIRES OR DOWNSTREAM FLOODING OR LANDSLIDES WOULD OCCUR. IMPACTS WOULD BE SIGNIFICANT AND UNAVOIDABLE.

Wildland Fire

As shown in Figure 4.17-1, SRAs moderate hazard zones are present in the northeastern portions of the StanCOG region and along the I-5 corridor. High to Very High Fire Hazard Severity Zones are present in State Responsibility Areas in the western portions of the region (CAL FIRE 2007b). Moderate Fire Hazard Severity Zones have been mapped in Local Responsibility Areas in the region (CAL FIRE 2007a). The land use scenario envisioned by the 2022 RTP/SCS concentrates the forecasted population and employment growth in urban areas and corridors of the StanCOG region, such as incorporated cities, unincorporated towns, and major roadways, where the risk of wildfire is less than in more rural, forested, or mountainous areas where fuels are abundant and emergency response access is restricted. 2022 RTP/SCS transportation improvements, including roadway improvements, transportation demand management, and transit improvements, would not involve developing residential uses that would include occupants. While some transportation projects may include office or maintenance structures, occupation would be temporary and would not be situated in very high FHSZs or SRAs. Additionally, transportation projects associated with the 2022 RTP/SCS would improve mobility in the StanCOG region, which could facilitate an expedited evacuation or escape during a wildfire. However, urban and outlying areas within the WUI are still at risk from wildfire.

Land use development envisioned in the proposed 2022 RTP/SCS that would be located within or less than two miles[1] from an SRA would cause significant wildfire impacts because existing codes and regulations cannot fully prevent wildfires from damaging structures or populations. These projects would increase the exposure of transportation infrastructure to risk of loss or damage from wildfire. Additionally, fire related impacts may extend far beyond the fire footprint as damage to homes, infrastructure, and ecosystems, and diminished air and water quality could all occur. People residing in residential development could be exposed to smoke and air pollution from wildfires regardless of their location within urbanized areas or the WUI. Thus, impacts associated with slope,

[1] For the purpose of this analysis, two miles is considered "near" an SRA or very high FHSZ.

prevailing winds, and other factors that would exacerbate wildfire risks and thereby expose project occupants to pollutant concentrations from a wildfire or uncontrolled spread of a wildfire would be significant.

Requirements to adhere to the local hazard mitigation plan, as well as the local general plan policies and programs aimed at reducing the risk of wildfires through land use compatibility, training, sustainable development, brush management, public outreach, and service standards for fire departments would reduce the risk of wildfire for these projects. Additionally, CBC regulations have been prepared and adopted for the purpose of establishing minimum wildfire protection standards in conjunction with building, construction, and development in a SRA. Title 14 sets forth the minimum development standards for emergency access, including fuel modification, setback, signage, and water supply, which are intended to result in development that avoids or minimizes the hazards associated with development including associated infrastructure to roads, fuel breaks, emergency water sources, power lines or other utilities in wildfire-prone areas.

Although there are limited instances where the proposed land use pattern and planned transportation investments of 2022 RTP/SCS may result in growth in or near wildfire prone areas, substantial wildfire-related effects could still occur. The 2022 RTP/SCS plans for the construction and maintenance of associated infrastructure and envisions land development near SRAs. Title 14 sets forth the minimum development standards for emergency access, fuel modification, setback, signage, and water supply, which are intended to result in development that avoids or minimizes the hazards associated with development including associated infrastructure to roads, fuel breaks, emergency water sources, power lines or other utilities in wildfire-prone areas. Global climate change will pose an increasing threat to wildland areas and nearby urban environments. The 2022 RTP/SCS plans for the construction and maintenance of associated infrastructure and envisions land development within and near these areas. The potential for slope failure and landslides can be exacerbated in these regions in the aftermath of a wildfire. Due to the unpredictable nature of wildfires in California, it is anticipated that projects in the 2022 RTP/SCS could exacerbate wildfire risk both in exposure to wildfires and in the aftermath conditions as a result of runoff, post-fire slope instability, or drainage changes as a result of wildfires denuding a slope. Even with implementation of required policies and measures, it is not possible to prevent the proposed 2022 RTP/SCS projects from exposing people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires. Therefore, impacts would be significant.

Construction and Fire Risk

There are proposed 2022 RTP/SCS transportation projects that are in or adjacent to SRAs. Construction activities for transportation and land use projects within the 2022 RTP/SCS involving the use of vehicles and heavy machinery could result in the ignition of a wildfire. During construction, heavy equipment and passenger vehicles driving on vegetated areas prior to clearing and grading could increase the risk of fire. Heated mufflers, explosives used during site preparation or line splicing, and improper disposal of cigarettes could potentially ignite surrounding vegetation. The use of heavy equipment, such as bulldozers and graders, has the potential to accidentally ignite a fire from sparks created when equipment blades strike rocks or metal objects. If noticed by the equipment operator or other project specific personnel, small ignitions can easily be suppressed by the construction equipment and/or on-site fire watch personnel. A fire could also be started during a project's construction by project personnel improperly disposing of burning cigarettes in areas covered with wildland vegetation and within 50 feet of combustible material storage.

Moreover, if the introduction of invasive, non-native plants is not controlled during construction, a project site could progressively become dominated by non-native plants which tend to increase the frequency and severity of wildfires. Based on recent scientific evidence, it is likely that anthropogenic climate change will continue to chronically enhance the potential for western U.S. forest fire activity when fuels are not limiting. As discussed further in Section 4.9, *Greenhouse Gas Emissions and Climate Change*, increasingly difficult drought conditions and extreme weather events will continue to raise wildfire risk within the StanCOG region.

New construction would be subject to the latest California Fire Code, which contains safety measures to minimize the threat from wildfires. Title 14 of the California Code of Regulations sets forth the minimum development standards for emergency access, fuel modification, setback, signage, and water supply, which help prevent loss of structures or life by reducing wildfire hazards. The codes and regulations would reduce the risk of loss, injury, or death from wildfire for new development envisioned by the proposed 2022 RTP/SCS, but not entirely. Therefore, impacts involving the installation or maintenance of associated infrastructure that may exacerbate fire risk would be significant.

Exacerbated Fire Risks

Slope failure and landslides can be exacerbated in regions in the aftermath of a wildfire. Hillsides can become denuded of vegetation and become unstable, increasing the potential for landslide risks and associated hazards downslope from such landslides. Potential impacts related to slope stability and landslides are discussed in Section 4.8, *Geology and Soils*. As discussed therein, stable slope conditions vary depending on location of the project within the region. Seismic related ground failure such as landslides may result from an earthquake in the StanCOG region. Unstable geologic formations susceptible to landslides occur in the Diablo Range to the west of I-5 and along river bluffs. As such, any projects located in these areas, including State Routes 4, 108, 120, 132, 219, and I-5, are particularly susceptible to landslides. The areas west of I-5 are classified as a landslide susceptibility class of four. In areas of high susceptibility to landslides (near foothill areas), 2022 RTP/SCS projects would be required to conform Stanislaus County Code of Chapter 16.05.060, Amendment of California Building Code, Appendix J—Grading, prior to approval of construction. Even with this compliance, impacts exposing people or structures to significant risks, including landsides, as a result of post-fire slope instability would be significant.

This same issue applies to runoff and flooding potential after a wildfire with denuded and unstable hillsides. Potential impacts related to flooding, runoff, and drainage are discussed in Section 4.11, *Hydrology and Water Quality*. Projects would be required to comply with existing design guidelines and Stanislaus Multi-Agency Regional Storm Water Resource Plan requirements for post-development peak stormwater flows and Best Management Practices to avoid and/or minimize flooding impacts and impacts to on-site and off-site drainage. Even through adherence to these regulations, impacts associated with exposure of people or structures to downslope or downstream flooding or landslides as a result of runoff due to post-fire slope instability would continue to be significant. However, even with adherence to these regulations, people or structures may still be exposed to downslope or downstream flooding or landslides as a result of runoff due to post-fire slope instability, and impacts would be significant. The following mitigation measures would reduce this impact.

Mitigation Measures

Transportation project sponsor agencies can and should implement, the following mitigation measures for applicable transportation projects that would result in wildfire impacts. The County and cities in the StanCOG region can and should implement these measures, where relevant to land use projects implementing the 2022 RTP/SCS. Project-specific environmental documents may adjust these mitigation measures as necessary to respond to site-specific conditions.

WF-1(a) Wildfire Risk Reduction

For individual transportation or land use project within or less than two miles from an SRA or very high fire hazard severity zones, the implementing agency shall require appropriate mitigation to reduce the risk. Examples of mitigation to reduce risk of loss, injury or death from wildlife include, but are not limited to:

- Require the use of fire-resistant vegetation native to the StanCOG region and/or the local microclimate of the project site and discourage the use of fire-prone species especially nonnative, invasive species.
- Enforce defensible space regulations to keep overgrown and unmanaged vegetation, accumulations of trash and other flammable material away from structures.
- Provide public education about wildfire risk, fire prevention measures, and safety procedures and practices to allow for safe evacuation and/or options to shelter-in-place.
- Require adherence to the local hazard mitigation plan, as well as the local general plan policies and programs aimed at reducing the risk of wildfires through land use compatibility, training, sustainable development, brush management, public outreach, and service standards for fire departments.
- Ensure sufficient emergency water supply.
- Encourage the use of fire-resistant vegetation native to the StanCOG region and/or the local microclimate of the project site and discourage the use of fire-prone species especially non-native, invasive species.
- Require a fire safety plan be submitted to and approved by the local fire protection agency. The fire safety plan shall include all of the fire safety features incorporated into the project and the schedule for implementation of the features. The local fire protection agency may require changes to the plan or may reject the plan if it does not adequately address fire hazards associated with the project as a whole or the individual phase of the project.
- Prohibit certain project construction activities with potential to ignite wildfires during red-flag warnings issued by the National Weather Service for the project site location. Example activities that should be prohibited during red-flag warnings include welding and grinding outside of enclosed buildings.
- Require fire extinguishers to be onsite during construction of projects. Fire extinguishers shall be maintained to function according to manufacturer specifications. Construction personnel shall receive training on the proper methods of using a fire extinguisher.
- Smoking and open fires shall be prohibited at individual transportation or land use projects sites included in 2022 RTP/SCS during construction and operations. A copy of the notification to all contractors regarding prohibiting smoking and burning shall be provided to the respective County in the StanCOG Region.

WF-1(b) Fire Protection Plan

Individual transportation or land use projects included in the 2022 RTP/SCS shall prepare a Fire Protection Plan that meets Fire Prevention Bureau of Stanislaus County requirements. The plan shall contain (but not be limited to) the following provisions:

- All construction equipment shall be equipped with appropriate spark arrestors and carry fire extinguishers.
- A fire watch with appropriate firefighting equipment shall be available at the Project site at all times when welding activities are taking place. Welding shall not occur when sustained winds exceed that set forth by the Fire Prevention Bureau of Stanislaus County unless a Fire Prevention Bureau of Stanislaus County -approved wind shield is on site.
- A vegetation management plan shall be prepared to address vegetation clearance around all Wind Turbine Generators (WTGs) and a regularly scheduled brush clearance of vegetation on and adjacent to all access roads, power lines, and other facilities.
- Operational fire water tanks shall be installed prior to construction.
- Provisions for fire/emergency services access if roadway blockage occurs due to large loads during construction and operation
- Cleared, maintained parking areas shall be designated; no parking shall be allowed in non-designated areas.
- The need for and/or use of dedicated repeaters for emergency services.
- Appropriate Hot work permits (such as cutting and welding permits) shall be obtained from the jurisdictional fire agency.
- Compliance with California PRC 4291, 4442, and 4443.

IMPLEMENTING AGENCIES AND TIMING

Implementing agencies for transportation projects are StanCOG and transportation project sponsor agencies. Implementing agencies for land use projects are cities and the County. This mitigation measure shall, or can and should, be applied during permitting and environmental review and implemented during construction where appropriate.

Significance After Mitigation

With implementation of Mitigation Measures WF-1(a) and WF-1(b), the risk of loss of structures and transportation infrastructure and the risk of injury or death due to wildfires would be reduced. These measures would make structures and transportation infrastructure more fire resistant and less vulnerable to loss in the event of a wildfire. These measures would also reduce the potential for construction of 2022 RTP/SCS projects to inadvertently ignite a wildfire. In addition, specific project impacts regarding wildfire risk would be addressed prior to project implementation during the planning and design process.

However, it is not possible to prevent a significant risk of wildfires or fully protect people and structures from the risks of wildfires in all cases. Therefore, this impact would remain significant and unavoidable. No additional mitigation measures to reduce this impact to less than significant levels are feasible.

c. Specific 2022 RTP/SCS Projects That May Result in Impacts

As discussed above, specific 2022 RTP/SCS projects that could result in significant wildfire impacts are those located within or less than two miles from an SRA or high fire hazard severity zones. These projects would increase the potential to ignite fires and therefore risk exacerbating the potential for loss or damage from wildfire. The public that would use that infrastructure and land uses developed within those areas and the maintenance personnel that would service that infrastructure or work within those areas would also be exposed to exacerbated risk of loss or damage due to wildfire. 2022 RTP/SCS projects that do not meet these criteria would have a lesser wildfire impact.

Table 4.17-1 shows all 2022 RTP/SCS projects that would occur within or less than two miles from an SRA. All transportation or land use projects located within or less than two miles from SRAs or lands classified as very high fire hazard severity zones would result in potentially exacerbated risks associated with Impact WF-1. Additional specific analysis described in the above mitigation measure would need to be conducted as individual projects are implemented in order to determine the magnitude of project-specific impacts.

