



2018 Regional Transportation Plan/ Sustainable Communities Strategy

Draft Programmatic Environmental Impact Report

SCH#2017032042

prepared by

San Joaquin Council of Governments

555 East Weber Avenue

Stockton, California 95202

Contact: Kim Anderson, Senior Regional Planner

prepared with the assistance of

Rincon Consultants, Inc.

7080 North Whitney, Suite 101

Fresno, California 93720

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Acronyms and Abbreviations

AAQS	Ambient Air Quality Standards
AB	Assembly Bill
ADA	Americans with Disabilities Act
ADT	average daily traffic
AF	acre feet
AFY	acre feet per year
AHC	anthropogenic hydrocarbons
ALUC	Airport Land Use Commission
ALUCP	Airport Land Use Compatibility Plan
APCD	Air Pollution Control Districts
APE	Area of Potential Effects
AQMD	Air Quality Management District
AQMP	Air Quality Management Plan
BACT	Best Available Control Technology
BIOS	Biogeographic Information and Mapping System
BMP	Best Management Practices
BO	Biological Opinion
BRA	Biological Resource Area
BRT	bus rapid transit
CAA	Clean Air Acts (state and federal)
CAAQS	California Ambient Air Quality Standards
CAL FIRE	California Department of Forestry and Fire Protection
CalEPA	California Environmental Protection Agency
Caltrans	California Department of Transportation
CAPCOA	California Air Pollution Control Officer's Association
CARB	California Air Resources Board
CBSC	California Building Standards Code
CCAA	California Clean Air Act
CCCC	California Climate Change Center

CDFW	California Department of Fish and Wildlife
CEC	California Energy Commission
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
CFGF	California Fish and Game Code
CGS	California Geological Survey
CH ₄	methane
CMP	Congestion Management Program
CNDDDB	California Natural Diversity Database
CNEL	Community Noise Equivalent Level
CNG	compressed natural gas
CNPS	California Native Plant Society
CO	carbon monoxide
CO ₂	carbon dioxide
CO ₂ e	carbon dioxide equivalent
CRHR	California Register of Historic Resources
CRPR	California Rare Plant Rank
CTP	California Transportation Plan
CVMT	congested vehicle miles traveled
CWA	Clean Water Act
CWHR	California Wildlife Habitat Relationships
dB	decibels
dBA	A-weighted decibels
DC	direct current
DDD	Dichlorodiphenyldichloroethane
DOC	Department of Conservation
DPM	diesel particulate matter
DPR	Department of Parks and Recreation
DPS	Distinct Population Segment
DWR	Department of Water Resources
EIR	environmental impact report
EMFAC	emission factors
EO	Executive Order

ESU	Evolutionary Significant Unit
FAA	Federal Aviation Administration
FAST Act	Fixing America’s Surface Transportation Act
FCAA	Federal Clean Air Act
FCAAA	Federal Clean Air Act Agreements
FEMA	Federal Emergency Management Administration
FESA	Federal Endangered Species Act
FHWA	Federal Highway Administration
FMMP	Farmland Mapping and Monitoring Program
FPPA	Federal Farmland Protection Act
FRAP	Fire and Resource Assessment Program
FSZ	Farmland Security Zone
FTA	Federal Transit Administration
FTIP	Federal Transportation Improvement Plan
GHG	Greenhouse Gas
GSA	groundwater sustainability agencies
GWP	Global Warming Potential
HAP	Hazardous Air Pollutant
HCP	Habitat Conservation Plan
HEPA	high-efficiency particulate air
HERS	Home Energy Rating Systems
HFC	hydrofluorocarbon
HMBP	Hazardous Materials Business Plan
HMMP	Habitat Mitigation and Monitoring Plan
HRA	health risk assessment
HRI	Historic Resources Authority
HUD	Department of Housing and Urban Development
HV	heating and ventilation
IPCC	United Nations Intergovernmental Panel on Climate Change
ITC	Intermodal Transportation Center
ITP	Incidental Take Plan
LAFCO	Local Agency Formation Commission
Ldn	day-night average sound level

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Leq	equivalent noise level
LEV	Low Emissions Vehicle
LNG	liquefied natural gas
LOS	Level of Service
L RTP	Long Range Transportation Plan
LSAT	Land Surface Air Temperature
LUP	land use plan
MERV	minimum efficiency reporting value
MMT	million metric tons
MPO	metropolitan planning organization
MTBE	methyl tertiary butyl ether
N ₂ O	nitrous oxides
NAAQS	National Ambient Air Quality Standard
NAC	Noise Abatement Criteria
NAHC	Native American Heritage Commission
NEPA	National Environmental Policy Act
NESHAP	National Emissions Standards for Hazardous Air Pollutants
NHC	Natural Hydrocarbons
NMFS	National Marine Fisheries Service
NO	nitric oxide
NO ₂	nitrogen dioxide
NOAA	National Oceanic and Atmospheric Administration
NOC	notice of completion
NOD	notice of determination
NOEP	National Ocean Economics Program
NOP	notice of preparation
NO _x	nitrogen oxides
NPDES	National Pollutant Discharge Elimination System
NPPA	Native Plant Protection Act
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NWI	National Wetlands Inventory
OEHA	California Office of Environmental Health Hazard Assessment

OSHA	(federal) Occupational Safety and Hazard Administration
Pb	lead
PFC	perfluorocarbons
PM	particulate matter (PM ₁₀ and PM _{2.5})
PPV	peak particle velocity
PRA	Paleontological Resources Assessment
PSD	prevention of significant deterioration
RAMP	Regional Advance Mitigation Planning
RCNM	Roadway Construction Noise Model
RCRA	Resource Conservation and Recovery Act
RGF	Regional Growth Forecast
RMS	root mean square
ROG	reactive organic compound
RPM	revolutions per minute
RSL	Rural Services Line
RTDM	Regional Travel Demand Model
RTIP	Regional Transportation Improvement Plan
RTP/SCS	Regional Transportation Plan/Sustainable Communities Strategy
RTPA	Regional Transportation Planning Agency
RWMG	Regional Water Management Group
SB	Senate Bill
SCS	Sustainable Communities Strategy
SDC	Seismic Design Criteria
SF ₆	sulfur hexafluoride
SGMA	Sustainable Ground Water Management Act
SO ₂	sulfur dioxide
SO _x	sulfur oxide
SR	State Route
SRA	Source Receptor Area
SSC	Species of Special Concern
STIP	Statewide Transportation Improvement Plan
SVP	Society of Vertebrate Paleontology
SWPPP	Storm Water Pollution Prevention Plan

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SWRCB	State Water Resources Control Board
TAC	toxic air contaminant
TDM	transportation demand management
TDS	Total Dissolved Solids
THP	Timber Harvesting Program
TNM	Federal Highway Traffic Noise Model
TOD	transportation oriented development
TPZ	Timber Production Zone
TSM	Transportation System Management
U.S. EPA	United States Environmental Protection Agency
USACE	United States Army Corps of Engineers
USC	United States Code
USFS	United States Forest Service
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
USL	Urban Services Line
VAVR	voluntary accelerated vehicle retirement
VKT	vehicle kilometers traveled
VMT	vehicle miles traveled
VOC	Volatile Organic Compounds
VPD	vehicles per day
VRV	voluntary repair of vehicles
WEAP	Worker Environmental Awareness Program
WMO	World Meteorological Organization
ZEV	Zero Emissions Vehicle

Executive Summary

Project Summary

The proposed project, the 2018 RTP/SCS, is a long-range comprehensive plan for the region's multi-modal transportation system. As a Metropolitan Planning Organization (MPO), preparing an RTP is one of San Joaquin Council of Governments' (SJCOG) primary statutory responsibilities under federal and state law. Implementation of an RTP is the mechanism used in California by both MPOs and Regional Transportation Planning Agencies (RTPAs) to conduct long-range planning (at least 20-years in to the future) in their regions. SJCOG must adopt an updated RTP every four years, or more frequently, if the region is to receive federal and state transportation dollars for public transit, streets/roads, and bicycle and pedestrian improvements. SJCOG adopted the 2014 RTP in June 2014; it provides a long-range plan for transportation in San Joaquin County. In 2008, California enacted the Sustainable Communities and Climate Protection Act, also known as Senate Bill 375 (SB 375), which requires MPOs to include a Sustainable Communities Strategy (SCS) element in their RTP updates. The 2014 RTP was the first SJCOG plan to include the SCS. The California Air Resources Board (CARB) provided greenhouse gas reductions targets for the preparation of the 2014 RTP, setting the targets at a 5 percent per capita reduction by 2020 and 10 percent per capita reduction by 2035 from year 2005 levels. The 2014 RTP/SCS met those targets. For San Joaquin County, the current per-capita emission reduction targets set by CARB are a five percent reduction relative to 2005 levels by 2020, and a 10 percent reduction from 2005 levels by 2035.

Alternatives

This Environmental Impact Report (EIR) examines three alternatives to the proposed 2018 RTP/SCS:

- **Alternative 1: No Project.** The No Project Alternative is comprised of a land use pattern that reflects existing land use trends and a transportation network comprised of transportation projects that are currently in construction or are funded in the short range Regional Transportation Improvement Program (RTIP).
- **Alternative 2: Business As Usual.** The Business As Usual Alternative has focused funding in roadway expansion and maintaining and rehabilitating existing roads and streets. This Alternative places investments that support land use patterns along highway corridors and less in urban core areas. This Alternative has a future growth pattern that is reflective of growth and development trends over the last two decades in San Joaquin County
- **Alternative 3: Compact Development.** The Compact Development Alternative places investments in transportation systems that support higher levels of compact growth and infill. It increases density and transit beyond what is included in the SCS. It includes a higher percentage of new growth as infill/redevelopment, additional transit and active transportation investments and a larger percentage of new housing as small lot or multi-family.

Each alternative is described in greater detail and analyzed in Section 6.0, *Alternatives*, to determine whether environmental impacts would be similar to, less than, or greater than those of the preferred scenario in the 2018 RTP/SCS.

Summary of Impacts and Mitigation Measures

Table 1 includes a brief description of the identified environmental impacts, proposed mitigation measures, and the level of significance after mitigation. Specific 2018 RTP/SCS projects that may contribute to the impacts described below are listed in the tables at the end of individual impact sections (4.1 through 4.15).

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.

Individual transportation projects are preliminarily identified in the 2018 RTP/SCS; however, this Program EIR analyzes potential environmental impacts from a regional perspective and is programmatic in nature. As such, it does not specifically analyze the individual projects. Project-specific analysis and applicable environmental review must be performed by the appropriate implementing agency prior to approval of these individual projects. 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 any further applicable environmental review of proposed projects. 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
- Residential or mixed use projects and transit priority projects consistent with the SCS.

For purposes of analysis, SJCOG has developed a land use distribution pattern and land use scenarios to address actions and strategies included in the SCS portion of the 2018 RTP/SCS. This Program EIR programmatically analyzes this land use distribution pattern (as part of the project analysis) as well as alternative land use distribution patterns (in the Alternatives section).

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

Impact	Mitigation Measure(s)	Significance After Mitigation
Aesthetics		
Impact AES-1: Proposed transportation improvement projects and land use patterns envisioned by the 2018 RTP/SCS may impair public views along designated scenic corridors, including state scenic highways.	AES-1(a): Regional Planning Efforts. Impacts to aesthetic resources shall be minimized through cooperation, information sharing, and SJCOG's ongoing regional planning efforts. AES-1(b): Alternative Design. Project sponsors shall identify and protect panoramic views and significant landscape features or landforms and implement project-specific mitigation as applicable. If it is determined that a project would significantly obstruct scenic views, implementing and local agencies can and should consider alternative designs that seek to avoid and/or minimize obstruction of scenic views to the extent feasible. Project-specific design measures may include reduction in height of improvements or width of improvements to reduce obstruction of views, or relocation of improvements to reduce obstruction of views. Implementing local agencies can and should consider taking the following (or equivalent) actions: - Require that the scale and massing of new development in higher-density areas provide appropriate transitions in building height and bulk that are sensitive to the physical and visual character of adjoining neighborhoods that have lower development intensities and building heights; ensure building heights stepped back from sensitive adjoining uses to maintain appropriate transitions in scale and to protect scenic views; - Avoid siting electric towers, solar power facilities, wind power facilities, communication transmission facilities and/or above ground lines along scenic roadways and routes, to the maximum feasible extent; - Prohibit projects and activities that would obscure, detract from, or negatively affect the quality of views from designated scenic roadways or scenic highways; and comply with other local general plan policies and local control related to the protection of panoramic or scenic views or views of significant landscape features or landforms.	With implementation of Mitigation Measures AES-1(a) and AES-1(b), impacts would remain significant and unavoidable.
Impact AES-2: Proposed transportation improvement projects and land use patterns envisioned by the 2018 RTP/SCS may substantially degrade existing visual character in the SJCOG region.	AES-2: Design Measures for Visual Compatibility. The project sponsor shall require measures that minimize contrasts in scale and massing between the project and surrounding natural forms and developments. Strategies to achieve this include but are not limited to: - 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); - Protecting or replacing trees in the project area; - 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	With implementation of Mitigation Measure AES-2, impacts would remain significant and unavoidable.

Impact	Mitigation Measure(s)	Significance After Mitigation
	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: Transportation improvement projects and land use patterns envisioned in the 2018 RTP/SCS would result in increased lighting from new lightpoles, security lighting, landscape and structure lighting, and lights on vehicles. Land use projects envisioned in the 2018 RTP/SCS would also introduce new or intensified sources of lighting. This lighting may adversely affect views in the area.	AES-3(a): Roadway Lighting. Roadway lighting shall be minimized 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. AES-3(b): Lighting Design Measures. 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(c): Glare Reduction Measures. Implementing agencies shall 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	With implementation of Mitigation Measures AES-3(a) through AES-3(c), impacts would be less than significant.

Impact	Mitigation Measure(s)	Significance After Mitigation
	underground along these routes wherever feasible to allow trees to grow and provide shade without need for severe pruning.	
Agriculture		
Impact AG-1: Proposed transportation improvements and land use patterns envisioned by the 2018 RTP/SCS could result in the conversion of important farmland to nonagricultural use, and/or conflict with existing zoning for agriculture.	AG-1: Impact Avoidance and Minimization. Project sponsors shall implement measures, where feasible and necessary 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 Prime Farmland, Unique Farmland, or Farmland of Statewide Importance; ▪ Compensatory mitigation at a minimum 1:1 (impacted: replaced) acreage ratio with Important Farmland of equivalent or better quality may be achieved in advance of impacts through the purchase or creation of mitigation credits or the implementation of mitigation projects through Regional Advance Mitigation Planning (RAMP), as deemed appropriate by the permitting agencies; ▪ Require acquisition of conservation easements on land at least equal in quality and size as mitigation for the loss of Important Farmland; 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.).	With implementation of Mitigation Measure AG-1, impacts would remain significant and unavoidable.
Impact AG-2: Proposed transportation improvements and land use patterns envisioned by the 2018 RTP/SCS could result in conflicts with existing zoning or land use designations for agriculture; or a Williamson Act contract.	Implement Mitigation Measure AG-1.	With implementation of Mitigation Measure AG-1, impacts would remain significant and unavoidable.
Impact AG-3: Proposed transportation improvement projects and land use patterns envisioned by the 2018 RTP/SCS would result in a conflict with or loss of forest or timberland.	AG-2: Preservation Ratios. Project sponsors shall establish preservation ratios to minimize loss of forest land, and timberland, such as one acre of unprotected forest land and timber land to be permanently conserved for each acre of open space developed as a result of individual projects. AG-3: Design Features. Project sponsors shall implement design features in RTP/SCS projects to minimize development impacts on existing forest land. Project sponsors shall consider corridor realignment, buffer zones and setbacks, and berms and fencing where feasible, to avoid forest lands and timberlands and to reduce conflicts between transportation uses and forest and timberlands.	With implementation of Mitigation Measures AG-2 and AG-3, impacts would remain significant and unavoidable.

San Joaquin Council of Governments
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Impact	Mitigation Measure(s)	Significance After Mitigation
Air Quality		
Impact AQ-1: Implementation of the 2018 RTP/SCS would reduce ozone precursor and PM _{2.5} emissions from mobile sources compared to 2015 existing conditions. However, the 2018 RTP/SCS would result in increased PM ₁₀ emissions relative to existing conditions.	AQ-1: Long-term PM₁₀ Emission Reductions. SJCOG recommends that implementing and local agencies require project proponents to demonstrate compliance with SJVAPCD Rules 9510 and 9410, if applicable, prior to the issuance of grading/building permits for individual projects. In addition, SJCOG recommends that implementing and local agencies require projects that would exceed SJVAPCD significance thresholds for operational PM ₁₀ emissions after implementation of applicable rules to enter into a Voluntary Emission Reduction Agreement (VERA) with the SJVAPCD to reduce PM ₁₀ emissions to below threshold level, as described in the SJVAPCD's <i>Guidance for Assessing and Mitigating Air Quality Impacts (GAMAQI)</i> . A VERA is a mitigation measure by which the project proponent provides pound-for-pound mitigation of air emissions increases through a process that funds and implements emission reduction projects by the SJVAPCD.	With implementation of Mitigation Measures AQ-1, impacts would be less than significant.
Impact AQ-2: Implementation of the transportation projects and land use pattern envisioned in the 2018 RTP/SCS would involve construction activities that would generate short-term emissions of criteria pollutants.	AQ-2: Short-term Criteria Pollutant Emission Reductions. SJCOG recommends that implementing and local agencies require project proponents to demonstrate that they have obtained all required permits from the SJVAPCD prior to the issuance of grading/building permits for individual projects and that all construction activities will continuously comply with applicable regulatory standards, including, but not limited to SJVAPCD Regulation VIII, "Control Measures for Construction Emissions of PM ₁₀ ," and ISR. In addition, SJCOG recommends that implementing and local agencies require projects that would exceed SJVAPCD significance thresholds for construction emissions to enter into a VERA with the SJVAPCD, as described in the SJVAPCD's <i>GAMAQI</i> .	With implementation of Mitigation Measures AQ-2, impacts would be less than significant.
Impact AQ-3: Implementation of the 2018 RTP/SCS would reduce long-term emissions of diesel particulate matter (DPM) from mobile sources.	No Mitigation Measures are required.	Impacts would be less than significant.
Impact AQ-4: Implementation of the 2018 RTP/SCS may result in increased exposure of sensitive receptors to diesel particulate matter (DPM) from mobile sources.	AQ-4: Health Risk Reduction Measures. Consistent with the general guidance contained in CARB's <i>Air Quality and Land Use Handbook</i> , appropriate and feasible measures shall be incorporated into project building design for residential, school and other sensitive uses located within 500 feet, or other distance as determined by the lead agency, of freeways, heavily travelled arterials, railways and other sources of DPM, including roadways experiencing significant vehicle delays (CARB 2005). The appropriate measures shall include one or more of the following methods, as determined by a qualified professional, as applicable: The project sponsor shall incorporate health risk reduction measures based on analysis of individual sites and project circumstances. These measures may include: ▪ Avoid siting new sensitive land uses within 500 feet of a freeway, railway, or other source of TACs. ▪ 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. ▪ Avoid locating sensitive receptors near the entry and exit points of a	With implementation of Mitigation Measure AQ-4, impacts would be less than significant.

Impact	Mitigation Measure(s)	Significance After Mitigation
	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 the freeway 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. Either HEPA filters or ASHRAE 85% supply filters should be used. Ongoing maintenance should occur. ▪ Retain a qualified HV consultant or Home Energy Rating Systems (HERS) 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. ▪ 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 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 exhaust emissions. ▪ Retain a qualified air quality consultant to prepare a health risk assessment (HRA) in accordance with CARB and the Office of Environmental Health and Hazard Assessment requirements to determine the exposure of project residents/occupants/users to stationary air quality pollutants prior to issuance of a demolition, grading, or building permit. Project sponsors shall implement HRA recommendations to a level which would not result in exposure of sensitive receptors to substantial pollutant concentrations (pursuant to the State CEQA Guidelines).	
Impact AQ-5: The 2018 RTP/SCS would conform with emission budgets for criteria pollutants established in the SIP for the SJVAB. The project would be consistent with the SIP.	No Mitigation Measures are required.	There would be no impact.

Impact	Mitigation Measure(s)	Significance After Mitigation
Biological Resources		
Impact BIO-1: Implementation of transportation improvements and the land use scenario envisioned by the 2018 RTP/SCS may result in impacts to special-status plant and animal species.	Implementing agencies that choose to participate in the San Joaquin County Multi-Species Habitat Conservation and Open Space Plan (SJMSCP) can reduce impacts to biological resources resulting from a proposed project to a level of less-than-significant if the proposed project is consistent with the SJMSCP. BIO-1(a): Biological Resources Screening and Assessment. 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 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 Survey. 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 CDFW, 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.	With implementation of Mitigation Measures BIO-1(a) through BIO-1(i), impacts would remain significant and unavoidable.

Impact	Mitigation Measure(s)	Significance After Mitigation
	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 2018 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 SJCOG, and/or the local jurisdiction overseeing the project for approval. The restoration plan shall include, at a minimum, the following components: ▪ Description of the project/impact site (i.e., location, responsible parties, areas to be impacted by habitat type); ▪ Goal(s) of the compensatory mitigation project [type(s) and area(s) of habitat to be established, restored, enhanced, and/or preserved; specific functions and values of habitat type(s) to be established, restored, enhanced, and/or preserved]; ▪ Description of the proposed compensatory mitigation site (location and size, ownership status, existing functions and values); ▪ Implementation plan for the compensatory mitigation site (rationale for expecting implementation success, responsible parties, schedule, site preparation, planting plan); ▪ Maintenance activities during the monitoring period, including weed removal as appropriate (activities, responsible parties, schedule); ▪ Monitoring plan for the compensatory mitigation site, including no less than quarterly monitoring for the first year (performance standards, target functions and values, target acreages to be established, restored, enhanced, and/or preserved, annual monitoring reports); ▪ Success criteria based on the goals and measurable objectives; said criteria to include numeric criteria to be selected based on the scale of the restoration effort and the restoration technique used: ▫ At least 80 percent survival of container plants, and/or ▫ Successful establishment the required number of individuals planted from seed to meet required replacement ratios; and/or ▫ Sampling-based recruitment/survival criteria to achieve vegetative cover or total number of surviving individuals equal to at least 70 percent of the equivalent metric in reference sites for the same habitat type; sampling-based criteria must use a scientifically valid vegetation sampling method ; ▪ An adaptive management program and remedial measures to address any shortcomings in meeting success criteria; ▪ Notification of completion of compensatory mitigation and agency confirmation; and	

Impact	Mitigation Measure(s)	Significance After Mitigation
	Contingency measures (initiating procedures, alternative locations for contingency compensatory mitigation, funding mechanism). BIO-1(d): Endangered/Threatened Species Habitat Assessment and Protocol Surveys. Specific habitat assessment and survey protocol surveys are established for several federally and/or state endangered or threatened species. 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 re-design the project in coordination with a qualified biologist to avoid impacting occupied/presumed occupied habitat to the maximum extent feasible. Disturbance limits shall have bright orange protective fencing installed at least 50 feet beyond their extent, or other distance as approved by a qualified biologist, to protect the habitat. If occupied or presumed occupied habitat cannot be avoided, the implementing agency shall provide the total acreages for habitat that would be impacted prior to the issuance of construction permits/approvals. The implementing agency shall purchase credits at a USFWS, and/or CDFW approved conservation bank and/or establish conservation easements or funds for acquisition of conservation easements as compensatory mitigation to offset impacts to federal and/or state listed species habitat. Compensatory mitigation shall be provided at the following ratio's for permanent impacts in accordance with the <i>San Joaquin County Multi-Species Habitat Conservation and Open Space Plan</i> (SJMSCP 2000) of not less than 1:1 (area mitigated: area impacted) for agricultural habitat lands and 3:1 for natural lands (non-wetland). 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 the implementing agency establishes conservation easement(s) (on- and/or off-site) to serve as compensatory mitigation for federal and/or state listed species habitat impacts, compensatory mitigation areas shall have a restrictive covenant prohibiting future development/disturbance and shall be managed in perpetuity to encourage persistence and enhancement of the preserved target species. Compensatory mitigation lands cannot be located on land that is currently held publicly for resource protection. The compensatory mitigation areas shall be managed by a conservation lands management entity or other qualified easement holder. In addition, 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	

Impact	Mitigation Measure(s)	Significance After Mitigation
	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 for approval. 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 should 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 preactivity 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.	

Impact	Mitigation Measure(s)	Significance After Mitigation
	▪ 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 work day, 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 BRA, 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	

Impact	Mitigation Measure(s)	Significance After Mitigation
	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. 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 August 31; however, buffers may be relaxed earlier than August 31 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.	

Impact	Mitigation Measure(s)	Significance After Mitigation
	BIO-1(i): Worker Environmental Awareness Program (WEAP). 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.	
Impact BIO-2: Implementation of transportation improvements and the land use scenario envisioned by the 2018 RTP/SCS may result in impacts to sensitive habitats, including federally protected wetlands.	Implementing agencies that choose to participate in the San Joaquin County Multi-Species Habitat Conservation and Open Space Plan (SJMSCP) can reduce impacts to biological resources resulting from a proposed project to a level of less-than-significant if the proposed project is consistent with the SJMSCP. BIO-2(a): Jurisdictional Delineation. If the results of measure BIO-1(a) indicates projects implemented under the 2018 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 RWQCB, a qualified biologist shall complete a jurisdictional delineation. The jurisdictional delineation shall determine the extent of the jurisdiction for each of these agencies and shall be conducted in accordance with the requirement set forth by each agency. The result shall be a jurisdictional delineation report that shall be submitted to the implementing agency, USACE, RWQCB, and CDFW as appropriate, for review and approval, and the project shall be designed to minimize impacts to jurisdictional areas to the maximum extent feasible. The delineation shall serve as the basis to identify jurisdictional areas to be protected during construction, through implementation of the avoidance and minimization identified in measure BIO-2(f). BIO-2(b): Wetlands, Drainage, and Riparian Habitat Restoration. Impacts to jurisdictional drainages, wetlands and riparian habitat shall be mitigated in accordance with the SJMSCP at a minimum ratio of 2:1 preservation plus 1:1 creation for natural lands (vernal pools) and 1:1 creation plus 2:1 preservation for natural lands (wetlands other than vernal pools) (acres of habitat restored to acres impacted), and shall occur on-site or as close to the impacted habitat as possible. A mitigation and monitoring plan shall be developed by a qualified biologist in accordance with the restoration plan component requirements in mitigation measure BIO-1(c) above and shall be implemented for no less than five years after construction of the segment, or until the implementing agency and/or the permitting authority (e.g., CDFW or USACE) has determined that restoration has been successful. 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 shall prepare a landscape plan for that project. This plan shall indicate the locations and species of plants to be installed. Drought tolerant, locally native plant	With implementation of Mitigation Measures BIO-2(a) through BIO-2(f), impacts would remain significant and unavoidable.

Impact	Mitigation Measure(s)	Significance After Mitigation
	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): Landscaping Plan. If the results of measure BIO-1(a) indicates projects implemented under the 2018 RTP/SCS would impact sensitive vegetation communities, impacts to sensitive communities shall be avoided through final project design modifications. Bright orange construction fencing shall be placed a minimum of 30 feet outside the edge of areas of sensitive communities that will be retained prior to any initiation of ground disturbance activities and shall remain in place until construction is complete. No vehicles, person, materials, or equipment shall be allowed in protected areas. If the implementing agency determines that sensitive communities cannot be avoided, impacts shall be mitigated on-site or offsite at a ratio of 1:1 for permanently impacted sensitive communities (habitat restored for habitat lost). Temporarily impacted areas shall be restored to pre-project conditions. A Restoration Plan shall be developed by a qualified biologist. The restoration plan shall be implemented for a period of not less than five years. Off-site habitat acquisition and off-site restoration and/or enhancement may be considered if onsite restoration is determined as unachievable, as long as the off-site proposals result in equal compensatory value. Replacement ratios for off-site mitigation may be different than those required for onsite mitigation. The plan shall include, at a minimum, the same components in accordance with the restoration plan component requirements in mitigation measure BIO-1(c) above. 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 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 project sponsor, shall also include, but not be limited to, the following measures to prevent the introduction of invasive weed species: ▪ During construction, the project shall make all reasonable efforts to limit the use of imported soils for fill. Soils currently existing on-site should be used for fill material. 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. ▪ The erosion control/ restoration plans for the project must emphasize the use of native species that are expected to occur in the area and that are considered suitable for use at the project site. ▪ All erosion control materials, including straw bales, straw wattles, or	

Impact	Mitigation Measure(s)	Significance After Mitigation
	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. In areas where construction is ongoing, hydroseeding shall occur where no construction activities have occurred within six (6) weeks since ground disturbing activities ceased. If exotic species invade these areas prior to hydroseeding, weed removal shall occur in consultation with a qualified biologist and in accordance with the restoration plan. BIO-2(f): Wetlands, Drainages, and Riparian Habitat Best Management Practices. The following best management practices shall be required 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. ▪ All project-generated debris, building materials, and rubbish shall be removed from jurisdictional areas and from areas where such materials could be washed into them. ▪ 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. All workers shall be informed of the importance of preventing spills and of the appropriate measures to take should an accidental spill occur.	
Impact BIO-3: Implementation of transportation improvements and the land use scenario envisioned by the 2018 RTP/SCS may impact wildlife movement, including fish migration,	Implementing agencies that choose to participate in the San Joaquin County Multi-Species Habitat Conservation and Open Space Plan (SJMSCP) can reduce impacts to biological resources resulting from a proposed project to a level of less-than-significant if the proposed project is consistent with the SJMSCP. 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	With implementation of Mitigation Measures BIO-3(a) through BIO-3(c), impacts would remain significant and

Impact	Mitigation Measure(s)	Significance After Mitigation
and/or impede the use of a native wildlife nursery.	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(a): 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 SJCOG 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(a): Project Design for Wildlife Connectivity. 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.	unavoidable.

Impact	Mitigation Measure(s)	Significance After Mitigation
Impact BIO-4: Implementation of transportation improvements and the land use scenario envisioned by the 2018 RTP/SCS would not conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy.	No mitigation measures are required.	Impacts would be less than significant.
Impact BIO-5: Implementation of the transportation improvements and the land use scenario envisioned by the 2018 RTP/SCS would not conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.	Implementing agencies that choose to participate in the San Joaquin County Multi-Species Habitat Conservation and Open Space Plan (SJMSCP) can reduce impacts to biological resources resulting from a proposed project to a level of less-than-significant if the proposed project is consistent with the SJMSCP. Implementation of Mitigation Measures BIO-1 through BIO-3 are required.	With implementation of Mitigation Measures BIO-1 through BIO-3, impacts would be less than significant.
Cultural Resources		
Impact CR-1: Implementation of proposed transportation improvements and the land use scenario envisioned by the 2018 RTP/SCS could cause a substantial adverse change in or disturb known and unknown historical resources as defined in CEQA Guidelines Section 15064.5.	CR-1: Historical Resources Impact Minimization. Prior to individual project permit issuance, the project sponsor of a 2018 RTP/SCS project involving earth disturbance or construction of permanent above ground structures or roadways shall prepare a map defining the Area of Potential Effects (APE). This map shall indicate the areas of primary and secondary disturbance associated with construction and operation of the facility and will help in determining whether known historical resources are located within the impact zone. If a structure greater than 45 years in age is within the identified APE, a survey and evaluation of the structure(s) to determine their eligibility for recognition under State, federal, or local historic preservation 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. The evaluation shall comply with CEQA Guidelines section 15064.5(b). Study recommendations shall be implemented, which may include, but would not be limited to, the following: ▪ Realign or redesign projects to avoid impacts on known historic resources where possible. ▪ If avoidance of a significant architectural/built environment resource is not feasible, additional mitigation options include, but are not limited to, specific design plans for historic districts, or plans for	With implementation of Mitigation Measure CR-1, impacts would remain significant and unavoidable.

Impact	Mitigation Measure(s)	Significance After Mitigation
	alteration or adaptive re-use of a historical resource that follows the Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for Preserving, Rehabilitation, Restoring, and Reconstructing Historic Buildings. Comply with existing local regulations and policies that exceed or reasonably replace any of the above measures that protect historic resources.	
Impact CR-2: Implementation of proposed transportation improvements and the land use scenario envisioned by the 2018 RTP/SCS could cause a substantial adverse change in or disturb known and unknown archeological resources as defined in CEQA Guidelines Section 15064.5.	CR-2: Archaeological Resources Impact Minimization. Before construction activities, project sponsors shall 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, project sponsors shall retain a qualified archaeologist to conduct archaeological surveys before construction activities. Project sponsors shall 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 (WEAP), construction monitoring by a qualified archaeologist, or avoidance of sites and preservation in place. In the event that evidence of any prehistoric or historic-era subsurface archaeological features or deposits are discovered during construction-related earthmoving activities (e.g., ceramic shard, trash scatters, lithic scatters), all ground-disturbing activity in the area of the discovery shall be halted until a qualified archaeologist 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 project sponsor 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. Project sponsors shall comply with existing local regulations and policies that exceed or reasonably replace any of the above measures that protect archaeological resources.	With implementation of Mitigation Measure CR-1, impacts would remain significant and unavoidable.
Impact CR-3: Implementation of proposed transportation improvements and the land use scenario envisioned by the 2018 RTP/SCS could cause a substantial adverse change in or disturb	CR-3: Paleontological Resources Impact Minimization. The project sponsor of a 2018 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	With implementation of Mitigation Measure CR-3, impacts would be less than significant.

Impact	Mitigation Measure(s)	Significance After Mitigation
known and unknown paleontological resources as defined in CEQA Guidelines Section 15064.5.	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: ▪ Paleontological Mitigation and Monitoring Program. A qualified paleontologist shall prepare a Paleontological Mitigation and Monitoring Program to be implemented during ground disturbance activity. This program shall outline the procedures for construction staff Worker Environmental Awareness Program (WEAP) training, paleontological monitoring extent and duration (i.e., in what locations and at what depths paleontological monitoring shall be required), salvage and preparation of fossils, the final mitigation and monitoring report, and paleontological staff qualifications. ▪ Paleontological Worker Environmental Awareness Program (WEAP). Prior to the start of ground disturbance activity greater than two feet below existing grade, 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. Ground disturbing activity with the potential to disturbed geologic units with high paleontological sensitivity shall be monitored on a full-time basis by a qualified paleontological monitor. Should no fossils be observed during the first 50 percent of such excavations, paleontological monitoring could be reduced to weekly spot-checking under the discretion of the qualified paleontologist. 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. ▪ Salvage of Fossils. 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 mitigation and monitoring program. 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.	

Impact	Mitigation Measure(s)	Significance After Mitigation
Impact CR-4: Implementation of proposed transportation improvements and the land use scenario envisioned by the 2018 RTP/SCS could result in damage to or destruction of human burials; however, required compliance with existing regulations would reduce impacts to a less than significant level.	No Mitigation Measures are required.	Impacts would be less than significant.
Energy		
Impact E-1: Transportation improvement projects and implementation of the land use scenario envisioned by the 2018 RTP/SCS would increase demand for energy beyond existing conditions. However, the 2018 RTP/SCS would not result in inefficient, unnecessary, or wasteful direct or indirect consumption of energy, and would be consistent with applicable federal, state, and local energy conservation policies.	No Mitigation Measures are required.	Impacts would be less than significant.
Impact E-2: Implementation of the 2018 RTP/SCS would not generate energy demands that would require the construction of new energy facilities or the expansion of existing facilities.	No Mitigation Measures are required.	Impacts would be less than significant.

Impact	Mitigation Measure(s)	Significance After Mitigation
Environmental Justice		
Impact EJ-1: Implementation of the projects contained in the 2018 RTP/SCS may cause adverse effects on a minority of low-income population; however, these potential impacts would not be disproportionately high as per Executive Order 12898 regarding environmental justice.	No Mitigation Measures are required.	Impacts would be less than significant.
Impact EJ-2: The mobility benefits derived from 2018 RTP/SCS in terms of travel times and accessibility by transit, single-occupancy vehicles, bicycling or walking would not be substantially less for minority populations, low-income populations, low community engagement populations, and populations with low mobility in the SJCOG region than for the population as a whole.	No Mitigation Measures are required.	Impacts would be less than significant.
Geology and Soils		
Impact GEO-1: Implementation of proposed transportation improvements and future projects facilitated by the land use scenario envisioned in the 2018 RTP/SCS could be subject to seismic hazards, including fault rupture, ground-shaking, liquefaction, and landsliding, that could expose people or structures to	GEO-1: Geotechnical Analysis. Project sponsors shall complete site-specific geotechnical reports conducted by a qualified geotechnical expert. Any investigations shall comply with the California Geological Survey's Guidelines for Evaluating and Mitigating Seismic Hazards in California and projects shall comply with the recommendations stated in the geotechnical analysis. Recommendations may include, but are not limited to, the following: fill placement and compaction, isolated and continuous footing, site specific pipe bedding, and site specific seismic design criteria.	With implementation of Mitigation Measure GEO-1, impacts would be less than significant.