Table 4.17-1 RTP/SCS Planned and Programmed Projects Occurring In or Less Than 2 Miles from an SRA or Very High Fire Severity Zone

Project ID	Location	Description	Project Impacts
Roadway Projects			
C22	Service Rd & Morgan Rd	Install Traffic Signal	WF-1
C29	Hatch Rd & Faith Home Rd	Install Traffic Signal	WF-1
C33	Service Road & Ustick	Install Traffic Signal	WF-1
C36	Whitmore Ave & Boothe Rd	Install Traffic Signal	WF-1
C37	Whitmore Ave. @ Knox Rd	Install Traffic Signal	WF-1
C43	Whitmore Ave. and Ustick Rd	Install Traffic Signal	WF-1
C48	Whitmore Ave & Faith Home Rd	Install Traffic Signal	WF-1
T42	Tuolumne Rd	Construct New Overpass	WF-1
T41	Taylor Rd	Reconstruct existing Interchange	WF-1
T44	Golden State Blvd & Taylor Rd	Widen Intersection from 2 to 4 lanes with bike improvements	WF-1
S71	Cooperstown Road at Rydberg Creek	Bridge Replacement - Off System Bridge Toll Credits	WF-1
S72	Crabtree Road at Dry Creek	Bridge Replacement - Off System Bridge Toll Credits	WF-1
S79	Las Palmas Ave over San Joaquin River	Bridge Rehabilitation Preventative Maintenance	WF-1
S27	Hills Ferry Rd @ San Joaquin River	Seismic Bridge Replacement	WF-1
S80	Milton Road over Rock Creek Tributary	Bridge Replacement - Off System Bridge Toll Credits	WF-1
S29	Seventh St @ Tuolumne River Bridge	Seismic Bridge Replacement; 4 lane bridge with pedestrian access	WF-1
S81	Sonora Road over Martells Creek	Scour Countermeasure	WF-1

Project ID	Location	Description	Project Impacts
S76	St. Francis Ave at MID Main Canal	Bridge Replacement - Off System Bridge Toll Credits	WF-1
S78	Tim Bell Road at Dry Creek	Bridge Replacement - Off System Bridge Toll Credits	WF-1
S25	San Joaquin River Bridge	Seismic Bridge Replacement - 3-lane Bridge	WF-1
S02	SR-99 Interchange with Crows Landing Road	Reconstruct interchange	WF-1
S03	I-5 Interchange with Fink Road	Reconstruct interchange	WF-1
S44	Santa Fe Ave & East Ave	Intersection Improvements	WF-1
S43	Keyes Road & SR 99 Exit/Entrance Ramps	Ramp Signalization	WF-1
S84	Over Claribel Bridge Lateral	Replace Bridge	WF-1
S85	Over Lone Tree Creek	Bridge Rehabilitation	WF-1
S88	Over Hood Creek	Replace Bridge	WF-1
O21	Intersection	Improve intersection to include traffic signal pole relocation, modify signal, and restriping.	WF-1
O22	Intersection	Project will include removal of existing median, paving, restriping, and traffic light reconfiguration.	WF-1
023	Intersection	Install Signal & Intersection Improvements	WF-1
O24	Intersection	Install Signal & Intersection Improvements	WF-1
O27	Intersection	Striping & Signage to include a 3-way stop, turn lanes for traveling North on Maag.	WF-1
O28	Intersection	Install Signal & Intersection Improvements	WF-1
S70	Cooperstown Road at Gallup Creek	Bridge Replacement - Off System Bridge Toll Credits	WF-1
N04	Highway 33/Sherman Parkway	Install Traffic Signal	WF-1
CA11	In Modesto, near Zeff Road Undercrossing.	Construct stormwater Best Management Practices (BMPs).	WF-1
C52	Service Rd., Central Ave. & Don Pedro Rd.	ITS Signal Synchronization Phase III	WF-1
C53	Crows Landing Rd. Whitmore Rd.	ITS Signal Synchronization Phase IV	WF-1
C72	El Camino Ave at North St	Surface Parking and undercrossing to ACE station traffic mitigation	WF-1
C73	Railroad Ave, Central Ave, Hackett Rd	Overflow Parking ACE Station	WF-1
Bicycle/Pedestrian Projects			
C20	Moore Rd to 6th St	Bicycle Boulevard (Class 3) and pedestrian improvements. (Non- Motorized Transportation Plan Top 25: Route 13)	WF-1
S37	East Taylor Rd to 7th St	Class 3.5 Bicycle Route with Wide Shoulders. Widen shoulder to at least 4', wider preferred. StanCOG Non-Motorized Transportation Master Plan Project ID: STAN-14	WF-1

Project ID	Location	Description	Project Impacts
S34	Shiloh Rd to River Rd	Class 1 Path. Widen shoulder to at least 4', bridge construction. StanCOG Non-Motorized Transportation Master Plan Project ID: STAN-11	WF-1
S36	Shiloh Rd to South Carpenter Rd	Class 3.5 Bicycle Route with Wide Shoulders. Widen shoulder to at least 4', wider preferred. StanCOG Non-Motorized Transportation Master Plan Project ID: STAN-13	WF-1
S41	Oakdale-Waterford Highway to Claus Rd	Class 1 Path. New Construction. StanCOG Non-Motorized Transportation Master Plan Project ID: STAN-18	WF-1
S25	SR-108 to Riverbank City Limits (Near Oakdale Rd)	Multi-Use Path (Class 1) and pedestrian improvements. (Non- Motorized Transportation Plan Top 25: Route 22)	WF-1
S22	North Yosemite Ave (Proposed) to Orange Blossom Rd	Class 1 Path. New Construction. StanCOG Non-Motorized Transportation Master Plan Project ID: STAN-1B	WF-1
S26	Virginia Corridor Bike Path to Terminal Ave	Class 1 Path. New Construction. StanCOG Non-Motorized Transportation Master Plan Project ID: STAN-4	WF-1
S28	Hetch Hetchy Canal (Proposed) to Kiernan Ave	Class 4 Separated Bike Lane. Parking removal (both sides). StanCOG Non-Motorized Transportation Master Plan Project ID: STAN-5B	WF-1
S32	Sycamore Ave to S. Washington Rd	Class 3.5 Bicycle Route with wide shoulders and pedestrian improvements. (Non-Motorized Transportation Plan Top 25: Route 24)	WF-1
O11	North of Kerr Park to Valley View Park	Construct Class I Bike Lane along Stanislaus River to connect to the existing Valley View Trail.	WF-1
H06	Fox Road to Santa Fe Ave	Bicycle Lane (Class 2), Bicycle bulevard (Class 3), and pedestrian improvements . (Non-Motorized Transportation Plan Top 25: Route 20A)	WF-1
Aviation Projects			
M02	Modesto City-County Airport	Reconstruction of Taxiway C	WF-1
M03	Modesto City-County Airport	Design - Reconstruction of Taxiway D	WF-1
M04	Modesto City-County Airport	Reconstruction of Taxiway D	WF-1
M05	Modesto City-County Airport	Design - Reconstruction of Taxiway E	WF-1
O06	Oakdale Municipal Airport	Airport Layout Plan	WF-1
O07	Oakdale Municipal Airport	Runway Safety Area/Drainage Environ	WF-1
O08	Oakdale Municipal Airport	Pavement Preservation Construction, Phase II	WF-1

4.17.4 Cumulative Impacts

A wildfire ignited in the StanCOG region could spread into adjoining counties as identified in Section 3.3.4, *Cumulative Impact Methodology*. Likewise, wildfires ignited in counties adjoining the StanCOG region could spread into the StanCOG region. Therefore, the cumulative impact analysis area for wildfire consists of the StanCOG region and the adjoining counties.

The proposed 2022 RTP/SCS is not expected to substantially increase wildfires, but the occurrence of wildfires always exists within the StanCOG region and transportation and land use projects under the proposed 2022 RTP/SCS could place people and structures within or less than two miles from an SRA or very high fire hazard severity zones. Construction and operation of projects would risk exacerbating these existing fire hazards by creating additional potential sources of fire ignition.

During construction and operation of the proposed 2022 RTP/SCS projects, if one of these cumulative projects were to simultaneously result in a wildland fire ignition during construction, they could combine and increase the severity of wildland fires beyond existing conditions. The combination of these projects being constructed concurrently could substantially increase the frequency of fire in the area above natural conditions. Cumulative impacts would be significant.

The land use scenario envisioned in the proposed 2022 RTP/SCS would result in some projects located within or less than two miles from an SRA or very high fire hazard severity zones, causing significant wildfire impacts, as existing codes and regulations cannot fully prevent wildfires from being generated and damaging structures or populations. These projects would increase the potential to ignite fires and therefore risk exacerbating the potential for loss or damage from wildfire. This added risk could start wildfires that could spread outside the StanCOG region impacting adjacent counties and communities. As a result, the land use scenario envisioned in the proposed 2022 RTP/SCS could result in a cumulatively considerable increase in wildfire risk. Mitigation measures described earlier in this section would minimize the contribution to this cumulative impact. However, the overall cumulative increase in fire frequency would continue to be substantial and the proposed 2022 RTP/SCS's contribution would be cumulatively considerable.

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4.18 Less Than Significant Environmental Factors

Section 15128 of the State CEQA Guidelines requires an EIR to briefly describe any possible significant effects that were determined not to be significant. The environmental factors discussed below represent the remainder of the checklist questions as listed in Appendix G of the State CEQA Guidelines that were not discussed in the other impact sections of the EIR.

4.18.1 Biological Resources

6. *Would the project conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?*

No adopted regional Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan occurs within Stanislaus County at the time of Draft EIR preparation and therefore no conflict with the 2022 RTP/SCS would occur. Therefore, no conflicts would occur related to existing local, regional, or state conservation plans.

4.18.2 Geology and Soils

5. *Would the project have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of waste water?*

The 2022 RTP/SCS does not include projects that would require the use of septic tanks or alternative wastewater disposal systems. The expansion and/or improvement of streets, highways, transit facilities, airports, and related transportation infrastructure would not include elements that would require wastewater treatment or otherwise necessitate the development of septic systems.

Future infill and land development projects that may be implemented as a result of the 2022 RTP/SCS would be anticipated to connect to existing wastewater infrastructure. Any development projects in rural areas requiring septic tanks or alternative wastewater disposal systems would be required to comply with State Water Resources Control Board regulations for the siting, installation, operation, and maintenance of on-site wastewater treatment systems, pursuant to Assembly Bill 885. Septic systems in the StanCOG region would be required to comply with the design standards set forth by the Stanislaus County Code of Ordinances Section 20.52.210 *Sewage Disposal and Water Supply*, which states the County Director of Environmental Resources will determine suitability of the placement of septic tanks. Cities within the StanCOG region would further require compliance with local ordinances. Therefore, impacts related to having soils incapable of adequately supporting the use of septic tanks and alternative wastewater disposal systems would be less than significant.

4.18.3 Mineral Resources

1. *Would the project result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?*
2. *Would the project result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?*

The 2022 RTP/SCS primarily involves modifications to existing roadways, including improvements related to intersections, safety, and widening, as well as alternative transportation projects. In addition, infill and development projects envisioned by the 2022 RTP/SCS would be located within existing urbanized areas. As indicated in the County of Stanislaus's General Plan Land Use Element, minerals commercially excavated are located in flood plains of rivers and streams, particularly by the Tuolumne and Stanislaus Rivers and Orestimba Creek (County of Stanislaus 2016a) and not located within cities. These mineral resources are protected by the Stanislaus County Code of Ordinances Section 21.88.170 which does not allow incompatible land uses to be placed next to a mineral resource zone unless granted conditions of approval. Pursuant to Implementation Measure 2 of Policy 27 of the General Plan Conservation/Open Space Element, any approval of potentially incompatible land uses containing significant deposits of extractive mineral resources shall include conditions mitigating the significant land use conflicts (County of Stanislaus 2016b). Furthermore, any future individual projects would be required to identify and mitigate impacts during the environmental review for project-specific impacts pertaining to mineral resources to allow for the recovery of identified minerals.

There are no projects under the proposed 2022 RTP/SCS that would directly result in the extraction, exploration, or digging for mineral resources, or prevent such activities. Therefore, the proposed 2022 RTP/SCS would not result in the loss of a known mineral resource that would be of value to the region and the residents of the State or result in the loss of availability of a locally important mineral resource recovery site. Impacts related to mineral resources would be less than significant.

4.18.4 Public Services

1. *Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the public services:*
    a. *Fire protection?*
    b. *Police protection?*
    c. *Schools?*
    d. *Parks?*
    e. *Other public facilities?*

Transportation projects under the 2022 RTP/SCS would not generate demand for police or fire services, schools, parks, or other public facilities beyond what is already planned for in the cities and County of the StanCOG region. The majority of these projects are related to maintenance and pedestrian improvement that would not involve the construction of new public services infrastructure. Transportation projects would not increase the population of the StanCOG region, and transportation projects would not require the removal or replacement of existing public service facilities.

Future growth and development may increase demand for public services; however, demand is not expected to exceed that already anticipated within the general plans and regional growth forecasts prepared for each respective area in which proposed SCS development would be located. Growth in the StanCOG region would not be a result of the proposed 2022 RTP/SCS. The proposed 2022

RTP/SCS is designed to accommodate the people, households, and jobs identified in regional growth forecasts. While growth would occur, the proposed 2022 RTP/SCS distributes this growth consistent with adopted plans and would not induce population growth beyond what has been previously anticipated. Additionally, the proposed 2022 RTP/SCS includes land use strategies that would allow for denser, more compact development in identified infill development areas, and therefore service areas for existing providers are not anticipated to expand. The Stanislaus County General Plan includes policies and implementation programs to ensure adequate public services are maintained. Policy 24 of the Land Use Element states that future growth shall not exceed the capabilities of the provider of services for public safety or schools (County of Stanislaus 2016a). Policy Five, Implementation Measure One of the Land Use Element states that residential development shall not be approved at the maximum density if environmental impacts cannot be mitigated (County of Stanislaus 2016a). Cities have similar general plan policies. The StanCOG region has planned for growth that would be accommodated by the proposed 2022 RTP/SCS, and thus the 2022 RTP/SCS would be consistent with Policy 24 and Policy Five. Planning for growth will continue to occur throughout implementation of the proposed 2022 RTP/SCS, and individual jurisdictions would increase services as necessary.

The number, location, physical sizes, and designs of future new and expanded fire and police protection facilities are unknown. As a result, specific environmental impacts associated with specific development cannot be speculated. However, if an individual jurisdiction chooses to increase fire or police protection facilities, the expansion of existing or development of new facilities would be subject to project-specific environmental review under CEQA whereby environmental impacts would be identified and mitigated accordingly. As mentioned above, growth that would be distributed by the proposed 2022 RTP/SCS has been accounted for within general plans and other regional growth forecasts. As such, any increased demand for fire or police protection facilities has been anticipated, and the proposed 2022 RTP/SCS would not induce growth such that increased fire or police protection facilities are necessary beyond what has already been determined by individual jurisdictions.