Impact	Mitigation Measure(s)	Significance After Mitigation
substantial adverse effects.		
Impact GEO-2: Grading associated with transportation improvements and future projects facilitated by the land use scenario envisioned in the 2018 RTP/SCS could cause soil erosion. However, compliance with applicable ordinance codes would ensure that impacts would remain less than significant.	No Mitigation Measures are required.	Impacts would be less than significant.
Impact GEO-3: Implementation of proposed transportation improvements and future projects facilitated by the land use scenario envisioned in the 2018 RTP/SCS could be located on potentially unstable soils, or in areas of high liquefaction potential. However, adherence to existing regulatory requirements would reduce this impact to less than significant.	No Mitigation Measures are required.	Impacts would be less than significant.
Greenhouse Gases		
Impact GHG-1: Implementation of the 2018 RTP/SCS would result in a net decrease in regional long-term mobile source GHG emissions as compared to existing 2015 conditions. Implementation of the 2018 RTP/SCS would also result in short-term mobile GHG emissions related to construction activities.	GHG-1: Construction GHG Reduction Measures. The project sponsor shall require the construction contractor to incorporate the most recent GHG reduction measures and/or technologies for reducing diesel particulate and NO_x emissions measures for off-road construction vehicles. The required measures shall be noted on all construction plans and the project sponsor shall perform periodic site inspections. Current GHG-reducing measures include, but are not limited to, 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 Tier 3 engines are not feasible, Tier 2 certified engines shall be used; ▪ Use of on-road heavy-duty trucks that meet the CARB's 2007 or cleaner certification standard for on-road heavy-duty diesel engines, and comply with the State On-Road Regulation; ▪ All on and off-road diesel equipment shall not idle for more than 5	With implementation of Mitigation Measure GHG-1, impacts would be less than significant.

Impact	Mitigation Measure(s)	Significance After Mitigation
	minutes. 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; ▪ Substitute gasoline-powered in place of diesel-powered equipment, where feasible; ▪ Use of alternatively fueled construction equipment, such as compressed natural gas (CNG), liquefied natural gas (LNG), propane or biodiesel, in place of diesel powered equipment for 15 percent of the fleet; ▪ Use of materials sources from local suppliers, as feasible; and ▪ Recycling of at least 50 percent of construction waste materials.	
Impact GHG-2: Implementation of the 2018 RTP/SCS would not interfere with the achievement of statewide GHG reduction targets encoded in AB 32 and SB 32.	No Mitigation Measures are required.	There would be no impact.
Impact GHG-3: Implementation of the 2018 RTP/SCS would help the region achieve its SB 375 GHG emissions reduction target and would not conflict with local GHG reduction plans and policies.	No Mitigation Measures are required.	There would be no impact.
Impact GHG Cumulative	GHG-Cumulative To support GHG reductions on a regional level, as well as address the gap between SB 375 and needed reductions from the transportation and land use sectors to achieve statewide targets, SJCOG shall take the following actions, as feasible (the following measures have been adapted from Appendix C of the 2017 Scoping Plan): ▪ Explore and develop financing and tools to support more efficient and more equitable development, including reducing barriers to housing development in infill areas; promoting infill development and necessary infrastructure in existing communities; and implementing strategies to ensure that long-time residents can stay in place as neighborhoods improve. ▪ Support transportation policies such as priced express lanes, reduced parking requirements for development, and transit commuter incentives that promote infill development and reduce vehicle miles traveled. ▪ Explore transit pass subsidies or other ways to reduce transit fares, particularly for disadvantaged communities, students, seniors, the disabled, and other transit-dependent users. ▪ Support expansion and improvement of active transportation	

Impact	Mitigation Measure(s)	Significance After Mitigation
	infrastructure to help meet the California Transportation Plan goal of quadrupling active transportation mode share by 2040. ▪ Explore ways to expand access to car share, bike share, and ride share services. ▪ Explore ways to increase use of lower-carbon construction materials for transportation infrastructure projects. ▪ Implement sustainable landscaping practices for transportation infrastructure projects that contribute to the enhancement of a multi-modal transportation system. ▪ Explore ways to: ▫ Promote teleworking and alternative work schedules. ▫ Incentivize use of transit and active transportation for commuting. ▫ Increase ride sharing to work to help meet the California Transportation Plan goal of increasing carpool vehicles by 15% by 2040. SJCOG and member agencies shall promote the use of Dibs (formerly Commute Connection), a program of SJCOG serving San Joaquin, Stanislaus, and Merced counties. Dibs promotes and encourages smart travel through carpooling, vanpooling, riding transit, walking, & biking. The program's core focus is to reduce single occupant vehicle commutes, thus reducing congestion and GHG emissions, and improving air quality. Information on Dibs can be found here: https://www.dibsmysway.com/	
Hazards and Hazardous Materials		
Impact HAZ-1: Proposed transportation improvement projects and land use patterns included in the 2018 RTP/SCS would facilitate the routine transport, use, or disposal of hazardous material, and may result in reasonably foreseeable upset and accident conditions. Mandatory compliance with existing regulations and programs would minimize the risk associated with these activities or accident conditions.	No Mitigation Measures are required.	Impacts would be less than significant.
Impact HAZ-2: Proposed transportation improvement projects and land use patterns included in the 2018 RTP/SCS would	No Mitigation Measures are required.	Impacts would be less than significant.

Impact	Mitigation Measure(s)	Significance After Mitigation
facilitate hazardous emissions or handling of acutely hazardous materials, substances or waste within one-quarter mile of an existing or proposed school. Existing regulations and programs would reduce the risk to schools.		
Impact HAZ-3: The 2018 RTP/SCS includes land use patterns and transportation projects that could occur on previously unknown hazardous material sites or sites on the list compiled by Government Code Section 65962.5. Thus, construction of these projects could create a hazard to the public or environment.	HAZ-1: Site Remediation: If an individual project included in the 2018 RTP/SCS is located on or near a hazardous materials and/or waste site pursuant to Government Code Section 65962.5, or has the potential for residual hazardous materials and/or waste as a result of location and/or prior uses, the project sponsor 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.	With implementation of Mitigation Measure HAZ-1, impacts would be less than significant.
Impact HAZ-4: Transportation improvement projects and land use scenario envisioned by the 2018 RTP/SCS may be located at or near a public use airport or private airstrip. Existing regulations and regulatory oversight would reduce the inherent hazard of development near airports to safe levels.	No Mitigation Measures are required.	Impacts would be less than significant.
Impact HAZ-5: Transportation improvement projects and the land use scenario envisioned by the 2018 RTP/SCS could interfere with existing emergency and	No Mitigation Measures are required.	Impacts would be less than significant.

Impact	Mitigation Measure(s)	Significance After Mitigation
evacuation. However, required regular updates to emergency response and evacuation plans would account for development and projects.		
Impact HAZ-6:	No Mitigation Measures are required.	Impacts would be less than significant.
Hydrology and Water Quality		
Impact W-1: Implementation of proposed transportation improvements and future projects facilitated by the land use scenario envisioned in the 2018 RTP/SCS could result in substantial eroded sediments and contaminants in runoff, as well as changes in drainage patterns which could degrade surface and ground water quality.	W-1(a): Fertilizer/Pesticide Application Plan. The project sponsor of a 2018 RTP/SCS project shall ensure that fertilizer/pesticide application plans for any new right-of-way landscaping are prepared to minimize deep percolation of contaminants. The plans shall specify the use of products that are safe for use in and around aquatic environments. W-1(b): Runoff Capture. The project sponsor of a 2018 RTP/SCS project involving construction of a new roadway, or widening or extension of an existing roadway, shall ensure that the improvement directs runoff into subsurface percolation basins and traps which would allow for the removal of urban pollutants, fertilizers, pesticides, and other chemicals.	With implementation of Mitigation Measures W-1(a) and W-1(b), impacts would be less than significant.
Impact W-2: Implementation of proposed transportation improvements and future projects facilitated by the land use scenario envisioned in the 2018 RTP/SCS would incrementally increase water demand above and beyond existing use in the SJCOG region. This demand may potentially require new or expanded water supplies, entitlements, or facilities.	W-2(a): Monitoring Systems, Long-Term Administrative Procedures, and Uniform Building Code For Dewatering Facilities. Project sponsors shall ensure that projects requiring continual dewatering facilities implement monitoring systems and long-term administrative procedures to ensure proper water management that prevents degrading of surface water and minimizes, to the greatest extent possible, adverse impacts on groundwater for the life of the project. Construction designs can and should comply with appropriate building codes and standard practices including the Uniform Building Code. W-2(b): Maximize Permeable Surface Areas. Implementing and local agencies shall maximize, where practical and feasible, permeable surface area in existing urbanized areas to protect water quality, reduce flooding, allow for groundwater recharge, and preserve wildlife habitat. New impervious surfaces can and should be minimized to the greatest extent possible, including the use of in-lieu fees and off-site mitigation. Implementing and local agencies should avoid development in groundwater recharge areas. Where feasible, transportation facilities should not be sited in groundwater recharge areas, to prevent conversion of those areas to impervious surface. W-2(c): Avoid Development In Groundwater Recharge Areas. Project sponsors shall avoid development in groundwater recharge areas. To the extent practicable, transportation facilities shall be sited away from areas of groundwater recharge in order to prevent impervious surface creation.	With implementation of Mitigation Measures W-2(a) through W-2(g), impacts would remain significant and unavoidable.

Impact	Mitigation Measure(s)	Significance After Mitigation
	W-2(d): Reduce Hardscape To Facilitate Groundwater Recharge. As appropriate, project sponsors shall reduce hardscape to the extent feasible in order to facilitate groundwater recharge. W-2(e): Bioswale Installation. The project sponsor of a 2018 RTP/SCS project, such as new roads or roadway extensions, that would substantially increase impervious surfaces shall ensure that bioswales are installed, where feasible, to facilitate groundwater recharge using stormwater runoff from the project site while improving water quality. W-2(f): Porous Pavement. Projects that involve streetscaping, parking, transit, and land use improvements shall ensure that porous pavement materials are utilized, where feasible, to allow for groundwater percolation. W-2(g): Construction Dust Suppression. Ensure that sponsored 2018 RTP/SCS projects, where economically feasible and available, utilize reclaimed and/or desalinated water is used for dust suppression during construction activities. This measure shall be noted on construction plans and shall be spot checked by the local jurisdiction.	
Impact W-3: Implementation of proposed transportation improvements and future projects facilitated by the land use scenario envisioned in the 2018 RTP/SCS could be subject to flood hazards, dam failure, or tsunami, which may expose people or structures to a significant risk of loss, injury, or death.	W-3(a): Project-Specific Hydrology Studies. Project sponsors conduct or require project-specific hydrology studies for projects proposed to be constructed within floodplains to demonstrate compliance with applicable federal, state, and local agency flood-control regulations. These studies shall identify project design features or mitigation measures that reduce impacts to either floodplains or flood flows to levels consistent with federal, state, and local regulations and laws related to development in the floodplain. W-3(b): Development In Flood Hazard Areas. Project sponsors shall, to the extent feasible and appropriate, prevent development in flood hazard areas that do not have appropriate protections. W-3(c): Elevated Structures In Flood Zones. If a 2018 RTP/SCS project is in an area with high flooding potential, project sponsors shall ensure that the structure is elevated at least one foot above the 100-year flood zone elevation and that bank stabilization and erosion control measures are implemented along creek crossings, where applicable.	With implementation of Mitigation Measures W-3(a) through W-3(c), impacts would be less than significant.
Impact W-4: Implementation of proposed transportation improvements and future projects included in the land use scenario envisioned in the 2018 RTP/SCS would increase water demand in the SJCOG region. This demand may potentially require new or expanded water supplies, entitlements, or facilities.	W-4(a): Coordinated Development And Support Of Sustainable Policies In Accommodating Growth. SJCOG, in coordination with regional water agencies and other stakeholders, shall encourage the kind of regional coordination throughout California that develops and supports sustainable policies in accommodating growth. W-4(b): Reduce Exterior Uses Of Water And Promote Reductions In Water Consumption. Project sponsors shall reduce exterior uses of water in public areas, and promote reductions in private homes and businesses by shifting to drought-tolerant native landscape plantings, using weather-based irrigation systems, educating other public agencies about water use, and installing related water pricing incentives. Local jurisdictions should work with local water retailers to promote the availability of drought resistant landscaping options and provide information on where these can be purchased. Use of reclaimed water especially in median landscaping and hillside landscaping can and should be implemented where feasible. W-4(c): Minimize Future Impacts To Water Supply. Future impacts to water supply shall be minimized through cooperation, information sharing, and program development as part of the SJCOG's ongoing regional planning efforts, in-coordination with regional water agencies,	With implementation of Mitigation Measures W-4(a) through W-4(i), impacts would remain significant and unavoidable.

Impact	Mitigation Measure(s)	Significance After Mitigation
	and other stakeholders. W-4(d): Water Demand/Pressure Requirements. Project sponsors shall coordinate with the local water provider to ensure that existing and/or planned water supply and water conveyance facilities are capable of meeting water demand/ pressure requirements. In accordance with state law, a water supply assessment can and should be required for projects that meet the size requirements specified in the regulations. In coordination with the local water provider, each project sponsor will identify specific on- and off-site improvements needed to ensure that impacts related to water supply and conveyance demand/pressure requirements are addressed prior to issuance of a certificate of occupancy. Water supply and conveyance demand/pressure clearance from the local water provider will be required at the time that a water connection permit application is submitted. W-4(e): Water Conservation Measures In New Development. Project sponsors shall implement water conservation measures in new development that should include but not be limited to the following: ▪ High efficiency toilets ▪ Restroom faucets with automatic shut-off ▪ High efficiency clothes washers ▪ High efficiency dishwashers ▪ Use of reclaimed water for appropriate uses ▪ Water saving irrigation measures including: weather-based irrigation controller with rain shut-off. W-4(f): Identify Feasible and Reasonable Measures To Reduce Water Consumption. Project sponsors shall consult with the local water provider to identify feasible and reasonable measures to reduce water consumption, including, but not limited to, systems to use reclaimed water for landscaping, drip irrigation, re-circulating hot water systems, water conserving landscape techniques (such as mulching, installation of drip irrigation systems, landscape design to group plants of similar water demand, soil moisture sensors, automatic irrigation systems, clustered landscaped areas to maximize the efficiency of the irrigation system), water conserving kitchen and bathroom fixtures and appliances, thermostatically controlled mixing valves for baths and showers, and insulated hot water lines.	
Impact W-5: Implementation of proposed transportation improvements and future projects facilitated by the land use scenario envisioned in the 2018 RTP/SCS would incrementally increase stormwater flows in the SJCOG region.	No Mitigation Measures are required.	Impacts would be less than significant.

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Impact	Mitigation Measure(s)	Significance After Mitigation
Land Use		
Impact LU-1: Implementation of transportation improvements and the land use scenario envisioned by the 2018 RTP/SCS would not divide existing established communities.	No Mitigation Measures are required.	Impacts would be less than significant.
Impact LU-2: The 2018 RTP/SCS would be consistent with applicable adopted state and local goals, policies, and regulations.	No Mitigation Measures are required.	Impacts would be less than significant.
Noise		
Impact N-1: Construction and operational activities from the proposed transportation improvement projects and the land use scenario envisioned in the 2018 RTP/SCS would create temporary and permanent noise level increases that exceed applicable thresholds in locations throughout the SJCOC region.	N-1: Noise Reduction Practices. Project sponsors shall assess and mitigate to the extent feasible short- and long-term noise impacts in accordance with applicable regulations and to implement site-specific noise reduction measures. Reduction measures include, but are not limited to, the following: ▪ Equipment and trucks used for project construction shall utilize the best available noise control techniques (e.g., improved mufflers, equipment redesign, use of intake silencers, ducts, engine enclosures, and acoustically attenuating shields or shrouds, wherever feasible). ▪ Except as may be exempted by the Lead Agency (or other appropriate government agency), impact tools (e.g., jack hammers, pavement breakers, and rock drills) used for project construction shall be hydraulically or electrically powered to avoid noise associated with compressed air exhaust from pneumatically powered tools. However, where use of pneumatic tools is unavoidable, an exhaust muffler on the compressed air exhaust should be used; this muffler can lower noise levels from the exhaust by up to about 10 dB(A). External jackets on the tools themselves should be used, if such jackets are commercially available and this could achieve a reduction of 5 dB(A). Quieter procedures shall be used, such as drills rather than impact equipment, whenever such procedures are available and consistent with construction procedures. ▪ Stationary noise sources shall be located as far from adjacent sensitive receptors as possible and they should be muffled and enclosed within temporary sheds, incorporate insulation barriers, or use other measures as determined by the Lead Agency (or other appropriate government agency) to provide equivalent noise reduction. ▪ A procedure and phone numbers shall be provided for notifying the Lead Agency staff and local Police Department; (during regular construction hours and off-hours); ▪ A sign shall be posted on-site pertaining with permitted construction days and hours and complaint procedures and who to notify in the event of a problem. The sign should also include a listing of both the	With implementation of Mitigation Measure N-1, impacts would remain significant and unavoidable.

Impact	Mitigation Measure(s)	Significance After Mitigation
	Lead Agency and construction contractor's telephone numbers (during regular construction hours and off-hours); ▪ An on-site construction complaint and enforcement manager for the project shall be designated; ▪ Neighbors and occupants within 300 feet of the project construction area shall be notified at least 30 days in advance of extreme noise generating activities about the estimated duration of the activity. ▪ A preconstruction meeting shall be held with the job inspectors and the general contractor/on-site project manager to confirm that noise measures and practices (including construction hours, neighborhood notification, posted signs, etc.) are completed. ▪ Portable barriers shall be used in the vicinity of sensitive receptors during construction. ▪ Projects that require pile driving or other construction noise above 90 dB(A) in proximity to sensitive receptors, shall reduce potential pier drilling, pile driving and/or other extreme noise generating construction impacts greater than 90dB(A), a set of site-specific noise attenuation measures should be completed under the supervision of a qualified acoustical consultant. ▪ The feasibility of noise control shall be evaluated at the receivers by temporarily improving the noise reduction capability of adjacent buildings by the use of sound blankets for example and such measures shall be implemented if such measures are feasible and would noticeably reduce noise impacts. ▪ The effectiveness of noise attenuation measures shall be monitored by taking noise measurements. ▪ Material stockpiles shall be strategically placed between the operation and the affected dwelling to minimize noise generated from any rock-crushing or screening operations performed within 3,000 feet of any occupied residence. ▪ Sound reducing barriers shall be constructed between noise sources and noise-sensitive land uses. ▪ Implement, to the extent feasible and practicable, speed limits and limits on hours of operation of rail and transit systems, where such limits may reduce noise impacts. ▪ Locate transit-related passenger stations, central maintenance facilities, decentralized maintenance facilities, and electric substations away from sensitive receptors to the maximum extent feasible.	
Impact N-2: Construction and operational activities, as well as increased transit activity from the proposed transportation improvement projects and the land use scenario envisioned in the 2018 RTP/SCS would generate substantial vibration levels throughout the SJCOG region.	N-2: Vibration Mitigation for Transportation Projects. Project sponsors of 2018 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 <i>Transit Noise and Vibration Impact Assessment</i> (FTA 2006) 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	With implementation of Mitigation Measure N-2, impacts would remain significant and unavoidable.

Impact	Mitigation Measure(s)	Significance After Mitigation
	▫ Providing special track support systems such as flattening 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 noise barriers ▫ Use noise reducing tires and wheel construction on bus wheels ▫ Use vehicle skirts (partial enclosure around each wheel with absorptive treatment) on freight vehicle wheels	
Transportation		
Impact T-1: Daily hours of vehicle delay and total peak period congested VMT in the SJCOG region would increase between future baseline 2015 conditions and 2042 conditions with implementation of the 2018 RTP/SCS.	T-1(a): Reduced Vehicle Travel. In addition to the current Tier 1 RTP projects, SJCOG should continue to explore potential measures to reduce vehicular travel. Such measures can include, but are not limited to land-use strategies to reduce VMT, car- sharing programs, additional car and vanpool programs, and additional bicycle programs. T-1(b): Evaluation of VMT. Implementing and local agencies should evaluate VMT as part of project specific review and identify and implement measures that reduce VMT including mixed use land uses and inclusion of alternative and active transportation facilities (bike racks, transit stops, and pedestrian amenities).	With implementation of Mitigation Measure T-1(a) and T-1(b), impacts would remain significant and unavoidable.
Impact T-2: Implementation of the transportation improvement projects and the land use scenario envisioned by the 2018 RTP/SCS could conflict with applicable congestion management plan programs by decreasing the levels of service of roadway operations in the SJCOG Planning Area.	T-2 LOS Deficient Roadways - Reduced Congestion and Alternatives. SJCOG should inform jurisdictions with projected LOS E and F roadway segments under the Plan of the potential need to develop a Deficiency Plan under the San Joaquin Regional Congestion Management Program at some point before 2042. SJCOG should work with these agencies to identify and encourage changes that would increase use of alternative transportation and other means to reduce congestion.	With implementation of Mitigation Measure T-2, impacts would remain significant and unavoidable.
Impact T-3: Implementation of the transportation improvement projects and the land use scenario envisioned by the 2018 RTP/SCS could generate new design feature hazards in the SJCOG planning area.	T-3: Safety Measures. Implementing and local agencies should make safety a prime objective in the design of RTP projects, and should plan to avoid, remedy, or mitigate such impacts in the course of project-level development and environmental review, including when incorporating active transportation and transit features into roadway projects.	With implementation of Mitigation Measure T-3, impacts would be less than significant.

Impact	Mitigation Measure(s)	Significance After Mitigation
Impact T-4: Implementation of the transportation improvement projects and the land use scenario envisioned by the 2018 RTP/SCS could result in congestion which would result in emergency access conflicts.	No Mitigation Measures are required.	Impacts would be less than significant.
Impact T-5: Implementation of the transportation improvement projects and the land use scenario envisioned by the 2018 RTP/SCS provides funding for active transportation projects in the SJCOG planning area to improve performance and safety of such facilities.	No Mitigation Measures are required.	Impacts would be less than significant.
Tribal Cultural Resources		
Impact TCR-1: Implementation of proposed transportation improvements and future projects facilitated by the land use scenario envisioned in the 2018 RTP/SCS have the potential to impact tribal cultural resources.	TCR-1: Tribal Cultural Resources Impact Minimization. If the project sponsor determines that a project may cause a substantial adverse change to a tribal cultural resource, identified through project-specific AB 52 consultation, and measures are not otherwise identified in the consultation process required under PRC Section 21080.3.2, project sponsors shall implement the following measures where feasible and necessary to address site-specific impacts to avoid or minimize the significant adverse impacts: ▪ Avoidance and preservation of the resources in place, including, but not limited to: planning and construction 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. ▪ 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.	With implementation of Mitigation Measure TCR-1, impacts would be less than significant.

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2018 Regional Transportation Plan/ Sustainable Communities Strategy

Impact	Mitigation Measure(s)	Significance After Mitigation
Less than Significant Environmental Factors		
Geology and Soils;: Use of septic tanks or alternative waste water disposal systems.	No Mitigation Measures are required.	No Impact
Mineral Resources: Impact the extraction of mineral resources.	No Mitigation Measures are required.	No Impact
Noise: Projects located within airport noise contour.	No Mitigation Measures are required.	No Impact
Population and Housing: Increase population or housing beyond anticipated growth in the region.	No Mitigation Measures are required.	No Impact
Public Services: Generate demand for police or fire services, schools, parks, or other public facilities.	No Mitigation Measures are required.	No Impact
Recreation: Generate demand for parks or recreation resources.	No Mitigation Measures are required.	No Impact
Utilities and Service Systems: Lead to the construction of projects that include habitable residences, commercial buildings or other facilities that would generate permanent sources of new wastewater that requires treatment.	No Mitigation Measures are required.	No Impact

1 Introduction

This document is an Environmental Impact Report (EIR) for the 2018 Regional Transportation Plan and Sustainable Communities Strategy (2018 RTP/SCS) proposed by the San Joaquin Council of Governments (SJCOG).

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 SJCOG, other agencies, and the general public in their consideration and evaluation of the environmental consequences of implementing of the proposed 2018 RTP/SCS.

This section discusses (1) the purpose of this EIR; (2) 2018 RTP/SCS and EIR background; (3) the type of environmental document prepared for the 2018 RTP/SCS; (4) the content and format of the EIR; (5) the environmental review process required under the California Environmental Quality Act (CEQA); and (6) the lead, responsible, and trustee agencies. The proposed project is described in detail in Section 2.0, *Project Description*.

1.1 Statement of Purpose

This EIR has been prepared in compliance with the CEQA Statutes and Guidelines. In general, the purpose of an EIR is to:

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

The Final EIR will include a Mitigation, Monitoring, and Reporting Program that identifies who will be responsible for implementing identified mitigation measures and the required timing for implementation. As the lead agency for preparing this EIR, SJCOG will rely on the EIR analysis of potential environmental effects in their review and consideration of the proposed 2018 RTP/SCS prior to approval.

As discussed in further detail below in Section 1.3.1, *CEQA Streamlining Opportunities*, SB 375 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.

1.2 Project Background

The proposed project, the 2018 RTP/SCS, is a long-range comprehensive plan for the region's multi-modal transportation system. As a Metropolitan Planning Organization (MPO), preparing an RTP is

one of San Joaquin Council of Governments' (SJCOG) primary statutory responsibilities under federal and state law. Implementation of an RTP is the mechanism used in California by both MPOs and Regional Transportation Planning Agencies (RTPAs) to conduct long-range planning (at least 20-years in to the future) in their regions. SJCOG must adopt an updated RTP every four years, or more frequently, if the region is to receive federal and state transportation dollars for public transit, streets/roads, and bicycle and pedestrian improvements. SJCOG adopted the 2014 RTP in June 2014; it provides a long-range plan for transportation in San Joaquin County. In 2008, California enacted the Sustainable Communities and Climate Protection Act, also known as Senate Bill 375 (SB 375), which requires MPOs to include a Sustainable Communities Strategy (SCS) element in their RTP updates. The 2014 RTP was the first SJCOG plan to include the SCS. The California Air Resources Board (CARB) provided greenhouse gas reductions targets for the preparation of the 2014 RTP, setting the targets at a 5 percent per capita reduction by 2020 and 10 percent per capita reduction by 2035 from year 2005 levels. The 2014 RTP/SCS met those targets. For San Joaquin County, the current per-capita emission reduction targets set by CARB are a five (5) percent reduction relative to 2005 levels by 2020, and a 10 percent reduction from 2005 levels by 2035.

In compliance with the CEQA Guidelines (Section 15063), SJCOG, as the Lead Agency responsible for the 2018 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 at the following location:

- Stockton, California, on March 30, 2017 from 4:00 PM to 7:30 PM at the San Joaquin Council of Governments office, 555 East Weber Avenue
- **Adriana Lopez and Mary Meninga.** The commenters discussed the heavy truck traffic on Lathrop Road and concern over the potential designation of Lathrop Road as a Surface Transportation Assistance Act (STAA) truck route. [STAA trucks are longer than California legal trucks and therefore have specific designated routes in California.]

SJCOG received several comment letters on the NOP. A copy of each letter is provided in Appendix A and the letters are summarized below. In addition to the summaries below, SJCOG received a letter from the State Clearinghouse stating that SJCOG completed the NOP environmental review process.

- **Adriana Lopez and Mary Meninga.** The commenters discuss their concerns relating to the existing conditions of Lathrop Road, and the potential impacts from future road widening or proposed STAA truck designation for Lathrop Road from I-5 to Highway 99. The commenters concerns, as specified in the letter, pertain to the following issues: safety, police enforcement, hazardous emissions, noise and vibrations, and available alternate routes.
- **Mary Meninga.** The commenter's letter is a follow up to the joint letter summarized above. The commenter further discusses safety risks regarding the STAA designation of Lathrop Road. In addition, the commenter mentions schools, community activity centers/facilities that may be adversely affected.
- **Delta Stewardship Council (DSC).** The DSC indicated their desire to provide input regarding consistency of the 2018 RTP/SCS with the Delta Plan. Pursuant to the Water Code Section 85212, the DSC will be required to review the RTP/SCS for consistency with the Delta Plan. The DSC also suggested the RTP/SCS promote coequal goals of the plans by addressing water supply reliability, and provided guidance on protecting the Delta as a place. The letter specifically references environmental issue areas such as land use and planning, biological resources, and hydrology and water quality.

- **Margaret Luevano.** The commenter stated their concerns with safety and congestion issues with Lathrop Road.
- **Native American Heritage Commission.** The Commission outlines the AB 52 and SB 18 consultation requirements, as they relate to the CEQA review process. The Commission indicated that the 2018 RTP/SCS is subject to both AB 52 and SB 18 requirements.
- **Central Valley Regional Water Quality Control Board.** The Central Valley Water Board provided comments related to water protection processes. Specifically, the letter provided the requirements for Construction Storm Water General Permits, Phase I and II Municipal Separate Storm Sewer System (MS4) Permits, Industrial Storm Water General Permits, Clean Water Act Section 404 Permits, Clean Water Act Section 401 Permits, Dewatering Permits, Irrigated Lands Regulatory Program, and Waste Discharge.

1.3 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 countywide assessment of the impacts of the proposed 2018 RTP/SCS. Analysis of site-specific impacts of individual projects is not the intended use of 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 undertaken as necessary by the appropriate implementing agency prior to each project being considered for approval. Because the act of adopting the 2018 RTP/SCS would not, in itself, result in the implementation of transportation system improvements projects or programs identified in this document, no environmental impacts would be directly associated with this action. 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
- 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 2018 RTP/SCS. These agencies would include the San Joaquin County and the cities and local jurisdictions within the County. Other project implementing agencies may include public transit providers, and other public agencies such as the California Department of Transportation (Caltrans), among others. All of these agencies, as well as the SJCOG 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 peculiar to the project, or its site, that have not been considered in this program EIR.

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.

1.3.1 CEQA Streamlining Opportunities

If the 2018 RTP/SCS is adopted and the program EIR is certified by SJCOG, 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 AB 32 and SB 375. Upon making this determination, a number of streamlining benefits may become available to lead agencies that carry out or approve future projects contemplated by the 2018 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.

1.3.1.1 Streamlining Under SB 375

SB 375 provides streamlining benefits for Transit Priority Projects (TPP). 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 Transit Priority Areas (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).

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 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). An SCEA is available for a TPP that does not result in any potentially significant environmental impacts after mitigation and that has incorporated all feasible mitigation measures, performance standards, or criteria set forth in the prior applicable EIRs including the EIR for the RTP/SCS. An SCEA is not required to discuss (1) growth inducing impacts, or (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 (PRC Sections 21155.2 (b)(1), 21159.28 (a)). Additionally, 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. Projects eligible for streamlining must incorporate mitigation measures required by an applicable prior environmental document, such as this EIR if it is certified by SJCOG. EIRs for qualifying residential or mixed-use residential projects are 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, or (3) a reduced density alternative to address effects of car and light truck trips generated by the project (PRC Section 21159.28 (a)-(b)).

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 1.3.1.5, *Other Tiering Opportunities*.

1.3.1.2 Streamlining Under SB 226

In 2011, the legislature enacted SB 226 to establish additional streamlining benefits applicable to infill projects that are consistent with the requirements set forth in CEQA Guidelines section 15183.3 (PRC Sections 21094.5 (c), 21094.5.5). Residential, commercial and retail, public office buildings, transit stations, and schools are eligible for this streamlining provided they meet the following requirements: (1) are located in an urban area on a site that has been previously developed or adjoins existing qualified urban uses on at least 75 percent of the site's perimeter; (2) satisfy the performance standards provided in Appendix M of the CEQA Guidelines; and, (3) are consistent with the general use designation, density, building intensity, and applicable policies specified for the project area in either a sustainable communities strategy or an alternative planning strategy, with some exceptions.

For these projects, more significant effects, or if uniformly applicable, development standards, would substantially mitigate such effects. If this is not the case, then a Mitigated Declaration or, for TPPs, an SCEA may be prepared. If impacts cannot be mitigated through project changes, then an "Infill EIR" is prepared. An Infill EIR is only required to analyze effects on the environment that are specific to the project or to the project site and were not addressed as significant effects in a prior planning level EIR unless new information shows the effects will be more significant than described in the prior EIR (PRC Section 21094.5 (a)(1)). Moreover, an Infill EIR is not required to consider potentially significant environmental effects of the project that may be reduced to a less-than-significant level by applying uniformly applicable development policies or standards adopted by the city, county, or the lead agency (PRC Section 21094.5 (a)(2)). The Infill EIR is not required to discuss (1) alternative locations, project densities, and building intensities, or (2) growth inducing impacts.

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 (CEQA Guidelines, Section 15183.3 (f)(1)).

1.3.1.3 Streamlining Under SB 743

SB 743 (2013) (PRC Section 21099 and 2155.4) created an exemption from CEQA for certain projects that are consistent with a Specific Plan (see Public Resources Code Section 21155.4.) A Specific Plan is a local plan that contains specific policies and development regulations for a defined area such as a downtown core or along a transit corridor. 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;
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 the project would cause new or worse significant environmental impacts compared to what was analyzed in the environmental impact report for the specific plan. In that case, supplemental environmental review must be prepared.

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).)

1.3.1.4 *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 SJCPG), 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, or (3) constitute cumulative effects and were adequately addressed in this EIR (PRC Section 21094).

1.4 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 beneficial. It proposes mitigation measures, where feasible, for identified significant environmental impacts to reduce project impacts, identifying when impacts can be reduced to a less than significant level. The responsible agency for the each mitigation measure is also identified, as further described in Section 4.0. This EIR has been organized into seven sections. These include:

- 1.0 **Introduction.** Provides the 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 SJCOG region, including a description of the regional transportation system, and discusses the EIR baseline and approach to direct and cumulative analyses.
- 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 plan, 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 Statutory Considerations.** Identifies the spatial, economic, or population growth 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.** Presents and assesses the potential environmental impacts of alternatives analyzed in addition to implementation of the proposed 2018 RTP/SCS.

- 7.0 **References and 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.

1.5 CEQA Review Process

SJCOG as the CEQA Lead Agency is preparing this EIR to satisfy all requirements under CEQA and follow all process requirements including public review, response to comments, identification of significant and unavoidable impacts, and preparing a Statement of Overriding Consideration as necessary for the unavoidable impacts. This document is a Program EIR. Section 15168(a) of the *State 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.”

The analysis in this EIR follows the below described process, as required under CEQA and shown in Figure 1. The steps are presented in sequential order.

1. **Notice of Preparation (NOP) and Initial Study.** following state guidelines, SJCOG submitted a NOP to the State Clearinghouse who publicly released it on March 14, 2017 for a 30-day review period that ended on April 12, 2017. A scoping meeting was also held on March 21, 2017 at the SJCOG office.
2. **Draft EIR Prepared.** The Draft EIR must contain: 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 Completion (NOC).** SJCOG, as the lead agency, has filed an NOC with the State Clearinghouse noticing agencies and the public that it has completed a Draft EIR and prepared a Public Notice of Availability of this Draft EIR as required under CEQA. As the lead agency, SJCOG will solicit input from other agencies and the public, and respond in writing to all comments received (Public Resources Code Sections 21104 and 21253). The public review period will be a minimum of 45 days.
4. **Final EIR.** SJCOG will prepare a Final EIR that includes: 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 a proposed project, SJCOG will 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. **Findings/Statement of Overriding Considerations.** For each significant impact of the project identified in the EIR, the lead agency 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.

7. **Mitigation Monitoring Reporting Program.** When the lead agency makes findings on significant effects identified in the EIR, it must adopt a reporting or monitoring program for mitigation measures that were adopted or made conditions of project approval to mitigate significant effects.
8. **Lead Agency Project Decision.** The lead agency 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).
9. **Notice of Determination (NOD).** SJCOG will file a NOD after deciding to approve a project for which an EIR is prepared (*CEQA Guidelines* Section 15094). SJCOG will file the NOD with the applicable County Clerks to be posted for 30 days and sent to anyone previously requesting notice. Posting of the NOD will start 30-day statute of limitations on CEQA legal challenges (Public Resources Code Section 21167[c]).