Future project sponsors are required by law to pay development impacts fees for schools at the time building permits are issued. The fees are used by a school district to mitigate impacts associated with long-term operation and maintenance of school facilities. Pursuant to Section 65996 of the California Government Code, payment of these fees fulfils complete mitigation of environmental impacts.

Through regulatory compliance, adequate parkland acreages would be maintained throughout the StanCOG region. For a full discussion of parks, refer to Section 14.18.5, *Recreation*, below.

Based on the above discussion, impacts related to public services would be less than significant.

4.18.5 Recreation

1. *Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?*
2. *Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?*

The proposed 2022 RTP/SCS would accommodate the people, households, and jobs identified within StanCOG's regional growth forecast. Transportation projects under the proposed 2022 RTP/SCS

would not generate demand for parkland or recreational resources. However, the overall growth resulting from the land use pattern established by the proposed 2022 RTP/SCS would result in an increased demand for services including recreational facilities.

Development of the individual land use projects in the proposed 2022 RTP/SCS would be required on a project-by-project basis to pay development fees towards the applicable jurisdiction. Since the passage of the 1975 Quimby Act, cities and counties have been authorized to adopt ordinances requiring that developers set aside land, donate conservation easements, or pay fees that can be used for purposes of acquiring parkland to maintain identified parkland acreages per 1,000 in population. In accordance with the Quimby Act, the County of Stanislaus requires three net acres of developed neighborhood parks per 1,000 residents through land dedication and development (County of Stanislaus 2016a). Cities throughout the StanCOG region have similar requirements implemented into their General Plans. All future development under the proposed 2022 RTP/SCS would be required to comply with these regulations. The payment of fees or provision of parkland would go toward maintaining parks or providing new park space, which would also reduce use of existing recreational facilities. Reduced use of existing facilities would result in a corresponding decrease in deterioration of existing recreational facilities. Therefore, impacts related to recreation would be less than significant.

4.18.6 Utilities and Service Systems

1. *Would the project require or result in the relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?*
2. *Would the project have sufficient water supplies available to serve the project and reasonably foreseeable development during normal, dry and multiple dry years?*
3. *Would the project result in a determination by the waste water treatment provider, which serves or may serve the project that it has adequate capacity to serve the project's demand in addition to the provider's existing commitments?*
4. *Would the project generate solid waste in excess of state or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?*
5. *Would the project comply with federal, state, and local management and reduction statutes related to solid waste?*

Future infill and development projects envisioned by the proposed 2022 RTP/SCS would occur in urbanized areas and would connect to existing utilities. However, the proposed 2022 RTP/SCS does not induce a population beyond what is generally projected and accounted for in local and regional plans. The proposed 2022 RTP/SCS is not inducing population growth, but rather establishing a framework to accommodate anticipated growth. As such, any growth facilitated by the proposed 2022 RTP/SCS would not require new utilities facilities beyond what is already anticipated in regional growth forecasts, Capital Improvement Programs (CIP), and general plans.

Urban Water Management Plans (UWMPs) for the StanCOG region estimate and pursue the efficient use of available water supplies identifying short-term and long-term water demand management measures. UWMPs are generally updated every five years to account for water demand resulting from the growth envisioned in general plan updates and updated population

growth forecasts. Therefore, the current UWMPs applicable to the StanCOG region generally account for the land development envisioned within the proposed 2022 RTP/SCS because it is largely consistent with relevant planning documents, such as general plans. Furthermore, Groundwater Sustainability Plans (GSPs) prepared under the Groundwater Sustainability Act are implemented in order to protect groundwater in the StanCOG area. The proposed 2022 RTP/SCS would adhere to the water conservation requirements set forth within these plans. Regional growth forecasted within the proposed 2022 RTP/SCS, general plans, and other documents are accounted for in UWMPs and GSPs, and any growth facilitated by the proposed 2022 RTP/SCS would not be in excess of anticipated growth forecasts. Thus, proposed 2022 RTP/SCS would not result in insufficient water supplies or a determination by a wastewater treatment provider that inadequate capacity exists to serve the anticipated demand.

Transportation and land use development projects implementing the proposed 2022 RTP/SCS would be required to comply with the California Green Building Code and Senate Bill 1016, which require that construction operations recycle a minimum of 50 percent of waste generated. Similarly, land use projects would also be required to comply with federal, State, and local statutes and regulations related to solid waste, including a 50 percent diversion rate pursuant to Assembly Bill 939 and a future 75 percent diversion rate pursuant to Assembly Bill 341, as well as local jurisdiction goals and policies for recycling and diversion of solid waste. Compliance with these requirements would ensure that solid waste generated from land use development would be minimized to the extent practical, and that diversion rates would increase into the future, as development included in the 2022 RTP/SCS is built out. Non-diverted waste generated by transportation and land use development projects included in the proposed 2022 RTP/SCS would be disposed in the Fink Road landfill and multiple transfer stations within the StanCOG region (CalRecycle 2022). These landfills are adequate for handling existing solid waste and future waste generated through 2035 (County of Stanislaus 2016c). Therefore, the proposed 2022 RTP/SCS would not generate solid waste in excess of State or local standards or conflict with federal, State, and local management and reduction statutes. Therefore, impacts related to utilities would be less than significant.

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5 Other CEQA Required Discussions

This section discusses growth-inducing impacts, irreversible environmental impacts, and significant and unavoidable impacts from development facilitated by the 2022 RTP/SCS.

5.1 Growth-Inducing Impacts

Section 15126.2(g) of the *State CEQA Guidelines* requires a discussion of a proposed project's potential to induce growth. Specifically, an EIR must discuss the ways in which the proposed project could foster or facilitate economic or population growth, such as by providing employment opportunities or removing obstacles to population growth. In addition, the EIR must discuss how the project may encourage and/or facilitate other activities that could significantly affect the environment. It cannot be assumed that growth in any area is necessarily beneficial, detrimental, or of little significance to the environment. Economic and population growth does not necessarily create significant and direct physical changes to the environment. However, depending upon the type, magnitude, and location of growth, it can result in significant environmental effects. A project's growth inducing potential is considered significant if growth generated by the project could result in significant effects to one or more environmental issue areas.

5.1.1 Employment, Household, and Population Growth

The StanCOG Board adopted a 2021 Stanislaus County Demographic and Employment Forecast in June 2021. The purpose of this forecast is to provide estimates of populations, households, and employment for Stanislaus County to support several planning initiatives. StanCOG does not hold land use authority and cannot directly affect populations growth, as development would be facilitated through implementation of the 2022 RTP/SCS, rather than proposing individual growth-inducing projects. The 2022 RTP/SCS intends to address economic and community vitality by facilitating economic development and opportunities through infrastructure investments that support goods movement within and through the region, including but not limited to the county's strategic freight corridors. The forecasts for household and employment opportunities, according to the 2021 forecast, is shown in Table 5-1.

Table 5-1 Household and Employment Forecast by Jurisdiction

	2020		2030		2040		2050	
Jurisdiction	**HH's**	**Emp.**	**HH's**	**Emp**	**HH's**	**Emp**	**HH's**	**Emp**
Ceres	13,318	15,384	15,063	18,804	16,366	20,067	17,552	21,847
Hughson	2,499	1,373	3,011	1,534	3,394	1,586	3,773	1,614
Modesto	74,508	105,365	82,250	118,361	88,031	124,258	92,914	130,490
Newman	3,320	2,085	3,881	2,066	4,301	2,077	4,703	2,082
Oakdale	7,823	8,256	8,897	8,937	9,697	9,005	10,424	9,276
Patterson	6,020	6,673	7,968	8,030	9,420	8,718	10,820	9,606
Riverbank	7,291	4,144	9,288	5,407	10,778	5,813	12,186	6,360
Turlock	25,788	33,001	29,464	38,828	32,204	40,259	34,770	42,395
Waterford	2,558	1,040	2,856	1,169	3,078	1,234	3,280	1,347
Unincorporated Central	25,788	42,142	23,618	46,102	24,160	47,482	24,631	51,726
Unincorporated Northeast	3,781	2,186	3,965	2,634	4,102	2,887	4,239	3,200
Unincorporated South	6,838	11,210	7,267	12,251	7,586	12,781	7,920	13,552
Unincorporated West	2,640	5,503	2,731	7,327	2,799	8,157	2,860	9,133
(Sub-Total Unincorporated)	*36,151*	*61,041*	*37,581*	*68,314*	*38,647*	*71,307*	*39,650*	*77,611*
Total	**179,276**	**238,362**	**200,258**	**271,450**	**215,916**	**284,324**	**230,072**	**302,628**
Increase*	–	–	**11.7%**	**13.9%**	**20.4%**	**19.3%**	**28.3%**	**27.0%**

Source: 2021 Stanislaus County Demographic and Employment Forecast (UOP 2021)

HH = Households; Emp. = Employment

*Increase refers to the percent increase from 2020

As discussed in Section 2.4, *Project Characteristics,* the RTP/SCS intends to provide framework on how to plan for expected growth, accommodate the inevitable growth of the region, and distribute growth. The land use scenario envisioned by the 2022 RTP/SCS would facilitate the development of infill and transit-oriented development projects within existing urbanized areas and therefore could redistribute growth patterns. As discussed in Section 4.12, *Land Use,* 2022 RTP/SCS projects have been anticipated by the general plans of applicable local jurisdictions, as all improvements have been coordinated with applicable local jurisdiction. The improvements are designed and intended to accommodate anticipated growth, which would occur regardless of the implementation of the 2022 RTP/SCS.

As discussed in Section 4.12, *Land Use*, the land use scenario envisioned in 2022 RTP/SCS was developed in close coordination with StanCOG member agency planning staff and also builds on local general plans and general plan updates currently in process or completed. Central to the SCS is a land use plan identifying the general location of uses, residential densities, and building intensities within the region. The 2022 RTP/SCS accounts for the land uses of nine incorporated cities and numerous unincorporated communities. Starting with land uses allowed by existing, adopted local General Plans, the land use plan envisioned by 2022 RTP/SCS emphasizes more compact, mixed-use and infill development than what is generally provided for in existing general plans applicable to the

region. This scenario would provide for higher density residential and employment uses, in addition to mixed-use designations, within urbanized areas and along major transportation corridors in the region. This focus intends to limit growth outside of the city boundaries, which would minimize impacts on rural areas which contain the majority of agricultural land throughout the County and reduce VMT. Therefore, direct population growth impacts would be less than significant.

Implementation of the 2022 RTP/SCS would create short-term economic growth in the region as a result of construction-related job opportunities. Implementation of the 2022 RTP/SCS would also generate additional employment opportunities for roadway, vehicle, and landscape maintenance, and public transit facility clean-up. The potential employment increase may subsequently increase the demand for support services and utilities, which could generate secondary employment opportunities. This additional economic growth would likely raise the existing revenue base within the region. Although such growth may incrementally increase economic activity in the County, significant physical effects are not expected to result from economic growth generated by the 2022 RTP/SCS.

Furthermore, while development envisioned as part of the proposed 2022 RTP/SCS could result in additional commerce, industry, recreation, public services, and infrastructure throughout the region, this economic activity would be consistent with the regional growth forecast and local general plans. Forecasted growth would be accommodated under the proposed 2022 RTP/SCS; therefore, the Plan would not be growth inducing, but rather it reflects the regulatory mandate to house the forecasted population and be based on the latest planning assumptions.

The proposed 2022 RTP/SCS was developed to integrate forecasted population increases, employment opportunities, and housing needs within the TCAG area. Therefore, the proposed 2022 RTP/SCS is designed to accommodate growth that would occur with or without its adoption; it is not designed, nor is it anticipated to, induce population growth beyond the levels forecasted.

5.1.2 Removal of Obstacles to Growth

The majority of 2022 RTP/SCS transportation improvements are located in existing urbanized areas such as Modesto, Turlock, and Oakdale; however, projects are also located in rural or semi-rural areas. Such transportation improvements can be perceived as removing an obstacle to growth by either creating additional traffic capacity (in the case of road widening projects) or providing new or better access to undeveloped areas (in the case of road extensions). New infrastructure may also serve to accelerate or shift planned growth or encourage and intensify unplanned growth. These transportation network improvements would remove obstacles to growth in some areas of the region, which would support additional housing, population and economic growth, and could therefore be considered growth inducing.

However, the 2022 RTP/SCS transportation improvements are designed to fully support compact development approach outlined in the SCS component of the 2022 RTP/SCS and fully support the complementary transportation needs of the growing population. The SCS component is designed to accommodate growth by encouraging infill and mixed-use development. The 2022 RTP/SCS transportation improvement projects are intended and designed to support the land use projects established in the SCS. As a result, 2022 RTP/SCS would not induce growth beyond that anticipated by 2046; rather, it is intended to accommodate it by encouraging infill and TOD development within existing urban areas. Therefore, 2022 RTP/SCS is consistent with projected and planned growth. Further, all transportation improvement projects are anticipated by the general plans of the applicable local jurisdictions of the Planning Area, as all improvements have been coordinated with the applicable local jurisdiction.

5.2 Irreversible Effects

Section 15126.2(c) of the CEQA Guidelines requires a discussion of significant irreversible environmental changes that would occur as a result of a proposed project. These may include current or future uses of nonrenewable resources and secondary or growth-inducing impacts that commit future generations to similar uses. CEQA requires that irretrievable commitments of resources be evaluated to ensure that such current consumption is justified.

Although the 2022 RTP/SCS forecasts to a horizon year of 2046 transportation improvement projects would have an indefinite life span, assuming regular maintenance of the proposed improvements and long-term occupancy of infill and TOD projects. The proposed improvements would be located primarily in areas where transportation facilities already exist, where transportation facilities are already planned, or where transportation facilities are needed to support the new land use patterns identified in the SCS. Therefore, most proposed transportation projects are not generally expected to dramatically alter development patterns in the County and projects would support planned future development patterns. 2022 RTP/SCS would provide a foundation for local, regional, and State officials in making decisions aimed at achieving a coordinated and balanced transportation system.

Many of the adverse impacts that could occur from implementation of the 2022 RTP/SCS are short-term in nature resulting primarily from construction of the proposed transportation projects, urban infill and mixed-use development projects. Typical construction-related impacts can involve the following issues: noise, air quality, aesthetics and construction-related erosion and associated water quality impacts. In addition, though such materials would not be used in a wasteful manner, all construction activity would involve the use of non-renewable energy sources, potable water and building materials (see Section 4.6, *Energy*). The use of these resources during construction would increase demand and impact supplies across the StanCOG region.

Long-term irreversible environmental impacts are associated with increased asphalt or concrete paving and related direct and cumulative impacts to geology and soils; biological and cultural resources (historic resources); transportation; and hydrology and water quality, as discussed in their respective sections of this EIR. In addition, the 2022 RTP/SCS would result in an overall increase in the urbanized character of the region, which would have long-term irreversible aesthetic impacts. Mitigation measures have been prescribed to minimize the long-term impacts of the 2022 RTP/SCS. However, in certain instances, as discussed in Section 5.3 below, impacts could remain significant with implementation of mitigation measures.

5.3 List of Significant and Unavoidable Impacts

The proposed 2022 RTP/SCS would result in the following significant and unavoidable impacts. For the full discussion of each impact, please refer to the section where it is discussed.

- Impact AES-1: Public views of scenic vistas and scenic resources within state scenic highways
- Impact AES-2: Degradation of existing visual character
- Impact AES-3: Increased light and glare
- Impact AG-1: Conversion of Important Farmland to nonagricultural use and conflicts with agricultural uses or conflicts with existing zoning or a Williamson Act contract
- Impact AQ-1: Conflicts or obstruction of implementation of an applicable air quality plan

- Impact AQ-2: Result in a cumulatively considerable net increase of criterial pollutants for which the project region is in non-attainment (construction)
- Impact AQ-3: Result in a cumulatively considerable net increase of criterial pollutants for which the project region is in non-attainment (operation)
- Impact AQ-4: Exposure of sensitive receptors to substantial pollutant concentrations
- Impact BIO-1: Substantial adverse impacts on special-status species
- Impact BIO-2: Substantial adverse impacts on riparian areas, wetlands, and other sensitive habitats
- Impact BIO-3: Interference to wildlife migration
- Impact CR-1: Substantial adverse change in the significance of a historical resource
- Impact CR-2: Substantial adverse change in the significance of an archaeological resource
- Impact EJ-1: Result in disproportionately high or adverse environmental impacts to EJ communities
- Impact GEO-4: Disturbance of known and unknown paleontological resources
- Impact GHG-1: Generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment. An increase that exceeds the following threshold would be considered a significant impact: a. A net increase in GHG emissions by 2046 compared to existing baseline conditions
- Impact GHG-2: Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases. Any conflict with the following thresholds would be considered a significant impact: a. Conflict with regional SB 375 per capita passenger vehicle CO2 emission reduction targets of 16 percent by 2035 from 2005 levels; b. Conflict with state's ability to achieve SB 32 GHG reduction target, which aims to reduce statewide emissions to 40 percent below 1990 levels by 2030; c. Conflict with state's ability to achieve EO B-55-18 carbon neutrality goal by 2045 or EO S-3-05 GHG reduction 2050 goal, which aims to reduce statewide emissions to 80 percent below 1990 levels by 2050; or d. Conflict with applicable local GHG emission reduction plans.
- Impact HAZ-3: Public and environmental hazards due to development on a hazardous material site
- Impact W-2: Decrease groundwater supplies or interfere substantially with groundwater recharge
- Impact W-4: Conflict with implementation of a water quality control plan or sustainable groundwater management plan
- Impact N-1: Temporary increase in ambient noise levels during construction and substantial absolute noise increase
- Impact N-2: Permanent increase in ambient noise levels and substantial absolute noise increase
- Impact N-3: Generate excessive groundborne vibration levels
- Impact N-4: Expose sensitive receptors to noise levels in excess of standards established in a local general plan or noise ordinance
- Impact N-5: Exceed applicable exterior and interior noise thresholds due to close proximity to existing airports
- Impact TCR-1: Substantial adverse change in the significance of a tribal cultural resource

- Impact WF-1: Expose people or structures to significant risks associated with wildfire and install or maintain associated infrastructure that may exacerbate fire risk

6 Alternatives

As required by Section 15126(d) of the State CEQA Guidelines, this EIR examines a reasonable range of alternatives to the proposed 2022 RTP/SCS. Section 15126.6 of the CEQA Guidelines requires that an EIR "describe a range of reasonable alternatives to the project, or to the location of the project, which would feasibly attain most of the basic objectives of the project, but would avoid or substantially lessen any of the significant effects of the project and evaluate the comparative merits of the alternatives."

In addition, the CEQA Guidelines state the following:

- An EIR need not consider every conceivable alternative to a project. Rather, it must consider a reasonable range of potentially feasible alternatives that will foster informed decision making and public participation. An EIR is not required to consider alternatives that are infeasible. The range of potential alternatives to the proposed project shall include those that could feasibly accomplish most of the basic objectives of the project and could avoid or substantially lessen one or more of the significant effects. The EIR should briefly discuss the rationale for selecting the alternatives to be discussed. The EIR should also identify any alternatives that were considered by the lead agency but were rejected as infeasible during the scoping process and briefly explain the reasons underlying the lead agency's determination. Among the factors that may be used to eliminate alternatives from detailed consideration in an EIR are (i) failure to meet most of the basic project objectives, (ii), infeasibility, or (iii) inability to avoid significant environmental impacts. (CEQA Guidelines Section 15126.6(a)(c).)
- "Feasible" means capable of being accomplished within a reasonable period of time, taking into account economic, environmental, legal, social and technological factors. (CEQA Guidelines Section 15364.)

The primary objective of the Regional Transportation Plan and Sustainable Communities Strategy (RTP/SCS) is to comply with applicable regulatory requirements, including California Transportation Commission (CTC) Guidelines and Senate Bill (SB) 375 regional greenhouse gas (GHG) reduction targets. StanCOG's specific objectives for the proposed 2022 RTP/SCS are to additionally ensure that the transportation system planned for the StanCOG region accomplishes the following:

- Serves regional goals, objectives, policies and plans.
- Responds to community and regional transportation needs.
- Promotes energy efficient, environmentally sound modes of travel and facilities and services.
- Promotes equity and efficiency in the distribution of transportation projects and services

Each scenario analyzed during the RTP/SCS process was developed according to a theme to help ensure that choices regarding land use and transportation investments were consistent with one another. Land use choices in each scenario included development patterns, such as where to locate new housing, new job centers, and new mixed-use areas relative to existing communities (e.g., infill vs. converted farmland or open space). They also considered the density of new development, which dictates the relative proportion of large-lot single-family housing to small-lot single-family housing and multifamily housing, and complementary uses, such as locating new housing near services and employment centers. Transportation investment choices in a scenario included decisions about spending levels on new roadway capacity, roadway maintenance, transit, and

alternative modes of travel (e.g., bike and pedestrian). The alternative land use and transportation scenarios modeled and analyzed by StanCOG are described in Appendix N of the proposed 2022 RTP/SCS and the preferred scenario (proposed project) is described in detail within Chapter 8, *Scenario Development,* and Chapter 9, *Scenario Evaluation*, of the proposed 2022 RTP/SCS, as well as Chapter 2 of this EIR.

6.1 Alternatives Development and Screening Process

During the development of the proposed 2022 RTP/SCS, StanCOG developed and evaluated scenarios that included various land use assumptions to see how each scenario could achieve the GHG targets established by CARB for the StanCOG region as well as other performance measures based on the proposed transportation system improvements and investments in the RTP. Extensive outreach with partner agencies, local jurisdictions, key stakeholders, and the public was ongoing throughout the proposed 2022 RTP/SCS planning process. Four scenarios were evaluated by StanCOG. The proposed 2022 RTP/SCS evaluated throughout this EIR is Scenario D. Alternative 1 is Scenario A, Alternative 2 is Scenario B, and Scenario C is discussed under 6-2 *Alternatives Considered but Rejected*.

This alternatives analysis herein includes the following:

- **Alternative 1: No Project Alternative** (SCS Scenario A: Stay the Course). The No Project Alternative depicts future growth continuing without reference to any of the Regional Blueprint principles or strategies, such as an emphasis on compact development. It assumes current regional growth trends continue consistent with growth forecast and continuing split of growth between cities, unincorporated communities, and rural areas. Only transportation projects from the approved 2018 RTP list would be constructed under this alternative.
- **Alternative 2: City Retrofit** (SCS Scenario B: City Retrofit). The City Retrofit Alternative includes a land use scenario which defines a pattern of future growth and transportation system investment for the region emphasizing growth on underutilized land along the region's commercial corridors and downtown areas. The City Retrofit Alternative principally allocates over 90 percent of growth in existing, developed areas, compared to 84 percent for the proposed 2022 RTP/SCS. This is achieved under this alternative by locating new housing along commercial corridors close to existing and future job centers and amenities for daily living. The alternative emphasizes compact development, reducing the need for personal vehicle use, and would minimize impacts to agricultural and rural areas. Growth would be divided between center and corridor infill areas and neighborhood infill areas, with a minimal amount of growth occurring in undeveloped areas. This alternative includes the same list of transportation projects as the proposed 2022 RTP/SCS.

Each alternative is described and analyzed below to determine whether environmental impacts would be similar to, less than, or greater than those of the preferred scenario in the proposed 2022 RTP/SCS. As required by CEQA, this section also includes a discussion of the "environmentally superior alternative" among those studied.

6.2 Alternatives Considered but Rejected

The CEQA Guidelines state that an EIR should identify any alternatives that were considered by the lead agency but were rejected as infeasible during the scoping process and briefly explain the

reasons underlying the lead agency's determination (CEQA Guidelines Section 15126.2(c). Among the factors that may be used to eliminate alternatives from detailed consideration in an EIR are (i) failure to meet most of the basic project objectives, (ii), infeasibility, or (iii) inability to avoid significant environmental impacts (CEQA Guidelines Section 15126.6(c)).

For this EIR, two alternatives were considered by StanCOG and rejected as infeasible during the scoping process for the RTP/SCS. these alternatives and the reasons for elimination are described below.

6.2.1 Complete Communities Alternative

The Complete Communities Alternative (SCS Scenario C: Complete Communities), reimagines future development in new growth areas to include both a broader range of housing types and mix of uses to build new communities that have amenities closer to housing, rather than following a housing subdivision pattern of growth. This alternative is similar to Alternative 1 in terms of the location where future growth happens (in new growth areas). However, growth is denser with more middle housing (such as duplexes, triplexes, and quadplexes) being built in these new growth areas.

Based on modeling results, the Complete Communities Alternative only slightly reduced GHG emissions and resulted in an increase in 2035 VMT compared to the proposed 2022 RTP/SCS. The alternative did not meet SB 375 goals. Compared to the proposed 2022 RTP/SCS, this alternative also had a greater impact on Prime Farmland, consuming 574 more acres. Therefore, this alternative was rejected as it was not environmentally superior to the project and provided little difference for comparing impacts due to its modeling results being very similar to the No Project Alternative.

6.2.2 Aggressive VMT Reduction Alternative

Due to the nature of the StanCOG region, certain aggressive VMT reducing measures are infeasible. For example, the region has a high variability in residential density and has a large rural component, with substantially longer trip lengths and therefore higher VMT for those in rural areas. These commuter trips are not easily replaced by transit, as longer transit trip lengths typically require multiple stops and/or transfers, making commuting via transit less attractive. The rural areas of the StanCOG region are also experiencing higher growth in employment than urban areas. Such growth is particularly evident with employment in the agriculture and service industries. These industries require a high level of in-person work and are therefore not conducive to telecommuting. The region also has high income variability, which further complicates the process of linking the residential and employment zones necessary to provide efficient urban transit and reduce commute trips.

There are also significant agriculture activities from farm workers making seasonal transient (field-to-field) trips and agriculture goods movements. These trips are not conducive to transit and often generate longer trip lengths and thus higher VMT. The VMT generated by these activities does not respond to VMT reduction strategies such as increased transit or telecommuting.

The region's aging population is expected to grow at a faster rate in the next 20 years. This population attracts more service trips from rural jurisdictions, resulting in higher VMT and making it difficult to provide efficient urban transit.

Other measures such as higher parking fees as well as tolling highway travel are only feasible in highly urbanized areas where increased transit services are available as an alternative mode. Therefore, an aggressive VMT reduction alternative was not considered as an alternative for detailed consideration in this EIR.

6.3 Alternative 1: No Project Alternative

6.3.1 Description

Alternative 1, the No Project Alternative, represents the region continuing to move forward with the investments and policies in the previous (2018) RTP/SCS. Alternative 1 used the 2018 Preferred Scenario as the starting point and updated it to reflect more recent development trends, as discussed in interviews with local jurisdictions, but updated land use growth to better match general plans and/or area plans prepared since 2018. Thereby, this alternative places the majority of future growth in new, undeveloped, greenfield areas rather than in infill and redevelopment areas. This alternative would keep future development roughly in the same pattern and using the same strategies that have been applied in past local general plans. This alternative would only construct projects in the approved 2018 RTP and therefore would not include any new projects from the 2022 RTP/SCS, maintaining the current status of projects. This would result in fewer transportation projects being constructed. Table 6-1 identifies projects included in the 2022 RTP/SCS that were not included in the 2018 RTP/SCA and therefore would not be constructed under Alternative 1.

Alternative 1 allocates 74 percent of its growth in new growth areas, 16 percent to neighborhood infill areas, and 13 percent to Center Corridor infill areas. This alternative has an overall gross acre residential density of 8.9 units per acre with 36 percent multifamily housing growth.