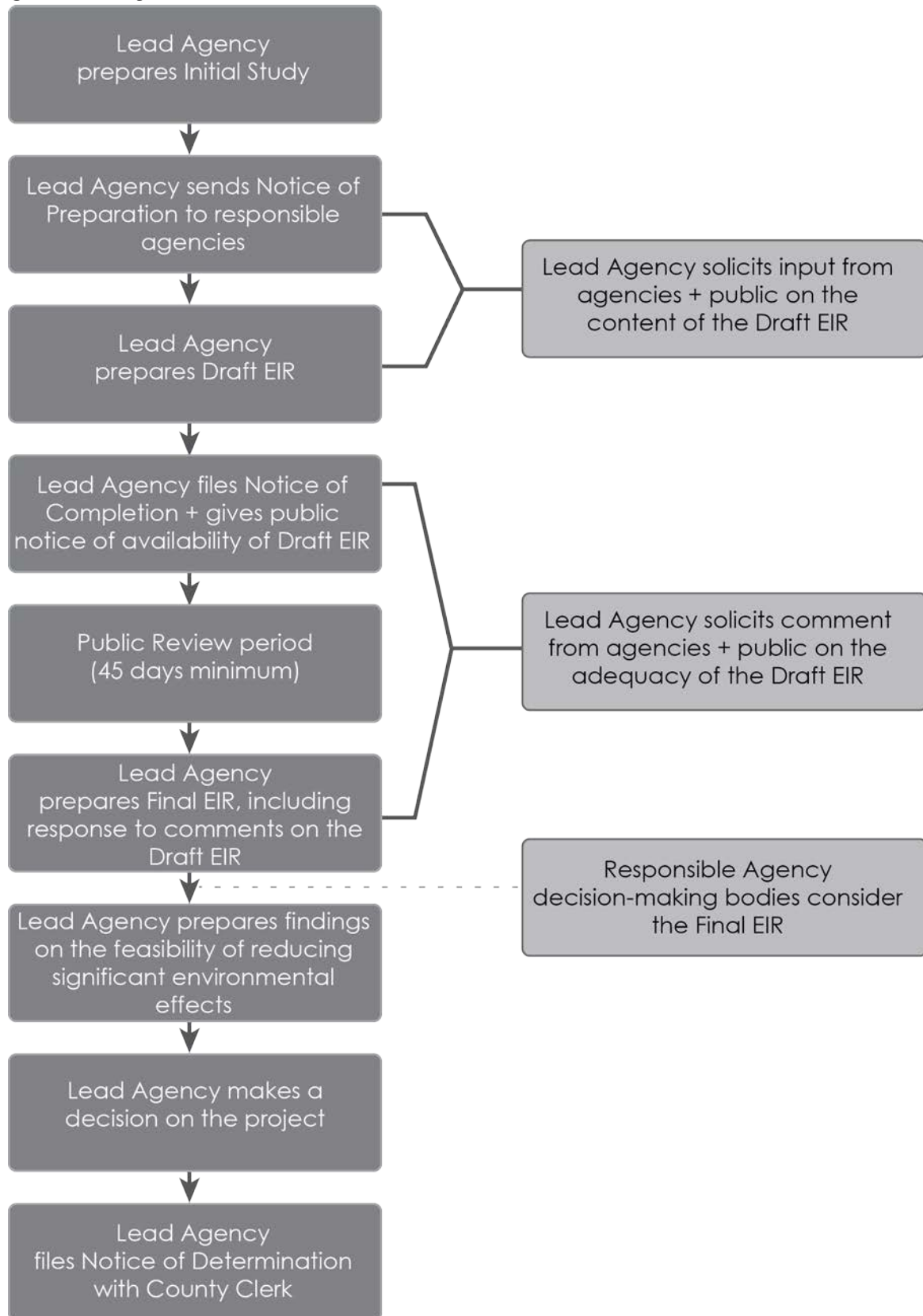
1.6 Lead and Responsible Agencies

The *CEQA Guidelines* define lead and responsible, and trustee agencies. A lead agency is the public agency with principal responsibility for carrying out or approving a project; the lead agency prepares the CEQA document (*CEQA Guidelines* Section 15367). A responsible agency is an agency other than the lead agency with responsibility for carrying out or approving a project, and uses the lead agency's CEQA document in its decision-making (*CEQA Guidelines* Section 15381).

SJCOG is the lead agency for the 2018 RTP/SCS because it holds principal responsibility for approving the 2018 RTP/SCS. While no Responsible Agencies or Trustee Agencies are responsible for approvals associated with adoption of the RTP/SCS, implementation of projects identified in the RTP/SCS will require permits and approvals from Lead, Trustee, and Responsible Agencies, which may include the following:

▪ County of San Joaquin	▪ California Transportation Commission
▪ City of Escalon	▪ California Department of Transportation
▪ City of Lathrop	▪ California Department of Fish and Wildlife
▪ City of Lodi	▪ California Department of Conservation
▪ City of Manteca	▪ Regional Water Quality Control Board
▪ City of Ripon	▪ Native American Heritage Commission
▪ City of Stockton	▪ U.S. Army Corps of Engineers
▪ City of Tracy	▪ U.S. Fish and Wildlife Service
▪ San Joaquin Valley Air Pollution Control District	▪ Delta Stewardship Council

Figure 1 CEQA Environmental Review Process



2 Project Description

The proposed project is the 2018 Regional Transportation Plan and Sustainable Communities Strategy (2018 RTP/SCS) for San Joaquin County (County). This section describes the proposed RTP/SCS, including the project objectives, project location and characteristics, 2018 RTP/SCS transportation projects, and discretionary actions needed for approval.

The full 2018 RTP/SCS is available for review at the San Joaquin Council of Governments (SJCOG) website (<http://www.sjcog.org/>).

2.1 Project Objectives

The objective of the 2018 RTP/SCS is to comply with the current California Transportation Commission Regional Transportation Plan Guidelines, pursuant to Government Code Section 14522, to prepare a regional transportation plan, a long-range transportation planning document which will provide policy guidelines regarding the planning and programming of transportation projects within the County through 2042. 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 2018 RTP/SCS.

2.1.1 General Legislative Requirements

The San Joaquin Council of Governments (SJCOG) as the federally-designated metropolitan planning organization (MPO) representing San Joaquin 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 a document used to achieve a coordinated and balanced regional transportation system.

SJCOG is also responsible for preparing 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 duty trucks to achieve the regional 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. All RTP updates started after the 2017 RTP Guidelines were adopted by the CTC (January 18, 2017) must use the new RTP Guidelines. SJCOG started their RTP/SCS after that date so is following the 2017 RTP Guidelines. Under both federal and State law, the RTPAs must update their RTPs every four years.¹ SJCOG adopted its most recent RTP/SCS in June 2014. The 2014 RTP/SCS covered a planning period through 2040.

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

2.1.2 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 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 California Transportation Commission (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.
- The CARB must develop regional GHG emission reduction targets for automobiles and light trucks for 2020 and 2035 by September 30, 2010. These first targets were approved on September 23, 2010. New targets were set in early 2018 for this RTP/SCS. New targets for future plans will be adopted by CARB in 2018.
- 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.

SJCOG reduction targets from CARB are currently identified as a 5 percent per capita reduction in 2020 and 10 percent per capita reduction by 2035 from year 2005. These targets apply to the entire SJCOG region for all on-road light duty trucks and passenger vehicles emissions, and not to individual cities or sub-regions. Therefore, SJCOG, through the 2018 RTP/SCS, must maintain or reduce these levels to meet the 2020 target and reduce these levels to meet the 2035 targets.

SB 375 specifically states that local governments retain their autonomy to plan local General Plan policies and land uses. The 2018 RTP/SCS provides a regional policy foundation that local governments may build upon, if they so choose. The 2018 RTP/SCS includes and accommodates the quantitative growth projections for the region. A Regional Housing Needs Assessment (RHNA) was adopted with the 2014 Plan and is scheduled to be updated again in 2022. 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 2018 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 2018 RTP/SCS are eligible for streamlined environmental review pursuant to CEQA.

2.1.3 Fixing America's Surface Transportation Act (Fast Act)

The most recent federal transportation legislation, Fixing America's Surface Transportation (FAST) Act builds on the changes made by MAP-21, and, was enacted in 2015. 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), with the long-range statewide and metropolitan plans 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, in an effort 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 representative to also serve as the representative of a local municipality.

Through the RTP development process, the FAST Act encourages SJCOG 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:

- Provide for consideration of projects and strategies that will:
 - (A) Support the economic vitality of the metropolitan area, especially by enabling global competitiveness, productivity, and efficiency;
 - (B) Increase the safety of the transportation system for motorized and non-motorized users;

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 2040.

³ 23 U.S.C. §134(g)(3)(A).

- (C) Increase the security of the transportation system for motorized and non-motorized users;
- (D) Increase the accessibility and mobility of people and for freight;
- (E) 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;
- (F) Enhance the integration and connectivity of the transportation system, across and between modes, for people and freight;
- (G) Promote efficient system management and operation;
- (H) Emphasize the preservation of the existing transportation system.
- (I) Improve the resiliency and reliability of the transportation system and reduce or mitigate stormwater impacts of surface transportation; and
- (J) Enhance travel and tourism. ⁴

2.1.4 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 SJCOG RTP/SCS as its projected adoption is for June 2018.

2.1.5 MAP-21

The Moving Ahead for Progress in the 21st Century Act (MAP-21) was enacted in 2012. Through the RTP development process, MAP-21 encourages SJCOG 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.⁵

Specifically, MAP-21 requires that the RTP 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;

⁴ 23 U.S.C. §134(h)(1).

⁵ 23 U.S.C. §134(g)(3)(A).

- 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.⁶

The 2018 RTP/SCS discusses in detail how these requirements are met.

2.1.6 Measure K Expenditure Plan

In November 2006, the voters of San Joaquin County approved the renewal of Measure K for an additional 30 years beyond the original 2011 expiration date. The Measure K Expenditure Plan identifies the countywide transportation facility and service improvements, including highway, public transit, railroad grade crossing, passenger rail, and bicycle projects, to be delivered by a half-cent sales tax in San Joaquin County dedicated for transportation purposes. Additionally, the Expenditure Plan outlines the distribution of all categorical allocations between the local jurisdictions within the county. The sales tax revenues generated by the Measure K (Renewal) program along with the policies, projects, and programs identified in the Measure K (Renewal) Expenditure Plan have been incorporated into the Plan as appropriate.

2.1.7 Metropolitan/Regional Transportation Plans

The procedures for developing Regional Transportation Plans, which SJCOG has prepared, are also referred to as Metropolitan Transportation Plans – are provided in the California Transportation Commission’s *2017 California Regional Transportation Plan Guidelines*. The guidelines apply to both types of document and identify the purpose of an MTP/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,

⁶ 23 U.S.C. §134(h)(1).

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

2.1.8 Local Objectives

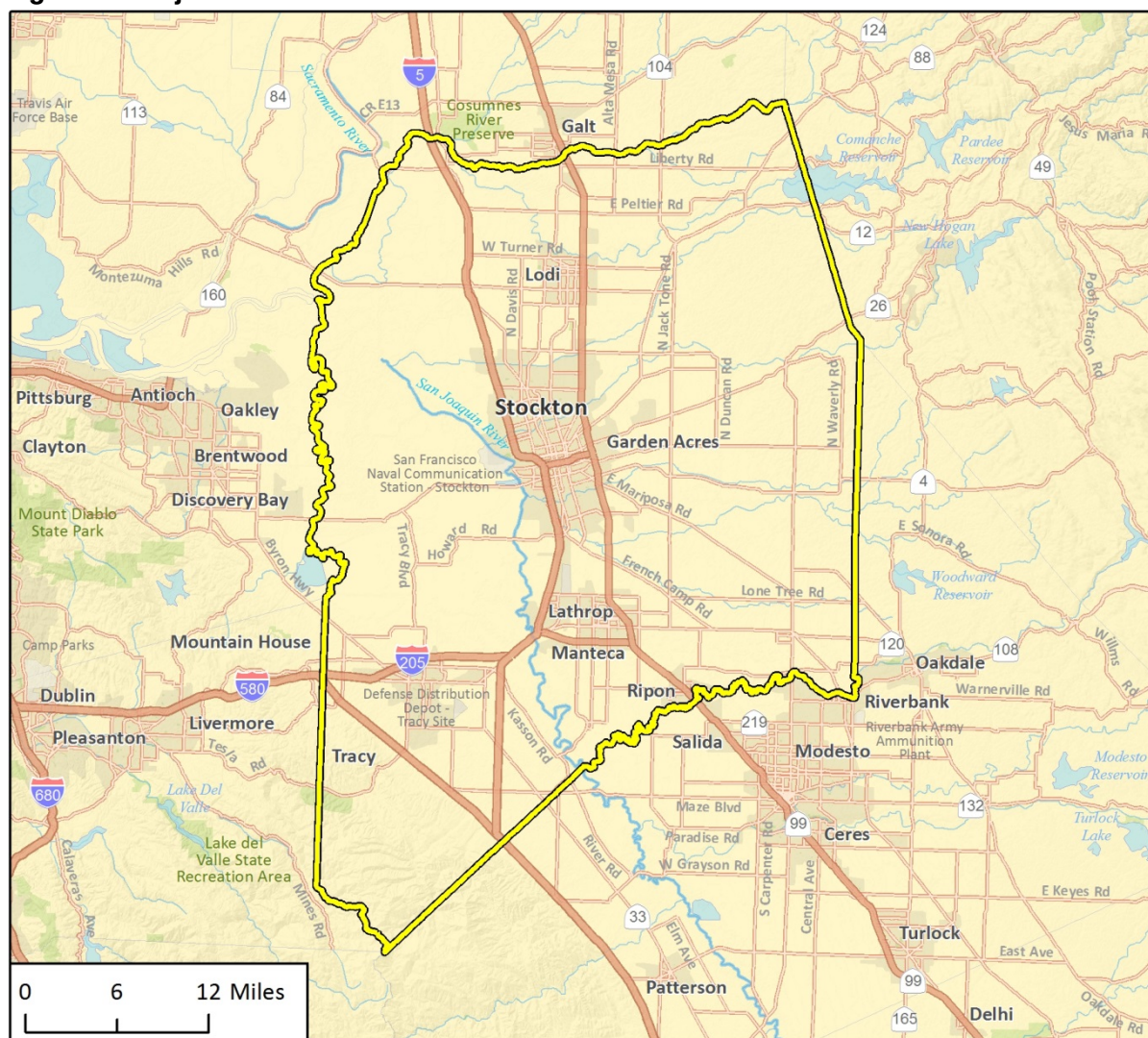
The 2018 RTP/SCS includes mobility as an important component and incorporates an emphasis on sustainability and integrated planning. The Plan contains projects, policies, and strategies to achieve a wide range of positive outcomes. It identifies reasonably available sources of funding for transportation. The 2018 RTP/SCS is a plan for improving the quality of life for residents of San Joaquin County by planning for wise transportation investments and informed land use choices. The Plan 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. These land use strategies include:

- Focusing new growth and development in areas well served by transit,
- Promoting a better fit between jobs and housing,
- Redirecting future housing growth toward more compact unit types, and
- Promoting a mix of uses and neighborhood design that enables more walk and bike trips.

2.2 Project Location

San Joaquin County is located in the northern portion of the San Joaquin Valley and covers approximately 1,440 square miles. The geographical extent of the 2018 RTP/SCS includes the area within the limits of San Joaquin County, California, including the incorporated cities of Escalon, Lathrop, Lodi, Manteca, Ripon, Stockton, Tracy, and all unincorporated areas under the jurisdiction of the County of San Joaquin (See Figure 2). Capital improvement projects identified in the 2018 RTP/SCS are primarily located on state highways, county roads and locally owned streets, as well as on airport property, transit district property and public utility lands. A description of the study area is provided in Section 3.0, *Environmental Setting*.

Figure 2 Project Location



 San Joaquin County

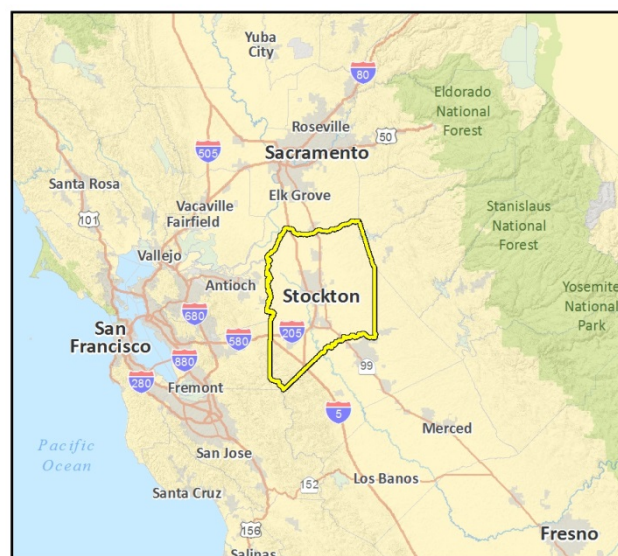


Fig 2 Regional Location

2.3 Project Characteristics

The 2018 RTP/SCS is a technical update to the 2014 RTP/SCS which was adopted in 2014. The 2018 RTP/SCS reflects changes in planning assumptions, planning lists, legislative requirements, local land use policies, and resource and revenue constraints, while preserving the foundational elements of the 2014 RTP/SCS.

The 2018 RTP/SCS plans how the SJCOG region will meet its transportation needs for the period from 2017 to 2042, considering existing and projected future land use patterns as well as forecast population and job growth. The 2018 RTP/SCS plans for the approximate \$11.5 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; aviation, as well as transportation demand management measures and transportation systems management.

The 2018 RTP/SCS is based on a preferred land use and transportation scenario which defines a pattern of future growth and transportation system investment for the region emphasizing a transit-oriented development and compact infill approach to land use and housing. Population and job growth is allocated principally within existing urban areas near public transit. Allocation of future growth directly addresses jobs-housing balance issues.

The preferred scenario consists of an intensified land use distribution approach that concentrates the forecasted population and employment growth in existing urban areas. This focus intends 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 that complement public transit and other non-vehicle alternatives.

There are four required elements of the RTP; 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 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.

The 2018 RTP/SCS is comprised of the following elements: (1) a policy element that presents an overview of the challenges facing the region; the RTP goals, policies and performance outcomes; (2) planning assumptions including growth of population; (3) the SCS, which includes land use policies and forecasted future growth and land use for the region; (4) a strategic investment chapter that includes action elements necessary to implement the Plan and performance measures to determine how the Plan performs; (5) the financial element that summarizes the cost of Plan implementation constrained by a realistic projection of available revenues and provides recommendations for the allocation of funds; (6) a future links chapter that addresses trends that could affect the RTP in future cycles; and (7) a monitoring chapter that addresses monitoring the progress of the transportation system. The RTP also addresses environmental justice. Transportation projects included in the 2018 RTP/SCS are listed in Appendix 3.0, Detailed RTP Project List, and contain many of the same projects included in the 2014 RTP/SCS. The projects, policies, and strategies that have

committed, available, or reasonably available funding sources constitute the 2018 RTP/SCS that is also referred to as the “constrained plan” or Plan. In total, the RTP/SCS assumes \$11.5 billion in projected revenues to be available within the 2042 horizon year of the Plan.

2.3.1 Policy Element

The overall approach to the 2018 RTP/SCS is to build upon the “ambitious and achievable” 2014 plan with updated planning assumptions. Goals, policies, and strategies have been carried over to the 2018 plan, plus any additional policies needed to address new requirements or updated technologies. The preferred scenario addresses the overall policy goals and intent with a different strategic focus. SJCOG staff compared not only metrics from each scenario against one another, but looked at measurable results against previous and current conditions based on empirical data. SJCOG measured progress over time since the last RTP and assessed whether a forecast of future conditions is better today over a similar set of policies and strategies as in 2014.

The 2018 RTP/SCS does not provide project designs or a construction schedule. Adoption of the 2018 RTP/SCS would not represent an approval action for any of the individual transportation programs and projects listed in the financially constrained Plan. Detailed site-specific alignment, location, design, and scheduling of the improvement projects which are included in the 2018 RTP/SCS are not fixed by the 2018 RTP/SCS, and these individual projects may be modified substantially from their initial description in the 2018 RTP/SCS at the time they are considered for implementation.

2.3.2 Financial Element

The total funding for the 2018 RTP/SCS has been allocated to projects in five broad funding categories: roadway expansion, roadway operations and maintenance, bus transit, rail transit, and active transportation.

SJCOG staff estimates the total funding for the 2018 RTP at \$11.5 billion. This funding is allocated to each of the five broad funding categories: highway and regional roadway expansion, roadway operations and maintenance, bus transit, rail transit, and active transportation. Of the total \$11.5 billion funding amount, the 2018 RTP/SCS would allocate approximately \$0.32 billion to active transportation projects (primarily in the form of bicycle and pedestrian improvements), \$1.21 billion to railroad and railway improvement projects, \$2.36 billion to bus transit operations, \$4.45 billion to roadway maintenance and rehabilitation efforts, and \$3.12 billion towards general roadway expansions, widenings, etc.

2.3.3 Action Element

SJCOG staff met with each jurisdiction in the County, as well as the Regional Transit District, Caltrans, and the Regional Rail Commission to update and refine a baseline project list for the 2018 RTP. This includes removal of completed or substantially completed projects, adding any new future projects, or modifications to projects based on changes to scope or schedule. Project lists were modified to reflect the different theme, policy choices, and investment priority focus of each of the alternative scenarios. The final project list is established based on those priorities and investments, and are discussed further in Section 2.4 below.

2.3.4 Sustainable Communities Strategy

This element provides future land-use assumptions upon which the SCS is constructed. SJCOG staff has met with each jurisdiction in San Joaquin County to discuss any changes to current planning assumptions, or potential changes to the location of future development since the last RTP/SCS was developed. As with 2014, the scenarios presented for consideration varied in the location and intensity of future growth. These assumptions are guided in each scenario by general plans; however, general plans provide for a range of specific development characteristics based on future priorities and desires of residents, shifting demographics, incentives, and private sector responses to these variables. The land-use assumptions are matched to investment priorities and project lists for the public, stakeholders, and SJCOG committees and Board, upon which results in the 2018 RTP/SCS.

The SCS consists of the preferred land use and transportation scenario selected by SJCOG as best capable of meeting RTP goals. The 2018 RTP/SCS simultaneously addresses the region's transportation needs and encourages infill development near transit investments to reduce vehicle miles traveled (VMT) and overall GHG emissions. This strategy selectively invests in transportation systems that complement compact growth within transit corridors in existing urban areas.

The transportation projects, programs, and strategies contained in the RTP are major components of the SCS. However, the SCS also focuses on the general land use growth pattern for the region, because the geographic relationships between land uses—including density and intensity— help determine travel demand. Thus, to meet requirements of SB 375, the SCS:

- Identifies existing and future land use patterns;
- Establishes a future land use pattern to meet GHG emission reduction targets;
- Identifies transportation needs and the planned transportation network;
- Considers statutory housing goals and objectives;
- Identifies areas to accommodate long-term housing needs;
- Identifies areas to accommodate eight-year housing needs;
- Considers resource areas and farmland; and

These requirements, as outlined in California Government Code Section 65080(b)(2)(B), do not mean that the SCS creates a mandate for certain land use policies at the local level. In fact, SB 375 specifically states that the SCS cannot dictate local General Plan policies (see Government Code Section 65080(b)(2)(J)). Rather, the SCS is intended to provide a regional policy foundation that local governments may build upon as they choose and generally includes quantitative growth projections.

2.4 2018 RTP/SCS Transportation Projects

The types of transportation projects comprising the 2018 RTP/SCS are summarized below. All projects by type and jurisdiction are shown in Appendix B.

- **Active Transportation.** San Joaquin County has an ideal terrain for using bicycles as an alternative transportation mode. The flat terrain, many rural roads, and relatively mild weather make it particularly conducive to bicycle travel. For short trips, the bicycle can serve as an alternative to the automobile. Because the bicycle is non-polluting and energy efficient, it is an element in the region's multi-modal transportation system that could lead to a more efficient transportation network. The projects in the 2018 RTP/SCS are focused on improvements

designed to benefit pedestrians and bicyclists. They include the construction of Class I-III bicycle lanes, sidewalk gap closures, ADA accessible ramps and sidewalks, pedestrian crossings, maintenance, rehabilitation, and repair projects, roundabouts, and new lighting. Specific projects include “complete streets” improvements on Miner Avenue and the installation of numerous Class II bicycle lanes in the City of Stockton. Another project includes the installation of crosswalks, LED in-pavement crosswalk lights, and new signs in the City of Ripon in order to implement the Parkview Elementary Safe Routes to School program.

- **Interchanges.** These projects focus mainly on the reconstruction and construction of interchanges throughout the County. These projects include the modification of existing interchanges, such as the projects located in the City of Tracy, as well as the construction of new interchanges and auxiliary lanes in the City of Stockton. Specific projects include the development of a new interchange and lanes along I-5 at Otto Drive in Stockton, and reconstructed interchanges in the City of Lathrop along I-5 at Louise Avenue and Lathrop Road.
- **Regional Roadways.** These projects include the development of new infrastructure such as reconstructed interchanges, intersection improvements, and new, widened, and extended roadway lanes, designed to improve safety and capacity. Specific projects include the widening and construction of new lanes on Airport Way and Atherton Drive in the City of Manteca, as well as a number of roadways widenings in the City of Stockton.
- **Rail Corridor/Railroad Crossings.** Railroad crossing projects focus on improvements to railroad crossings, safety improvements, and construction of new grade separations. Specific projects included in the 2018 RTP/SCS include the construction of 4 and 6 lane grade separations along the UPRR in the City of Stockton, and grade separations in Escalon, Lathrop, and Manteca. Rail corridor projects include the purchase of rail stock, railway realignments, rehabilitation and upgrade to existing tracks and stations.
- **Airports.** San Joaquin County's airports provide services which address a variety of local and regional needs through providing viable mobility options for the County's citizens and businesses. The aviation system connects the traveling public and cargo movers to airports in major metropolitan areas of the state and neighboring areas of Nevada. The aviation system serves the US military directly or in an auxiliary fashion as well as supporting local farmers, police, and medical services. Aviation activities also provide recreational opportunities for the citizens of San Joaquin County. The projects included in the 2018 RTP/SCS are focused on reconstruction, rehabilitation, and general improvements at both the Tracy Municipal Airport, and the Stockton Metro Airport. Specific projects include runway, taxiway, and lighting improvements at the Stockton Metro Airport, and the installation of wash facilities, a helicopter pad, and new fencing at the Tracy Municipal Airport.
- **Transportation Control Measures (TCM).** Transportation Control Measures have received tremendous amounts of attention since the passage of the State and Federal Clean Air Acts and congestion management legislation. As a result, the entire San Joaquin Valley Air basin is currently designated as a “non-attainment area” for ozone and particulate matter less than 2.5 microns in diameter (PM-2.5) and maintenance for particulate matter less than 10 microns in diameter (PM-10). In San Joaquin Valley, the Air District and the Transportation Planning Agencies have jointly prepared a Transportation Control Measure Plan. The joint effort is the result of a memorandum-of-understanding signed by each of the agencies to coordinate air quality and transportation planning activities. TCM projects in the 2018 RTP/SCS include the installation of traffic signals, roundabouts, complete streets improvements, new bicycle facilities and lanes, pedestrian improvements such as widening and maintenance to local pathways, and technological improvements such as signal systems and monitoring traffic flows.

- **Bus Transit.** Transit systems consists of local, intercity, interregional, and dial-a-ride bus services, as well as intercity and interregional passenger rail systems currently operating in San Joaquin County. The system also includes needed services such as demand response for both those who are in need of transit for medical purposes and those in rural areas (General Public dial-a-ride). All cities and unincorporated areas in San Joaquin County are served by a public transit system. There are four types of public transit services currently operated by RTD and the cities in San Joaquin County: general public fixed-route, general public dial-a-ride, general public route-deviation, and para- transit dial-a-ride. The transit projects included in the 2018 RTP/SCS focus on improvements such as the purchase of rolling stock, bus rehabilitation, purchase of communication equipment, bus shelters and ancillary equipment used to rehabilitate/upgrade existing transit stops/stations. Specific improvements would include traffic signal upgrades, bus stop amenities and access enhancements in the Stockton Metropolitan Area, as well as new bus replacements and new passenger amenities in the City of Escalon.
- **Operations and Maintenance.** These types of projects are located throughout the County, and are diverse in definition. The project description of these projects include projects similarly discussed above, and include improvements such as the construction of roundabouts, pedestrian and bicycle facility upgrades, roadway rehabilitation, and the installation of ramp meters and Intelligent Transit System (ITS) elements. Currently there are several ITS projects targeted specifically for San Joaquin County. These projects would fall under the focused urban area ITS and include advanced warning systems, vehicle tracking, signal coordination and synchronization, and advanced transit systems. Other improvements include the installation of adaptive traffic signals through signal coordination efforts, and new traffic responsiveness control systems.

The general location of projects that comprise the 2018 RTP/SCS are shown in Figure 3.

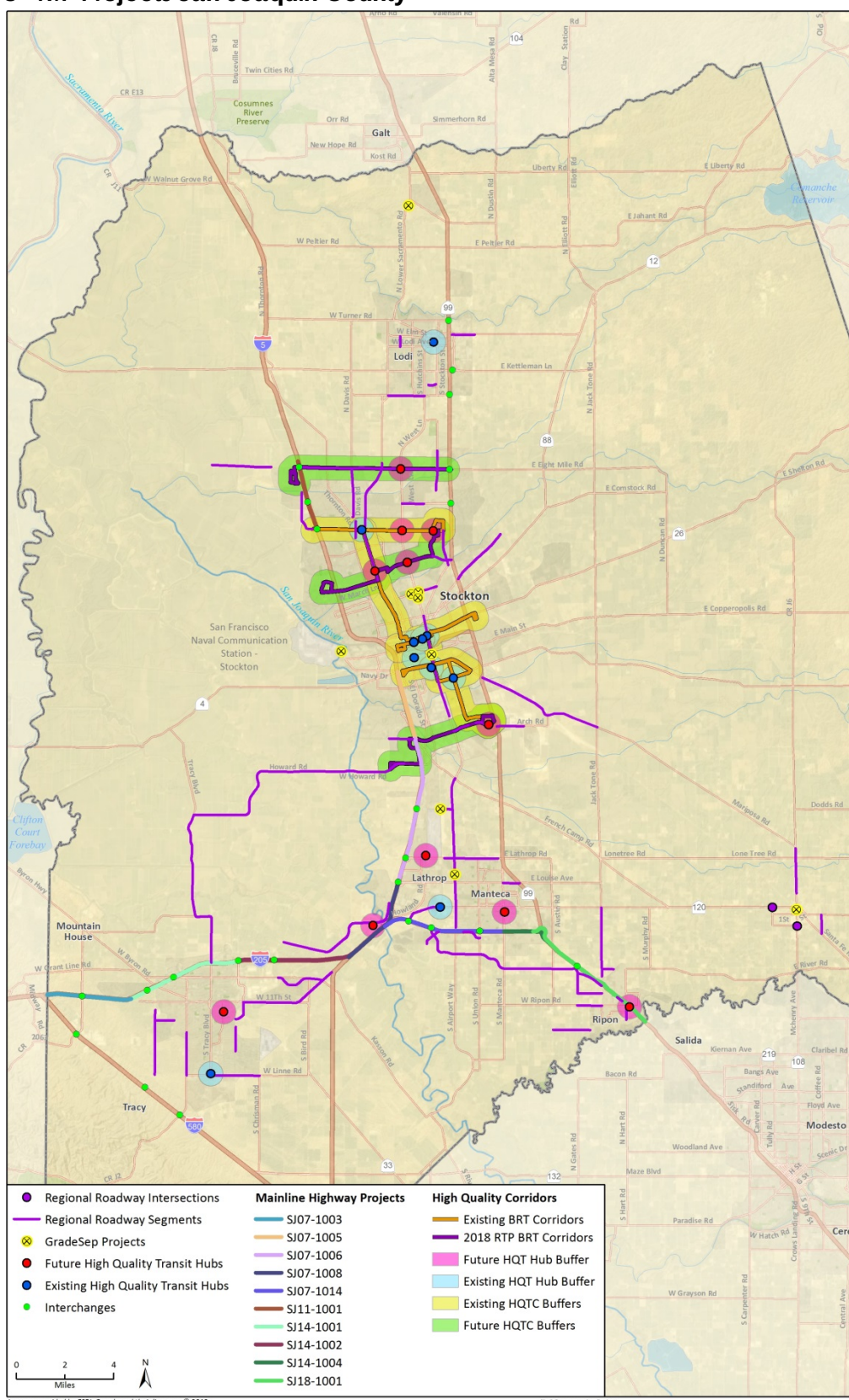
2.5 Intended Use of EIR

2.5.1 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. SJCOG will use this Program EIR as part of its review and approval of the 2018 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 counties 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 SJCOG 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 2018 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 2018 RTP/SCS; however, this Program EIR is programmatic in nature and does not specifically analyze these projects. Project-level analysis will be prepared by

Figure 3 RTP Projects San Joaquin County



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 Opportunities*.

2.5.2 Project Permits and Approvals

To complete the 2018 RTP/SCS process, SJCOG will first adopt the 2018 RTP/SCS and certify the EIR, and adopt any specific findings and Statements of Overriding Considerations to complete the CEQA review process. Additional environmental review will be conducted by project sponsors, as the lead agency for the individual projects contained within the 2018 RTP/SCS, prior to project implementation.

Depending on the location of the project, future approvals for individual transportation projects identified in the 2018 RTP/SCS would have to be completed by one or more of the following agencies:

- California Department of Transportation (Caltrans)
- San Joaquin Valley Air Pollution Control District
- San Joaquin Joint Powers Authority
- Transit agencies within San Joaquin County
- San Joaquin Council of Governments
- San Joaquin County
- Cities of: Escalon, Lathrop, Lodi, Manteca, Ripon, Stockton, and Tracy

The following public agencies would need to review the assumptions inherent in the 2018 RTP/SCS before it could be implemented:

- SJCOG
- Caltrans
- California Transportation Commission
- Cities of: Escalon, Lathrop, Lodi, Manteca, Ripon, Stockton, and Tracy
- County of San Joaquin
- San Joaquin Valley Air Pollution Control District
- Transit agencies within San Joaquin County

As future transportation system improvement projects identified in the 2018 RTP/SCS are planned and designed, site-specific environmental review will be conducted by the agencies responsible for implementing such projects.

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.

2.6 Relationship with Other Plans and Programs

The 2018 RTP/SCS Program EIR builds on the analysis and mitigation contained in the 2014 RTP/SCS Program EIR. The 2018 RTP/SCS project list is similar to the project list for the 2014 RTP/SCS, although some of the transportation projects from the 2014 RTP are now considered committed and are included in the No Project Alternative. The 2018 RTP/SCS evaluates the most recent projects and policies and provides more direct comparisons between current conditions and expected future Plan conditions. The 2018 RTP/SCS Program EIR includes additional analysis of cumulative, growth-inducing, and other indirect impacts.

The 2018 RTP/SCS has maintenance and operations focus. As such, there are less environmental impacts as there are fewer capacity increasing projects than in previous plans; those that are included are generally focused in already developed areas and are anticipated to include features supporting alternative modes of transportation and/or ride sharing options as contextually appropriate.

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3 Environmental Setting and Impact Analysis Approach

This section provides a general overview of the environmental setting for the 2018 RTP/SCS, including a regional setting, sub-regional setting, and a description of the regional transportation system. This section also outlines the EIR baseline and approach to both direct and cumulative impact analyses. More detailed descriptions of the environmental setting for each environmental issue area can be found in Section 4.0, *Environmental Impact Analysis*.