Table 6-1 2022 RTP/SCS Projects Excluded from Alternative 1

Project ID	Location	Description
City of Ceres		
C72	El Camino Ave at North St	Surface Parking and undercrossing to ACE station traffic mitigation
C73	Railroad Ave, Central Ave, Hackett Rd	Overflow Parking ACE Station
C74	Develop a Lighted Park and Ride Lot	Near Whitmore Overpass
C75	Develop a lighted Park and Ride 2nd Lot	Near Freeway/ACE Station
C76	Bridge 38C0222 and 200 feet each direction on Service Rd. and Moore Rd.	Replace bridge for safety, widen lanes to meet Caltrans standards, add bike/pedestrian facility
Caltrans		
CA01	18.5/20.9	Install Ramp Metering, Add HOV Lanes, and Mixed Flow Lanes. Modify Onramp & Ramp Intersections
CA02	PM 4.9	Newman Intersection Oversight
CA03	22.56/24.75	Construction HOV lanes
CA04	Kasson/River Rd	Lengthen EB and WB two lanes transition
CA05	Crows Landing Rd/Fink Rd	Construct Traffic Signal or Roundabout
CA07	Near Patterson, from Fink Road Undercrossing No. 38-0114L to Khaksa Road Undercrossing No. 38-0127L/R at various locations. Rehabilitate bridge decks with concrete overlay, replace joint seals and/or approach slabs.	Rehabilitate bridge decks with concrete overlay, replace joint seals and/or approach slabs

Project ID	Location	Description
CA08	In Stanislaus and San Joaquin Counties, on various routes at various locations.	Install Transportation Management System (TMS) elements and enhance highway worker safety
CA09	Near Westley, at the Westley Safety Roadside Rest Area (SRRA).	Replace SRRA buildings
CA10	In and near Ceres and Modesto, at various locations from Mitchell Road to Kansas Avenue; also in Merced County, on Route 59 near the city of Merced, at Childs Avenue (PM 14.0).	Upgrade drainage pump plants
CA11	In Modesto, near Zeff Road Undercrossing.	Construct stormwater Best Management Practices (BMPs)
CA12	PM 3.63 to 4.10	Construct NB and SB SR-99 auxiliary lanes between Monte Vista Rd to Taylor Rd
CA13	In Waterford, from Reinway Avenue to F Street.	Upgrade pedestrian facilities to make compliant with the Americans with Disabilities Act (ADA) standards
CA14	Bridge replacement in Stanislaus County on State Route 4 at Hoods Creed Bridge (#38 0041)	Bridge Replacement
CA15	Pavement Class I in Stanislaus County Route 5	Pavement Class I in Stanislaus County Route 5
CA16	Intersection SR 33/Frank Cox Road, north of city of Patterson	Install Left-Turn Channelization for southbound and northbound traffic
CA17	Repair or replace old signals in District10 (D10) in Stanislaus & Merced Counties	Repair or replace old signals in District10 (D10) in Stanislaus & Merced Counties
CA18	Stanislaus County SR 99 at Modesto Mtce Station Yard (Facility #38M5715)	Modesto Maintenance Station Rehabilitation
CA19	On SR 99 in the city of Modesto in Stanislaus county at Briggsmore Avenue, Standiford Avenue, Beckwith Road.	Collision Severity Reduction
CA20	Repair or replace old signals in Stanislaus county 108 PM 23.08 to 38.24	Repair or replace old signals in Stanislaus county 108 PM 23.08 to 38.24
CA21	Intersection SR 120/Wamble Road, east of the city of Oakdale.	Install Left-Turn Channelization for eastbound and westbound traffic
CA22	Stanislaus 120 PM15.04	Bridge Replacement to address Fish Passage Priority
City of Hughson		
H15	Fox Road to Santa Fe	Improve to 2-lane Minor Collector
City of Modesto		
M34	Oakdale Rd to Roselle Ave	Construct new 2 lane roadway
M79	SR 99/Pelandale Interchange (Phase 2)	Widen Sisk Rd/Pelandale Intersection to the south-west corner of the intersection, construct a second left-turn lane from EB Pelandale to NB Sisk Rd, a third dedicated through lane on EB Pelandale, and a

Project ID	Location	Description
		dedicated right-turn lane from EB Pelandale to SB Sisk Rd
M82	State Route 99 to Dakota Ave Phase 1 (2-lane expressway)	Construct a two-lane expressway from N. Dakota Ave to the Needham St. Overcrossing. (Phase 1 of ultimate build-out of SR132 West Freeway/Expressway Project) (Reference: 2014 RTP Project ID - RE01)
M83	State Route 99 to Dakota Ave (Phase 2 Ultimate 4 lane facility with SR-99 connections)	Construct a four lane freeway from N. Dakota Ave to the Needham St. Overcrossing.
M84	Briggsmore Interchange	Reconstruct to 8 Lane Interchange
M85	Standiford/Beckwith Interchange	Reconstruct to 8 Lane Interchange
M86	Various Locations	Intelligent Transportation System Upgrades
M87	SR-99 to Hatch Rd.	Complete Street Improvements
M88	Neece Ave. to Paradise Rd.	Complete Street Improvements
M89	1st St. to Carpenter Rd.	Complete Street Improvements
City of Newman		
N10	Mariposa to Stephens	Pavement Rehabilitation, Maintenance
N11	Merced to Inyo and Yolo to Kern	Pavement Rehabilitation, Maintenance
N12	Main Street to T Street	Pavement Rehabilitation, Maintenance
N13	Main Street to T Street	Pavement Rehabilitation, Maintenance
N14	Main Street to T Street	Pavement Rehabilitation, Maintenance
N15	Merced to Inyo Avenue	Pavement Rehabilitation, Maintenance
N16	Driskell to Rodeo Grounds Way	Realign Canal School Road to meet the Driskell Ave and Hills Ferry Road Intersection
N17	Inyo Ave to Yolo Ave	Roadway rehabilitation, maintenance, pedestrian, and complete streets improvements
N18	SR33 to Hills Ferry Road	Pavement Rehabilitation and Maintenance
N19	Merced County line northward to Yolo Avenue	Highway and pedestrian safety improvements
N20	Driskell to Sherman Parkway	Pavement Rehabilitation, Maintenance, and complete streets improvements
N21	Driskell to Sherman Parkway	Pavement Rehabilitation, Maintenance, and complete streets improvements
N22	Upper Rd to Prince Street	Pavement Rehabilitation, Maintenance, and complete streets improvements
N23	Merced St to Sherman Parkway	Roadway rehabilitation, maintenance, pedestrian, and complete streets improvements
N24	SR33 to Hardin Rd	Roadway rehabilitation, widening, intersection improvements, pedestrian, and complete streets improvements
N25	Various Locations	Pavement Rehabilitation and Maintenance
N26	From Inyo Ave to Yolo St	Roadway rehabilitation, maintenance, pedestrian, and complete streets improvements
N27	From T Street to Hills Ferry Road	Roadway rehabilitation, maintenance, pedestrian, and complete
N28	From Hills Ferry Road to City Limits	Roadway rehabilitation, maintenance, pedestrian, and complete streets improvements

Project ID	Location	Description
City of Oakdale		
O20	F St to Sierra Rd	Install Complete Street Improvements to include 2 lanes, median, 2 bike lanes, and full frontage improvements
O21	Intersection	Improve intersection to include traffic signal pole relocation, modify signal, and restriping
O22	Intersection	Project will include removal of existing median, paving, restriping, and traffic light reconfiguration
O23	Intersection	Install Signal & Intersection Improvements
O24	Intersection	Install Signal & Intersection Improvements
O27	Intersection	Striping & Signage to include a 3-way stop, turn lanes for traveling North on Maag
O28	Intersection	Install Signal & Intersection Improvements
O32	Oakdale / County	Intersection Improvements at Rodeo Intersection Improvements at Rodeo Stearns and F (SR 108/120 and Stearns Road intersection)
City of Patterson		
P08	Raines Rd to I-5	Construct New Interchange at I-5.
P09	Sperry Ave/State Route 33	Signal at intersection, adding a left turn to each approach.
P10	Roger Rd/ Keystone Pacific	Signalizing the intersection, adding a left-lane to each approach,
P11	Rogers Road/Zacharias Rd	Signalizing the intersection, adding a left-lane to each approach,
P12	Ward Av/ East-West Connection	Signalizing the intersection, install two Northbound left-turn
P13	SR-33/ Ward Ave	Signalize intersection; add a northbound left turn lane.
P14	Salado Av and Ward Av	Signalize intersection
P15	Las Palmas Av and Poplar Av	Signalize intersection and Lane improvement
P16	Ward Av to SR-33	Widen from 2 to 4 lanes
P17	Sperry Av to American Eagle Way	Widen from 2 to 4 lanes
P18	American Eagle Way to SR-33	Widen from 2 to 4 lanes
P19	Sperry Av to Marshall Rd	Widen from 2 to 4 lanes
P20	SR 33 to Sycamore Av	adding center turn lane
City of Riverbank		
S101	SR 132 Dakota Avenue to Gates Road	Construct 2 or 4-lane divided expressway or freeway (County)
S103	Hatch Road to Garner Road	2-Lane Expressway
S104	Ladd Rd to the south end of the McHenry Bridge	Widen to 5 Lanes
S106	Over TID Upper Lateral #3	Replace Bridge
S107	Eastin Road & Orestimba Creek	Low water crossing - bridge or culvert construction
S108	Catfish Camp to 1,200' southwest	Raise Road profile
S109	Geer Road and Santa Fe Avenue	Intersection Improvements - curb, gutter, SD improvements @ NW corner
S110	W. Main St & Faith Home Rd	Intersection Improvements
S111	Faith Home Road @ Whitmore Avenue	Intersection Improvements

Project ID	Location	Description
S112	Faith Home Road @ Roeding Road	Intersection Improvements
S113	Faith Home Road @ Service Road	Intersection Improvements
S114	Claribel Road @ Langworth Road	Intersection Improvements
S115	Dakota Road @ Beckwith Road	Intersection Improvements
S116	Grayson Road @ Vivian Road	Intersection Improvements
S117	Crows Landing Road @ Marshall Road/River Road	Intersection Improvements
S118	Pirrone Road @ Sisk Road	Intersection Improvements
S119	Pirrone Road - Gateway Drive to Hammett Road	Roadway Realignment
S120	A Street @ 3rd Street	Intersection Improvements
S121	Various Locations	ITS/Traffic Operations Improvements
S122	Various Locations	Roadway Safety Improvements
S123	Bell Road to SR 33	Widen to County Standard
S124	Fink Road to W. Ike Crow Road	Widen to County Standard
S125	Fink Road to CLIBP West Entrance	Widen to County Standard
S126	Ward Avenue to CLIBP Entrance	Widen to County Standard
S127	Sperry Avenue @ SR 33	Intersection Improvements
S128	W. Ike Crow Road @ SR 33	Intersection Improvements
S129	Fink Road @ Bell Road	Intersection Improvements
S130	Fink Road @ CLIBP Entrance	Intersection Improvements
S131	Oakdale Road to Claus Road	Construct 4-lane Expressway
S132	Claus Road to Albers Road	Construct 4-lane Expressway
S133	Albers Road to SR 120	Construct 4-lane Expressway
S134	Tully Road to Coffee Road	Construct 6-lane Freeway
S135	SR 99 Interchange with Keyes Road	Reconstruct interchange
S136	SR 99 to Dakota Avenue	Widen to 4-Lane Highway
City of Turlock		
W13	Western City Limit to the Eastern City Limit	Widen Yosemite Blvd to 4 Lane Arterial Standard as defined in the City of Waterford Vision 2025 General Plan
W14	Northern City Limit to Southern City Limit	Widen Reinway to 2 Lane Collector Standard as defined in the City of Waterford Vision 2025 General Plan
W15	Reinway Avenue to Pasadena Ave	Widen Washington to 2 Lane Local Road Standard as defined in the City of Waterford Vision 2025 General Plan
W16	Washington to Yosemite	Widen Pasadena to 2 Lane Local Road Standard as defined in the City of Waterford Vision 2025 General Plan

6.3.2 Impact Analysis

a. Aesthetics

Implementation of this alternative would result in fewer visual impacts as compared to the proposed 2022 RTP/SCS, because many of the proposed interchange improvements, auxiliary and transition lanes, new roadways and overcrossings and road extensions, would not be constructed (See Table 6-1). Nevertheless, many transportation projects would still be constructed under this alternative with the potential to impact scenic vistas on designated scenic highways, along with the gradual transformation toward a more urban/suburban character would occur in many parts of the StanCOG region. In fact, because this alternative would deviate from the 2018 SCS and continue current growth trends rather than emphasizing an infill approach to land use and housing, more development would occur outside of existing urban areas, which may result in greater impacts to scenic resources in the less developed portions of the StanCOG region. Thus, impacts related to visual character would be significant and unavoidable for this alternative, as they would be with the proposed 2022 RTP/SCS. The overall level of impact resulting from combined transportation improvement and land use projects would be similar when compared to the proposed 2022 RTP/SCS with some impacts greater while other impacts less but would remain significant and unavoidable.

b. Agriculture and Forestry Resources

This alternative would result in fewer transportation projects being constructed, including roadway widening and other projects that could directly convert agricultural land to non-agricultural use. However, because this alternative would continue current growth trends rather than emphasizing an infill approach to land use and housing, more development would be expected to occur outside of existing urbanized areas, including within areas currently used for agricultural production. Given this land use trend and the extent of Important Farmland in the StanCOG region, impacts related to converting Important Farmland to non-agricultural use, conflicts between urban and agricultural land uses, and conflicts with existing agricultural zoning and/or Williamson Act contracts would be worse under this alternative than for the proposed 2022 RTP/SCS.

Because there is no identified forestland in the StanCOG region, there is no impact to forest or timberlands.

The overall impact to agriculture resources resulting from the No Build Alternative would be greater than under the 2022 RTP/SCS.

c. Air Quality

Implementation of this alternative would result in reduced short-term air quality impacts from construction activity, as fewer transportation projects would be implemented and therefore less construction activity would occur. Because emissions are directly correlated with VMT, it can be reasonably assumed that emissions for all pollutants would be higher under the No Project Alternative compared to the proposed 2022 RTP/SCS. The land use scenario in the No Project Alternative would contribute to more new growth in undeveloped areas compared to that of the proposed RTP/SCS. Because the proposed 2022 RTP/SCS would emphasize infill development, it would likely result in lower VMT than the No Project Alternative. Therefore, this alternative would result in higher emissions than the proposed 2022 RP/SCS. The SCS is intended to increase residential and commercial land use capacity within existing transit corridors which would shift a greater share of future growth to these corridors, ultimately increasing density and improving

circulation and multimodal connections. If this alternative were selected, improvements in the transportation infrastructure and infill development projects anticipated under the proposed 2022 RTP/SCS would not occur. Higher VMT as a result of fewer alternative transportation projects under this alternative would result in higher air pollutant emissions.

Future land use development under this alternative would not be infill or TOD-focused. As such, the No Project Alternative would not concentrate population adjacent to transit and other transportation facilities that could result in more people being exposed to elevated health risks from TACs. Accordingly, impacts related to TAC exposure to sensitive receptors would be less under this alternative than under the proposed 2022 RTP/SCS but would remain significant and unavoidable.

Overall air quality impacts would increase under this alternative when compared to the proposed 2022 RTP/SCS because VMT would be higher under this alternative. Under this alternative, TACs would be reduced due to reduced development near transit and transportation facilities. However, long term operational impacts related exposure of sensitive receptors to substantial hazardous air pollutant concentrations and objectionable odors would remain significant and unavoidable, as they would be for the proposed 2022 RTP/SCS.

d. Biological Resources

Future transportation projects developed under this alternative would result in fewer impacts to biological resources, as fewer roadway extensions, widening projects, and creek crossings would occur under this alternative. However, because this alternative would continue current regional growth trends rather than emphasizing an infill approach to land use and housing, more development would be expected to occur outside of existing urbanized areas, including in areas providing habitat for special status plant and animal species. Overall impacts to special status plants, animals, wetlands and/or riparian habitat and wildlife movement outside developed urban areas would therefore be greater than under the 2022 RTP/SCS. Impacts would remain significant and unavoidable, as they would be for the proposed 2022 RTP/SCS.

e. Cultural Resources

As described in Section 4.5, *Cultural Resources,* some of the proposed 2022 RTP/SCS projects may be located in proximity to historical resources or include repair or replacement of potentially historical structures (e.g., bridges). Because fewer transportation projects would be developed under the No Project Alternative, these impacts would be reduced. In addition, because less infill development would occur under this alternative, fewer impacts involving redevelopment or demolition of existing structures resulting from land use development would occur. Impacts to historic resources would therefore be reduced when compared to the proposed 2022 RTP/SCS. However, project specific impacts may still be significant, as they are for the proposed 2022 RTP/SCS.

Implementation of this alternative would involve less ground disturbance associated with transportation improvements than would occur under the proposed 2022 RTP/SCS. However, because more land use development could occur outside of existing urbanized areas, more ground disturbance would be expected to occur in previously undeveloped areas. As such, the potential for uncovering known or unknown archaeological resources would increase under this alternative for new development but decrease for transportation projects. The overall level of impact resulting from combined transportation improvement and land use projects would be similar when compared to the proposed 2022 RTP/SCS assuming relative equalization between the historic and archaeologic impacts between the proposed 2022 RTP/SCS project and Alternative 1. Impacts to archaeological resources would remain significant and unavoidable, as they are for the proposed 2022 RTP/SCS.

f. Energy

Because this alternative would result in less construction of transportation infrastructure, overall energy use associated with construction activities would be reduced when compared to the proposed 2022 RTP/SCS. However, this alternative would not include many of the capital improvements envisioned under the proposed 2022 RTP/SCS that would improve transportation efficiency and reduce regional energy demand, such as active transportation projects. Energy use will increase over time as the result of regional socioeconomic (population and employment) growth, regardless of implementation of the proposed 2022 RTP/SCS. The No Project Alternative would result in similar total and per capita energy use as compared to the proposed 2022 RTP/SCS. As discussed in Section 4.6, *Energy,* the proposed 2022 RTP/SCS would not result in inefficient, unnecessary, or wasteful direct or indirect consumption of energy, and would be consistent with applicable energy conservation policies. Because the No Project Alternative would be similar in both total and per capita energy use, impacts would be similar when compared to the proposed 2022 RTP/SCS and impacts related to inefficient, unnecessary, or wasteful direct or indirect energy consumption would be less than significant, as they are for the proposed 2022 RTP/SCS.

g. Environmental Justice

This alternative would result in fewer transportation projects being constructed, including roadway widening and other projects and would not emphasize an infill approach to land use and housing that could potentially impact, displace or divide an EJ community compared to the project. However, because this alternative would continue current growth trends rather than emphasizing an infill approach to land use and housing, more development would be expected to occur outside of existing urbanized areas that are not near transit that EJ communities need for transportation.

Unlike the 2022 RTP/SCS, this alternative would not promote infill and mixed use development. Infill and mixed use development would improve mobility for low income and minority populations and communities of concerns because housing and jobs would be located within closer proximity to public transit facilities. Therefore, without this type of development, Alternative 1 may result in a smaller percentage of environmental justice populations having convenient access to mobility. Performance measures developed by StanCOG indicate that 19 percent less households in jobs-rich areas would be developed compared to the proposed project under Alternative 1 making access to jobs more difficult for EJ communities with limited transportation options.

Overall, implementation of Alternative 1 would result in similar impacts on environmental justice than the proposed 2012 RTP/SCS with less impact on potential displacement but also less access to transit and housing near jobs.

h. Geology and Soils

Impacts of this alternative related to erosion and loss of topsoil would be less than significant pursuant to compliance with existing regulations, similar to the proposed 2022 RTP/SCS. Because this alternative does not include as many new interchanges, roads and fixed facilities, there would be less exposure of new structures to hazardous geologic conditions, including expansive soils, landslides, ground-shaking, and flooding. Conversely, if inadequate structures are not replaced, the potential for these existing structures and people using these structures to be harmed by geologic hazards could be greater than under the proposed 2022 RTP/SCS. Implementation of this alternative would involve less ground disturbance associated with transportation improvements than would occur under the proposed 2022 RTP/SCS. However, because more land use development could

occur outside of existing urbanized areas due to growth continuing under the existing land use pattern, more development would be expected to occur in previously undeveloped areas. While development under the No Project Alternative would also be required to comply with the California Building Code and requirements set forth by the Alquist Priolo Zone Act, the No Project Alternative would result in a greater area of land being converted from undeveloped to developed uses that could be located in areas with greater susceptibility to seismic related risks. Impacts related to susceptibility to seismic related risks would be less than significant, as under the proposed 2022 RTP/SCS.

Impacts to paleontological resources would be greater under this alternative compared to the proposed 2022 RTP/SCS, as greater amounts of ground disturbing activities would increase the potential for impacts that could result in significant and unavoidable impacts, greater than the proposed 2022 RTP/SCS.

Overall, impacts to geology and soils would be slightly greater compared to the proposed 2022 RTP/SCS with greater land disturbance but would remain less than significant. Impacts to paleontological resources would also be greater and would be significant and unavoidable.

i. Greenhouse Gas Emissions

The No Project Alternative would result in fewer impacts associated with GHG emissions during construction activities as fewer transportation infrastructure projects would be constructed compared to the proposed 2022 RTP/SCS. However, operation of the No Project Alternative would result in conflicts with applicable GHG reduction plans, policies, and regulations, resulting in a greater impact compared to the proposed project. The No Project Alternative would not include the promotion of sustainable modes of travel, clean vehicle technologies and traffic operational improvements within the StanCOG region that would help improve GHG emissions levels from mobile sources substantially. The overall impact of this alternative would be greater than the proposed project and remain significant and unavoidable.

j. Hazards and Hazardous Materials

This alternative would result in fewer infrastructure projects being constructed, thereby reducing hazardous material use, storage, and transportation resulting from construction of those projects. However, the volume of hazardous materials being transported to support land use development in the region would remain the same, as land use development would continue to occur under this alternative. Because future development under the No Project Alternative would be subject to applicable hazardous materials regulations and programs, impacts relating to routine transport, use, or disposal of hazardous materials; risk of upset and accident conditions; emissions within one-quarter mile of a school; and airport hazards would be less than significant, similar to the proposed 2022 RTP/SCS. Overall hazards and hazardous materials impacts would be similar under this alternative as under the proposed 2022 RTP/SCS.

k. Hydrology and Water Quality

This alternative would result in fewer transportation infrastructure projects being constructed. Therefore, this alternative would reduce water quality impacts resulting from construction-related erosion and sedimentation and would generate less water demand for dust suppression activities for transportation projects. These impacts would remain less than significant pursuant to compliance with existing regulations, as they are for the proposed 2022 RTP/SCS.

Because this alternative would continue current growth trends rather than emphasizing an infill approach to land use and housing, more development would be expected to occur outside of existing urbanized areas. As such, impervious surfaces would be expected to increase under this alternative. Because projects would be located in less developed areas, runoff would include fewer urban pollutants such as heavy metals from auto emissions, oil and grease than projects under the proposed 2022 RTP/SCS. However, because more development would occur in and therefore be adjacent to agricultural areas, runoff from those adjacent agricultural areas would contain more fertilizers and pesticides. While projects under this alternative may require more grading and vegetation removal, including in proximity to creeks, less in-fill development may result in less disturbance of soils on previously contaminated sites. As such, water quality in creeks may be more impacted, but water quality within urban areas may be less impacted. Because of these tradeoffs, the No Project Alternative would result in impacts to water quality that are overall comparable to the proposed 2022 RTP/SCS with some impacts greater while other impacts would be less; water quality impacts would remain less than significant, pursuant to compliance with existing regulations, as they are for the proposed 2022 RTP/SCS.

l. Land Use

As with the 2022 MTP/SCS, this alternative would not be anticipated to divide an established community. As noted in Section 4.12, *Land Use,* the 2022 RTP/SCS includes a list of planned and programmed projects including local and regional capital improvements that have been anticipated or accounted for in local general plans and regional, statewide, and federal transportation improvement programs. In addition, the objective of the 2022 RTP/SCS is to provide for a comprehensive transportation system of facilities and services that meets public need for the movement of people and goods, and that is consistent with the social, economic, and environmental goals and policies of the region. The No Project Alternative would not provide the same number of capital improvements anticipated within applicable general plans and transportation improvement programs, nor would it guide development to explicitly meet social, economic, and environmental goals and policies of the region as anticipated under the 2022 RTP/SCS. Due to the more dispersed land use pattern, the amount of undeveloped land impacted would be greater under this alternative.

Although the No Project Alternative would continue existing land use patterns and trends, it would increase the severity of several environmental impacts, as discussed herein. As such, it could result in conflicts with State and local policies and regulations adopted for the purpose of avoiding or mitigating environmental effects. Because environmental effects would generally increase under this alternative, the overall impacts on land use would be greater under this alternative when compared to the 2022 RTP/SCS but would remain less than significant.

m. Noise

From a programmatic perspective, fewer transportation infrastructure projects would result in less construction activity under the No Project Alternative. This would reduce temporary noise impacts throughout the StanCOG region. In addition, because the number of infill or TOD projects would be less under the No Project Alternative, construction-related noise impacts on adjacent sensitive receptors would also decrease. However, construction noise would still occur, and impacts would continue to be significant, as they are for the proposed 2022 RTP/SCS.

Although the number of transportation projects would be reduced as compared to the 2022 RTP/SCS, increased traffic volumes resulting from regional growth would continue to occur.

Whether noise impacts would be greater or less than those anticipated under the 2022 RTP/SCS remains dependent on site specific considerations that cannot currently be known. Regionally, the difference in VMT between the No Project Alternative and the proposed 2022 RTP/SCS (101,812 difference in 2035 distributed across the entire network) is not enough to noticeably change overall noise levels in the StanCOG region. Mobile source noise levels resulting from traffic would therefore be similar under the No Project Alternative when compared to the proposed 2022 RTP/SCS and would remain significant and unavoidable.

Because the listed projects in Table 6-1 for rail and transit improvements planned under the proposed 2022 RTP/SCS would not be implemented under this alternative, the potential for increased rail and transit noise would be reduced under the No Project Alternative but would remain significant and unavoidable.

Overall, noise-related impacts across the region would be similar to the proposed 2022 RTP/SCS and would continue to be significant and unavoidable.

n. Population and Housing

The No Project Alternative would result in the same population increase in the region by 2046 as the proposed 2022 RTP/SCS. As such, impacts related to population growth would be similar to the proposed 2022 RTP/SCS and would remain less than significant. Because fewer transportation projects would be implemented and land uses would be less dense (thus resulting in less demolition and redevelopment of existing housing), displacement-related impacts would be reduced under this alternative when compared to the proposed 2022 RTP/SCS. This impact would be less than significant. Overall population and housing impacts would be less than the proposed 2022 RTP/SCS.

o. Public Services and Recreation

Implementation of this alternative would result in the same population increase in the region by 2046 as the proposed 2022 RTP/SCS. As such, expected demand on public services, recreation, and utilities and service systems would be similar to the proposed 2022 RTP/SCS and may require new or expanded facilities. Overall, impacts related to public services and recreation would be similar as under the proposed 2022 RTP/SCS and would be less than significant.

p. Transportation

This alternative would not include many of the projects envisioned under the proposed 2022 RTP/SCS as listed above, including new highway and intersection projects, new bikeway and pedestrian projects (active transportation), new railroad projects, new transit projects, new intelligent transportation system/transportation demand management projects and aviation projects. Many of these projects are intended to address VMT, and in many cases would serve as mitigation measures to reduce potential impacts associated with planned long-term development.

Overall, VMT within the StanCOG region would increase as a result of regional population growth. As discussed in Section 4.15, *Transportation*, daily VMT in the StanCOG region in 2035 would be 10,159,585 without implementation of the proposed 2022 RTP/SCS. This would be 101,812 more regional VMT than would be generated with implementation of the proposed 2022 RTP/SCS. Thus, under the No Project Alternative, there would be a less than 1 percent increase in daily VMT in 2035 compared to conditions with the proposed 2022 RTP/SCS in 2035. This alternative has a total 2035 VMT that is 1.81 percent higher than the project.