3.1 Regional Setting

Located at the center of California's vast agricultural operations, San Joaquin County is located in San Joaquin Valley. The County encompasses over 900,000 acres (about 1,425 square miles) and is bordered by Sacramento County to the north, Stanislaus County to the south, Amador and Calaveras Counties to the east, and Contra Costa and Alameda Counties to the west. The county seat for San Joaquin County is the city of Stockton. San Joaquin County includes relatively level, agriculturally productive lands. Major landforms in the County include the foothills of the Diablo Range in the southwest, the foothills of the Sierra Nevada in the east, and the Delta in the northwest. State Route 99 (SR 99) and Interstate 5 (I-5), two of the State's major north-south freeways, pass through San Joaquin County. Interstate 205 (I-205) and Interstate 580 (I-580) provide direct connections to the San Francisco Bay Area to the west. Three transcontinental railroads (including Amtrak Service), the Stockton Metropolitan Airport, and the Port of Stockton connect the County to the State, nation, and world.

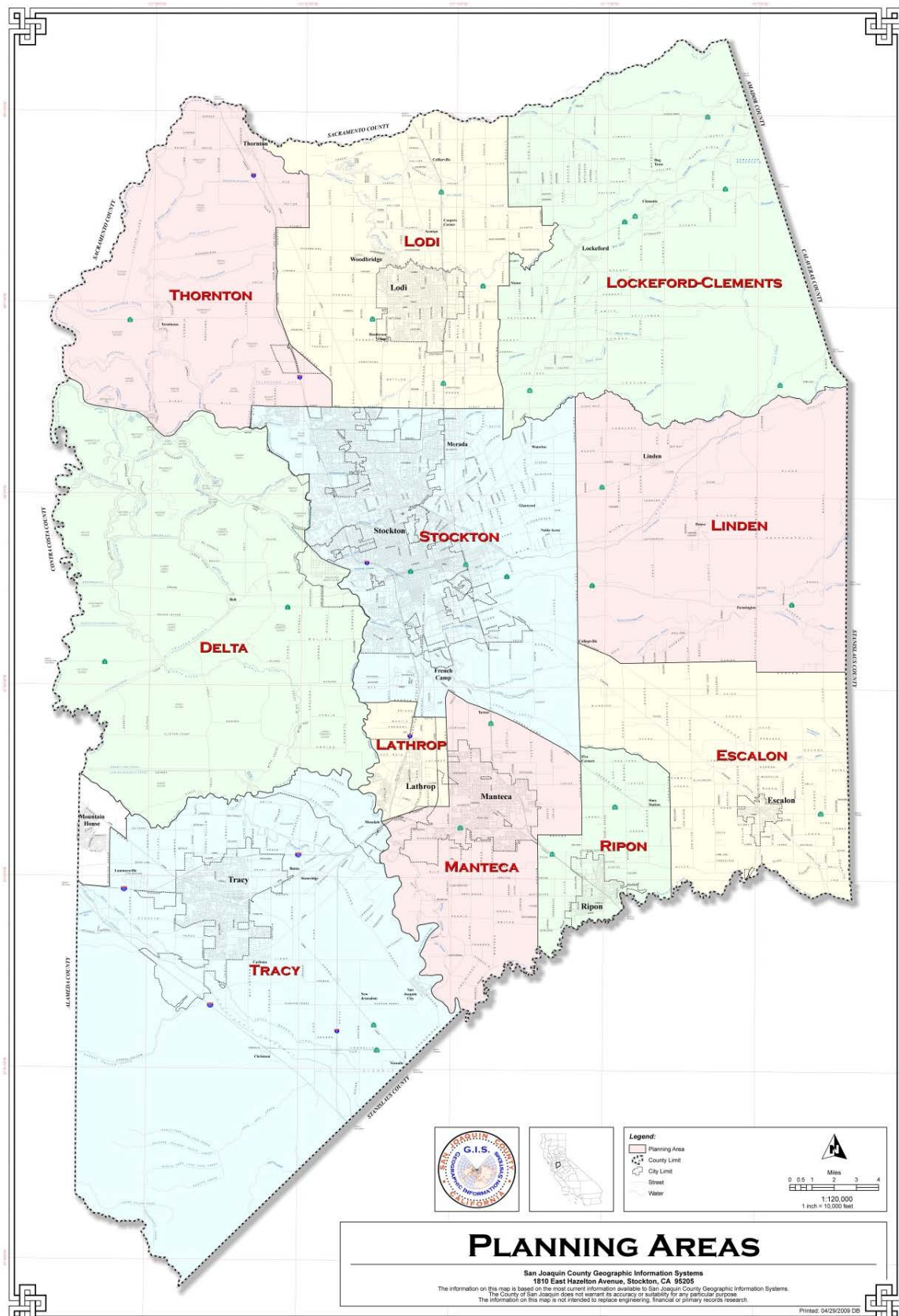
The County General Plan divides San Joaquin County into 12 Planning Areas as follows: the Delta, Escalon, Lathrop, Linden, Lockeford, Lodi, Manteca, Mountain House, Ripon, Stockton, Thornton, and Tracy (see Figure 4). The General Plan Planning Areas include all lands within the County line, not including lands in the seven incorporated cities (i.e., Escalon, Lathrop, Lodi, Manteca, Ripon, Stockton, and Tracy) and any additional areas in which adopted County policies may relate.

3.2 Regional Growth Setting

The County covers approximately 1,440 square miles and is predominantly flat land with some gently rolling hills. The County is bordered to the southwest by the Diablo Range and to the east by the Sierra Nevada foothills. The County contains a combination of metropolitan and rural areas with a long history of agricultural activities. San Joaquin County is considered one of the fastest growing regions in the Central Valley, with the population expected to reach over a million people by the year 2042.

While much of this trend continues to be the result of "spillover" from the Bay Area, the County's geographical advantages and quality of life also contribute to the growth. This growth has led to increased urbanization and the persistent challenge to meet state and federal air quality requirements.

Figure 4 SCS Land Use San Joaquin County



Economically, San Joaquin County continues to grow in many segments of its economy. Downtown revitalization efforts in Stockton, Big League Dreams in Manteca, and the Lodi area's success producing world-class wines are shaping San Joaquin County into a destination for tourism and entertainment. The region also continues to be an attractive location for new warehousing and distribution centers that serve Northern California, the Bay Area, and the west coast. A centralized and diverse network of highway, rail, air, and seaport facilities support the continued development of San Joaquin County into a major goods movement region.

As San Joaquin County is transformed, these growth factors have profound effects on the ability to finance, deliver, and maintain the transportation infrastructure. The 2018 RTP/SCS aims to build on the 2014 RTP/SCS to create both an efficient and effective multimodal transportation system for San Joaquin County that balances the needs for maintenance and preservation with expansion and enhancements. A conscious effort is made to design a system that both promotes mobility as well as preserves the environment. This effort is guided by a set of overarching goals.

Due primarily to the availability of housing at lower costs than surrounding communities to the north and to the west of San Joaquin County, the County is a place where many residents travel long distances for employment outside the County. Specifically, State Routes 4 and 12 link the east and west sides of the County. Each operates as a freeway segment for a brief but important segment between State Route 99 and I-5. Both routes also connect with Bay Area counties across the San Joaquin Delta and carry significant commuter and interregional traffic.

3.3 Regional Transportation System

3.3.1 San Joaquin County

The San Joaquin County transportation system is designed to meet the multiple needs of residents and businesses. The County's central position within the state provides key routes and linkages for the movement of goods throughout California and to the rest of the United States. The County has one of the few deep-water ports within the State at the Port of Stockton, an airport that serves international markets, key highway corridors, and the hub for a number of major railroads. Given the County's location, San Joaquin County serves as a major transportation center for warehousing and distribution activities, as well as a source of more affordable housing for employees working in the Bay Area.

Several major vehicle routes traverse the County and provide important links for employees and goods to other parts of California, such as the Bay Area and Sacramento. These major routes include Interstates I-5, 205, and 580, as well as State Routes 99, 120, 12 and 4. The I-205/I-580 corridor serves as a major gateway between the Bay Area/Silicon Valley and the County.

The County has six airports open to the public that offer a variety of aviation services, to various domestic and international locations. Stockton Metropolitan Airport is owned and operated by the County, and offers general aviation services along with commercial passenger service to places such as Las Vegas, Phoenix, and San Diego. The second largest airport is the Tracy Municipal Airport, which is owned and operated by the City of Tracy.

There are a number of rail lines that traverse the County and provide transportation services for both passengers and freight. A partnership between the Union Pacific and the Burlington Northern and Santa Fe (BNSF) Corporation operates an intermodal shipping yard providing a key connection for truck-rail freight movement. Amtrak provides passenger service to the County, while Altamont

Commuter Express (ACE) provides direct commuter rail service to Silicon Valley (with stops in Stockton, Lathrop, Manteca, and Tracy).

Regional public transit is provided by San Joaquin Regional Transit District (SJRTD) bus service. The SJRTD offers fixed-route buses, intercity buses, interregional buses, and dial-a-ride services. Local bus services are provided by transit operators in most of the local jurisdictions throughout the County. A variety of Class I-III bicycle routes in many areas provide additional transit alternatives.

3.4 EIR Baseline, Approach for Direct and Cumulative Analyses

3.4.1 EIR Baseline

Section 15125 of the CEQA Guidelines states that an EIR “must include a description of the physical environmental conditions in the vicinity of the project, as they exist at the time the notice of preparation [NOP] is published.” Section 15125 states that this approach “normally constitute[s] the baseline physical conditions by which a lead agency determines whether an impact is significant.” In certain instances, the lead agency has the discretion to use a baseline other than existing conditions at the time of the release of the NOP based on the information available at the time the analysis is being performed.

This EIR evaluates potential impacts against existing conditions at the time of the release of the NOP (March 2017), 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 2018 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 SJCOG decision-makers. These issue areas include:

- Aesthetics
- Agriculture and Forestry
- Biological Resources
- Cultural Resources
- Energy
- Environmental Justice
- Geology and Soils
- Hazards and Hazardous Materials
- Hydrology and Water Quality
- Land Use
- Tribal Cultural Resources

For impacts related to air quality, noise, greenhouse gas, and traffic, 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 2018 RTP/SCS is adopted. The 2018 RTP/SCS is a long-term plan that proposes transportation projects and land use patterns to the year 2042. It is important to emphasize that population growth, urbanization, and volume of average daily traffic generated in the SJCOG region will increase by 2042, with or without implementation of the 2018 RTP/SCS, as a result of a range of demographic and economic factors independent of policy and land use decisions by SJCOG and its member agencies. Therefore, this SEIR evaluates potential impacts against both a future baseline and a current baseline standard .

An analysis that attributed physical environmental impacts solely to the 2018 RTP/SCS that are in fact due to future regional growth that would occur in the absence of the 2018 RTP/SCS would overstate the impacts caused by the 2018 RTP/SCS. For this reason, certain environmental issues analyzed in the EIR compare future conditions including the 2018 RTP/SCS with the expected future conditions without the 2018 RTP/SCS (the “future baseline”) as well as to the current baseline, controlling for future regional growth that would occur independently of the 2018 RTP/SCS. These comparisons isolate environmental effects potentially resulting from the 2018 RTP/SCS from those caused by future growth that would occur regardless of the 2018 RTP/SCS, as compared to existing baseline conditions in March 2017.

Identification of potential impacts and mitigation measures for these environmental issue areas are therefore based on the increment of physical change due to 2018 RTP/SCS, rather than the future regional growth that would occur regardless of whether or not the plan is adopted and implemented. The environmental issue areas for which this approach is used include the following:

- Air Quality
- Greenhouse Gases Emissions/Climate Change
- Noise
- Transportation and Circulation

3.4.1.1 *Interim Timeframes*

2042 is the horizon year of the proposed 2018 RTP/SCS. While the RTP/SCS would be implemented gradually over the planning period, this EIR does not analyze interim time frames because the four/five-year update cycle of the RTP/SCS already requires short-term adjustments to the Plan. The one exception to this approach is in Section 4.9, *Greenhouse Gas Emissions/Climate Change*, which examines impacts for the year 2020 and 2035, as well as a comparative baseline from 2015, to satisfy statutory requirements and state goals related to GHG emissions (Health & Safety Code, § 38551(b)). A summary of the scenarios considered in the GHG analysis is provided in Section 4.8.2 in Section 4.9, *Greenhouse Gas Emissions/Climate Change*.

3.4.2 Approach for Direct Analysis

The programmatic nature of the 2018 RTP/SCS necessitates a general approach to the evaluation of existing conditions and impacts associated with the proposed project. As a programmatic document, this EIR presents a region-wide assessment of the impacts of the 2018 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 for roughly 25 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 elements of the 2018 RTP/SCS, including land development resulting from regional growth and transportation improvements identified in the 2018 RTP/SCS, project-specific CEQA documents will be prepared by the appropriate project implementation agency.

For analytical purposes, the baseline year examined throughout this EIR is 2017, when the NOP was published, except where specifically noted to correspond with the RTP traffic modeling data using 2015 as a baseline, and as further described in Section 3.4.1.1 above.

3.4.3 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 potential 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). A cumulative impact of concern under CEQA occurs when the net result of combined individual impacts compounds or increases other overall environmental impacts (CEQA Guidelines, Section 15355). In other words, cumulative impacts can result from individually minor but collectively significant projects taking place over a period of time. 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.

3.4.3.1 *Cumulative Impact Methodology*

The 2018 RTP/SCS is a cumulative plan by design. The Plan area is comprised of under a million acres and seven cities plus census designated places. It 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. As such, the environmental analysis of the 2018 RTP/SCS presented throughout this Draft EIR is a cumulative analysis compliant with the requirements of CEQA and the CEQA Guidelines. Furthermore, this Draft EIR contains detailed analysis of regional (cumulative) impacts, which are differentiated from localized impacts that may occur at the county level. Nevertheless, the following discussion examines impacts associated with implementation of the 2018 RTP/SCS, plus implementation of projected development for jurisdictions adjoining the SJCOG region, to assess the potential for cumulative impacts from growth extending beyond the region.

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 thoughtful combination of the two approaches. The cumulative analysis presented in this document uses a projections-based approach. Land use and growth projections for the region, which are the subject of analysis throughout this Draft EIR, are combined with the growth projections for the adjoining counties. Analysis of the cumulative impacts of the 2018 RTP/SCS for each environmental issue area is presented at the ends of Sections 4.1 through 4.15.

4 Environmental Impact Analysis

This section discusses the possible environmental effects of the 2018 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* §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 SJCOG, 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 effect discussion are recommended mitigation measures (when required) and the residual effects or level of significance remaining after the implementation of the measures. While SJCOG 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.

Regarding the implementation of the mitigation measures listed throughout this EIR, implementing agencies for transportation projects include SJCOG, and transportation project sponsor agencies. Implementing agencies for land use projects include San Joaquin County and cities within the

county. Project-specific environmental documents may adjust these mitigation measures as necessary to respond to site-specific conditions. Each section concludes, if applicable, with a screening-level discussion of specific RTP/SCS transportation projects that may result in identified impacts.

The Executive Summary of this EIR summarizes all impacts and mitigation measures that apply to the 2018 RTP/SCS.

4.1 Aesthetics/Visual Resources

This section describes the existing visual characteristics within the region, identifies the regulatory framework with respect to regulations that address aesthetic resources, and evaluates the significance of the potential changes in the visual character and quality that could result from development of the proposed Regional Transportation Plan (RTP)/Sustainable Communities Strategy (SCS). In addition, mitigation measures are identified as appropriate and feasible to reduce identified impacts.

The RTP/SCS plan area consists of transportation routes, including highways, rail alignments, bicycle trails, roads, and Caltrans right-of-way in San Joaquin County. The aesthetic appearance of San Joaquin County is a function of both the natural landscape and man-made elements that create an urban and rural character and design. Because transportation facilities can have a major influence on human perception of the visual environment, this section addresses the general aesthetic landscape of the region and assesses the potential impacts from region-wide construction of at- and above-grade transportation facilities. The SCS component of the RTP would influence urban development in San Joaquin County and therefore patterns of development are assessed.

4.1.1 Setting

a. Environmental Setting

The aesthetic value of an area is a 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. These terms and criteria are described in detail below.

SJCOG's planning area is predominantly rural, with urban development at the seven incorporated cities, with scattered rural development throughout the agricultural inland valley. The specific characteristics that contribute to and define the aesthetic value of San Joaquin County are described below.

Visual Character

San Joaquin County is located at the north end of the San Joaquin Valley, part of California's vast agricultural heartland. There are urban communities within the County which are surrounded by agricultural and vacant lands. The density and intensity of development varies, with the higher majority of density development located in or near the incorporated cities and unincorporated urban communities. Incorporated cities within San Joaquin County include the cities of Escalon, Lathrop, Lodi, Manteca, Ripon, Stockton, and Tracy. The proposed transportation improvement projects within the 2018 RTP/SCS are located on state highways, regionally significant roads, local streets, railroad rights-of-way, and public lands.

The County contains a combination of metropolitan and rural areas with a long history of agricultural activities. A vast majority of the 1,440 square miles that comprise the County are relatively level terrain with agriculturally productive lands (see Section 4.2, *Agriculture and Forestry Resources* for a further discussion of agriculture within the planning area). The foothills of the Sierra

Nevada mountain range lie along the County's eastern boundary, and the foothills of the Diablo Range define the southwest corner of the County. With few exceptions, the flat topography is not conducive to views of the Delta region in the western portion of the County. The County has a predominantly rural character, when compared to the urban centers of the nearby San Francisco Bay or Sacramento metropolitan areas, with some taller buildings in Downtown Stockton. Generally, most structures are low to medium rise, with residential development consisting primarily of mobile home parks, older single-family detached residences, newer tract homes, and scattered high-density apartments. There are vast open areas, orchards, and agricultural land which add to the small town image of established communities in the area. Most segments of major highways are located at a higher elevation than surrounding lands for flood protection, providing motorists with views of the adjacent developments, agriculture, and open land.

Scenic Views and Visual Resources

Visual resources are generally classified into two categories: scenic views and scenic resources. Scenic views are elements or components of the broader viewshed such as mountain ranges, valleys, and ridgelines. They are usually mid-ground or background elements of a viewshed that can be seen from a range of viewpoints, often along a roadway or other corridor. Scenic resources are specific features of a viewing area (or viewshed) such as trees, rock outcroppings, and historic buildings. They are specific features that act as the focal point of a viewshed and are usually foreground elements.

Aesthetically significant features occur in a diverse array of environments within the region, ranging in character from urban centers to rural agricultural lands to natural woodlands. The extraordinary range of visual features in the region is afforded by the mixture of climate, topography, and flora and fauna found in the natural environment, and the diversity of style, composition, and distribution of the built environment.

Natural features throughout the County include waterways, riparian habitat, wildlife habitat and wetlands, significant oak groves, and hillsides. Natural features of the County are clustered in the Sacramento-San Joaquin Delta area in the western half of the County. County policies specify that these natural features, as elements of the visual environment, should be protected from unwarranted or premature urban encroachment.

From a regional perspective, views of the Delta and foothills of the Diablo Range and Sierra Nevada are considered valuable visual resources. San Joaquin County General Plan open space policies establish protection of outstanding views of waterways, hilltops, and oak groves from public land and public roadways (Policy NCR-7.2: Views from Public Lands and Roadways).

Features of the built environment which may also hold visual significance include individual or groups of structures that are distinctive due to their aesthetic, historical, social, or cultural significance or characteristics. Examples of the visually significant built environment may include bridges or overpasses, architecturally appealing buildings or groups of buildings, landscaped freeways, and a location where a historic event occurred.

The following sub-sections provide a description of the scenic resources within the County. The descriptions are included in the County's 2009 General Plan Background Report and are summarized below.

Agricultural Land

The County's rural area has a high scenic value although it has been intensively developed, modified, and manipulated for agricultural purposes. The predominant characteristic of San Joaquin County's rural areas are primarily agricultural, including a mix of pasture, row crops, vineyards, and orchards with limited accessory buildings (barns, residences, sheds) scattered throughout. Viewers are offered expansive views over row crops and pastures, while orchards and vineyards create a focused line of sight. Most highways and roadways throughout the non-urbanized San Joaquin County provide some extent of rural agricultural landscape views.

The Delta, Marshes, and Wetlands

Reservoirs, creeks, rivers, ponds, and marshes comprise the main wetland resources in the County. Of these wetland resources, the Delta is the most prominent scenic resource. The Delta and Suisun Marsh form the largest estuary on the west coast of North America (USFW 2017). Further, the Suisun Marsh represents 10 percent of California's remaining wetlands (USDOI 2010). According to the Delta Vision Blue Ribbon Task Force 2, "The Delta is a regional, state, and national treasure. Its unique combination of estuary, water supply, recreation and tourism, aesthetics, lifestyle, and rural character make it a special place that we must recognize and protect." As stated in the Delta Vision Strategic Plan, "The Delta is one of the state's most distinct regions, combining a unique physical geography of islands and river channels with a cultural heritage as enduring as any in California. The Delta possesses natural, historical, and recreational resources of statewide and even national significance" (Blue Ribbon Task Force 2008).

Marshes locally are restricted primarily to the Delta, although small areas of marsh are located in the southeast portion of the County. Views of the Delta are predominantly from state highways, such as State Route (SR)-4 and SR-12 west of Stockton and Lodi and locally designated scenic roads, such as Eight Mile Road, Empire Tract Road, Lower Roberts Island Road, and Bacon Island Road.

River Corridors

The Stanislaus River, Mokelumne River, Calaveras River, and Dry Creek corridors, including their tributaries and creeks, provide scenic waterways and areas of riparian forest in the County. In addition, the lower Stanislaus and Mokelumne Rivers are the only areas left in the County with significant riparian woodland vegetation, heightening the importance of these areas. Less significant amounts of riparian vegetation also exist within the Delta and along portions of Old River, Bear Creek, and Dry Creek. Views of river corridors can be seen briefly from state highways and local roads, along bikeways and trails, and by recreationists along the rivers. Major public viewpoints of these resources are limited to road and highway crossings because the wide floodplains have hindered the development of roads and other viewpoints. A locally designated scenic roadway, River Road, provides views of the Stanislaus River corridor in the far southeast County. The riparian corridor of the lower Stanislaus River can be viewed from Caswell State Park, as well as local roadways in the vicinity.

Rangelands

Rangelands within the County are the prototypical California landscape in this area of the state. Verdant green from late winter to early summer, these landscapes evolve to the dried grass brown of late summer and fall. Though some areas of rangeland are composed of oak savannah, they are predominantly made up of expansive grasslands interspersed with vernal pools and ephemeral streams. Development within these areas tends to be infrequent and consist of small-scale

agricultural improvements. Rangelands are the primary landscape type in the eastern area of the County, and west of I-5, I-205, and I-580. Primary viewpoints of rangelands include I-5, I-205 and I-580 and SR-33 in the western County, and SR-4, SR-12, SR-26, SR-88 and SR-120, Shelton Road, Clements Road, Liberty Road, and Mackville Road in eastern San Joaquin County.

Scenic Panoramas

Coastal range and Sierra Nevada foothill views from the wide valley floor constitute the majority of scenic vistas in the County. These ranges are most often viewed from roadways. The coastal Diablo Range borders San Joaquin County on the west and is composed of gently to steeply rolling hills. Views of the Diablo Range can be seen along the I-5 and I-580 corridor, from portions of SR-33, and Corral Hollow Road. The foothills of the Sierra Nevada border San Joaquin County on the east, and are composed of gently rolling hills leading to the sharper terrain of the Sierra in the background. The dominant colors of the mountains and hills vary with the season, with golden brown hues through most of the year replaced by the green of vegetation in response to the winter rains. Due to poor air quality within the County, views of these scenic panoramas are often obscured, with views of the Sierra Nevada limited.

Scenic Water Resources and Wild and Scenic Rivers

Water resources are important visual resources that draw tourists to the area for recreational opportunities. The most visually significant water bodies in the area are part of the Sacramento-San Joaquin River Delta.

Scenic Corridors and Highways

Corridors

A scenic corridor is the view from the road that may include a distant panorama and/or the immediate roadside area. A scenic corridor encompasses the outstanding natural features and landscapes that are considered scenic. It is the visual quality of the man-made or natural environments within a scenic corridor that are responsible for its scenic value. Commonly, the physical limits of a scenic corridor are broken down into foreground views (0 to 0.25 mile) and distant views (over 0.25 mile). In addition to distinct foreground and distant views, the visual quality of a scenic corridor is defined by special features, which include:

- **Focal points:** prominent natural or man-made features which immediately catch the eye
- **Transition areas:** locations where the visual environment changes dramatically
- **Gateways:** locations which mark the entrance to a community or geographic area

Highways

A scenic highway is generally defined by Caltrans as a public highway that traverses an area of outstanding scenic quality, containing striking views, flora, geology, or other unique natural attributes. A highway may be designated scenic depending upon how much of the natural landscape can be seen by travelers, the scenic quality of the landscape, and the extent to which development intrudes upon the traveler's enjoyment of the view.

The status of a proposed state scenic highway changes from eligible to officially designated when the local governing body applies to Caltrans for scenic highway approval, adopts a Corridor Protection Program, and receives notification that the highway has been officially designated a

Scenic Highway. San Joaquin County has also designated scenic routes as valuable in enhancing the recreational experience for County residents and non-residents. The designation of scenic routes is based on County General Plan Policy NCR-7.3 Designate Scenic Routes, which states that the criteria for selection of scenic routes should specify that the route has one or more of the following characteristics:

- It leads to a recreational area
- It provides a representative sampling of the scenic diversity within the County
- It exhibits unusual natural or manmade features of interest
- It provides opportunities to view activities outside the normal routine of most people
- It provides a route for people to view the Delta waterways
- It links two scenic routes or connects with scenic routes of cities or other counties

As presented in Table 2, there are two officially designated scenic highways in San Joaquin County and located along stretches of I-580 and I-5.

Table 2 Officially Designated State Scenic Highways – San Joaquin County

Highway	Location	Length (miles)
Interstate 580	From Interstate 5 to the Alameda County Line	15.40
Interstate 5	From the Stanislaus County Line to Interstate 580	0.70

Source: California Department Of Transportation, 2013.

As shown in Table 3, San Joaquin County currently has 26 Designated Scenic Routes. The County and state designated scenic highways within the 2018 RTP/SCS planning area are shown in Figure 5.

Table 3 San Joaquin County Designated Routes

Road Name	Segment Begin	Segment End	Configuration	Scenic Resources
Liberty Road	SR 88	Amador County Line	East/west two-lane rural road	Range/grazing land; Camanche Reservoir
Collier Road	Mackville Rd	SR 88	East/west two-lane rural road	Range/grazing land
Mackville Road	SR-12/88	Collier Road	North/south two-lane rural road	Community of Clements; cropland; aggregate mine; park; Mokelumne River
Jahant Road	Tully Road	Mackville Road	East/west two-lane rural road	Range/grazing land; rural residences
Tully Road	Jahant Road	Peltier Road	North/south two-lane rural road	Cropland; rural residences
Peltier Road	Elliott Road	Tully Road	East/west two-lane rural road	Cropland; rural residences
Elliott Road	SR-12/88	Peltier Road	North/south two-lane rural road	Community of Lockeford; cropland; Mokelumne River; rural residences
Jack Tone Road	Eight Mile Road	SR-12/88	North/south two-lane rural road	Community of Lockeford; cropland; orchards; rural residences

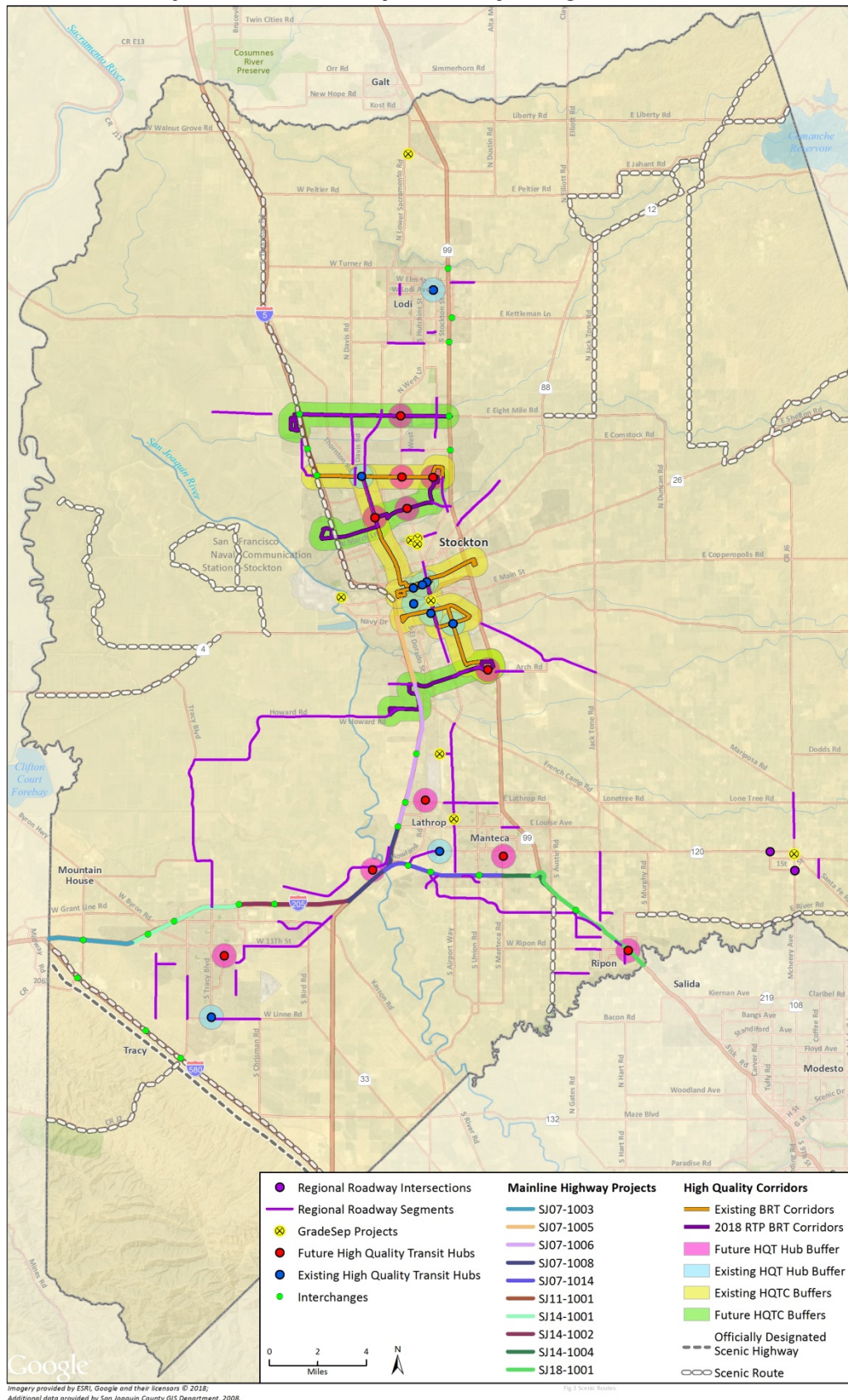
San Joaquin Council of Governments
2018 Regional Transportation Plan/ Sustainable Communities Strategy

Road Name	Segment Begin	Segment End	Configuration	Scenic Resources
Eight Mile Road	SR 88	Jack Tone Road	East/west two-lane rural road	Cropland; orchards; rural residences
Clements Road	Comstock Road	SR-12/88	North/south two-lane rural road	Cropland; range/grazing land
Comstock Road	Clements Road	Fine Road	East/west two-lane rural road	Orchards
Fine Road	SR 26	Comstock Road	North/south two-lane rural road	Orchards
SR 26	Fine Road	Calaveras County Line	East/west two-lane rural highway	Orchards; Mormon Slough; range/grazing land
Shelton Road	SR 26	Calaveras County Line/Wimer Road	North/south two-lane rural road	Calaveras River; orchards; range/grazing land
Shelton Road	Calaveras County Line/Wimer Road	SR 26	North/south two-lane rural road	Orchards and range/grazing land
Interstate 5	SR 4	Sacramento Co. Line	North/south six- to four-lane rural freeway	Cropland; Mokelumne River; riparian vegetation
Eight Mile Road	Empire Tract	Thorton Road	East/west two-lane rural road	Cropland; riparian vegetation; Delta waterways
Empire Tract Perimeter Roads	Eight Mile Road	Eight Mile Road	two-lane rural road	Cropland; riparian vegetation; Delta waterways
Inland Drive	SR 4	McDonald Road	Two-lane rural road	Cropland
McDonald Road	Inland Drive	Neugebauer Road	Two-lane rural road	Cropland
Neugebauer Road	McDonald Road	Holt Road	Two-lane rural road	Cropland; riparian vegetation; Delta waterways
Holt Road	Neugebauer Road	McDonald Road SR 4	Two-lane rural road	Cropland
SR 4	Contra Costa Co. Line	Trappers Road	East/west two-lane rural highway	Cropland; riparian vegetation; Delta waterways
Bacon Island Road	SR 4	Connection Slough	Two-lane rural road	Cropland; riparian vegetation; Delta waterways
Corral Hollow Road	Alameda Co. Line	Interstate 580	East/west two-lane rural road	Range; Diablo Range foothills; Corral Hollow canyon
Austin Road	Stanislaus Co. Line	SR 99	North/south two-lane rural road	Cropland
River Road	Ripon Road	Santa Fe Road	East/west two-lane rural road	Cropland; orchards; riparian vegetation; Stanislaus River

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, there are no rivers in San Joaquin County designated under the National Wild and Scenic Rivers System (Wild and Scenic Rivers Council 2017).

Figure 5 RTP/SCS Projects and San Joaquin County Designated Scenic Routes



b. Regulatory Setting

Federal

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
- That if there is a feasible and prudent alternative, a proposed project using Section 4(f) lands cannot be approved by the 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 of 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

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 has 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 the California Department of Transportation (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.

Caltrans Adopt-a-Highway Program

Caltrans administers the Adopt-a-Highway program to improve and maintain the visual quality of California highways 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.

Regional and Local

City and County General Plans

The general plans and zoning ordinances of the cities within the San Joaquin County area regulate design and the built environment within those communities, while the general plan for each county performing the same function within unincorporated areas. In all cases, the general plans and zoning typically prescribe visual resource policies, and in some cases, require development 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.

Most local planning guidelines to preserve and enhance visual quality and aesthetic resources of urban and natural areas are established in a jurisdiction's General Plan. Cities and counties can use open space easements as a mechanism to preserve scenic resources, if they have adopted open-space plans, as provided by the Open Space Easement Act of 1974 and codified in California Government Code (Section 51070 et seq.). According to the Act, a city may acquire or approve an open-space easement through a variety of means, including use of public money.

4.1.2 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 a 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 ranges 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 2018 RTP/SCS.

Significance Thresholds

Appendix G of the State CEQA Guideline identifies the following criteria for determining whether a project's impacts would have a significant impact related to aesthetics/visual resources:

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. Substantially degrade the existing visual character or quality of the site or its surroundings; and/or
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 analysis assesses the potential impacts to visual resources that could result from implementation of the proposed RTP/SCS. Impacts to aesthetic resources are assessed in terms of both land use and transportation changes that could occur under the 2018 RTP/SCS. By 2042, implementation of the proposed RTP/SCS will result in a land use pattern and transportation network that is different from existing conditions. Unless otherwise stated, “existing conditions” refers to conditions in the year 2018.

Due to the programmatic nature of the 2018 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 2018 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 PROPOSED TRANSPORTATION IMPROVEMENT PROJECTS AND LAND USE PATTERNS ENVISIONED BY THE 2018 RTP/SCS MAY IMPAIR PUBLIC VIEWS ALONG DESIGNATED SCENIC CORRIDORS, INCLUDING STATE SCENIC HIGHWAYS. THIS WOULD BE A SIGNIFICANT AND UNAVOIDABLE IMPACT.

Scenic Resources

Within the RTP/SCS plan area, views of scenic resources, including the Sierra Nevada foothills, the Diablo Range, and the Sacramento-San Joaquin River Delta can be seen from highways and roadways, including scenic corridors, throughout the County. Implementation of the transportation improvements and changes to land use patterns identified in the proposed 2018 RTP/SCS could result in visual impacts by blocking or impeding views of significant landscape features. In general, the potential to impact panoramic views and landscapes (both natural and man-made) varies by the location of transportation improvement projects. Panoramic views are found both in open space areas and in developed urban areas.

Improvements to existing transportation infrastructure, resulting from the implementation of the proposed 2018 RTP/SCS, such as roadway widening, bridge replacements, signal installation, and road rehabilitation, could result in modification of the foreground of the various scenic viewsheds throughout the County. There is also potential for the 2018 RTP/SCS transportation projects, such as new roadways and bridges, to affect scenic resources within the area. This would include RTP/SCS transportation projects that are located adjacent to a broad viewshed such as the mountain ranges, rangelands, valleys, ridgelines, or water bodies along roadways, or adjacent to the focal point of the forefront of the broad viewshed, such as visually important trees, rocks, or historic buildings.

Both changes to 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). 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 in to existing open space land and increase density in existing urban areas. Changes in land use patterns and individual 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.

Scenic Highways

As discussed in the setting and shown in Table 2 and Table 3, there are two officially designated state scenic highways and numerous County-designated scenic view corridors in the SJCOG region. Visual resource impacts from construction on or adjacent to these roadways could include: blockage of views 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 2018 RTP/SCS would generally result in modification of existing transportation facilities within existing highway, roadway, or railroad rights-of-way. Further, many of the proposed projects are at-grade with the surrounding environment. As such, most of the road and highway investment 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 state scenic highway. Similarly, land use development envisioned by the 2018 RTP/SCS would be focused primarily in urban infill areas. Scenic vistas and designated scenic highways are generally located in undeveloped, rural areas, such that most future land use development envisioned in the 2018 RTP/SCS would not be expected to block or substantially alter scenic vistas.

Portions of I-580 and I-5 are state-designated scenic highways in the County. These state-designated corridors are protected under the Corridor Protection Programs that safeguard scenic corridors from encroaching development. When a city or county nominates a roadway for designation it must also adopt ordinances, zoning and/or planning policies to preserve the scenic quality of the corridor or document that such regulations already exist in various portions of local codes. In particular, Corridor Protection Programs must include (1) regulation of land uses and density of development (2) detailed land use and site planning (3) control of outdoor advertising (4) careful attention to and control of earthmoving and landscaping, and (5) the design and appearance of structures and equipment. The 2018 RTP/SCS includes transportation projects and development projects (such as interchange improvements) which are located on state-designated scenic highway portions of the I-580 or I-5 in San Joaquin County. Figure 5 shows the location of the RTP/SCS projects in relation to the County's state designated scenic highways and scenic routes. Thus, as development could take place near state-designated scenic highways, existing panoramic views, and views of significant landscape features or landforms could be affected. Although urban areas already have substantial existing transportation infrastructure and a variety of development (such as the San Joaquin Regional Transit District's (SJRTD) Bus Rapid Transit (BRT) system and the Downtown Transit Center located in Stockton), additional infrastructure in these areas proposed by the RTP/SCS would potentially impede or change the existing panoramic views or landscape features in the County.

While each jurisdiction in which land use and transportation improvements may be located has policies related to the protection of scenic resources and views, the potential remains for removal of scenic features and/or the addition of obstructing features, particularly those that would be in the foreground of scenic viewsheds and vistas. The permanent removal or addition of infrastructure

affecting scenic vistas or development within scenic highways would result in impacts to views or views of significant features. Changes related to land use and/or transportation projects are considered significant and unavoidable. Mitigation Measures AES-1(a) through AES-1(c), described below would reduce to the extent feasible but not necessarily eliminate potential significant adverse impacts.

Mitigation Measures

For transportation projects under their jurisdiction, SJCOG shall implement, and transportation project sponsor agencies can and should implement, the following mitigation measures. These mitigation measures have been developed for the 2018 RTP/SCS program where applicable for transportation projects that would potentially degrade scenic vistas and/or scenic resources within a state scenic highway. Municipalities in the SJCOG region can and should implement these measures, where relevant to land use projects implementing the 2018 RTP/SCS.

AES-1(a) Regional Planning Efforts

Impacts to aesthetic resources shall be minimized through cooperation, information sharing, and SJCOG's ongoing regional planning efforts.

AES-1(b) Alternative Design

Project sponsors shall identify and protect panoramic views and significant landscape features or landforms and implement project-specific mitigation as applicable. If it is determined that a project would significantly obstruct scenic views, implementing and local agencies can and should consider alternative designs that seek to avoid and/or minimize obstruction of scenic views to the extent feasible. Project-specific design measures may include reduction in height of improvements or width of improvements to reduce obstruction of views, or relocation of improvements to reduce obstruction of views. Implementing local agencies can and should consider taking the following (or equivalent) actions:

- Require that the scale and massing of new development in higher-density areas provide appropriate transitions in building height and bulk that are sensitive to the physical and visual character of adjoining neighborhoods that have lower development intensities and building heights; ensure building heights stepped back from sensitive adjoining uses to maintain appropriate transitions in scale and to protect scenic views;
- Avoid siting electric towers, solar power facilities, wind power facilities, communication transmission facilities and/or above ground lines along scenic roadways and routes, to the maximum feasible extent;
- Prohibit projects and activities that would obscure, detract from, or negatively affect the quality of views from designated scenic roadways or scenic highways; and comply with other local general plan policies and local control related to the protection of panoramic or scenic views or views of significant landscape features or landforms.

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 the 2018 RTP/SCS could still result in obstructions to panoramic views and views of important landscape features or landforms (mountains, deltas, marshes,

wetlands, rivers, rangelands, or important man-made structures) as seen from public viewing areas. 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: Substantially degrade the existing visual character or quality of the site or its surroundings

IMPACT AES-2 PROPOSED TRANSPORTATION IMPROVEMENT PROJECTS AND LAND USE PATTERNS ENVISIONED BY THE 2018 RTP/SCS MAY SUBSTANTIALLY DEGRADE EXISTING VISUAL CHARACTER IN THE SJCOG REGION. THIS WOULD BE A SIGNIFICANT AND UNAVOIDABLE IMPACT.

The proposed 2018 RTP/SCS includes improvements to existing facilities such as road widenings and extensions, intersection or interchange improvements (ex. roundabouts), auxiliary and transition lanes, highway maintenance, and other improvements. The 2018 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 would alter the character of agricultural areas, such as the widening projects in Lathrop, Lodi, and Manteca. 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 suburban visual character. Depending on the design and siting of transportation projects, this could be considered a degradation of the visual character or quality of an area.

The 2018 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. However, when compared to existing conditions, the 2018 RTP/SCS land use scenario would intensify the built environment within existing urban areas through the implementation of infill and transit-oriented development (TOD) 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 could potentially be seen as a degradation of the visual character or quality of the region.

Projects implemented under the 2018 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, but irreversible transformation in visual character from rural or semi-rural to more urban or suburban throughout the SJCOG region. Mitigation measures are available to reduce impacts to the extent feasible, and are listed below. Although mitigation is required, impacts on visual character resulting from implementation of the 2018 RTP/SCS would remain potentially significant.

Mitigation Measures

For transportation projects under their jurisdiction, SJCOG shall implement, and transportation project sponsor agencies can and should implement, the following mitigation measure developed for the 2018 RTP/SCS program where applicable for transportation projects that would substantially degrade visual character. Municipalities in the SJCOG region can and should implement this measure, where relevant to land use projects implementing the 2018 RTP/SCS.

AES-2 Design Measures for Visual Compatibility

The project sponsor shall require measures that minimize contrasts in scale and massing between the project and surrounding natural forms and developments. Strategies to achieve this include but are not limited to:

- 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);
- Protecting or replacing trees in the project area;
- 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.

Significance After Mitigation

Implementation of the above mitigation measure would reduce project-specific impacts to the extent feasible. Nevertheless, the incremental alteration of current rural or semi-rural character to a more suburban environment is a significant and unavoidable impact.

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 TRANSPORTATION IMPROVEMENT PROJECTS AND LAND USE PATTERNS ENVISIONED IN THE 2018 RTP/SCS WOULD RESULT IN INCREASED LIGHTING FROM NEW LIGHTPOLES, SECURITY LIGHTING, LANDSCAPE AND STRUCTURE LIGHTING, AND LIGHTS ON VEHICLES. LAND USE PROJECTS ENVISIONED IN THE 2018 RTP/SCS WOULD ALSO INTRODUCE NEW OR INTENSIFIED SOURCES OF LIGHTING. THIS LIGHTING MAY ADVERSELY AFFECT VIEWS IN THE AREA AND WOULD BE A SIGNIFICANT BUT MITIGABLE IMPACT.

New or intensified lighting from land use development envisioned in the 2018 RTP/SCS, which is focused on infill and TOD 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 TOD projects under the 2018 RTP/SCS, depending on site-specific conditions and lighting design associated with new structures. 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 2018 RTP/SCS would directly introduce light, including: new rail cars for ACE service expansion, the replacement of existing lighting at the Stockton Municipal Airport, construction of pedestrian lighting along various City streets, and installation of lighting along bike paths in San Joaquin County. The introduction of light and glare could adversely affect day or nighttime views.

New transportation investments would be aligned with planned developments, which would help to reduce aesthetic impacts; however, these projects could potentially introduce glare, light, and shadow to areas where previously no sources of glare, light, and shadow existed. Impacts from glare, light, and shadow related to transportation projects and changes to land use patterns from implementation of the 2018 RTP/SCS are considered potentially significant.

Mitigation Measures

For transportation projects under their jurisdiction, SJCOG 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. Municipalities in the SJCOG region can and should implement these measures, where relevant to land use projects implementing the 2018 RTP/SCS.

AES-3(a) Roadway Lighting

Roadway lighting shall be minimized 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.

AES-3(b) Lighting Design Measures

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(c) Glare Reduction Measures

Implementing agencies shall 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.

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. As a result, in areas

lacking existing dark sky ordinances or similar regulations, or where such regulations are insufficient, the implementation of the identified mitigation measures would reduce impacts related to light and glare to a less than significant level.

c. Cumulative Impacts

The analysis in this section examines impacts of the 2018 RTP/SCS on aesthetics/visual resources throughout the SJCOG region and is cumulative in nature. 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 or caused 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.

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 area, such as a relatively large city adjoining agricultural land on fringe of the County (especially adjacent to Sacramento County), increases and possibly expands over time and meets or 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 anticipated in the 2018 RTP/SCS is primarily focused on infill areas, development outside of those geographies 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 2018 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. Whether this overall change in land use is experienced as an adverse or beneficial outcome is highly subjective. However, the combination of forecasted development in the SJCOG region and planned development in neighboring counties will result in a different visual environment than currently exists. For the purposes of this analysis, the cumulative impacts associated with night sky lighting and changes in the visual environment are considered potentially significant and the contribution of the 2018 RTP/SCS to these impacts is cumulative considerable.

4.2 Agriculture and Forestry Resources

This section evaluates the agriculture and forestry resource impacts of the proposed 2018 RTP/SCS.

4.2.1 Setting

SJCOG's planning area includes expansive agricultural lands. The specific agricultural resources of San Joaquin County are discussed below.

Important Farmland

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" specifically includes the following definitions provided by the DOC (DOC 2016a):

- **Prime Farmland.** Land which has the best combination of physical and chemical characteristics for the production of 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 similar to *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 used for the production of 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.

a. Important Farmland Trends

According to the DOC, Important Farmland in California decreased by 70,632 acres, or 0.6 percent, between 2010 and 2012 (DOC 2015). The highest-quality agricultural soils, known as Prime Farmland, comprised 67 percent of the loss. Although this farmland conversion was partially caused by increased urbanization, long-term land idling was the largest factor contributing to irrigated land decreases over this time period.

As shown in Table 4, in contrast with statewide trends of decreasing agricultural lands, between 2012 and 2014, total Important Farmland in San Joaquin County saw a net increase of 2,259 acres (DOC 2015). However, for irrigated farmland, the San Joaquin Valley accounted for 56 percent of the statewide decrease in net irrigated farmland change, with land idling as a major contributing factor (DOC 2015).

Table 4 Important Agriculture Land Conversion by County 2012-2014

Land Use Category	Total Acreage Inventoried		2012-2014 Acreage Changes			
	2012	2014	Acres Lost (-)	Acres Gained (+)	Total Acreage Changed	Net Acreage Changed
Important Farmland ¹	612,733	614,992	6,929	9,188	16,117	2,259

¹Important Farmland represents all Prime Farmland, Farmland of Statewide Importance, and Unique Farmland within the given County.

Source: California Department of Conservation (DOC). San Joaquin County 2012-2014 Land Use Conversion

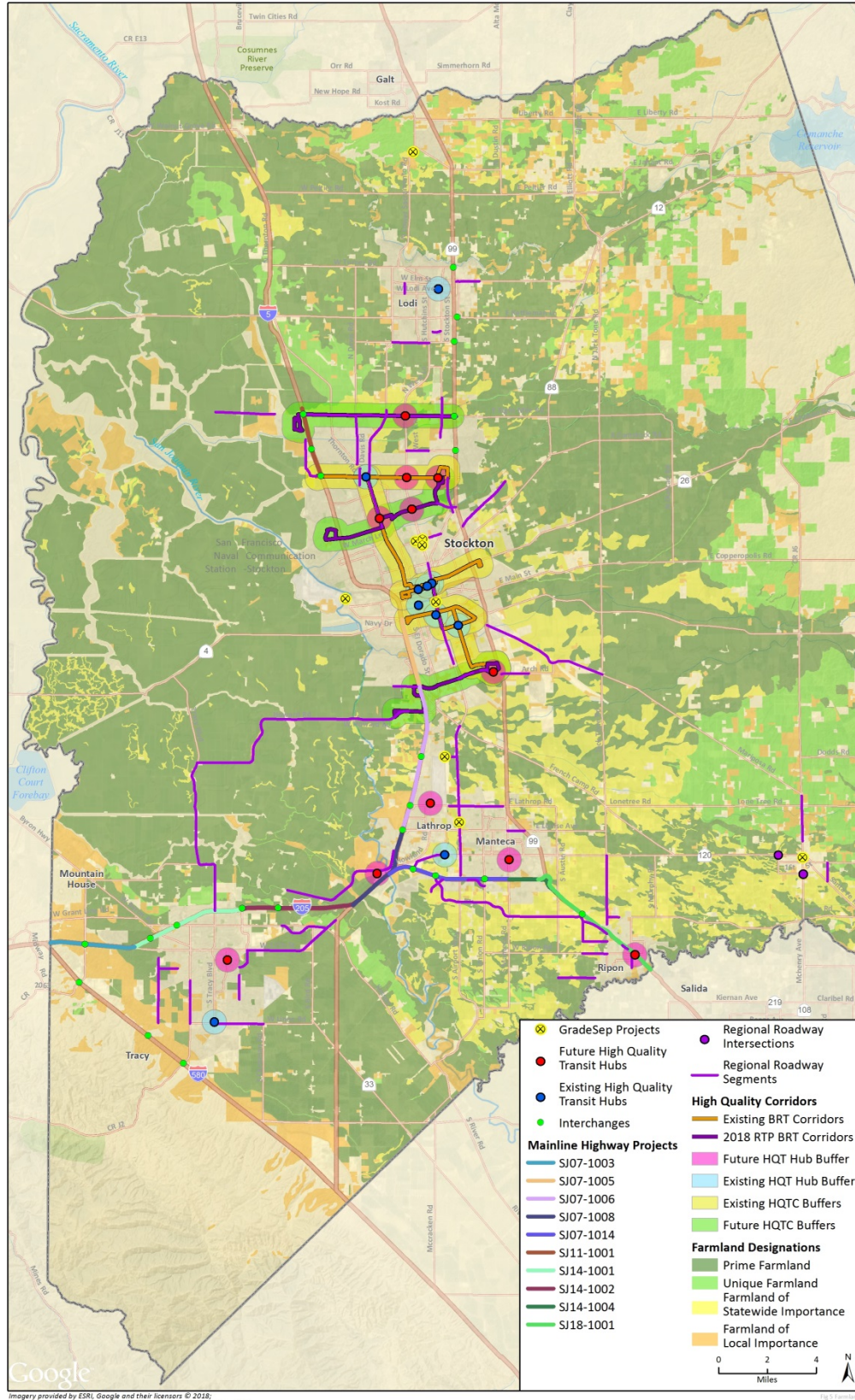
b. Agricultural Productivity

San Joaquin County

Agriculture consisting of crop farming is the largest industry in San Joaquin County and contributes a substantial amount of money to San Joaquin County's economy. San Joaquin County ranks number seven in agricultural producing counties in the United States and is one of eleven California counties with a billion dollars or more production in crop value. Per the 2016 Agricultural Report for San Joaquin County, the gross value of agricultural production for 2016 was \$2,337,922,000, a 14.5 percent decrease from 2015. The top ten crops produced in the County for 2016 consisted of: grapes, milk, almonds, walnuts, cattle, tomatoes, cherries, hay, potatoes, and melons (San Joaquin County 2016).

As of January 1, 2015, 499,654 acres of land are under Williamson Act contract in San Joaquin County with 60,255 acres under the Farmland Security Zone ("FSZ") (DOC 2016c). As noted, approximately 748,633 acres of land in San Joaquin County were classified as "farmland" in 2012, which accounts for approximately 82 percent of land in the County (DOC 2015). Of the total agricultural land in the County, the DOC (2015) has classified approximately 382,115 acres as "Prime Farmland," approximately 82,160 acres as "Farmland of Statewide Importance," and approximately 72,055 acres as "Unique Farmland." According to the FMMP, between the years 2012 and 2014, Important Farmland in San Joaquin County saw a net increase of over 2,259 acres (DOC 2015). Figure 6 illustrates the intersection of Important Farmland and projects listed under the 2018 RTP/SCS in San Joaquin County.

Figure 6 Important Farmland in San Joaquin County



c. Forest Lands

San Joaquin County has approximately 20,000 acres of existing oak woodland. The groves are located in the southwest and northeast portions of the County. As the oak woodlands and forest lands are generally located in the slow growth areas of the County (mountain areas) the rate of forest land loss has typically been slow. Within the SJCOG planning area, there are no Timber Harvesting Plans (TPH) (CAL FIRE 2012). Additionally, according to the California Department of Forestry and Fire Protection's (CAL FIRE) Fire and Resource Assessment Program (FRAP), there are no Timber Production Zone (TPZ) designations within the County (FRAP 2010).

Although there are no TPH or TPZ in the planning area, there is blue oak habitat in the SJCOG region. This is a community that covers about 20,000 acres and is dominated by blue oak, and/or interior live oak, and foothill pine. The 20,000 acres of existing oak woodland in the southwest portion of the county qualifies as "forest land" under Public Resources Code section 12220(g), which states, "'Forest land' is land that can support 10 percent native tree cover of any species, including hardwoods, under natural conditions, and that allows for management of one or more forest resources, including timber, aesthetics, fish and wildlife, biodiversity, water quality, recreation, and other public benefits." (ESA 2014).

d. Regulatory Setting

Federal

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 (NRCS 2017).

US 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 2017).

State

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 2016d).

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 2016e).

Regional and Local

Delta Protection Commission

The Delta Protection Act of 1992 (Pub. Resources Code, § 29760 et seq.) recognized the Sacramento-San Joaquin Delta as a natural resource of statewide, national, and international significance, containing irreplaceable resources. It created the policy to recognize, preserve, and protect those resources, and established the Delta Protection Commission. The Delta Protection Commission was charged with creating the Land Use and Resources Management Plan for the Primary Zone, which was adopted in 1995. The management plan provides direction for local jurisdictions in the Delta region on land use decisions. Local jurisdictions with lands in the primary zone have amended their general plans to incorporate the management plan. In 2010, the Delta Protection Commission amended the management plan to reflect changes since adoption, such as newly identified Endangered species, effects of climate change, flood control issues, increased recreational use, water quality changes, habitat loss, road and utility construction, and urbanization. The amendment adds specific overview, goals, and policies subsections and a glossary of terms to address components of the Delta system, such as: natural resources, utilities, infrastructure, land use, agriculture, water, recreation, and levees.

Delta Stewardship Council

In November 2009, the California Legislature enacted the Sacramento-San Joaquin Delta Reform Act (Delta Reform Act) of 2009, also known as Sen. Bill No. 1 (Stats. 2009, 7th Ex. Sess., ch. 5) (SB X7-1), one of several bills passed at that time related to water supply reliability, ecosystem health, and the Delta. The Delta Reform Act created the Delta Stewardship Council (DSC). The DSC is made up of seven members that are advised by a 10-member board of scientists. The DSC was charged with developing and adopting a Delta Plan by January 1, 2012.

The DSC is tasked with addressing the coequal goals of providing a more reliable water supply for California and protecting, restoring, and enhancing the Delta ecosystem. According to the Delta Reform Act, the coequal goals shall be achieved in a manner that protects and enhances the unique cultural, recreational, natural resource, and agricultural values of the Delta as an evolving place. The DSC regulates covered actions, as statutorily defined, to address the coequal goals.

General Plans

The San Joaquin County General Plan highlights the importance of protecting agricultural land. The County General Plan contains goals to promote the long-term protection, conservation, and enhancement of productive and potentially productive agricultural land and ensure that the County’s land use policies are consistent with ongoing agricultural activities. The most

comprehensive land use planning for the San Joaquin region is provided by city and county general plans, which local governments are required to prepare as a guide for future development. The municipalities within the SJCOG area contain general plans with goals and policies concerning topics that are mandated by state law or which the jurisdiction has chosen to include, such as land use, conservation and open space, natural resources, parks and recreation, and agricultural elements.

4.2.2 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 agricultural resources:

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;
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 Timber Production;
4. Result in the loss of forest land or conversion of forest land to non-forest use; and/or
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.

Thresholds 1-5 are discussed below.

b. Project Impacts and Mitigation Measures

This section describes generalized agricultural resources impacts associated with the projects anticipated under the 2018 RTP/SCS. Due to the programmatic nature of the 2018 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 2018 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 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 PROPOSED TRANSPORTATION IMPROVEMENTS AND LAND USE PATTERNS ENVISIONED BY THE 2018 RTP/SCS COULD RESULT IN THE CONVERSION OF IMPORTANT FARMLAND TO NONAGRICULTURAL USE, AND/OR CONFLICT WITH EXISTING ZONING FOR AGRICULTURE. THIS WOULD BE A SIGNIFICANT AND UNAVOIDABLE IMPACT.

As discussed in Section 4.2.1, the SJCOG region contains approximately 382,115 acres of Prime Farmland, 72,055 acres of Unique Farmland, and 82,160 acres of Farmland of Statewide Importance (DOC 2015). Because the 2018 RTP/SCS land use pattern emphasizes infill development, approximately 99 percent of the region's existing agricultural land is expected to remain available

for agriculture. The remaining less than one percent, representing approximately 23,400 acres, would have the potential to be converted to developed land. Conservatively assuming that all 23,400 acres contain FMMP-designated Important Farmland, the proposed 2018 RTP/SCS would have the potential to convert 23,400 acres of Important Farmland to non-agricultural use. This amount of conversion over the 25-year planning period for the 2018 RTP/SCS (2018-2042) represents an average conversion rate of approximately 936 acres per year, compared to an average of approximately 965 acres per year from 1990 to 2014 (DOC 2016d). The 2018 RTP/SCS is estimated to reduce by 9,700 acres the amount of Prime Farmland converted to developed land compared to business as usual. Although the County is expected to see a reduction in the average annual acreage change of converted farmland, this rate of conversion would constitute a potentially significant impact.

Transportation improvement projects in the 2018 RTP/SCS adjacent to agricultural areas (Figure 6), particularly those requiring new rights-of-way, could also have indirect impacts on agricultural productivity. Although the incorporated cities in San Joaquin county are fairly urbanized, many cities border agriculture, including FMMP-designated Important Farmland. These include but are not limited to the cities of Tracy and Lodi, as well as census designated places (CDPs) like Mountain House. Transportation improvement projects that involve roadway widening have the potential to affect narrow segments of agricultural land located immediately along the existing right-of-way of proposed improvements. 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.

The 2018 RTP/SCS envisions 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 expected to result in agricultural resource impacts since they would be located within existing urban areas. 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 including determining the impact by completing the Farmland Conversion Impact Rating form (AD-1006), if required.

In developing the 2018 RTP/SCS forecasted development pattern and transportation system, SJCOG relied on the policies of local governments to develop urbanization assumptions based on the most recent information available. The general plans and related environmental documentation for each local jurisdiction identify potential impacts to agricultural resources that could occur as a result of Plan implementation. As such, the 2018 RTP/SCS was developed consistent with the applicable general plans; thus, no impacts that are new or different from what was disclosed are expected to occur. Through transit oriented development in denser areas, the proposed 2018 RTP/SCS would direct more growth in the areas that are already urbanized, thereby avoiding some agricultural lands from being converted to urban uses, as well as avoiding lands currently designated for agricultural purposes. However, as discussed previously, implementation of the proposed 2018 RTP/SCS would potentially result in the conversion of up to 23,400 acres of Important Farmland to non-agricultural uses. Lands that remain agricultural, but are located near areas converted to urban uses, may experience increased development pressure, as nearby land values increase, new routes to previously inaccessible areas are formed, or nuisances from urban development spread to agricultural lands.

A determination of the impacts to Important Farmland and agricultural zoning would also be made on a case-by-case basis as individual projects are implemented. It is expected that not many individual projects would 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, as the actual magnitude of impacts from individual projects cannot be determined at this time, and because of the potential increase in the average annual conversion rate of agricultural land to non-agricultural uses over the next 25 years, this would be a potentially significant impact.

Mitigation Measures

For transportation projects under their jurisdiction, SJCOG shall, and transportation project sponsor agencies can and should, implement the following mitigation measures developed for the 2018 RTP/SCS program, where applicable, for transportation projects that would result in impacts to Important Farmland. The County and cities in the SJCOG region can and should implement these measures, where relevant to land use projects implementing the 2018 RTP/SCS.

AG-1 Impact Avoidance and Minimization

Project sponsors shall implement measures, where feasible and necessary 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 Prime Farmland, Unique Farmland, or Farmland of Statewide Importance;
- Compensatory mitigation at a minimum 1:1 (impacted: replaced) acreage ratio with Important Farmland of equivalent or better quality may be achieved in advance of impacts through the purchase or creation of mitigation credits or the implementation of mitigation projects through Regional Advance Mitigation Planning (RAMP), as deemed appropriate by the permitting agencies;
- Require acquisition of conservation easements on land at least equal in quality and size as mitigation for the loss of Important Farmland; 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.).

Significance After Mitigation

If the implementing agency adopts these mitigation measures, impacts from the 2018 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. As appropriate, SJCOG will encourage implementing agencies to adopt Mitigation Measure AG-1 through its Intergovernmental Review process. SJCOG cannot require the implementing agency to adopt these mitigation measures because such agencies are ultimately responsible to determine and adopt mitigation. This impact remains significant and unavoidable.

Threshold 2: Conflict with existing zoning or land use designation for agricultural use, or a Williamson Act contract

Impact AG-2 PROPOSED TRANSPORTATION IMPROVEMENTS AND LAND USE PATTERNS ENVISIONED BY THE 2018 RTP/SCS COULD RESULT IN CONFLICTS WITH EXISTING ZONING OR LAND USE DESIGNATIONS FOR AGRICULTURE; OR A WILLIAMSON ACT CONTRACT. IMPACTS WOULD BE SIGNIFICANT AND UNAVOIDABLE.

As of January 1st, 2015, San Joaquin County contained a total of 499,654 acres of land contracted under the Williamson Act. Due to the planning horizon of the RTP (25 years), it is likely that some land currently under Williamson Act contracts could expire and potentially be converted to non-agricultural uses. However, as discussed in the RTP/SCS (see Chapter 1, Creating a Sustainable Communities Strategy), all land use changes are subject to local plans and policies. As such, no specific zoning changes would occur as a direct result of the RTP/SCS, rather each individual jurisdiction would be responsible for approving land use and zoning changes.

Transportation improvements and land uses envisioned from the 2018 RTP/SCS could occur on lands with existing agricultural uses and zoning. As discussed similarly in Impact AG-1, transportation improvement projects under the 2018 RTP/SCS adjacent to agricultural areas, particularly those requiring new rights-of-way, could also have indirect impacts on agricultural productivity. Transportation improvement projects that involve roadway widening have the potential to affect narrow segments of agricultural land located immediately along the existing right-of-way of proposed improvements.

The impacts to existing zoning and land use designations for agricultural resources, and Williamson Act agricultural lands are potentially significant. Mitigation Measure AG-1 is required to reduce impacts to the extent feasible.

Mitigation Measures

Implementation of mitigation measure AG-1 would reduce impacts to extent feasible.

Significance After Mitigation

If the project sponsor adopts these mitigation measures, impacts to contracted Williamson Act lands and agricultural zoned land would be reduced, although not to a less than significant level in all cases. 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. As appropriate, SJCOG will encourage lead agencies to adopt these mitigation measures through its Intergovernmental Review process. However, SJCOG cannot require implementing agencies to adopt Mitigation Measure AG-1, as it is ultimately the responsibility of a lead agency to determine and adopt mitigation. Therefore, this impact remains significant and unavoidable.

Threshold 3: Conflict with existing zoning for, or cause rezoning of, forest land, timberland, or timberland zoned Timber Production

Threshold 4: Result in the loss of forest land or conversion of forest land to non-forest use

**Impact AG-3 PROPOSED TRANSPORTATION IMPROVEMENT PROJECTS AND LAND USE PATTERNS
ENVISIONED BY THE 2018 RTP/SCS WOULD RESULT IN A CONFLICT WITH OR LOSS OF FOREST OR TIMBERLAND.
IMPACTS WOULD BE SIGNIFICANT AND UNAVOIDABLE.**

San Joaquin County has approximately 20,000 acres of existing oak woodland which are located in the southwest and northeast portions of the County. As the oak woodlands and forest lands are generally located in the slow growth areas of the County (mountainous areas) the rate of forest land loss has typically been slow.

Due to the planning horizon of the 2018 RTP (25 years), it is likely that some land currently defined and zoned as forest land or timberland could be converted to residential or other uses. However, as discussed in the RTP/SCS (see Chapter 1, Creating a Sustainable Communities Strategy), all land use changes are subject to local plans and policies. As such, no specific zoning changes would occur as a direct result of the RTP/SCS, rather each individual jurisdiction would be responsible for approving land use and zoning changes. As a result, no direct changes to land use designation or zoning would occur as a result of the RTP/SCS.

The majority of growth anticipated with the RTP/SCS would occur in urbanized areas, not existing forest lands. Land use strategies contained within the RTP/SCS would help to encourage growth in developed areas rather than a more dispersed land use pattern that could result in conversion of forest land as evidenced by the fact that the 2018 RTP/SCS would consume 55 percent fewer acres of land compared to the No Project (approximately 26,000 acres under the 2018 RTP/SCS compared to 46,084 under the No Project).

However, due to the importance of the County's timberland and forest land resources, the impacts on existing zoning and land use designations for forest land resources, related to the land use changes and transportation improvements from implementation of the proposed 2018 RTP/SCS are considered potentially significant. Mitigation Measure AG-1, described above, and AG-2(a) and AG-3, described below, should be implemented to help decrease the level of impact to the extent feasible.

Mitigation Measures

For transportation projects under their jurisdiction, SJCOG shall implement, and transportation project sponsor agencies can and should implement, the following mitigation measure developed for the 2018 RTP/SCS program where applicable for transportation projects that would substantially degrade visual character. Municipalities in the SJCOG region can and should implement this measure, where relevant to land use projects implementing the 2018 RTP/SCS. The following Mitigation Measures, AG-2 and AG-3, as well as Mitigation Measure AG-1 discussed above would reduce impacts to the extent feasible.

AG-2 Preservation Ratios

Project sponsors shall establish preservation ratios to minimize loss of forest land, and timberland, such as one acre of unprotected forest land and timber land to be permanently conserved for each acre of open space developed as a result of individual projects.

AG-3 Design Features

Project sponsors shall implement design features in RTP/SCS projects to minimize development impacts on existing forest land. Project sponsors shall consider corridor realignment, buffer zones

and setbacks, and berms and fencing where feasible, to avoid forest lands and timberlands and to reduce conflicts between transportation uses and forest and timberlands.

Significance After Mitigation

If the project sponsor adopts these mitigation measures, it is not anticipated that it will reduce forest land and timberland impacts to a less than significant level in all cases. Due to the irreversible effects of converting or reducing forest land, impacts could be significant and unavoidable. In addition, as this document evaluates impacts at the programmatic level, all project circumstances are not foreseeable and therefore, even with implementation of Mitigation Measures AG-1, through AG-3, impacts could remain significant and unavoidable. As appropriate, SJCOG will encourage lead agencies to adopt these mitigation measures through its Intergovernmental Review process. However, SJCOG cannot require implementing agencies to adopt Mitigation Measures AG-1 through AG-3, as it is ultimately the responsibility of a lead agency to determine and adopt mitigation. This impact remains significant and unavoidable.

c. Cumulative Impacts

Implementation of the proposed 2018 RTP/SCS would result in conversion of up to 23,400 acres of agriculture to non-agricultural use. While this represents total potential Important Farmland lost in the SJCOG region, counties outside the SJCOG region would also continue to convert agricultural land due to development outside of existing urbanized areas. Collectively, this adds to the cumulative conversion of agricultural lands, including areas designated as Important Farmland by the FMMP, in cumulative impact analysis area. As such, the cumulative loss of agricultural lands would be potentially significant.

Implementation of mitigation identified above would minimize the contribution of the proposed 2018 RTP/SCS to cumulative agricultural land impacts. However, as the cumulative impact analysis area urbanizes, total agricultural conversion as well as land use conflicts between agricultural land and urban uses could intensify, particularly at the edge of existing cities and communities. Consequently, cumulative impacts to agricultural resources, and the regional contribution to them, remain potentially significant, and the 2018 RTP/SCS contribution would be cumulatively considerable.

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4.3 Air Quality

This section analyzes the impacts of the 2018 RTP/SCS on local and regional air quality, through the year 2042. 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, *Greenhouse Gas Emissions/Climate Change*.

4.3.1 Setting

a. Local Climate and Topography

The San Joaquin Valley Air Basin (SJVAB) consists of eight counties, stretching from Kern County in the south to San Joaquin County in the north. The SJVAB is bounded by the Sierra Nevada to the east, the Coast Ranges to the west, and the Tehachapi mountains to the south. Figure 7 illustrates the location of the County within the SJVAB.

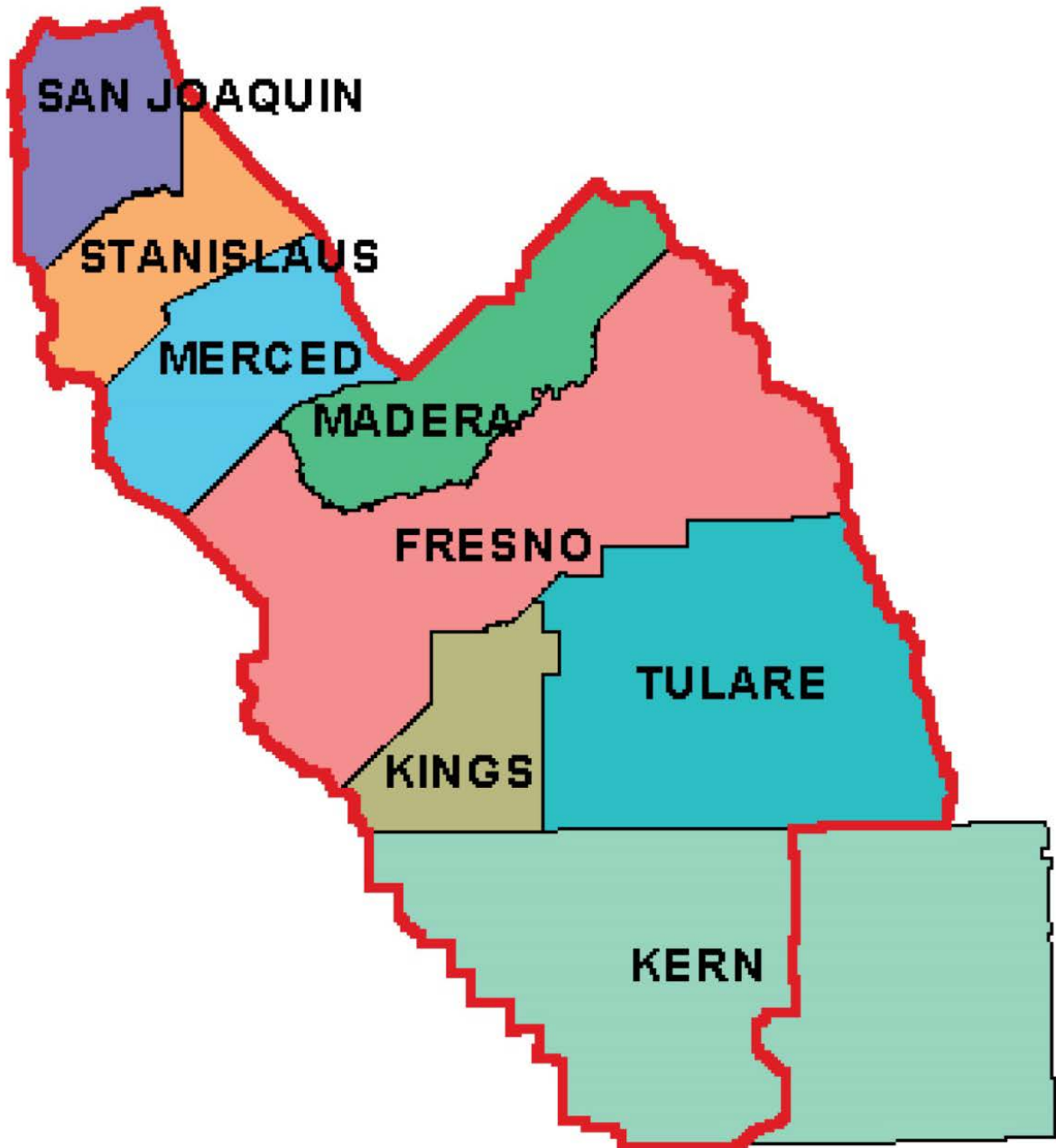
The SJVAB has an inland Mediterranean climate with warm, dry summers, relatively cool nights, and cooler winters with limited rainfall. Winters are mild with light rains and frequent heavy fog from December to January. The average temperature in the Basin is 61.5 degrees Fahrenheit (°F) (USA.com 2018). The average maximum daily temperature in July is approximately 93°F and the average minimum daily temperature in January is 38°F (Sperling's Best Places 2016). Rainfall occurs mainly in the winter months from November to April and averages 18.6 inches per year (USA.com 2018).