Under the No Project Alternative, projects to increase bus capacity on congested facilities and the frequency of bus lines would not be implemented. Additionally, the proposed 2022 RTP/SCS projects that are intended to ensure a reliable bus fleet would not be implemented under the No Project Alternative. Without these types of projects, operation of public transit may be unreliable or fail to meet the frequency and performance standards established by the transit agencies in the StanCOG region. Thus, compared to the proposed 2022 RTP/SCS, the No Project Alternative would have a greater adverse impact on transit service in the StanCOG region with less dense development and identified transit projects in Table 6-1 not being funded.

Overall, the No Project Alternative would result in increased daily VMT in the StanCOG region compared to the proposed 2022 RTP/SCS, and in adverse impacts to transit service as projects to increase capacity on congested facilities and bus lines would not be implemented. Thus, overall, impacts to transportation would be greater under the No Project Alternative and would remain significant and unavoidable.

q. Tribal Cultural Resources

Implementation of this alternative would involve less ground disturbance associated with transportation improvements than would occur under the proposed 2022 RTP/SCS. However, because more land use development could occur outside of existing urbanized areas, more ground disturbance would be expected to occur in previously undeveloped or open space areas. As such, the potential to disturb tribal cultural resources, including ancestral remains and sacred sites, would increase under this alternative. Future projects would be required to comply with AB 52, which may require formal tribal consultation. Compliance with this requirement would reduce impacts to a less than significant level, similar to the proposed 2022 RTP/SCS. However, because of the increased potential to disturb tribal cultural resources from development outside of urbanized areas and no mitigation applicable to this alternative, the overall impact of the No Project Alternative would be greater than under the proposed 2022 RTP/SCS.

r. Wildfire

The No Project Alternative would allow more housing near wildlands and would increase the vulnerability of people and structures to wildland fire. Under the No Project Alternative land use development could occur outside of existing urbanized areas and extend into more wildland areas. This impact, which is significant and unavoidable for the proposed 2022 RTP/SCS, would be greater under the No Project Alternative and would remain significant and unavoidable.

6.4 Alternative 2: City Retrofit

6.4.1 Description

Alternative 2, the City Retrofit Alternative, prioritizes growth on underutilized land along the StanCOG region's aging commercial corridors and downtowns. It does this by placing over 95 percent of growth in existing, developed areas by placing new housing along commercial corridors (55 percent) and neighborhood infill areas (45 percent) close to existing and future jobs and amenities for daily living. Strategies to increase density along commercial corridors would include reducing parking minimums, creating incentives for building higher density housing or mixed-use buildings, or streamlining the permitting process. Compared to the proposed 2022 RTP/SCS, Alternative 2 would increase gross residential density by 8.2 percent, be 8 percent higher for

households in jobs-rich areas, include 15 percent more dwelling units at 20+ units per acre, and have a 24 percent higher 15+ multifamily housing growth compared to the proposed project. Plus, it would consume 42 percent less Prime Farmland (a reduction of 422 acres) compared to the proposed 2022 RTP/SCS.

This more compact development would reduce the need for a personal vehicle, which reduces VMT 2.56 percent more than the proposed project.

The alternative has an overall gross acre residential density of 24.8 units per acre with 43 percent multifamily housing growth of 15 or more units and 83 percent of new dwelling units provided at 20-plus units per acre.

In terms of transportation investment, this alternative implements the same list of transportation projects as the proposed 2022 RTP/SCS.

6.4.2 Impact Analysis

a. Aesthetics

This alternative would include greater development intensities around transit and within urban centers. Higher density housing in transit areas and urban centers would have the potential to impact scenic vistas on designated scenic highways, along with the gradual transformation toward a more urban character would occur in many parts of the StanCOG region. Land use development envisioned under this alternative would be denser than the proposed 2022 RTP/SCS and would result in greater aesthetic impacts to scenic resources in the developed portions of the StanCOG region. As land use development would be denser in infill areas, there would be less development in scenic viewshed areas, and this alternative would result in fewer changes in character from rural to urban. Impacts to scenic resources would be less under this alternative compared to the proposed 2022 RTP/SCS. Nevertheless, impacts related to visual character would be significant and unavoidable as with the proposed 2022 RTP/SCS. While the overall level of impact resulting from land use projects would be less when compared to the proposed 2022 RTP/SCS, impacts would remain significant and unavoidable.

a. Agriculture and Forestry Resources

Land use development under this alternative would further concentrate higher density housing in transit and urban areas. Impacts from land use projects to agricultural resources would be less than impacts under the proposed 2022 RTP/SCS, as development would not extend into agricultural land to the same extent impacting 422 less acres of Prime farmland compared to the proposed project. This impact would be less than for the proposed 2022 RTP/SCS but would remain significant and unavoidable because some development on Important Farmland could still occur.

Because there is no identified forestland in the StanCOG region, there is no impact to forest or timberlands.

b. Air Quality

Under this alternative, the land use development pattern would have higher densities in urban areas near transit. As such, it is likely that more sensitive receptors would be exposed to health risks from TACs during construction or operation. As a result, exposure to substantial hazardous air pollutant concentrations and objectionable odors would remain significant and unavoidable, as under the proposed 2022 RTP/SCS.

Because this alternative would reduce VMT, it can be assumed that transportation related emissions of air pollutants would be reduced when compared to the proposed RTP/SCS. Impacts, however, would remain significant and unavoidable, as under the proposed 2022 RTP/SCS.

c. Biological Resources

This alternative would further emphasize an infill approach to land use and housing. As with the proposed 2022 RTP/SCS, development would primarily occur in already urbanized areas and would not result in development of areas that provide habitat for special status plant and animal species. Overall impacts to special status plants, animals, wetlands and/or riparian habitat and wildlife movement outside developed urban areas would therefore be reduced when compared the proposed 2022 RTP/SCS. However, impacts would remain significant and unavoidable.

d. Cultural Resources

As described in Section 4.5, *Cultural Resources,* some of the proposed 2022 RTP/SCS projects may be located in proximity to historical resources or include repair or replacement of potentially historical structures (e.g., bridges). Under this alternative, all of the projects that would include repair or replacement of potentially historic resources would still occur. Impacts to historical resources would therefore be similar compared to the proposed 2022 RTP/SCS. Land use development impacts under this alternative could be greater as there is greater potential to redevelop and demolish historic structures in urbanized areas.

Land use development would be at a denser rate requiring less ground disturbance activities than under the proposed 2022 RTP/SCS. As such, the potential for uncovering known or unknown archaeological resources as a result of land use development would be reduced under this alternative. Although overall archaeological resources impacts would be reduced, the potential would remain for unearthing known or previously unidentified resources. As such, impacts would remain significant and unavoidable.

e. Energy

Energy use will increase over time as the result of regional socioeconomic (population and employment) growth, regardless of implementation of the proposed 2022 RTP/SCS. As discussed in Section 4.6, *Energy,* the proposed 2022 RTP/SCS would not result in inefficient, unnecessary, or wasteful direct or indirect consumption of energy, and would be consistent with applicable energy conservation policies. Because this alternative would reduce vehicular travel as shown through reduced VMT, energy use would be reduced. Impacts related to inefficient, unnecessary, or wasteful direct or indirect energy consumption would be reduced when compared to the proposed 2022 RTP/SCS and would similarly remain less than significant.

f. Environmental Justice

Alternative B would include greater development intensities around transit and within urban centers. Higher density housing in transit areas and urban centers would have the potential to displace existing EJ communities where the new development would occur but also provide an increased access to transit to EJ communities through higher density development along transportation corridors. This alternative would provide more housing in jobs-rich areas, 8 percent more than the proposed project. This alternative would also provide 15 percent more housing at 20-plus units per acre, providing an even greater mix of housing type allows for a greater range of options for all populations, including EJ populations, and also provides for a greater range of housing

affordability compared to the proposed project. Overall, implementation of Alternative B would reduce impacts related to environmental justice compared to the proposed 2022 RTP/SCS with better access to transit, affordable housing, and housing near jobs.

g. Geology and Soils

Similar to the proposed 2022 RTP/SCS, this alternative would replace inadequate existing structures, such as existing buildings and bridges, and would reduce the potential for these existing structures and people using these structures to be harmed by geologic hazards and would be the same as the proposed 2022 RTP/SCS. Development under Alternative 2 would also be required to comply with the California Building Code and requirements set forth by the Alquist Priolo Zone Act. Overall, seismic related impacts would be similar to the proposed 2022 RTP/SCS. Implementation of mitigation measures, as under the proposed 2022 RTP/SCS, would still be required and impacts would remain significant and unavoidable.

Impacts related to erosion and loss of topsoil would be less than significant pursuant to compliance with existing regulations, similar to the proposed 2022 RTP/SCS. Development under Alternative 2 would also be required to comply with the California Building Code and requirements set forth by the Alquist Priolo Zone Act. Therefore, impacts would be similar to the proposed 2022 RTP/SCS and impacts would remain less than significant.

Impacts to paleontological resources would be less under this alternative compared to the proposed 2022 RTP/SCS as development outside of urbanized areas would be less, but would still result in significant and unavoidable impacts, similar to the proposed 2022 RTP/SCS. Impacts to paleontological resources would be significant and unavoidable but would be reduced under this alternative.

h. Greenhouse Gas Emissions

Alternative 2 would likely result in fewer impacts associated with GHG emissions during construction activities for transit projects as the scale of construction would be smaller. Additionally, operational GHG impacts would likely decrease because the increased housing density envisioned by this alternative would reduce the need for a personal vehicle and subsequently reduce VMT. This compact development would also increase the effectiveness of public transit and multimodal transportation networks, which could further reduce GHG emissions beyond the proposed 2022 RTP/SCS. The extent to which this alternative would reduce GHG emissions cannot be feasibly quantified at this time. It is assumed that GHG impacts would be less as compared to the proposed 2022 RTP/SCS, but impacts would remain significant and unavoidable, as they are for the proposed 2022 RTP/SCS.

i. Hazards and Hazardous Materials

This alternative would result in similar infrastructure projects being constructed, thereby having similar hazardous material use, storage and transportation resulting from construction of those projects. The volume of hazardous materials being transported to support land use development in the region would remain the same. Because Alternative 2 would be subject to existing regulations and programs, impacts relating to routine transport, use, or disposal of hazardous materials; risk of upset and accident conditions; emissions within one-quarter mile of a school; airport hazards; and interference with emergency response and evacuation plans would be less than significant, similar

to the proposed 2022 RTP/SCS. Overall hazards and hazardous materials impacts would be similar under this alternative as under the proposed 2022 RTP/SCS.

j. Hydrology and Water Quality

This alternative would further emphasize an infill approach to land use and housing. As such, land development would result in fewer impervious surfaces than would be expected under the proposed 2022 RTP/SCS. Nonetheless, infill development would generate runoff that would include urban pollutants such as heavy metals from auto emissions, oil, and grease, similar to projects under the proposed 2022 RTP/SCS. Therefore, impacts to water quality would be less than those of the proposed 2022 RTP/SCS because less development would occur that would result in additional impervious surfaces. Infill development would generate runoff that would include urban pollutants similar such as heavy metals from auto emissions, oil, and grease, similar to the proposed 2022 RTP/SCS. Therefore, impacts to water quality would be similar to water quality impacts of the proposed 2022 RTP/SCS.

Overall hydrology and water quality impacts would be similar under Alternative 2 as the proposed 2022 RTP/SCS and impacts would remain significant and unavoidable.

k. Land Use

As noted in Section 4.12, *Land Use,* the proposed 2022 RTP/SCS includes a list of planned and programmed projects including local and regional capital improvements that have been anticipated or accounted for in local general plans and regional, statewide, and federal transportation improvement programs. Higher density housing in urbanized areas, primarily infill, would be anticipated to result in greater conflicts with local land use plans as this alternative would prioritize higher density beyond existing growth projections and would be inconsistent with growth projections of local General Plans and Specific Plans.

Development under this alternative would be concentrated in urbanized areas and would consist of primarily infill projects. As such, the land use pattern under this alternative would not result in the physical division of communities and impacts would be similar to the proposed 2022 RTP/SCS.

Development under this alternative could conflict with land use plans, policies, and programs through the shifting of development into urban areas and corridors requiring additional mitigation. As such, implementation of this alternative would conflict with State and local policies and regulations adopted for the purpose of avoiding or mitigating environmental effects.

Under this alternative, impacts related to physically dividing an established community would be similar and impacts due to a conflict with any land use plan, policy, or regulation would be greater as stated above when compared to the proposed 2022 RTP/SCS and would remain less than significant.

l. Noise

Land use development under this alternative would occur primarily in infill and TOD areas. As such, increased noise levels from increased transit onto development in the area would be greater than under the proposed 2022 RTP/SCS and would result in more sensitive receivers exposed to greater sound levels. Increased ambient noise levels for sensitive receivers in these areas would be significant and unavoidable under this alternative, as it is for the proposed 2022 RTP/SCS.

Noise would generally be the same as compared to the proposed 2022 RTP/SCS, as cumulative regional traffic volumes would increase regardless of implementation of the proposed 2022 RTP/SCS or this alternative. Whether noise impacts would be greater or less than those anticipated under the proposed 2022 RTP/SCS remains dependent on site specific considerations that cannot currently be known. Regionally, the difference in VMT between the proposed 2022 RTP/SCS and Alternative 2 is not enough to noticeably change overall noise levels in the region. Mobile source noise levels resulting from traffic would be slightly less under Alternative 2 than the proposed 2022 RTP/SCS as this alternative would result in less VMT.

Construction and operation of future development under this alternative could be located in close proximity to a public airport or private airstrip, as under the proposed 2022 RTP/SCS, and would result in exposure of people residing or working in the area to excessive noise levels. As under the proposed 2022 RTP/SCS, this alternative could result in the exposure of people residing or working near public airports or private airstrips to excessive noise levels. Mitigation measures identified in Section 4.13, *Noise,* would continue to be required under this alternative and impacts would be similar as under the proposed 2022 RTP/SCS and would remain significant and unavoidable.