Air quality is affected by the rate and location of pollutant emissions and by climatic and topographic 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. In the SJVAB, the surrounding mountains restrict air movement and impede the dispersion of pollutants out of the basin. The SJVAB also experiences temperature inversions frequently throughout the year, which restrict vertical dispersion of air pollutants; an inversion occurs when a mass of warm dry air sits over cooler air near the ground, essentially trapping the air mass below (SJVAPCD 2012a). In addition, the Valley's long, hot summers, and stagnant, foggy winters, provide ideal conditions for the formation of photochemical oxidants and reduce dispersion, respectively.

Wind speed and direction determine the dispersion of air pollutants. Marine air comes into the basin from the Sacramento River–San Joaquin River Delta, although most air movement is restricted by the surrounding mountains. Winds from the Bay Area flow northeasterly into the Sacramento Valley and southward into San Joaquin County. This results in weak winds from the north and northeast, with an average speed of seven miles per hour. During the summer, wind from the north flows south and southeasterly through the Valley, through the Tehachapi Pass and into the Southeast Desert Air Basin. Thus, emissions from the San Francisco Bay Area and the Broader Sacramento air basins are transported into San Joaquin County and the SJVAB. Emissions in the San Joaquin Valley are then transported to the Southeast Desert and Great Basin Valley Air Basins. In late fall and winter, cold air from the mountains flows into the Valley. This results in winds from the south that flow north and northwesterly. Some emissions from San Joaquin County are transported to the broader Sacramento air basin during these times. However, the winds are relatively light, limiting the dispersion of CO and other pollutants.

Figure 7 San Joaquin Valley Air Basin

San Joaquin Valley Air Basin



Source: San Joaquin Valley Unified Air Pollution Control District, 2017

In the late fall and winter, when there is little interchange of air between the valley and the coast, humidity is high following winter rains, and temperature inversions at ground level persist over the entire valley for several weeks, air movement is virtually absent and radiation fog, known as tule fog, forms. This is typically when peak concentrations of carbon monoxide (CO), oxides of nitrogen (NO_x), and particulate matter (PM) occur.

b. Air Pollutants of Primary Concern

The federal and State Clean Air Acts (CAA) mandate the control and reduction of certain air pollutants, referred to as “criteria pollutants.” Under these laws, the U.S. Environmental Protection Agency (U.S. EPA) and the California Air Resources Board (CARB) have established ambient air quality standards for criteria pollutants. Primary criteria pollutants are emitted directly from a source (e.g., vehicle tailpipe, an exhaust stack of a factory, etc.) into the atmosphere and include carbon monoxide, reactive organic gasses (ROG), NO_x, fine particulate matter (PM₁₀ and PM_{2.5}), sulfur dioxide (SO₂), and lead (Pb). Secondary criteria pollutants are created by atmospheric chemical and photochemical reactions. ROG, together with NO_x, form the building blocks for the creation of photochemical (secondary) pollutants. Secondary pollutants include oxidants, ozone, and sulfate and nitrate particulates (smog). The characteristics, sources, and effects of critical air contaminants are provided in Table 5.

Table 5 Description of Criteria Pollutants

Photochemical Oxidant (Ox)

Characteristics. The term “photochemical oxidant” can include several different pollutants, but consists primarily of ozone (more than 90 percent) and a group of chemicals called organic peroxy nitrates. Photochemical oxidants are created in the atmosphere rather than emitted directly into the air. Reactive organic gases and oxides of nitrogen are the emitted contaminants, which participate in the reaction. Ozone is a pungent, colorless toxic gas, which is produced by the photochemical process. Photochemical oxidant is a characteristic of southern California-type smog, and reaches highest concentrations during the summer and early fall.

Sources. Ozone is caused by complex atmospheric reactions involving oxides of nitrogen and reactive organic gases with ultraviolet energy from sunlight. Motor vehicles are the major source of oxides of nitrogen and reactive organic gases in the basin.

Effects. The common manifestations of ozone and other photochemical oxidants are damage to vegetation and cracking of untreated rubber. Ozone in high concentrations (ranging from 0.15 ppm to 0.50 ppm) can also directly affect the lungs, causing respiratory and coronary irritation and possible changes in lung functions. These health problems are particularly acute in children and elderly people exposed to these pollutants.

Carbon Monoxide (CO)

Characteristics. CO is a colorless, odorless, toxic gas produced through the incomplete combustion of fossil fuels. Concentrations are higher in winter when more fuel is burned for heating purposes and weather conditions favor the build-up of directly emitted contaminants.

Sources. The use of gasoline-powered engines is the major source of this contaminant, with automobiles being the primary contributor. CO emissions from gasoline-powered engines are higher during winter months due to poor engine efficiency in cold temperatures. Various industrial processes also produce CO emissions through incomplete combustion of fossil fuels.

Effects. CO does not irritate the respiratory tract. However, it passes through the lungs directly into the blood stream and, by interfering with the transfer of oxygen, deprives sensitive tissues of oxygen.

Nitrogen Oxides (NO_x)

Characteristics. NO_x primarily consists of nitric oxide (NO) (a colorless, odorless gas formed from atmospheric nitrogen and oxygen when petroleum combustion takes place under high temperatures and/or pressure) and nitrogen dioxide (NO₂) (a reddish-brown irritating gas formed by the combination of nitric oxide with oxygen). Due to the role they play as ozone precursors, oxides of nitrogen are one of the two criteria pollutants subject to federal ozone requirements.

Sources. High combustion temperatures cause nitrogen and oxygen to combine and form nitric oxide. Further reaction produces additional oxides of nitrogen. Combustion in motor vehicle engines, power plants, refineries and other industrial operations are the primary sources in the region. Ships, railroads and aircraft are other significant emitters.

Effects. Oxides of nitrogen are direct participants in photochemical smog reactions. The emitted compound, nitric oxide, combines with oxygen in the atmosphere in the presence of sunlight, to form nitrogen dioxide and ozone. Nitrogen dioxide, the most significant of these pollutants, can color the atmosphere at concentrations as low as 0.5 ppm on days of 21 0-mile visibility. NO₂ is an important air pollutant in the region because it is a primary receptor of ultraviolet light. The latter initiates photochemical reactions, helping to form ozone and/or particulate nitrate. It will also react in the air to form nitrate particulates.

Sulfur Dioxide (SO₂)

Characteristics. SO₂ is a colorless, pungent, irritating gas formed primarily by the combustion of sulfur-containing fossil fuels. In humid atmospheres, SO₂ can form sulfur trioxide and sulfuric acid mist, with some of the latter eventually reacting to produce sulfate particulates.

Sources. This contaminant is the natural combustion product of sulfur or sulfur-containing fuels. Fuel combustion is the major source, while chemical plants, sulfur recovery plants, and metal processing are minor contributors.

Effects. At sufficiently high concentrations, sulfur dioxide irritates the upper respiratory tract. At lower concentrations, when in conjunction with particulates, SO₂ appears able to do still greater harm by injuring lung tissues. Sulfur oxides, in combination with moisture and oxygen, can yellow the leaves of plants, dissolve marble and eat away iron and steel. Sulfur oxides can also react to form sulfates, which reduce visibility.

Particulates (Total Suspended Particles and PM₁₀)

Characteristics. Atmospheric particulates are made up of finely divided solids or liquids, such as soot, dust, aerosols, fumes, and mists. About 90 percent by weight of the emitted particles are larger than 10 microns in diameter, but about 10 percent by weight, or 90 percent of the total *number* of particulates, are less than 5 microns in diameter. The aerosols formed in the atmosphere, primarily sulfate and nitrate, are usually smaller than 1 micron. In areas close to major sources, particulate concentrations are generally higher in the winter, when more fuel is burned for heating, and meteorological conditions favor the build-up of directly-emitted contaminants. However, in areas remote from major sources and subject to photochemical smog (ozone), particulate concentrations can be higher during summer months because the presence of ozone increases the potential for SO₂ and NO₂ to convert to sulfate and nitrate particulates.

Sources. Particulate matter consists of particles in the atmosphere resulting from many kinds of dust and fume-producing industrial and agricultural operations, from combustion, and from atmospheric photochemical reactions. Re-entrained road dust from vehicles is a significant source of particulates. Natural activities also put particulates into the atmosphere; wind-raised dust and ocean spray are two such sources of particulates.

Effects. In the respiratory tract very small particles of certain substances may produce injury by themselves, or may contain absorbed gases that are injurious. Suspended in the air, particulates less than 5 microns in diameter can both scatter and absorb sunlight, producing haze and reducing visibility. They can also cause a wide range of damage to materials.

Diesel Particulate Matter (DPM)

Characteristics. Diesel particulate matter is part of a complex mixture that makes up diesel exhaust. Diesel exhaust is commonly found throughout the environment. Diesel exhaust is composed of two phases, either gas or particle, and both phases contribute to the risk. The gas phase is composed of many of the urban hazardous air pollutants, such as acetaldehyde, acrolein, benzene, 1,3-butadiene, formaldehyde, and polycyclic aromatic hydrocarbons. Diesel exhaust has a distinct odor, which is primarily a result of hydrocarbons and aldehydes contained in diesel fuel. The particle phase also has many different types of particles that can be classified by size or composition. The size of diesel particulates that are of greatest health concern are those that are in the categories of fine and ultra-fine particles. The composition of these fine and ultra-fine particles may be composed of elemental carbon with adsorbed compounds such as organic compounds, sulfate, nitrate, metals, and other trace elements.

Sources. Diesel exhaust is emitted from a broad range of diesel engines: the on-road diesel engines of trucks, buses, and cars and the off-road diesel engines that include locomotives, marine vessels, and heavy-duty equipment.

Effects. Acute exposure to diesel exhaust may cause irritation to the eyes, nose, throat and lungs, and some neurological effects such as lightheadedness. Acute exposure may also elicit a cough or nausea as well as exacerbate asthma. Chronic exposure in experimental animal inhalation studies has shown a range of dose-dependent lung inflammation and cellular changes in the lung and there are also diesel exhaust immunological effects. Based upon human and laboratory studies, there is considerable evidence that diesel exhaust is a likely carcinogen. Human epidemiological studies demonstrate an association between diesel exhaust exposure and increased lung cancer rates in occupational settings.

Hydrocarbons and other Organic Gases (Total Hydrocarbons, CH₄NMHC (non-methane), AHC, NHC)

Characteristics. Any of the vast family of compounds consisting of hydrogen and carbon in various combinations are known as hydrocarbons. Fossil fuels are included in this group. Many hydrocarbon compounds are major air pollutants, and those which can be classified as olefins or aromatics are highly photochemically reactive. Atmospheric hydrocarbon concentrations are generally higher in winter because the reactive hydrocarbons react more slowly in the winter and meteorological conditions are more favorable to their accumulating in the atmosphere to higher concentration before producing photochemical oxidants. Due to the role they play as ozone precursors, reactive hydrocarbons are one of the two criteria pollutants subject to federal ozone requirements.

Sources. Motor vehicles are a major source of anthropogenic hydrocarbons (AHC) in the basin. Other sources include evaporation of organic solvents and petroleum refining and marketing operations. Trees are the principal emitters of biogenic or natural hydrocarbons (NHC).

Effects. Certain hydrocarbons can damage plants by inhibiting growth and causing flowers and leaves to fall. Levels of hydrocarbons currently measured in urban areas are not known to cause adverse effects in humans. However, certain members of this contaminant group are important components in the reactions which produce photochemical oxidants.

Lead (Pb)

Characteristics. Lead is an elemental heavy metal found naturally in the environment as well as in manufactured products. Lead can be released directly into the air, as suspended particles. It is soft, malleable, and melts at a relatively low temperature. When freshly cut, it has a bluish-white tint; it tarnishes to a dull gray upon exposure to air. Lead has several properties that make it useful: high density, low melting point, ductility, and relative inertness to oxidation. Combined with relative abundance and low cost, these factors resulted in the extensive worldwide use of lead. Lead is persistent in the environment and accumulates in soils and sediments through deposition from air sources, direct discharge of waste streams to water bodies, mining, and erosion.

Sources. The major sources of lead emissions historically have been mobile and industrial sources. As a result of phasing out leaded gasoline, metal processing currently is the primary source of Pb 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.

Effects. Humans may be exposed to lead from air pollution directly, through inhalation, or through the incidental ingestion of lead that has settled out from the air onto soil or dust. Depending on the level of exposure, lead can adversely affect the nervous system, kidney function, immune system, reproductive and developmental systems and the cardiovascular system. Lead exposure also affects the oxygen carrying capacity of the blood. The lead effects most commonly encountered in current populations are neurological effects in children and cardiovascular effects (e.g., high blood pressure and heart disease) in adults. Infants and young children are especially sensitive to even low levels of lead, which may contribute to behavioral problems, learning deficits and lowered IQ. Elevated lead in the environment can result in decreased growth and reproductive rates in plants and animals, and neurological effects in vertebrates.

c. Other Pollutants

Diesel engine fuel combustion emits particulate matter, referred to as diesel particulate matter (DPM) that can be very small and readily respirable. The particles have hundreds of chemicals adsorbed onto their surfaces, including many known or suspected mutagens and carcinogens (CARB 2016a). Both short and long-term exposure to DPM can result in adverse health effects. Short-term exposure may cause irritation to the eyes, nose, throat and lungs and exacerbate asthma, while chronic exposure has been shown to lead to lung inflammation and cellular changes in animals and has been linked to cancer (U.S. EPA 2017a). Statewide, DPM is estimated to result in 1,400 additional cases of cardiopulmonary death, 100 cases of cardiovascular hospitalization, 120 cases of respiratory hospitalization, and 600 cases of respiratory emergency room visits (CARB 2016a). Most major sources of diesel emissions, such as ships, trains, and trucks, operate in and around ports, rail yards, and heavily traveled roadways. DPM is identified by CARB as a toxic air contaminant (TAC) (CARB 2016a).

Besides DPM, several other pollutants emitted by vehicle exhaust are a public health concern. The U.S. EPA has identified five pollutants of highest priority in addition to DPM: acrolein, acetaldehyde, formaldehyde, benzene, and 1,3-butadiene. The latter five pollutants are found in organic gases emitted by vehicles.

d. Odors

Typically, odors are regarded as an annoyance rather than a health hazard. However, manifestations of a person's reaction to foul odors can range from psychological (e.g., irritation, anger, or anxiety) to physiological (e.g., circulatory and respiratory effects, nausea, vomiting, and headache). The ability to detect odors varies considerably among the population and overall is quite subjective. Some individuals have the ability to smell minute quantities of specific substances; others may not have the same sensitivity but may have sensitivities to odors of other substances. In addition, people may have different reactions to the same odor; in fact, an odor that is offensive to one person (e.g., from a fast-food restaurant) may be perfectly acceptable to another.

It is also important to note that an unfamiliar odor is more easily detected and is more likely to cause complaints than a familiar one. This is because of the phenomenon known as odor fatigue, in which a person can become desensitized to almost any odor and recognition only occurs with an alteration in the intensity. Quality and intensity are two properties present in any odor. The quality of an odor indicates the nature of the smell experience. For instance, if a person describes an odor as flowery or sweet, then the person is describing the quality of the odor. Intensity refers to the strength of the odor. For example, a person may use the word "strong" to describe the intensity of an odor. Odor intensity depends on the odorant concentration in the air.

When an odorous sample is progressively diluted, the odorant concentration decreases. As this occurs, the odor intensity weakens and eventually becomes so low that the detection or recognition of the odor is quite difficult. At some point during dilution, the concentration of the odorant reaches a detection threshold. An odorant concentration below the detection threshold means that the concentration in the air is not detectable by the average human.

e. Sensitive Receptors

A sensitive receptor is a location where human populations, especially children, seniors, and sick persons, are present and where there is a reasonable expectation of continuous human exposure to pollutants. Examples of sensitive receptors include residences, hospitals, and schools.

f. Ambient Air Quality

The federal and state governments have established ambient air quality standards for the protection of public health. The U.S. EPA has set primary national ambient air quality standards (NAAQS) for ozone, CO, nitrogen dioxide (NO₂), sulfur dioxide (SO₂), particulate matter with a diameter of up to ten microns (PM₁₀) and up to 2.5 microns (PM_{2.5}), and lead (Pb). Primary standards are those levels of air quality deemed necessary, with an adequate margin of safety, to protect public health. In addition, California has established ambient air quality standards for these and other pollutants, which are typically more stringent than the federal standards. Table 6 lists the current federal and State standards for regulated pollutants.

Table 6 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
CO	8-Hour	9.0 ppm	9.0 ppm
	1-Hour	35.0 ppm	20.0 ppm
NO ₂	Annual	0.053 ppm	0.030 ppm
	1-Hour	0.100 ppm	0.18 ppm
SO ₂	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 _{2.5}	Annual	12 µg/m ³	12 µg/m ³
	24-Hour	35 µg/m ³	–
Lead	30-Day	–	1.5 µg/m ³
	3-Month	0.15 µg/m ³	–
Visibility-Reducing Particles	–	–	Extinction coefficient of 0.23 per kilometer - visibility of 10 miles or more due to particles when relative humidity is less than 70 percent.
Sulfates	24-Hour	–	25 µg/m ³
Hydrogen Sulfide	1-Hour	–	0.03 ppm
Vinyl Chloride	24-Hour	–	0.01 ppm

ppm = parts per million;

µg/m³ = micrograms per cubic meter

Source: CARB 2016b

The U.S. EPA and CARB designate air basins, or portions of air basins, and counties as being in “attainment” or “nonattainment” for each of the criteria pollutants. Nonattainment areas are ranked as marginal, moderate, serious, severe, or extreme according to the degree of nonattainment. Areas that do not meet the standards shown in Table 6 are classified as nonattainment areas. The NAAQS (other than ozone, PM₁₀, PM_{2.5}, and those based on annual averages or arithmetic mean) are not to be exceeded more than once per year; the NAAQS for ozone, PM₁₀, PM_{2.5} are based on statistical calculations over one- to three-year periods, depending on the pollutant. The California Ambient Air Quality Standards (CAAQS) are not to be exceeded during a three-year period.

The determination of whether an area meets state and federal standards is based on air quality monitoring data. Some areas are unclassified, which means there is insufficient monitoring data for determining attainment or nonattainment. Unclassified areas are typically treated as being in attainment. Because the attainment/nonattainment designation is pollutant specific, an area may be classified as nonattainment for one pollutant and attainment for another. Similarly, because the State and federal standards differ, an area could be classified as in attainment for the federal standards of a pollutant and nonattainment for the State standard of the same pollutant.

Table 7 summarizes the SJVAB’s attainment status for federal and State criteria pollutant standards. As indicated in the table, the SJVAB is currently in nonattainment of the following standards (SJVAPCD 2012b):

- State one-hour ozone
- State and federal eight-hour ozone
- State 24-hour PM₁₀
- State and federal PM_{2.5}

The SJVAB is classified as being in nonattainment for the state one-hour ozone standard, federal and state eight-hour ozone standards, the state PM₁₀ standard, and the federal and state 24-hour and annual PM_{2.5} standards.

Table 7 Criteria Pollutant Attainment Status for San Joaquin Valley Air Basin

Pollutant	NAAQS	CAAQS
Ozone – 1 hour	None	Nonattainment/Severe
Ozone – 8 hour	Nonattainment	Nonattainment
CO	Attainment/Unclassified	Attainment
NO ₂	Attainment/Unclassified	Attainment
SO ₂	Unclassified	Attainment
PM ₁₀	Attainment	Nonattainment
PM _{2.5}	Nonattainment	Nonattainment
Lead (Pb)	Attainment/Unclassified	Attainment
Sulfates	None	Attainment
Hydrogen Sulfide	None	Unclassified
Visibility-Reducing Particles	None	Unclassified
Vinyl Chloride	None	Attainment

Source: SJVAPCD 2012

g. Air Quality Monitoring

The SJVAPCD and CARB maintain four air quality-monitoring sites in San Joaquin County: Hazelton Street, Stockton; Airport, Tracy; Wagner/Holt, Stockton; and 530 Fishback Road, Manteca. Figure 8 shows the locations of air quality monitoring stations in the SJVAB. Table 8 summarizes the top four maximum daily concentrations of criteria pollutants throughout San Joaquin County in 2014, 2015, and 2016. Table 9 and Table 10 show the emissions inventory and forecast for ROG, NO_x, and PM_{2.5} and PM₁₀ within the SJVAB, respectively.

Figure 8 SJVAB Air Quality Monitoring Stations (2017)

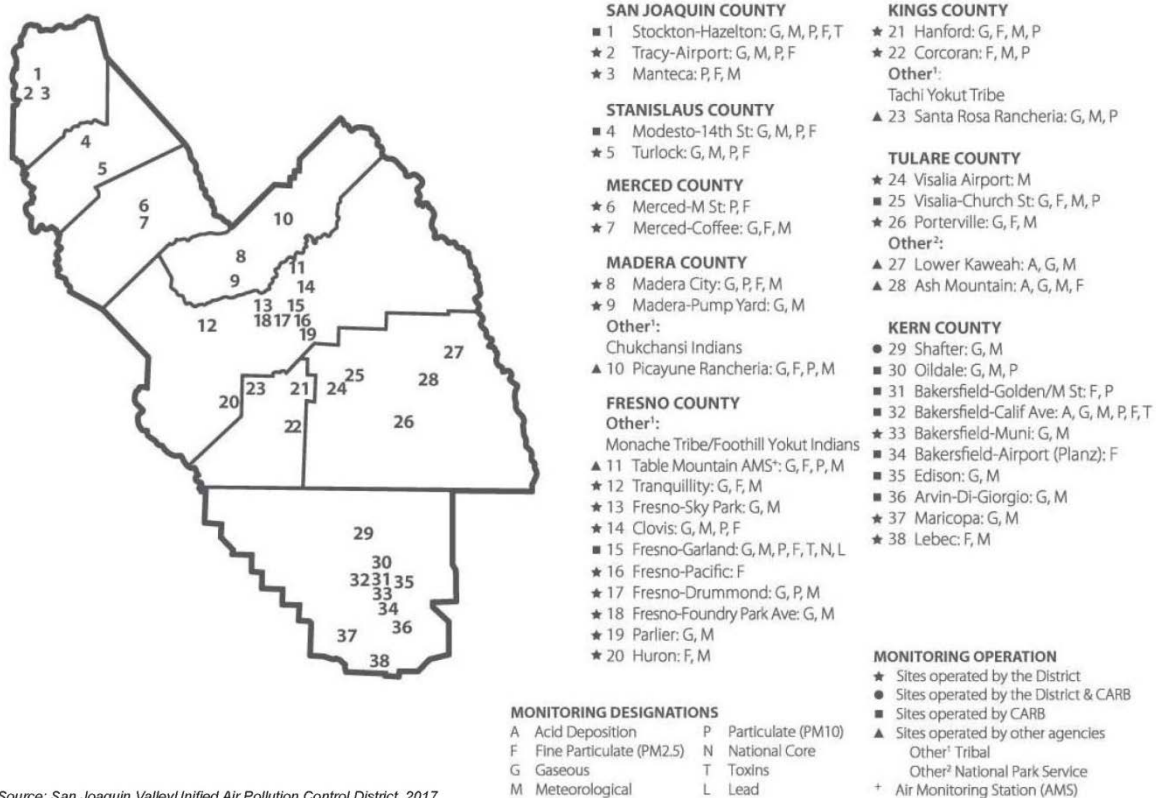


Table 8 Maximum Sampled Pollutant Concentrations for San Joaquin County (2014-2016)

Pollutant	2014	2015	2016
8-Hour Ozone (ppm), 8-Hour Average	0.084	0.091	0.092
Number of days of State exceedances (>0.070 ppm)	17	21	19
Number of days of Federal exceedances (>0.070 ppm)	17	21	19
Ozone (ppm), Worst Hour	0.097	0.107	0.109
Number of days of State exceedances (>0.10 ppm)	1	4	4
Nitrogen Dioxide (ppb) - Worst Hour	66.9	58	64.1
Number of days of State exceedances (>180 ppb)	0	0	0
Particulate Matter 10 microns, $\mu\text{g}/\text{m}^3$, Worst 24 Hours ¹	109.0	107.3	71.7
Number of samples of State exceedances (>50 $\mu\text{g}/\text{m}^3$) ²	3	4	5
Number of samples of Federal exceedances (>150 $\mu\text{g}/\text{m}^3$)	0	0	0
Particulate Matter <2.5 microns, $\mu\text{g}/\text{m}^3$, Worst 24 Hours	56.8	62.1	50.8
Number of samples above Federal standard (>35 $\mu\text{g}/\text{m}^3$)	17	18	7

¹ Maximum PM₁₀ data is taken from the Manteca-530 Fishback Rd Station monitoring results.

² Because no State monitoring data is available for the Manteca-530 Fishback Rd Station, the number of State exceedances is taken from the Stockton-Hazelton Street Station.

Source: CARB 2017a

Table 9 Emissions Inventory and Forecasts for ROG and NO_x

	Annual Average Emissions (tons/day)			
	2013	2017	2020	2022
ROG	324.4	301.6	296.4	294.8
NO _x	318.1	237.5	208.3	185.2
PM _{2.5}	63.4	60.0	60.0	59.5

Source: SJVAPCD 2016a

Table 10 Emissions Inventory and Forecasts for PM₁₀

Tons/Day	Annual Average Emissions (tons/day)			
	2000	2005	2010	2020
PM ₁₀ (All Sources)	324.0	284.6	282.4	290.3

Source: SJVAPCD 2007

h. Regulatory Setting

Air quality in the County is addressed through the efforts of various federal, state, regional, and local government agencies. The agencies primarily responsible for improving the air quality within the County include the U.S. EPA, CARB, SJVAPCD, and the SJCOG. These agencies work jointly, as well as individually, to improve air quality through legislation, regulations, planning, policy-making, education, and a variety of programs. The agencies primarily responsible for improving the air quality within San Joaquin County are discussed below, along with their individual responsibilities.

Federal

The U.S. EPA is responsible for enforcing the CAA and establishing National Ambient Air Quality Standards (NAAQS), as required under the 1977 CAA and subsequent amendments. The U.S. EPA regulates emission sources that are under the exclusive authority of the federal government, such as aircraft, ships, and certain types of locomotives. The agency has jurisdiction over emission sources outside state waters (e.g. beyond the outer continental shelf) and establishes various emission standards, including those for vehicles sold in states other than California. Automobiles sold in California must meet the stricter emission standards established by CARB.

As part of its enforcement responsibilities, the U.S. EPA requires each state with areas that do not meet the federal standards to prepare and submit a State Implementation Plan (SIP) that demonstrates the means to attain the federal standards. The SIP must integrate federal, state, and local plan components and regulations to identify specific measures to reduce pollution, using a combination of performance standards and market-based programs within the time frame identified in the SIP.

State

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. 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. CARB regulates mobile air pollution sources, such as motor vehicles. The agency is responsible for setting emission standards for vehicles sold in California and for other emission sources, such as consumer products and certain off-road equipment. CARB established passenger vehicle fuel specifications, which became effective in March 1996. In addition, the California Legislature enacted Senate Bill 656 (SB 656) to reduce public exposure of airborne particulate matter in 2003, which required CARB to develop and adopt a list of readily available, feasible, and cost-effective control measures that could be employed by CARB and local air districts. 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.

Regional and Local

The SJVAPCD is the agency responsible for monitoring and regulating air pollutant emissions from stationary, area, and indirect sources throughout the SJVAB. Under state law, the SJVAPCD is required to prepare a plan for air quality improvement for pollutants for which the SJVAPCD is in non-compliance. SJVAPCD has adopted numerous air quality plans to reduce ozone and particulate

precursor emissions since 1992. The following list provides the latest plan iterations to address attainment of different standards for which the Basin is in nonattainment (SJVAPCD 2016b, 2017):

- **2016 Plan for the 2008 8-hour Ozone Standard (adopted June 2016).** Ensures attainment of federal 2008 8-hour ozone standard (0.075 ppm) by December 31, 2031. The Ozone Plan describes a comprehensive stationary and mobile source control strategy to reduce NO_x emissions by over 60 percent between 2012 and 2031.
- **2013 Plan for the Revoked 1-Hour Ozone Standard (adopted September 2013).** Ensures attainment of the now revoked 1-hour federal ozone standard (0.124 ppm).
- **2017 PM Plans (in preparation).** Will provide a single comprehensive attainment plan that addresses multiple PM_{2.5} standards under the FCAA (1997, 2006, and 2012 federal annual PM 2.5 standards), and the 1987 federal annual PM₁₀ standard.
- **2016 Moderate Area Plan for the 2012 PM_{2.5} Standard (adopted September 2016).** Ensures attainment of the federal annual PM_{2.5} standard of 12 µg/m³ established in 2012. The Moderate Area Plan addresses the fact that attainment of the 2012 PM_{2.5} standard by 2021 is impracticable and is physically impossible given that critical mobile source regulations, such as CARB regulations for trucks, buses, and off-road engines, would not be fully implemented until 2023.
- **2015 Plan for the 1997 PM_{2.5} standard (adopted April 2015).** Ensures attainment of 1997 federal annual PM_{2.5} standard of 15 µg/m³ and 24-hour PM_{2.5} standard of 65 µg/m³.
- **2012 PM_{2.5} Plan (adopted December 2012).** Addresses federal 24-hour PM_{2.5} standard of 35 µg/m³ established in 2006.

In addition to preparing planning documents to ensure attainment of federal and state standards, the SJVAPCD sets rules and regulations to support attainment of standards and address air quality issues. Applicable rules and regulations including the following:

- **Regulation VIII – Fugitive PM₁₀ Prohibition.** This regulation requires actions to prevent, reduce, or mitigate fugitive dust emissions associated with human activities, including construction and earthmoving activities.
 - **Rule 8021 – Construction, Demolition, Excavation, Extraction, and other Earthmoving Activities.** This rule requires that appropriate measures be implemented during construction, demolition, excavation, extraction, or other earthmoving activities, to ensure that visible dust emissions (VDE) do not exceed 20% opacity. Control measure options include watering of exposed surface areas, application of chemical/organic stabilizers, constructing wind barriers, restricting vehicles from the site, and establishing a speed limit of 15 miles per hour on unpaved access/haul roads. Rule 8021 also establishes administrative requirements, such as a Dust Control Plan for residential development involving 10 acres or more of disturbed surface area, non-residential development involving 5 acres or more, or for any project that would relocate more than 2,500 cubic yards per day of bulk materials on at least three days.
- **Regulation IX – Mobile and Indirect Sources.** This regulation encompasses a number of regulations that apply to mobile and indirect sources including the following:
 - **Rule 9120 – Transportation Conformity.** This rule specifies criteria and procedures for determining the conformity of highway and transit plans and projects funded by the US DOT, MPOs, or other recipients of funds under Title 23, United States Code or the Federal Transit Act, with SJVAPCD implementation plans.

- **Rule 9410 – Employer Based Trip Reduction.** This rule requires employers with at least 100 employees to develop and implement an Employer Trip Reduction Implementation Plan (eTRIP). The rule provides a menu of measures that can be incorporated into the eTRIP to encourage employees to use alternative transportation and ridesharing, such as registering with a local rideshare agency, internal ride matching, and providing onsite food service or childcare. Each measure is allotted a certain amount of points and the employer must achieve a total of either 100 or 250 points, depending on the type of work site.
- **Rule 9510 – Indirect Source Review.** The Indirect Source Review (ISR) rule, which went into effect March 1, 2006, requires developers of new residential, commercial, and industrial projects to reduce smog-forming and particulate emissions generated by their projects. The ISR rule also applies to transportation and transit projects whose construction exhaust emissions would result in a total of two or more tons per year of NO_x or PM₁₀. The rule requires developers to reduce construction NO_x and PM₁₀ exhaust emissions by 20 percent and 45 percent, respectively, and reduce operational NO_x and PM₁₀ emissions by 33.3 percent and 50 percent, respectively, as compared to the unmitigated baseline.

County and City General Plans

A General Plan Air Quality element is required for all jurisdictions in the SJVAPCD. The Air Quality Element is intended to protect the public's health and welfare by implementing measures that allow the SJVAPCD to attain Federal and State air quality standards. To achieve this goal, the Element sets forth a number of policies and standards to reduce current pollution emissions and to require new development to include measures to comply with air quality standards. Policies include preparing local plans to achieve air quality standards, enforcing SJVAPCD regulations and guidance, monitoring air pollutants, implementing dust control practices for construction sites, and encouraging transportation alternatives to motor vehicles.

4.3.2 Impact Analysis

a. Significance Thresholds and Methodology

Significance Thresholds

The SJVAPCD has established the following significance thresholds for construction and operational emissions from individual projects:

Construction and Operational Thresholds

100 tons per year of CO
10 tons per year of NO_x
10 tons per year of ROG
27 tons per year of SO_x
15 tons per year of PM₁₀
15 tons per year of PM_{2.5}

Because the 2018 RTP/SCS is a programmatic document and would not directly generate emissions, SJVAPCD significance thresholds do not apply in determining the significance of emissions associated with the 2018 RTP/SCS. However, individual projects included in the 2018 RTP/SCS undergoing CEQA review would be subject to these thresholds.

State and federal clean air laws require that emissions of pollutants for which national or state ambient air quality standards are violated be reduced from current levels. Therefore, for the purposes of this EIR, SJCOG has determined that adoption and/or implementation of the proposed 2018 RTP/SCS (including adoption of the RTP policies, adoption of the SCS, and adoption of the transportation project list and financing plan) could result in significant adverse impacts to air quality if any of the following would occur:

1. Projected long-term emissions of criteria pollutants are greater than current emission levels;
2. Projected short-term emissions of criteria pollutants (construction of transportation projects and anticipated development) would result in substantial levels of criteria pollutant emissions;
3. Projected long-term emissions of toxic air contaminants (DPM from heavy-duty diesel trucks and other emissions from industrial activities) are greater than current emission levels;
4. Localized concentrations of toxic air contaminants at sensitive receptors (short-term and/or long-term) exceed existing conditions; and/or
5. Projected long-term emissions would be considered to be cumulatively significant if they are not consistent with the local air quality management plans and state implementation plans.

Short-Term Emissions Methodology

Emissions from construction activities represent temporary impacts that are typically short in duration and depend 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 level because such emissions are dependent on the characteristics of individual projects. However, because implementation of the 2018 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 (i.e., 2015, the baseline year utilized in traffic modeling) to the future RTP/SCS conditions in 2042, as required in CEQA Section 15126.2(a).

Air emissions from mobile sources were calculated using CARB's EMFAC 2014 model and regional vehicle miles travelled (VMT) calculated using the San Joaquin Valley Model Improvement Plan, Phase 2 (VMIP2), which incorporates land use, socioeconomic growth projections, interregional travel, and adjustments to reflect employment density, intersection density, and access to jobs and houses. EMFAC 2014 was developed by CARB and accommodates mobility assumptions (e.g., vehicle speed, delay times, average trip lengths, time of day, and total travel time) provided by VMIP2.

b. Project Impacts and Mitigation Measures

This section evaluates generalized air quality impacts associated with the 2018 RTP/SCS. Due to the programmatic nature of the 2018 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.

Threshold 1: Projected long-term emissions of criteria pollutants are considered significant if they are greater than current emission levels

IMPACT AQ-1 IMPLEMENTATION OF THE 2018 RTP/SCS WOULD REDUCE OZONE PRECURSOR AND PM_{2.5} EMISSIONS FROM MOBILE SOURCES COMPARED TO 2015 EXISTING CONDITIONS. HOWEVER, THE 2018 RTP/SCS WOULD RESULT IN INCREASED PM₁₀ EMISSIONS RELATIVE TO EXISTING CONDITIONS. IMPACTS WOULD BE SIGNIFICANT BUT MITIGABLE.

The 2018 RTP/SCS would alter mobile source emissions of criteria pollutants by implementing traffic improvement projects and promoting more compact growth with greater infill development in proximity to transit. Table 11 summarizes the emission levels (tons/day) of criteria pollutants under baseline (2015) conditions and 2042 with 2018 RTP/SCS conditions. As shown below, all criteria pollutants are expected to decrease under 2042 conditions with the project, except for PM₁₀, which would minimally increase by about 0.1 ton per day.

Table 11 Regional On-Road Motor Vehicle Emissions of Criteria Pollutants

Scenario	ROG (tons/day)	NO _x (tons/day)	PM ₁₀ (tons/day) ¹	PM _{2.5} (tons/day)
2015 SJCOG Baseline	7.2	17.3	1.2	0.61
2042 with 2018 RTP/SCS	2.0	4.2	1.3	0.53
Net change	-5.2	-13.1	+0.1	-0.08

¹ PM₁₀ includes emissions from exhaust only.

Notes: The modeling season providing the highest pollutant levels was used for each criteria pollutant: ROG (summer), NO_x (winter), PM₁₀ (annual), PM_{2.5} (winter).

SJVAPCD Rule 9510 (ISR) requires developers of new residential, commercial, and industrial projects to reduce operational NO_x and PM₁₀ emissions by 33.3 percent and 50 percent, respectively, as compared to the unmitigated baseline. In addition, SJVAPCD Rule 9410 requires employers with at least 100 employees to develop and implement an Employer Trip Reduction Implementation Plan (eTRIP) to reduce employee trips. Enforcement of these rules would reduce PM₁₀ emissions associated with implementation of the 2018 RTP/SCS. However, because individual project details are not known at this time, it is possible that impacts from development of the envisioned land use scenario would remain potentially significant even with implementation of applicable rules.

Mitigation Measure

For transportation projects under their jurisdiction, SJCOG shall implement, and transportation project sponsor agencies can and should implement, the following mitigation measure developed for the 2018 RTP/SCS program where applicable for transportation projects involving construction activities. Local agencies in the SJCOG region can and should implement this measure, where relevant, to land use projects implementing the 2018 RTP/SCS.

AQ-1 Long-term PM₁₀ Emission Reductions

Project Sponsors shall require project proponents to demonstrate compliance with SJVAPCD Rules 9510 and 9410, if applicable, prior to the issuance of grading/building permits for individual projects. In addition, implementing and local agencies shall require projects that would exceed SJVAPCD significance thresholds for operational PM₁₀ emissions after implementation of applicable rules to enter into a Voluntary Emission Reduction Agreement (VERA) with the SJVAPCD to reduce PM₁₀ emissions to below threshold level, as described in the SJVAPCD's *Guidance for Assessing and Mitigating Air Quality Impacts (GAMAQI)*. A VERA is a mitigation measure by which the project proponent provides pound-for-pound mitigation of air emissions increases through a process that funds and implements emission reduction projects by the SJVAPCD.

Significance After Mitigation

With implementation of the above mitigation, impacts related to long-term PM₁₀ emissions would be less than significant.

Threshold 2: Projected short-term emissions of criteria pollutants (from construction of transportation projects and anticipated development) are considered to be significant if they would result in substantial criteria pollutant emissions

IMPACT AQ-2 IMPLEMENTATION OF THE TRANSPORTATION PROJECTS AND LAND USE PATTERN ENVISIONED IN THE 2018 RTP/SCS WOULD INVOLVE CONSTRUCTION ACTIVITIES THAT WOULD GENERATE SHORT-TERM EMISSIONS OF CRITERIA POLLUTANTS. IMPACTS WOULD BE SIGNIFICANT BUT MITIGABLE.

Implementation of the 2018 RTP/SCS would involve construction activities related to transportation improvements, as well as general construction as part of regional growth. These construction activities would result in short-term emissions of air pollutants including ROGs, NO_x, PM₁₀, PM_{2.5} and fugitive dust from operation of construction equipment, employee and vendor vehicle trips, demolition, grading and other ground-disturbing activities, application of paint and other coatings, paving, and other activities.

Individual projects would be required to comply with SJVAPCD regulations to reduce air quality impacts associated with construction activities, such as Regulation VIII, which establishes control measures for fugitive dust, and Rule 9510 (ISE), which requires developers and transportation projects meeting applicability criteria to reduce on-site construction NO_x and PM₁₀ emissions by 20 percent and 45 percent, respectively, or pay fees to fund off-site mitigation of the remaining balance of emission reductions required. In addition, the SJVAPCD has established quantitative significance thresholds for construction emissions that would apply to individual projects undergoing CEQA review. However, given the unknown scale of construction and timing of individual projects, it is possible that construction emissions of criteria pollutant emissions could create or substantially contribute to a short-term exceedance of ambient air quality standards. Impacts would be potentially significant, but mitigable.

Mitigation Measure

For transportation projects under their jurisdiction, SJCOG shall implement, and transportation project sponsor agencies can and should implement, the following mitigation measure developed for the 2018 RTP/SCS program where applicable for transportation projects involving construction activities. Local agencies in the SJCOG region can and should implement this measure, where relevant, to land use projects implementing the 2018 RTP/SCS.

AQ-2 Short-term Criteria Pollutant Emission Reductions

Implementing and local agencies shall require project proponents to demonstrate that they have obtained all required permits from the SJVAPCD prior to the issuance of grading/building permits for individual projects and that all construction activities will continuously comply with applicable regulatory standards, including, but not limited to SJVAPCD Regulation VIII, "Control Measures for Construction Emissions of PM₁₀," and ISR. In addition, Implementing and local agencies require projects that would exceed SJVAPCD significance thresholds for construction emissions to enter into a VERA with the SJVAPCD, as described in the SJVAPCD's *GAMAQI*.

Significance After Mitigation

With implementation of the above mitigation, impacts related to short-term construction emissions from individual projects would be less than significant.

Threshold 3: Projected long-term emissions of toxic air contaminants (diesel particulate matter from heavy-duty diesel trucks and other emissions from industrial activities) are considered significant if they would be greater than current emission levels

IMPACT AQ-3 IMPLEMENTATION OF THE 2018 RTP/SCS WOULD REDUCE LONG-TERM EMISSIONS OF DIESEL PARTICULATE MATTER (DPM) FROM MOBILE SOURCES. THIS IMPACT WOULD BE LESS THAN SIGNIFICANT.

Vehicle use is associated with a number of toxic air contaminants (TACs), including DPM, benzene, 1,3-butadiene, formaldehyde, acetaldehyde, acrolein, polycyclic organic matter (POM), and naphthalene. Diesel particulate matter (DPM) is the primary TAC and is emitted in the exhaust of diesel-powered vehicles. DPM is primarily composed of very fine particles, with more than 90 percent of DPM being less than one micron in diameter. Since particles less than 2.5 microns in diameter are categorized as PM_{2.5}, this means that over 90 percent of DPM is in the form of PM_{2.5}, with less than 10 percent existing as PM₁₀; PM₁₀ emissions from mobile sources mainly result from tire wear, brake dust, and road dust being re-entrained rather than from fuel combustion. Therefore, PM_{2.5} emissions are used as a proxy for DPM emissions in this analysis. The remaining TACs are primarily ROG and generally components of vehicle exhaust, though a small portion occur as fugitive emissions that are emitted during fueling or fuel transport. Fugitive emissions of TACs are relatively minor in amount, and would not be considered likely to affect the overall rate of TAC emissions.

In order to more closely evaluate DPM emissions, PM_{2.5} emissions from heavy-duty diesel vehicles (the primary source of DPM) were estimated using the EMFAC 2014 model. Table 12 summarizes PM_{2.5} emissions from heavy-duty diesel vehicles under existing conditions and 2042 with project conditions; 2042 conditions without the project are also included for informational purposes. PM_{2.5} emissions from heavy-duty diesel vehicles would be lower in 2042 with the 2018 RTP/SCS than under existing conditions. This impact would be less than significant.

Table 12 PM_{2.5} Emissions from Heavy-Duty Diesel Vehicles

Scenario	PM _{2.5} (tons/day)
2015 SJCOG Baseline	0.26
2042 with 2018 RTP/SCS	0.11
Net change	-0.15

Notes: The modeling season providing the highest levels of criteria pollutants was used for PM_{2.5}(winter).

Mitigation Measures

No Mitigation Measures are required.

Significance After Mitigation

Impacts would be less than significant without mitigation.

Threshold 4: Localized concentrations of toxic air contaminants at sensitive receptors (short-term and/or long-term) are considered significant if they would exceed existing conditions

IMPACT AQ-4 IMPLEMENTATION OF THE 2018 RTP/SCS MAY RESULT IN INCREASED EXPOSURE OF SENSITIVE RECEPTORS TO DIESEL PARTICULATE MATTER (DPM) FROM MOBILE SOURCES. IMPACTS WOULD BE SIGNIFICANT BUT MITIGABLE.

The 2018 RTP/SCS would result in the construction of new roadways or widening of existing roadways that may occur in proximity to existing sensitive receptors. In addition, as a result of 2018 RTP/SCS policies and the selected land use scenario, the anticipated growth pattern in the SJCOG region would concentrate population adjacent to transit and other transportation facilities that could result in more people being exposed to elevated health risks and nuisance odors relative to existing conditions. Populations 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* (CARB 2011), 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. California freeway studies show about a 70 percent drop-off in particulate pollution levels at 500 feet (CARB 2005). Vehicle delay, especially along corridors near sensitive residential receptors, can also increase idling emissions and associated health risks for nearby receptors from roadways.

The CARB has several programs and regulations in place to reduce DPM and TAC emissions from mobile sources statewide, including the Diesel Risk Reduction Plan (CARB 2010) and Advanced Clean Cars Program (CARB 2017b). These programs include measures such as enforced retrofit of diesel particulate filters, replacement of older trucks and buses, requirements for lower emissions on new diesel vehicles, inspection programs, idling restrictions, and other programs for marine and off-road diesel vehicles. These programs and regulations would reduce air toxic emissions from mobile sources over the horizon of the 2018 RTP/SCS. Nevertheless, in order to achieve the greatest VMT reductions from a compact growth pattern, development must necessarily occur in close proximity to public transit and major roadway corridors. Although the precise location and density of such development is not known at this time, the proposed 2018 RTP/SCS may result in new sensitive

receptors being sited close to existing and new hazardous air pollutant sources, potentially resulting in substantial exposure to substantial hazardous air pollutant concentrations and nuisance odors. Impacts would be significant but mitigable.

Mitigation Measure

For transportation projects under their jurisdiction, SJCOG shall implement, and transportation project sponsor agencies can and should implement, the following mitigation measure developed for the 2018 RTP/SCS program where applicable. Local agencies in the SJCOG region can and should implement this measure, where relevant, to land use projects implementing the 2018 RTP/SCS.

AQ-3 Health Risk Reduction Measures

Consistent with the general guidance contained in CARB's *Air Quality and Land Use Handbook*, appropriate and feasible measures shall be incorporated into project building design for residential, school and other sensitive uses located within 500 feet, or other distance as determined by the lead agency, of freeways, heavily travelled arterials, railways and other sources of DPM, including roadways experiencing significant vehicle delays (CARB 2005). The appropriate measures shall include one or more of the following methods, as determined by a qualified professional, as applicable:

The project sponsor shall incorporate health risk reduction measures based on analysis of individual sites and project circumstances. These measures may include:

- Avoid siting new sensitive land uses within 500 feet of a freeway, railway, or other source of TACs.
- 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.
- Avoid locating 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 the freeway 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. Either HEPA filters or ASHRAE 85% supply filters should be used. Ongoing maintenance should occur.
- Retain a qualified HV consultant or Home Energy Rating Systems (HERS) 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.
- 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 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 exhaust emissions.
- Retain a qualified air quality consultant to prepare a health risk assessment (HRA) in accordance with CARB and the Office of Environmental Health and Hazard Assessment requirements to determine the exposure of project residents/occupants/users to stationary air quality pollutants prior to issuance of a demolition, grading, or building permit. Project sponsors shall implement HRA recommendations to a level which would not result in exposure of sensitive receptors to substantial pollutant concentrations (pursuant to the State CEQA Guidelines).

Significance After Mitigation

With implementation Mitigation Measure AQ-3, localized concentrations of toxic air contaminants at sensitive receptor locations would be reduced to a less than significant level.

Threshold 5: Projected long-term emissions would be considered to be cumulatively significant if they are not consistent with the local air quality management plans and state implementation plans

IMPACT AQ-5 THE 2018 RTP/SCS WOULD CONFORM WITH EMISSION BUDGETS FOR CRITERIA POLLUTANTS ESTABLISHED IN THE SIP FOR THE SJVAB. THE PROJECT WOULD BE CONSISTENT WITH THE SIP AND THERE WOULD BE NO IMPACT.

A State Implementation Plan (SIP) provides for the attainment of ambient air quality in a region on a cumulative basis. That is, it considers emissions from both mobile and stationary sources, and determines the maximum allowable quantities for emissions of air pollutants in a region. These maximum allowable quantities are known as emission budgets. Consistency with a SIP is shown through a conformity analysis, which determines if project emissions are within the approved emissions budget for the region.

A conformity analysis was performed for the 2018 RTP/SCS and found that project emissions would be within emission budgets for CO, ozone, PM₁₀, and PM_{2.5}. Therefore, the project would not conflict with the SIP. A SIP is not a single document, but rather a collection of documents including technical reports, district rules, state regulations, programs, and air quality management plans (AQMP). AQMPs are developed by the local air districts to ensure local compliance with the aims of the SIP and become part of the SIP once submitted and approved. Consequently, compliance with the applicable SIP ensures compliance with the AQMP as well. Therefore, as the 2018 RTP/SCS is in conformance with the SIP it also complies with the AQMP. The project would not conflict with the SIP or local AQMPs and there would be no impact.

Mitigation Measures

No Mitigation Measures are required.

Significance After Mitigation

There would be no impact without mitigation.

c. Cumulative Impacts

A discussion of cumulative impacts is included in Impact AQ-5. In addition, the SJCOG planning region falls within the jurisdiction of SJVAPCD, and is bordered by Stanislaus County (within the SJVAPCD) to the south, Contra Costa and Alameda Counties to the west, which fall within the jurisdiction of the Bay Area Air Quality Management District (BAAQMD), Sacramento County to the north, Amador and Calaveras Counties to the east, each having their own air pollution control district. Each of these four air districts has prepared an air quality plan to improve conditions and meet federal and state air quality standards. While each air district is primarily responsible for regulating its own emissions, the transport of emissions in one area can affect another area's ability to achieve attainment of pollutant standards. All four air districts currently exceed at least one federal and/or state air quality standard. Construction activities associated with transportation projects under the 2018 RTP/SCS, as well as the land use projects envisioned by the 2018 RTP/SCS, would create fugitive dust and ozone precursor emissions and have the potential to result in temporary adverse impacts on air quality. Although regional ozone precursors would be reduced with the 2018 RTP/SCS compared to existing 2015 conditions, regional PM₁₀ emissions would increase beyond existing conditions leading to a significant cumulative impact. However, exceedances would be mitigated to below threshold level through implementation of SJVAPCD rules and mitigation of individual project emissions to below significance threshold-level through VERAs, as needed. Therefore, the 2018 RTP/SCS would have a less than significant cumulatively considerable contribution to regional air quality impacts.

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4.4 Biological Resources

This section describes the existing biological resources within the region and evaluates the significance of the changes in biological resources that would result from development of the proposed 2018 RTP/SCS, and feasible mitigation measures to reduce these potential impacts. Sources utilized in this discussion include data provided by the US 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. Terrestrial Vegetation Communities

San Joaquin County contains a wide diversity of tree, scrub, estuarine, and herbaceous (grasslands, pastures, certain wetlands) habitat types. Thirty habitats are mapped using the CDFW - California Wildlife Habitat Relationships (CWHR) habitat classification system within San Joaquin County (CDFW, 2008). Of the thirty habitats, nine are tree dominated habitats, four are shrub dominated habitats, two are herbaceous habitats, ten are either developed, sparsely/non-vegetated or cropland habitats, and five are drainages or wetlands (see Figure 9). Because of the programmatic nature of this EIR, the habitat categories presented in Figure 9 depict a broad illustration of the CWHR types found within San Joaquin County. A description of each of these habitats adapted from *A Guide to Wildlife Habitats of California* (Mayer and Laudenslayer, 1988) is presented below. Two aquatic habitat types are also designated and are discussed in 4.4.1.b below. Note that these habitat types are generalized and site-specific variation is present throughout the county. Also note that the CWHR classification system maps habitats from a broad perspective, and in many areas it is expected that two or more habitats may intergrade with one another. Habitats that occur within populated areas also show variation owing to greater anthropogenic influences, such as the introduction of non-native plant species and non-native and feral animals.

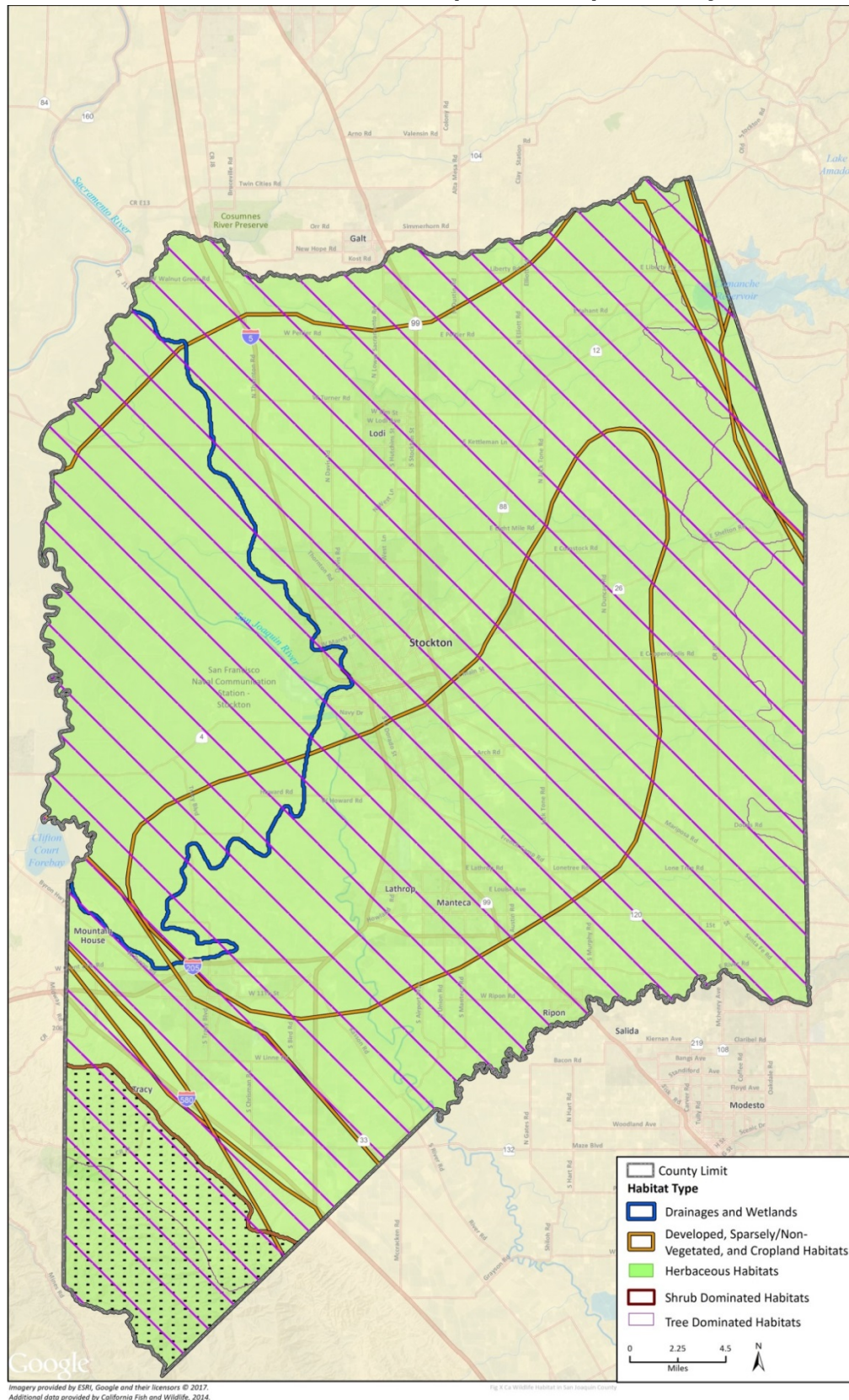
Tree-Dominated Habitats

San Joaquin County is home to a variety of hardwood, coniferous, and mixed woodlands and forests (see Figure 9). These tree-dominated habitats can support diverse wildlife populations. Riparian habitats are generally the terrestrial areas adjacent to fresh water bodies forming a vegetated corridor from stream edge to floodplain edge. Riparian habitats occur in and along the major rivers (e.g. San Joaquin, Mokelumne, Calaveras, and Stanislaus 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. The following are descriptions of types of tree-dominated habitats that occur within three miles of construction projects outlined in the 2018 RTP/SCS.

Blue Oak-foothill Pine

This habitat 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 generally tend to only have 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 habitat, with blue oak usually most abundant. In the Coast Range, associated tree

Figure 9 California Wildlife Habitat Relationships: San Joaquin County



species include coast live oak (*Quercus agrifolia*), valley oak (*Quercus lobata*), and California buckeye (*Aesculus californica*). 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 pines and even interior live oaks sometimes 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 habitat type include various buckbrush (*Ceanothus* spp.) species and manzanita (*Arctostaphylos* spp.). Other species found in this habitat type can include California coffeeberry (*Frangula californica*), poison-oak (*Toxicodendron diversilobum*) and silver lupine (*Lupinus albifrons*). This habitat is generally located in the foothills of the Central Valley, between 500 and 3,000 feet in elevation. Blue oak-foothill pine habitat typically corresponds 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 over story of scattered trees, although the canopy can be nearly closed. The canopy is dominated by broad-leaved trees 16 feet to 50 feet tall, commonly forming open savanna-like stands on dry ridges and gentle slopes. Blue oak is typically the dominant tree species. 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.

Coastal Oak Woodland

Coastal oak woodlands are common to mesic coastal foothills of California. The woodlands do not form a continuous belt, but occur in a mosaic closely associated with mixed chaparral, coastal scrub and annual grasslands. In San Joaquin County, these woodlands are commonly dominated by coast live oak. At drier sites, other species such as blue oak and foothill pine may also be interspersed. The understory of dense stands tends to be composed of shade tolerant shrubs and herbaceous plant species such as California blackberry (*Rubus ursinus*), poison oak, miner's lettuce (*Claytonia perfoliata*) and toyon. In areas with more open canopies the understory may be more dominated by grassland species such as bromes and oats. Coastal oak woodland typically corresponds to the *Quercus agrifolia* alliance as described by Sawyer et al. (2009).

Eucalyptus Forest

This habitat type ranges from single-species thickets with little or no shrubby understory to scattered trees over a well-developed herbaceous and shrubby understory. In most cases, eucalyptus groves form a dense stand with a closed canopy. Blue gum eucalyptus (*Eucalyptus globulus*) and red gum eucalyptus (*Eucalyptus camaldulensis*) are the most common eucalyptus species found in these stands. The understory of these areas tends to have extensive patches of leaf litter with limited vegetation, but may include species such as poison oak and toyon. Trees within this habitat type are typically planted in rows for use as a wind break.

Juniper

This habit is characterized as woodlands of open to dense groupings of juniper (*Juniperus* spp.) trees in the form of treelike shrubs or small trees. Denser stands are commonly associated with a grassy understory. In California, this habitat has both cismontane and transmontane associations and

usually forms a band between lower desert scrub habitat and higher sagebrush and pinyon-juniper woodlands (Sawyer et al. 2009).

Montane Hardwood

A typical montane hardwood habitat 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. Montane hardwood typically corresponds to the *Quercus chrysolepis* Forest Alliance, as described by Sawyer et al. (2009).

Sierran Mixed Conifer

Dominant trees in Sierran Mixed Conifer habitat include white fir, Douglas-fir, ponderosa pine, sugar pine, incense-cedar, and California black oak. White fir tends to be the most ubiquitous species (though most often a minor overstory component) because it tolerates shade. It occurs primarily at middle elevations in El Dorado County. Ponderosa pine dominates at lower elevations and on south slopes. Jeffrey pine commonly replaces ponderosa pine at high elevations, on cold sites, or on ultramafic soils. Red fir is a minor associate at the highest elevations. Deerbrush (*Ceanothus integerrimus*), chinquapin (*Chrysolepis chrysophylla*), squawcarpet (*Ceanothus prostrates*), mountain misery (*Chamaebatia foliolosa*), tanoak, manzanita, currants, and wood rose, are common shrub species in the shrub understory. Grasses and forbs associated with this habitat include over 100 species, including bromes, rushes (*Juncus* spp.), and purple needlegrass (*Nassella pulchra*).

Valley Oak Woodland

This habitat 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 habitat 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*). Valley oak woodland typically corresponds to the *Quercus lobata* Woodland Alliance as described by Sawyer et al. (2009).

Valley-Foothill Riparian

This habitat type is associated with drainages, particularly those with low velocity flows, flood plains, and gentle topography. This habitat type 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.

Shrub Dominated Habitats

Shrub-dominated habitats, such as chaparral and desert scrub, are comprised primarily of woody, evergreen shrubs and occurs in San Joaquin County on the inner Coast Range, south of I-580. within San Joaquin County (see Figure 9). The following are descriptions of shrub-dominated habitats that occur within three miles of construction projects outlined in the 2018 RTP/SCS.

Chamise-Redshank Chaparral

Regionally this chaparral habitat type is dominated by pure or nearly pure stands of chamise (*Adenostoma fasciculatum*). 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. Fire occurs regularly in chamise-redshank chaparral and influences habitat structure. Within the SJCOG region, chamise-redshank chaparral typically corresponds to the *Adenostoma fasciculatum* Shrubland Alliance as described by Sawyer et al. (2009).

Desert Scrub

This habitat type generally has low species diversity and is typically composed of scattered groupings of broad-leaved evergreen or deciduous shrubs. Canopy cover in this habitat is usually less than 50 percent and bare ground is often observed between plants. Creosotebush (*Larrea tridentata*) is often the dominant plant in this habitat because of its large size compared to other desert scrub plants. This habitat type is generally found below 4,000 feet.

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 is a dense, nearly impenetrable thicket. On 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. Mixed chaparral can correspond to multiple alliances as described by Sawyer et al. (2009) depending upon the species composition. These alliances can include, but are not limited to, *Ceanothus cuneatus* Shrubland Alliance and the *Arctostaphylos* sp. Shrubland Alliances.

Herbaceous Habitats

These habitats are generally comprised of areas dominated by grasses and other non-woody species. The majority of this habitat in San Joaquin County is comprised of non-native grasslands (see). Native perennial grasslands, which are dominated by perennial bunch grasses, such as purple needlegrass (*Nassella pulchra*), were historically abundant within San Joaquin County but are now currently patchy in distribution statewide. The following are descriptions of the grass and herb-dominated habitats that occur within three miles of construction projects outlined in the 2018 RTP/SCS.

Annual Grasslands

This habitat type 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 also varies considerably on a temporal scale. Grazing is a common land use within this habitat type. Common grass species include wild oats, soft chess brome (*Bromus hordeaceus*), ripgut brome (*Bromus diandrus*), and red brome (*Bromus madritensis*). Common forb species can include species of filaree (*Erodium* spp.), and bur clover (*Medicago polymorpha*). California poppy can also be quite common in this habitat type. Annual grassland can correspond to multiple alliances as described by Sawyer et al. (2009) depending upon the species composition. These alliances can include, but are not limited to, *Avena (barbata, fatua)* semi-natural stands and *Bromus (diandrus, hordeaceus)* – *Brachypodium distachyon* semi-natural stands.

Perennial Grasslands

This habitat type in California is found in coastal prairies under maritime influence and relics in habitats dominated by annual grasses and forbs. This habitat is dominated by perennial grass species such as California oatgrass (*Danthonia californica*), Pacific hairgrass (*Deschampsia holciformis*), and sweet vernalgrass (*Anthoxanthum odoratum*). Grazing by domestic livestock or wild herbivores such as Roosevelt elk can substantially alter habitat structure through reduction of plant height and removal of biomass.

Developed, Sparsely/Non-Vegetated, and Cropland Habitats

Developed and sparsely to non-vegetated habitats and croplands are abundant in the county (Figure 9). Developed habitats 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 habitats also tend to be associated with rock outcrops and cliffs. The following are descriptions of developed and sparsely/non-vegetated habitats that occur within three miles of construction projects outlined in the 2018 RTP/SCS.

Cropland

This habitat type is characterized by areas in active agriculture used to grow annual or perennial herbaceous crops, and is an entirely man-made habitat. 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 habitat classifications include, but are not limited to, dryland grain crop, irrigated hayfield crop and irrigated row and field crop, irrigated hayfield, rice, and pasture. Orchards and vineyards are classified separately

Orchard/Vineyard

This habitat type is characterized by typically open, single-species tree- or woody vine-dominated habitats. 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 stonefruits 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 habitat classifications include, but are not limited to, deciduous orchard and evergreen orchard.

Urban

This habitat type is also a completely man-made habitat comprising residential, commercial, and industrial developed areas. Plant species within urban habitats are typically comprised of ornamental plants and non-native invasive plant species, with large developed areas lacking vegetation.

Barren

This habitat type is defined by the absence of vegetation. Any habitat 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 habitats include areas of exposed parent rock or talus.

b. Drainages and Wetlands

Drainages

Several large rivers end in San Joaquin County where they flow into the Delta. The largest of these, the San Joaquin River, divides into three channels as it enters the Delta: “Old River,” “Middle River,” and the “mainstem” of the San Joaquin River. The Mokelumne, Calaveras, and Stanislaus rivers are the other major rivers in the County. Two additional major waterways, the Delta-Mendota Canal and the California Aqueduct, occur within the county.

Several creeks and tributaries are associated with the riverine watersheds including Mormon Slough, Dry Creek, Corral Hollow, Hospital Creek, Lone Tree Creek, Little Johns Creek, Duck Creek, Mosher Slough, Bear Creek, Paddy Creek, and Potter Creek. 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 delta smelt (*Hypomesus transpacificus*), riparian brush rabbit (*Sylvilagus bachmani riparius*), riparian woodrat (*Neotoma fuscipes riparia*), and California red-legged frog (*Rana draytonii*). Many of these rivers and their tributaries are also federally designated critical habitat for the delta smelt.

Wetlands

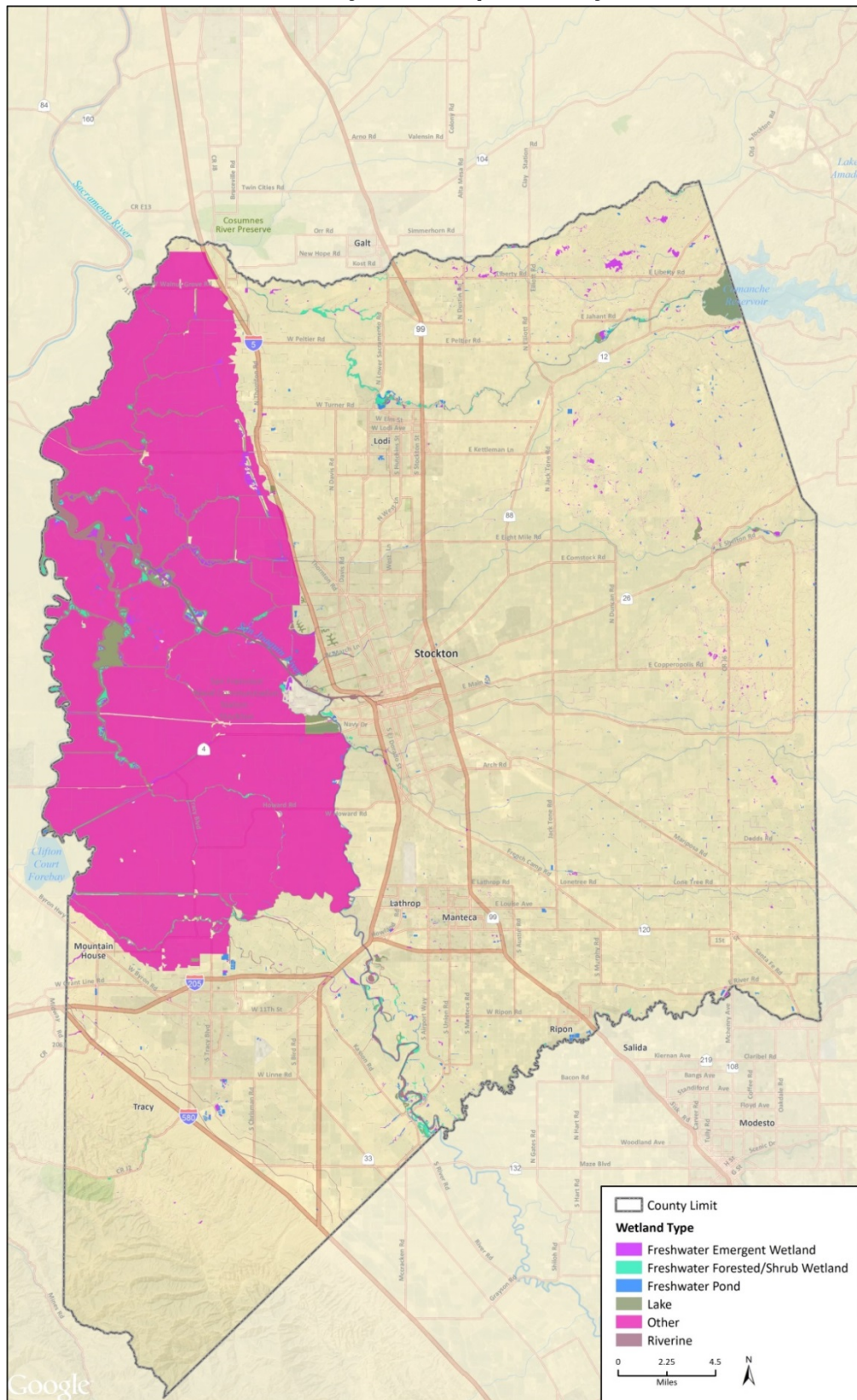
Wetlands are regarded as important biological resources both because of their rarity and because they provide a variety of ecosystem services. Several types of wetlands exist in the county, including freshwater marshes, vernal pools, and riparian habitats. A map illustrating wetlands in the San Joaquin County Planning Area is shown in Figure 10.

In addition to vernal pools, several areas within three miles of 2018 RTP/SCS construction projects contain wetlands mapped by the USFWS National Wetlands Inventory (NWI)(USFWS, 2017c). A general description of each of the classifications used in the NWI is provided below. Of those wetland types mapped by the NWI, estuarine, fresh emergent wetland, lacustrine, riverine, and saline emergent wetland habitats are also mapped by the CWHR.

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 adapted to the cycle of

Figure 10 National Wetlands Inventory: San Joaquin County



brief inundation followed by seasonal drying. Vernal pools are characterized by herbaceous plants that may begin their growth as aquatic or semi-aquatic plants and transition to a dry land environment as the pool dries, while other species germinate in the mud as the pool begins to dry. Most vernal pool plants are annual herbs, many of which are endemic to vernal pools. Wildlife species supported by vernal pools include California tiger salamander (*Ambystoma californiense*) and vernal pool fairy shrimp (*Branchinecta lynchi*).