Overall, noise-related impacts across the region would be similar to the proposed 2022 RTP/SCS and would continue to be significant and unavoidable.

m. Population and Housing

Alternative 2 would result in the same population increase in the region by 2046 as the proposed 2022 RTP/SCS. As such, impacts related to population growth would be to the same as for the proposed 2022 RTP/SCS and would continue to be less than significant. Temporary displacement as a result of more infill projects could occur; however, this displacement would be offset by an increase in housing units. Compliance with regulations under the Federal Uniform Relocation and Real Property Acquisition Policies Act would further reduce impacts to less than significant, as under the proposed 2022 RTP/SCS. Overall population and housing impacts would be similar to the proposed 2022 RTP/SCS.

n. Transportation

This alternative incorporates less dispersed land use and development and a more compact growth footprint than the proposed 2022 RTP/SCS, and increased use of regional transit service to generate an increase in regional transit ridership and corresponding decrease in VMT. Alternative 2 would generate 9,795,808 regional VMT in 2035 (SB 375 target year) compared to 10,057,773 regional VMT for the proposed 2022 RTP/SCS – a decrease of 261,965, or 2.6 percent. This decrease is substantial (more than a one percent change) such that VMT would be better as compared to the proposed 2022 RTP/SCS. Overall, this alternative still increases regional and per capita VMT above adopted thresholds, therefore, impacts related to transportation would be reduced under this alternative but would remain significant and unavoidable.

o. Tribal Cultural Resources

Under this alternative, land use development would occur in infill areas to a greater extent than the proposed 2022 RTP/SCS. Higher density development within already urbanized areas would reduce ground disturbance, as less disturbance would occur outside these areas. As such, the potential to disturb tribal cultural resources, including ancestral remains and sacred sites, would decrease under this alternative. Future projects would still be required to comply with AB 52, which would encourage tribal consultation with local California Native American tribes and require the

identification of project specific substantial adverse effects on tribal cultural resources and appropriate project specific mitigation measures. If it is determined that a specific project would result a substantial adverse change in the significance of a tribal cultural resource, the impact would be significant. This significant impact would occur for projects under Alternative 2, as it would for the proposed 2022 RTP/SCS. Therefore, impacts would be significant and unavoidable, as they would be for the proposed 2022 RTP/SCS but would be reduced compared to the proposed 2022 RTP/SCS due to the reduced level of ground disturbance outside of urban areas.

p. Wildfire

The land use pattern under this alternative would construct higher density housing in urban areas which would reduce the amount of land development within and near wildland urban interface areas. However, there is still the potential for development under this alternative to result in exacerbated wildfire risk. Exacerbated wildfire risk would result in additional impacts related to flooding, landslides, and other associated hazards. Under this alternative, mitigation would still be required; however, impacts would still be significant and unavoidable, as under the proposed 2022 RTP/SCS.

The proposed 2022 RTP/SCS would focus housing on infill and TOD areas and would decrease the vulnerability of people and structures to wildland fire by reducing development in urban wildland interface areas. While development of both land use and transportation structures under this alternative would still be required to comply with the California Fire Code, and mitigation would still be required, impacts under this alternative would remain significant and unavoidable as potential risks from wildfire cannot be feasibly reduced to less than significant. Overall, wildfire impacts would be reduced when compared to the proposed 2022 RTP/SCS but would remain significant and unavoidable.

6.5 Environmentally Superior Alternative

State CEQA Guidelines Section 15126.6 requires that an EIR identify the environmentally superior alternative among the alternatives analyzed. Section 15126.6(d)(2) states that if the No Project Alternative is identified as the environmentally superior alternative, the EIR shall also identify an environmentally superior alternative from among the other alternatives analyzed. This section compares the impacts of the two alternatives under consideration to those of the proposed 2022 RTP/SCS in compliance with the *State CEQA Guidelines*.

Table 6-2 shows whether each alternative would have impacts that are less than, similar to, or greater than the proposed 2022 RTP/SCS for each of the issue areas studied.

Based on the above analysis and summary in Table 6-2, Alternative 2 is the environmentally superior alternative, assuming all environmental issue areas are weighted equally. Under Alternative 2, land use patterns would be concentrated in infill and TOD areas. Alternative 2 would result in a higher density development pattern than the proposed 2022 RTP/SCS. This results in Alternative 2 reducing VMT to a greater extent than the proposed project with a 2.6 percent greater reduction in VMT compared to the project. This VMT reduction would also result in less generation of criteria pollutants and GHG emissions compared to the project. Alternative 2 could be considered environmentally superior to the proposed 2022 RTP/SCS primarily because, as shown in Table 6-2, overall impacts to the following resources would be less: agriculture resources, air quality, biological resources, cultural resources, energy, environmental justice, greenhouse gas emissions, transportation (VMT), and wildfire.

The No Project Alternative (Alternative 1) would result in a less dense development pattern compared to the proposed 2022 RTP/SCS, as it would continue existing land use trends. Because of the increased land development outside of existing urbanized areas, Alternative 1 would result in more ground disturbance than the proposed 2022 RTP/SCS. Consequently, compared to the proposed 2022 RTP/SCS, Alternative 1 would have greater overall impacts to agricultural resources, air quality, biological resources, geology and soils, GHG emissions, hazards and hazardous materials, hydrology and water quality, land use, transportation, tribal cultural resources, and wildfire. As shown in Table 6-2, Alternative 1 would result in greater impacts than the proposed 2022 RTP/SCS. It would also fail to meet most basic project objectives promote equitable access opportunities, provide a mix of land uses and compact development patterns and encourage infill development to preserve agricultural land and natural resources, and maintain or reduce congestion as compared to current levels.

Table 6-2 Impact Comparison of Alternatives

Impacts	Proposed 2022 RTP/SCS	Alternative 1: No Project Alternative	Alternative 2: Infill and Transit Focus
Impact AES-1: Have a substantial adverse effect on scenic vistas and substantially damage scenic resources within highways identified to have high scenic qualities or designated by the State as eligible scenic highways.	SU	=	>
Impact AES-2: In non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site or its surroundings, and in an urbanized area, would conflict with applicable zoning and other regulations governing scenic quality.	SU	=	>
Impact AES-3: Create a new source of substantial light or glare that would adversely affect daytime or nighttime views in the area. a new source of substantial light or glare that would adversely affect day or nighttime views in the area	SU	>	>
Impact AG-1: Convert Important Farmland to non-agricultural uses, or conflict with existing zoning for agriculture or a Williamson Act Contract.	SU	>	<
Impact AG-2: Would not conflict with existing zoning for forest land, timberland, or timberland production, nor convert forest land to non-forest uses. Impacts would be less than significant.	LTS	=	=
Impact AQ-1: Conflict with or obstruct implementation of the applicable air quality plan	SU	>	=
Impact AQ-2: Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (construction).	SU	>	<
Impact AQ-3: Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (operation).	SU	>	<
Impact AQ-4 & 5: Expose sensitive receptors to substantial pollutant concentrations	SU	<	<
Impact AQ-6: Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people	LTS	<	=
Impact BIO-1: Have a substantial adverse effect, either directly or through habitat modifications, on species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service.	SU	=	<
Impact BIO-2: Would result in substantial adverse impacts on sensitive habitats, including sensitive natural communities, and state and federally protected wetlands**.**	SU	**>**	**<**
Impact BIO-3: Would interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors or impede the use of native wildlife nursery sites.	SU	>	<

Impacts	Proposed 2022 RTP/SCS	Alternative 1: No Project Alternative	Alternative 2: Infill and Transit Focus
Impact BIO-4: Would not conflict with any local policies or ordinances protecting biological resources, such as a tree protection policy.	LTS	=	<
Impact CR-1: Transportation improvement projects and the land use scenario envisioned by 2022 RTP/SCS would cause a substantial adverse change in the significance of a historical resource pursuant to §15064.5.	SU	<	>
Impact CR-2: Construction activity associated with transportation improvement projects, and land use development envisioned by the implementation of 2022 RTP/SCS may cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5.	SU	>	<
Impact CR-3: Construction activity associated with transportation improvement projects, and land use development envisioned by implementation of 2022 RTP/SCS could result in disturbances to human remains including those interred outside of formal cemeteries.	LTS	=	<
Impact E-1: Would not result in a significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources or increased reliance on fossil fuels.	LTS	=	<
Impact E-2: Would not increase reliance on fossil fuels or decrease reliance on renewable energy sources.	LTS	>	<
Impact E-3: Would not conflict with or obstruct a State or local plan for renewable energy or energy efficiency.	LTS	=	=
Impact EJ-1: Result in disproportionately high or adverse environmental impacts to EJ communities.	SU	=	>
Impact EJ-2: Result in disproportionately lower distribution of benefits derived from the proposed transportation improvement projects to EJ communities.	LTS	>	<
Impact EJ-3: Result in decreased availability of affordable housing stock.	LTS	>	<
Impact GEO-1: Would not directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving rupture of a known earthquake fault, strong seismic ground shaking, seismic-related ground failure, including liquefaction, or landslides.	LTS	=	=
Impact GEO-2: Would not result in substantial soil erosion or the loss of topsoil.	LTS	=	=
Impact GEO-3: Be located on unstable soils subject to landslides and soils subject to expansion.	LTS	=	=
Impact GEO-4: Could cause a substantial adverse change in or disturb known and unknown paleontological resources as defined in CEQA under guidelines section 15064.5. Impacts to paleontological resources would be significant and unavoidable.	SU	>	<
Impact GHG-1 & 2: Generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment. An increase that exceeds the following threshold would be considered a significant impact: a) A net increase in GHG emissions by 2046 compared to baseline 2020 conditions	SU	>	<

Impacts	Proposed 2022 RTP/SCS	Alternative 1: No Project Alternative	Alternative 2: Infill and Transit Focus
Impact GHG-2: Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases. Any conflict with the following thresholds would be considered a significant impact: a) Conflict with regional SB 375 per capita passenger vehicle CO2 emission reduction targets of 6 percent by 2035 from 2005 levels	LTS	>	<
Impact GHG-3: Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases. Any conflict with the following thresholds would be considered a significant impact: b) Conflict with state's ability to achieve SB 32 GHG reduction target, which aims to reduce statewide emissions to 40 percent below 1990 levels by 2030 c) Conflict with state's ability to achieve EO S-3-05 GHG reduction 2050 goal, which aims to reduce statewide emissions to 80 percent below 1990 levels by 2050; or d) Conflict with applicable local GHG reduction plans	SU	>	<
Impact HAZ-1: Facilitate the routine transport, use, or disposal of hazardous material, and may result in reasonably foreseeable upset and accident conditions.	LTS	=	=
Impact HAZ-2: Would not emit hazardous emissions or handle hazardous or acutely hazardous materials, substances or waste within one-quarter mile of an existing or proposed school.	LTS	=	=
Impact HAZ-3: Transportation improvement projects and land uses could occur on sites on the list of hazardous material sites compiled by Government Code Section 65962.5.	SU	=	=
Impact HAZ-4: Located within an airport land use plan or within two miles of a public or public use airport would not result in a safety hazard or excessive noise for people residing or working in the project area.	LTS	=	=
Impact HYD-1 Would not violate water quality standards or waste discharge requirements, or otherwise substantially degrade surface or ground water quality.	LTS	<	<
Impact HYD-2: Would substantially decrease groundwater supplies and interfere with groundwater recharge such that it may impede sustainable groundwater management of the basin.	SU	>	=
Impact HYD-3: Would not substantially alter the existing drainage pattern of a site or area through alteration of the course of a stream or river or through the addition of impervious surfaces in a manner where drainage changes would result in flooding on- or off-site, redirect or impede flood flows, exceed the capacity of stormwater systems, or provide additional polluted runoff.	SU	=	=
Impact HYD-4: Would not risk release of pollutants due to project inundation in flood hazard, tsunami, or seiche zones.	LTS	=	=

Impacts	Proposed 2022 RTP/SCS	Alternative 1: No Project Alternative	Alternative 2: Infill and Transit Focus
Impact HYD-5: Could conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plans.	SU	=	=
Impact LU-1: Physically divide an established community	LTS	=	<
Impact LU-2: Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation (including, but not limited to, the General Plan or Zoning Ordinance) and result in a physical change to the environment not already addressed in the other resource chapters of this EIR.	LTS	>	=
Impact N-1: Would generate a substantial temporary increase in ambient noise levels in excess of standards established in local general plans or noise ordinances and would generate a substantial absolute noise increase over existing noise levels.	SU	<	>
Impact N-2: Would generate a substantial permanent increase in ambient noise levels in excess of standards or over existing noise levels and generate a substantial absolute noise increase over existing noise levels.	SU	=	>
Impact N-3: Would generate excessive groundborne vibration levels	SU	=	=
Impact N-4: May place sensitive receptors in areas with noise levels in excess of standards established in the local general plan or noise ordinance.	SU	>	>
Impact N-5: Would be located in close proximity to existing airports such that applicable exterior and interior noise thresholds would be exceeded.	SU	<	>
Impact POP-1: Would not induce substantial unplanned population growth, either directly or indirectly.	LTS	=	=
Impact POP-2: Would temporarily displace existing housing and people but would not necessitate the construction of replacement housing elsewhere.	LTS	=	=
Impact T-1: Would not conflict with any program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities.	LTS	>	<
Impact T-2: Would result in an overall increase in regional VMT and would result in a small decrease in VMT per capita below the baseline (2020) conditions.	LTS	>	<
Impact T-3: Would not substantially increase hazards due to geometric design features or incompatible uses.	LTS	=	=
Impact T-4: Would not result in inadequate emergency vehicle access, nor would projects implemented under the proposed 2022 RTP/SCS impair implementation or physically interfere with an adopted emergency response plan or emergency evacuation plan.	LTS	=	=
Impact TCR-1: Would cause a substantial adverse change in the significance of a tribal cultural resource.	SU	>	<

Impacts	Proposed 2022 RTP/SCS	Alternative 1: No Project Alternative	Alternative 2: Infill and Transit Focus
Impact W-1: Would be located in or near an SRA or very high fire hazard severity zone, and significant risks of loss, injury, or death from wildfires or downstream flooding or landslides would occur.	SU	>	<

Note: Comparison of impacts is based on the overall impact of the alternative on the resource or issue.

< Alternative impacts would be less than those of the proposed 2022 RTP/SCS

= Alternative would result in impacts similar to the proposed 2022 RTP/SCS

> Alternative impacts would be greater than those of the proposed 2022 RTP/SCS

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5. Other CEQA Required Discussions

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