Freshwater Emergent Wetlands

Freshwater emergent wetlands include all non-tidal waters dominated by emergent herbaceous plant species, mosses, and/or lichens. Wetlands of this type are also low in salinity. The NWI also includes in this category wetlands that lack vegetation if they are less than 20 acres in size, do not have an active wave-formed or bedrock shoreline feature, have a low water depth less than 6.6 feet. Freshwater emergent wetlands are characterized by erect, rooted herbaceous hydrophytes. Dominant vegetation is generally perennial monocots. All emergent wetlands are inundated or saturated frequently enough that the roots of the vegetation prosper in an anaerobic environment. The wetlands 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 include non-tidal waters that are dominated by trees and shrubs, with emergent herbaceous plants, mosses and/or lichens. The NWI also includes within this category wetlands that lack vegetation can be included in this class 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 include non-tidal waters, typically less than 20 acres in size and typically with vegetative cover along its 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. This wetland type is also mapped by the CWHR and categorized as lacustrine habitat which includes vernal pools; however, we have recognized vernal pools as unique features and thus provided a separate description that was previously presented.

Lakes

Lakes are a lacustrine system which includes wetlands and deep water habitats that are 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 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.

Riverine

Riverine habitats are stream systems that include 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 drainages as previously described.

c. Sensitive Natural Communities

The California Natural Diversity Database (CNDDB) lists eight natural communities that occur within the San Joaquin County (CDFW 2017b). These sensitive communities are also listed in Table 13 below. 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 (CDFW 2010). 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. Because this analysis is at the county level and programmatic, vegetation mapping and analysis at the alliance and association level is not available at this time, and would need to be conducted at the project level.

Table 13 Sensitive Communities Documented within San Joaquin County

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 Claypan Vernal Pool
Northern Hardpan Vernal Pool
Valley Oak Woodland
Source: CNDDB (CDFW, 2017b)

d. Special Status Plants and Animals

For the purpose of this EIR, special-status species are those plants and animals listed, proposed for listing, or candidates for listing as threatened or endangered by the U.S. Fish and Wildlife Service (USFWS) under the federal Endangered Species Act; 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. The CNDDB also provides records of other special animals that CDFW is tracking, but are not currently designated a special-status. Because of the programmatic nature of the analysis and the duration in which the 2018 RTP/SCS will be implemented, these species were also included as “special-status” considering the CDFW is currently collecting data and tracking these species and therefore there is potential for their status to be elevated in the future. Additionally, special-status plants with California Rare Plant Rank (CRPR) of 1 through 4 were included. CDFW standards state that plants with a CRPR 1A, 1B, 2A, and 2B may meet definitions of rare or endangered under CEQA Sections 15380 (b) and (d) (CDFW 2017c). By CNPS standards, the plants of CRPR Ranks 1A, 1B, 2A and 2B meet the definitions of Sections 2062 and 2067 (CESA) of the California Fish and Game Code, and are eligible for state listing, thus should be considered under CEQA §15380. According to CDFW, “In general, CNPS Rank 3 plants (plants about which more information is needed) and Rank 4 plants

(plants of limited distribution) may not warrant consideration under CEQA §15380. These plants may be included on special-status plant lists such as those developed by counties where they would be addressed under CEQA §15380. Factors such as regional rarity vs. statewide rarity should be considered in determining whether cumulative impacts to a Rank 4 plant are significant even if individual project impacts are not.” Due to the programmatic nature of this analysis and the duration in which the 2018 RTP/SCS will be implemented, the evaluation of Rank 3 and 4 species in context of type localities, unique vegetation types, and local designation of special-status would need to be completed on a case by case basis and requires site-specific knowledge of the vegetation type in which the plant occurs on a given site. Thus, for this analysis, all plants with a CRPR rank are included.

Plants with a CRPR of 1, 2, 3, and 4, which are defined as:

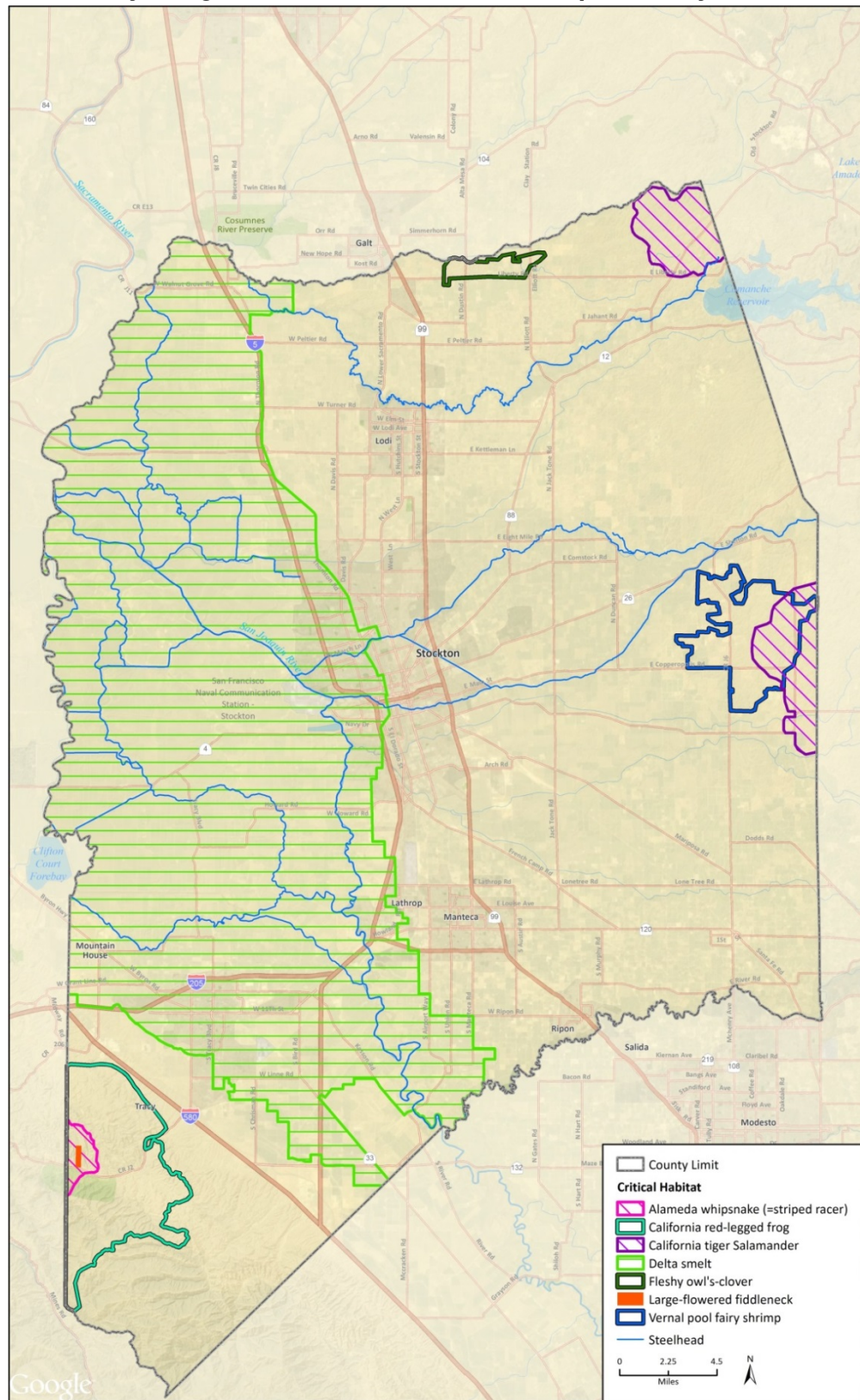
- CRPR 1A = Plants presumed extinct in California;
- CRPR 1B.1 = Rare or endangered in California and elsewhere; seriously endangered in California (over 80 percent of occurrences threatened/high degree and immediacy of threat);
- CRPR 1B.2 = Rare or endangered in California and elsewhere; fairly endangered in California (20-80 percent occurrences threatened);
- CRPR 1B.3 = Rare or endangered in California and elsewhere, not very endangered in California (<20 percent of occurrences threatened or no current threats known);
- CRPR 2 = Rare, threatened or endangered in California, but more common elsewhere;
- CRPR 3 = Plants needing more information (most are species that are taxonomically unresolved; some species on this list meet the definitions of rarity under CNPS and CESA);
- CRPR 4.1 = Plants of limited distribution (watch list), seriously endangered in California;
- CRPR 4.2 = Plants of limited distribution (watch list), fairly endangered in California (20-80 percent occurrences threatened); and
- CRPR 4.3 = Plants of limited distribution (watch list), not very endangered in California.

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. Species of Special Concern 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 consider sensitive as described under the CEQA Appendix G questions.

Queries of the USFWS Information, Planning, and Conservation website (IPaC) (USFWS, 2017b), CNDDDB (CDFW, 2017b), and California Native Plant Society (CNPS) Online Inventory of Rare and Endangered Plants of California (CNPS, 2017) were conducted to obtain comprehensive information regarding state and federally listed species considered to have potential to occur within San Joaquin County. Federally designated critical habitat for seven species also occurs in San Joaquin County (Figure 11).

San Joaquin County is home to several species protected by federal and state agencies. Special-status animal species can be found in a variety of habitats within the county. The CNDDDB (CDFW, 2017b), CNPS (2017), and USFWS IPaC (USFWS, 2017b) together list 89 special-status plant and animal species (34 plant species [including CRPR 3 and 4] and 55 animal species [inclusive of special

Figure 11 Federally Designated Critical Habitat: San Joaquin County



animals]) that occur within San Joaquin County. The status and habitat requirements of those species are presented in Appendix D.

e. 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* (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.

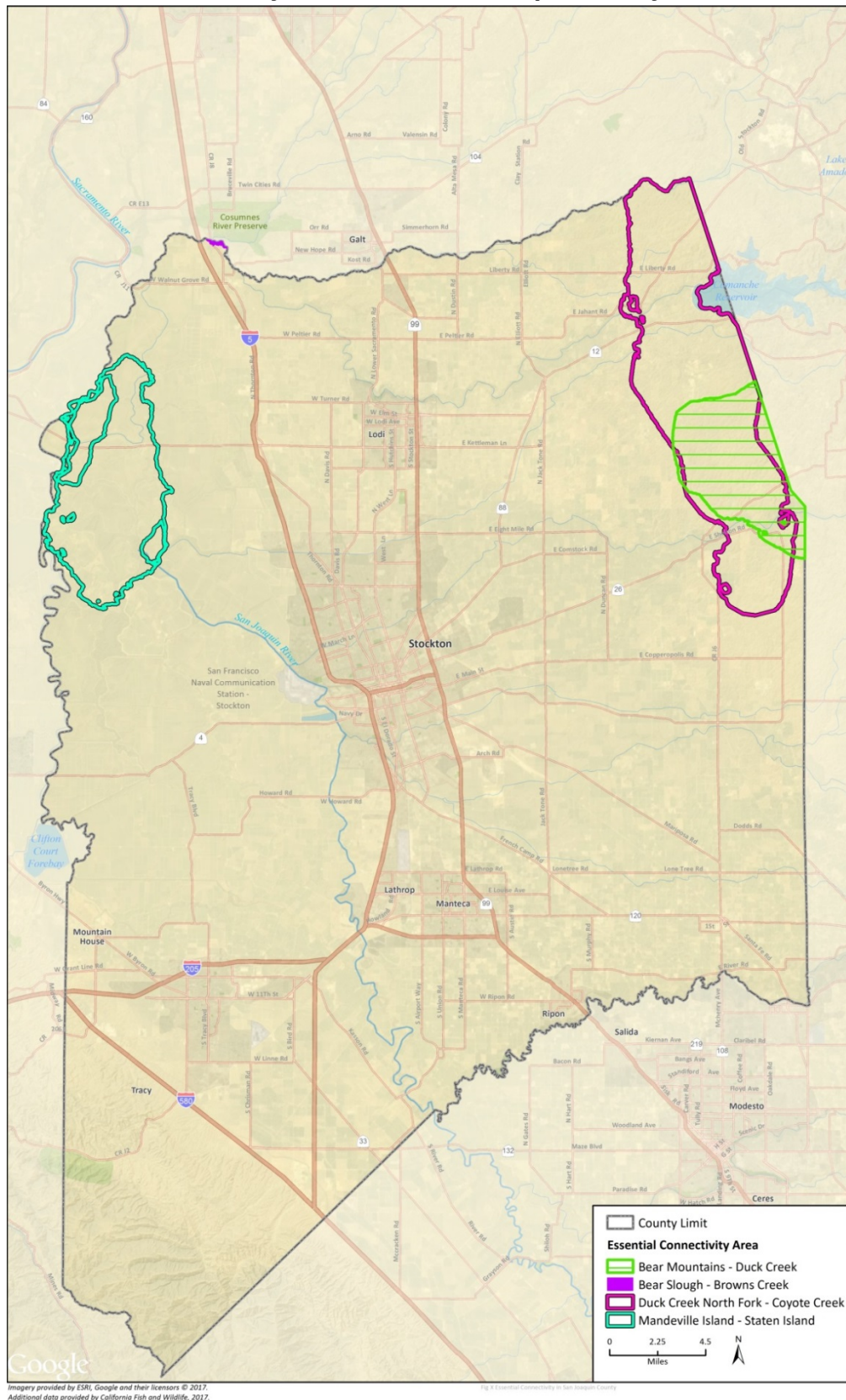
Four ECAs are mapped within San Joaquin County (see Figure 12). The Mandeville Island-Staten Island ECA is located in the northwestern portion of the County in the Delta. The Bear Slough-Browns Creek ECA is also located in the northwestern portion of the County near the Consumes River Preserve. The remaining two ECAs, Bear Mountains-Duck Creek ECA and Duck Creek North Fork-Coyote Creek ECA overlap each other in the northeastern portion of the County near Comanche Reservoir.

Small scale corridors important to wildlife movement are also present within the county, many of which are not mapped as ECAs. These include the various rivers, creeks, drainages and other topographic features that facilitate movement, such as the San Joaquin, Mokelumne, and Calaveras Rivers and other drainages as depicted in Figure 12. These corridors provide a means to facilitate regional connectivity for a number of wildlife species as a wildlife corridor.

f. Regulatory Framework

Federal, state, and local authorities under a variety of statutes and guidelines share regulatory authority over biological resources. The primary authority for general biological resources lies within the land use control and planning authority of local jurisdictions, which in this instance is San

Figure 12 Essential Connectivity Areas within San Joaquin County



Joaquin County. The CDFW is a trustee agency for biological resources throughout the state under CEQA and also has direct jurisdiction under the California Fish and Game Code (CFGC), which includes, but is not limited to, resources protected by the State of California under CESA.

Federal

United States Fish and Wildlife Service

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). The USFWS and National Marine Fisheries Service (NMFS) share responsibility for implementing the Federal Endangered Species Act (FESA) (16 USC § 153 et seq.). The USFWS generally implements the FESA for terrestrial and freshwater species, while the NMFS implements the FESA for marine and anadromous species. Projects that would result in “take” of any federally listed threatened or endangered species are required to obtain permits from the USFWS and/or NMFS through either Section 7 (interagency consultation with a federal nexus) or Section 10 (Habitat Conservation Plan) of FESA, depending on the involvement by the federal government in permitting and/or funding of the project. The permitting process is used to determine if a project would jeopardize the continued existence of a listed species and what measures would be required to avoid jeopardizing the species. “Take” under federal definition means to harass, harm (which includes habitat modification), pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct. Proposed or candidate species do not have the full protection of FESA; however, the USFWS and NMFS advise project applicants that they could be elevated to listed status at any time.

National Marine Fisheries Service

The NMFS is a component of the National Oceanic and Atmospheric Administration (NOAA) and has jurisdiction over projects in which federally-listed marine or anadromous fish may be affected, including steelhead, Coho salmon, and tidewater goby.

United States Army Corps of Engineers

Under Section 404 of the Clean Water Act, the U.S. Army Corps of Engineers (USACE) 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. The USACE also implements the federal policy embodied in Executive Order 11990, which is intended to result in no net loss of wetlands. In achieving the goals of the Clean Water Act, the USACE seeks to avoid adverse impacts and offset unavoidable adverse impacts on existing aquatic resources. Any discharge into wetlands or other “waters of the United States” that are hydrologically connected and/or demonstrate a significant nexus to jurisdictional waters would require a 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 through compensatory mitigation involving creation or enhancement of similar habitats.

State

California Department of Fish and Wildlife

The CDFW derives its authority from the Fish and Game Code of California. The CESA (Fish and Game Code Section 2050 et. seq.) prohibits take of State-listed threatened and endangered species. Take under CESA is restricted to direct harm of a listed species and does not prohibit indirect harm by way of habitat modification. The CDFW additionally prohibits take for species designated as Fully Protected under the CFGC under various sections.

California Fish and Game Code sections 3503, 3503.5, and 3511 describe unlawful take, possession, or destruction of birds, nests, and eggs. Fully protected birds (CFGF 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. The CDFW also has authority to administer the Native Plant Protection Act (NPPA) (CFGF 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).

Lakes, ponds, perennial and intermittent streams and associated riparian vegetation, when present, also fall under the jurisdiction of the CDFW. Section 1600 et seq. of the Fish and Game Code (Lake and Streambed Alteration Agreements) gives the CDFW regulatory authority over work within the bed or bank of a lake or stream consisting of, but not limited to, the diversion or obstruction of the natural flow or changes in the channel, bed, or bank of any river, stream or lake.

State and Regional Water Board

The State Water Resources Control Board (SWRCB) and each of nine local Regional Water Quality Control Boards (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. The SWRCB has issued general Waste Discharge Requirements (WDRs) regarding discharges to “isolated” waters of the State (Water Quality Order No. 2004-0004-DWQ, Statewide General Waste Discharge Requirements for Dredged or Fill Discharges to Waters Deemed by the U.S. Army Corps of Engineers to be Outside of Federal Jurisdiction). The local RWQCB enforces actions under this general order for isolated waters not subject to federal jurisdiction, and is also responsible for the issuance of water quality certifications pursuant to Section 401 of the CWA for waters subject to federal jurisdiction.

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 shall be constructed so that they do not present a barrier to fish passage.

Regional and Local

General Plans are created by cities and counties to guide the growth and land development of their communities. As such, General Plans typically contain elements which address protection of

biological resources. Typically, these elements consist of goals, policies and actions that protect natural resources, such as environmentally sensitive habitats, special-status species, native trees, creeks, wetland, and riparian habitats. Local jurisdictions approve development as long as it is consistent with those elements of the General Plan.

Some resources are afforded protection via local ordinances such as those that protect trees, riparian corridors, and environmentally sensitive habitats. The County and cities within the SJCOG region have municipal codes which protect natural resources and addresses compliance with environmental regulations.

San Joaquin County General Plan

The Natural and Cultural Resources Element of the San Joaquin County General Plan includes goals to protect the biological resources found within the county. The goals and policies of the San Joaquin County General Plan are aimed at protecting and conserving listed species and their habitat, critical habitat, the Delta, and river environments. In addition, the San Joaquin County General Plan includes a policy requiring the County to protect, preserve, and enhance important natural resource habitat, biological diversity, and the ecological integrity of natural systems in the County.

San Joaquin County Multi-Species Habitat Conservation and Open Space Plan

The San Joaquin County Multi-Species Habitat Conservation and Open Space Plan (SJMSCP 2000) was adopted by the San Joaquin Transportation Authority on November 14, 2000. The key purpose of the SJMSCP is to provide a strategy for balancing the need to conserve Open Space and the need to Convert Open Space to non-Open Space uses while protecting the region's agricultural economy; preserving landowner property rights; providing for the long-term management of plant, fish, and wildlife species, especially those that are currently listed, or may be listed in the future, under the Federal Endangered Species Act (ESA) or the California (CESA); providing and maintaining multiple open-spaces which contribute to the quality of life of the residents of San Joaquin County; and accommodating a growing population while minimizing costs to Project Proponents and society at large. The SJMSCP is a 50 year plan, and the Plan is based on a 50 year planning horizon.

A Habitat Conservation Plan (HCP) is a federal and/or state planning document that is prepared pursuant to Section 10 of the Federal Endangered Species Act (FESA) and Section 2081 of the California Endangered Species Act (CESA). An approved HCP within a defined plan area allows for the incidental take of species and habitat that are otherwise protected under FESA and CESA during development activities.

A Natural Community Conservation Plan (NCCP) is another state planning document administered by CDFW. An approved NCCP within a defined plan area allows for the incidental take of species and habitat that are otherwise protected under CESA during growth and development activities.

BACKGROUND

The key purpose of the San Joaquin County Multi-Species Habitat Conservation and Open Space Plan (SJMSCP), is to provide a strategy for balancing the need to conserve Open Space and the need to Convert Open Space to non-Open Space uses while protecting the region's agricultural economy; preserving landowner property rights; providing for the long-term management of plant, fish and wildlife species, especially those that are currently listed, or may be listed in the future, under the Federal Endangered Species Act (ESA) or the California Endangered Species Act (CESA); providing and maintaining multiple- use Open Spaces which contribute to the quality of life of the residents of

San Joaquin County; and accommodating a growing population while minimizing costs to Project Proponents and society at large.

San Joaquin County's past and future (2001–2051) growth has affected and will continue to affect 97 special status plant, fish and wildlife species in 52 vegetative communities scattered throughout San Joaquin County's 1,400+ square miles and 900,000+ acres, which include 43 percent of the Sacramento-San Joaquin Delta's Primary Zone. The SJMSCP, in accordance with ESA Section 10(a)(1)(B) and CESA Section 2081(b) Incidental Take Permits, provides compensation for the conversion of open space to non-open space uses which affect the plant, fish and wildlife species covered by the Plan, hereinafter referred to as "SJMSCP Covered Species." In addition, the SJMSCP provides compensation to offset the impacts of Open Space land Conversions on non-wildlife related resources such as recreation, agriculture, scenic values and other beneficial Open Space uses.

The SJMSCP compensates for Conversions of Open Space for the following activities: urban development, mining, expansion of existing urban boundaries, non-agricultural activities occurring outside of urban boundaries, levee maintenance undertaken by the San Joaquin Area Flood Control Agency, transportation projects, school expansions, non-federal flood control projects, new parks and trails, maintenance of existing facilities for non-federal irrigation district projects, utility installation, maintenance activities, managing Preserves, and similar public agency projects. These activities will be undertaken by both public and private individuals and agencies throughout San Joaquin County and within the County's incorporated cities of Escalon, Lathrop, Lodi, Manteca, Ripon, Stockton, and Tracy. Public agencies including Caltrans (for transportation projects), and the San Joaquin Council of Governments (for transportation projects) also will undertake activities which will be covered by the SJMSCP.

Species coverage will be variable under the SJMSCP and will range from full coverage under federal and state law to CEQA coverage only. The 97 SJMSCP Covered Species include 25 state and/or federally listed species. The SJMSCP Covered Species includes 27 plants (six listed), four fish (two listed), four amphibians (one listed), four reptiles (one listed), 33 birds (seven listed), 15 mammals (three listed), and 10 invertebrates (five listed).

IMPLEMENTATION

SJCOG Inc. administers the SJMSCP, a voluntary mitigation plan, and holds the mitigation land. Project applicants are given the option of participating in the SJMSCP as a way to streamline compliance with required local, state, and federal laws regarding biological resources, and typically avoid having to approach each agency independently. According to the SJMSCP, adoption and implementation by local planning jurisdictions provides adequate compensation and mitigation for impacts to plants, fish, and wildlife. SJMSCP-permitted activities within the boundaries of San Joaquin County fulfill conservation and open space obligations and policies of local general plans, resolution, ordinances, and other regulations as they pertain to plants, fish, and wildlife. Adoption and implementation of the SJMSCP also secures compliance pursuant to the state and federal laws such as CEQA, the National Environmental Policy Act (NEPA), the Planning and Zoning Law, the State Subdivision Map Act, the Porter-Cologne Act, and the Cortese-Knox Act in regards to species covered under the SJMSCP. If an implementing agency chooses not to participate in the SJMSCP, it will be required to provide alternative mitigation in an amount and kind equal to that provided in the SJMSCP.

Applicants pay mitigation fees or provide land *in-lieu* of fees on a per-acre basis, as established by the SJCOG Inc. according to the measures needed to mitigate impacts to the various habitat and

biological resources. Different types of land require different levels of mitigation; i.e., one category requires that one-acre of a similar land type be preserved for each acre developed, while another type requires that three-acres be preserved for each acre developed. Most of the County is mapped according to these categories so that landowners, project proponents, and project reviewers are easily aware of the applicable SJMSCP fees for the proposed project.

The appropriate fees are collected or land in lieu is detained and remitted to SJCOG Inc. for administration. SJCOG Inc. uses the funds to preserve open space land of comparable types throughout the County, often coordinating with other private or public land trusts to purchase conservation easements or buy land outright for preservation. Development occurring on land that has been classified under the SJMSCP as “no-pay” would not be required to pay a fee but fulfill the biological requirements of the plan to minimize impacts to species. This category usually refers to already urbanized land and infill development areas. The fees are adjusted on an annual basis, based on qualified agricultural land sales in San Joaquin County which would meet mitigation requirements under the SJMSCP.

4.4.2 Impact Analysis

a. Methodology and Significance Thresholds

Data used for this analysis include aerial photographs, topographic maps, the CNDDDB, the CNPS online inventory of rare and endangered plants, and accepted scientific texts to identify species. Federal special-status species inventories maintained by the USFWS were reviewed in conjunction with the CNDDDB and CNPS online inventory. Potential areas of disturbance associated with the 2018 RTP/SCS were compared to the identified biological resource occurrences to determine whether an impact may occur. Other data on biological resources were collected from numerous sources, including relevant literature, maps of natural resources, and data on special-status species and sensitive habitat information obtained from the CDFW BIOS (2017a), CDFW CNDDDB (2017b), CNPS Online Inventory of Rare and Endangered Plants of California (2017), and the USFWS IPaC (2017a). The USFWS Critical Habitat Mapper (2017b) and USFWS National Wetlands Inventory (NWI; 2017c) were also queried.

Evaluation Criteria

The following thresholds from Appendix G of the State CEQA Guidelines identifies the following criteria for determining whether a project’s impacts would have a significant impact on 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 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; and/or
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.

b. Project Impacts and Mitigation Measures

The following section presents a programmatic-level discussion of the potential for impacts to sensitive biological resources from implementation of the 2018 RTP/SCS. Section 4.4.2.c summarizes the impacts associated with capital improvement projects proposed in the 2018 RTP/SCS. Due to the programmatic nature of the 2018 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 2018 RTP/SCS could result in the impacts as described in the following section. Implementing agencies have the option to participate in the San Joaquin County Multi-Species Habitat Conservation and Open Space Plan (SJMSCP) to reduce impacts to biological resources resulting from a proposed project to a level of less-than-significant if the proposed project is consistent with the SJMSCP.

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 Game or U.S. Fish and Wildlife Service

IMPACT BIO-1 IMPLEMENTATION OF TRANSPORTATION IMPROVEMENTS AND THE LAND USE SCENARIO ENVISIONED BY THE 2018 RTP/SCS MAY RESULT IN IMPACTS TO SPECIAL-STATUS PLANT AND ANIMAL SPECIES. BECAUSE MITIGATION MAY NOT FULLY REDUCE IMPACTS THEY WOULD REMAIN SIGNIFICANT AND UNAVOIDABLE.

For the purposes of this analysis, special-status plant and animal species include those designations described under Section 4.4.1.d above. Most of the transportation improvements proposed under the 2018 RTP/SCS consist of expansions of existing facilities. However, these projects could impact areas occupied by special-status plant and animal species. As mentioned above, there are 89 special-status species known to occur or with potential to occur within San Joaquin County. Twenty-five of these species are given high levels of protection by the federal government through listing under FESA or by the State government through listing under CESA or designation of Fully Protected status (animals only). The remaining species shown in Appendix D are protected through CEQA and/or through local ordinances. Most special-status species have very limited ranges within the subject counties and have specific habitat requirements. Many special-status species may also tend to be associated with sensitive habitats, such as riparian habitats and drainages.

Because of the programmatic nature of the 2018 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 2018 RTP/SCS are planned and designed, site-specific environmental review will be conducted by the agencies responsible for implementing such projects. Nevertheless, some special-status species are expected

to be encountered at the locations where projects administered under the 2018 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 are within suitable habitat for species such as California red-legged frog (Federally Threatened and State SSC), delta smelt (Federally Threatened and State Endangered), riparian brush rabbit (Federally Endangered and State Endangered), and riparian woodrat (Federally Endangered and State SSC). Many of the creeks and rivers found within coastal watersheds, such as those in San Joaquin County, are considered accessible by delta smelt and currently support or have historically supported delta smelt populations (Santa Cruz County 2015b).

In addition to the rivers and creeks that may be impacted, future transportation projects under the 2018 RTP/SCS could impact upland habitats and the sensitive species that may occupy them. For example, San Joaquin kit fox (*Vulpes macrotis mutica*), a federally Endangered and State Threatened species, may be present in grassland habitats near roads where projects could occur. The federally threatened and state threatened California tiger salamander can also occupy annual grassland habitats containing small mammal burrows if such habitat is within 1.24 miles (the dispersal distance of the species) of known or potentially suitable breeding habitat. Three 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 2018 RTP/SCS area can support many species of nesting birds, including sensitive species such as the State Threatened Swainson's hawk (*Buteo swainsoni*) and the state SSC burrowing owl (*Athene cunicularia*). 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 and/or operation of projects under the 2018 RTP/SCS. Direct impacts also include habitat modification and loss such that it results in mortality or otherwise alters foraging and breeding behaviors 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 human and domestic animal (especially dog and cat) presence disrupt the normal behaviors of native animal species and foster the spread of non-native invasive plant species. Because impacts to protected species could still occur, even with implementation of the mitigation measures listed below, these impacts would remain potentially significant.

Mitigation Measures

Implementing agencies that choose to participate in the San Joaquin County Multi-Species Habitat Conservation and Open Space Plan (SJMSCP) can reduce impacts to biological resources resulting from a proposed project to a level of less-than-significant if the proposed project is consistent with the SJMSCP.

SJCOG shall, and transportation project sponsor agencies can and should, implement the following mitigation measures for applicable transportation projects identified in Appendix B. Municipalities in the San Joaquin County can and should implement these measures, where relevant to land use

projects implementing the 2018 RTP/SCS. Project-specific environmental documents may adjust these mitigation measures as necessary to respond to site-specific conditions.

BIO-1(a) Biological Resources Screening and Assessment

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 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 CDFW, 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 2018 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 SJCOG, and/or the local jurisdiction overseeing the project for approval. The restoration plan shall include, at a minimum, the following components:

- Description of the project/impact site (i.e., location, responsible parties, areas to be impacted by habitat type);
- Goal(s) of the compensatory mitigation project [type(s) and area(s) of habitat to be established, restored, enhanced, and/or preserved; specific functions and values of habitat type(s) to be established, restored, enhanced, and/or preserved];
- Description of the proposed compensatory mitigation site (location and size, ownership status, existing functions and values);
- Implementation plan for the compensatory mitigation site (rationale for expecting implementation success, responsible parties, schedule, site preparation, planting plan);
- Maintenance activities during the monitoring period, including weed removal as appropriate (activities, responsible parties, schedule);
- Monitoring plan for the compensatory mitigation site, including no less than quarterly monitoring for the first year (performance standards, target functions and values, target acreages to be established, restored, enhanced, and/or preserved, annual monitoring reports);
- Success criteria based on the goals and measurable objectives; said criteria to include numeric criteria to be selected based on the scale of the restoration effort and the restoration technique used:
 - At least 80 percent survival of container plants, and/or
 - Successful establishment the required number of individuals planted from seed to meet required replacement ratios; and/or
 - Sampling-based recruitment/survival criteria to achieve vegetative cover or total number of surviving individuals equal to at least 70 percent of the equivalent metric in reference sites for the same habitat type; sampling-based criteria must use a scientifically valid vegetation sampling method ;
- An adaptive management program and remedial measures to address any shortcomings in meeting success criteria;
- Notification of completion of compensatory mitigation and agency confirmation; and
- Contingency measures (initiating procedures, alternative locations for contingency compensatory mitigation, funding mechanism).

BIO-1(d) Endangered/Threatened Species Habitat Assessment and Protocol Surveys

Specific habitat assessment and survey protocol surveys are established for several federally and/or state endangered or threatened species. 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 re-design the project in coordination with a qualified biologist to avoid impacting occupied/presumed occupied habitat to the maximum extent feasible. Disturbance limits shall have bright orange protective fencing installed at least 50 feet beyond their extent, or other distance as approved by a qualified biologist, to protect the habitat. If occupied or presumed occupied habitat cannot be avoided, the implementing agency shall provide the total acreages for habitat that would be impacted prior to the issuance of construction permits/approvals. The implementing agency shall purchase credits at a USFWS, and/or CDFW approved conservation bank and/or establish conservation easements or funds for acquisition of conservation easements as compensatory mitigation to offset impacts to federal and/or state listed species habitat.

Compensatory mitigation shall be provided at the following ratio's for permanent impacts in accordance with the *San Joaquin County Multi-Species Habitat Conservation and Open Space Plan* (SJMSCP 2000) of not less than 1:1 (area mitigated: area impacted) for agricultural habitat lands and 3:1 for natural lands (non-wetland). 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 the implementing agency establishes conservation easement(s) (on- and/or off-site) to serve as compensatory mitigation for federal and/or state listed species habitat impacts, compensatory mitigation areas shall have a restrictive covenant prohibiting future development/disturbance and shall be managed in perpetuity to encourage persistence and enhancement of the preserved target species. Compensatory mitigation lands cannot be located on land that is currently held publicly for resource protection. The compensatory mitigation areas shall be managed by a conservation lands management entity or other qualified easement holder. In addition, 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 for approval.

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 should 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 preactivity 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 work day, 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 BRA, 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

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 August 31; however, buffers may be relaxed earlier than August 31 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) Worker Environmental Awareness Program (WEAP)

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.

Significance After Mitigation

Compliance with the above mitigation measures and all existing state, local and/or federal regulations would reduce impacts to a less than significant level.

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 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 IMPROVEMENTS AND THE LAND USE SCENARIO ENVISIONED BY THE 2018 RTP/SCS MAY RESULT IN IMPACTS TO SENSITIVE HABITATS, INCLUDING FEDERALLY PROTECTED WETLANDS. THIS IMPACT WOULD BE SIGNIFICANT BUT MITIGABLE.

Transportation improvement projects and land use development that may be implemented under the 2018 RTP/SCS have the potential to impact sensitive habitats, including riparian areas and wetlands, as mapped on Figure 10. Due to the programmatic nature of this analysis, the extent and severity of the impacts is currently unknown. Some examples of potential impacts include, but are not limited to: construction and reconstruction/widening of bridges over rivers and creeks, including the San Joaquin River, Mormon Slough, Little Johns Creek, and Duck Creek. These types of projects would have potential to impact riparian areas, as well as water bodies. In addition, projects such as multiuse trails and bike paths may also involve development along riparian corridors or construction of bridges across rivers and creeks. 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.

Direct impacts to sensitive habitats include loss of habitat during construction of individual projects. 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 2018 RTP/SCS would concentrate development primarily within existing urbanized areas. As a result, future infill and TOD projects are likely to result in only limited impacts to riparian habitat or sensitive habitat, though areas that have been relatively free of ground disturbance may contain sensitive native habitats such as Elderberry Savanna, Northern Claypan Vernal Pool, Northern Hardpan Vernal Pool, Valley Oak Woodland, 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

Implementing agencies that choose to participate in the San Joaquin County Multi-Species Habitat Conservation and Open Space Plan (SJMSCP) can reduce impacts to biological resources resulting from a proposed project to a level of less-than-significant if the proposed project is consistent with the SJMSCP.

SJCOG and transportation project sponsor agencies can and should implement the following mitigation measures for applicable transportation projects identified in Appendix B. San Joaquin County and cities within the county can and should implement these measures, where relevant to land use projects implementing the 2018 RTP/SCS. Project-specific environmental documents may adjust these mitigation measures as necessary to respond to site-specific conditions.

BIO-2(a) Jurisdictional Delineation

If the results of measure BIO-1(a) indicates projects implemented under the 2018 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 RWQCB, a qualified biologist shall complete a jurisdictional delineation. The jurisdictional delineation shall determine the extent of the jurisdiction for each of these agencies and shall be conducted in accordance with the requirement set forth by each agency. The result shall be a jurisdictional delineation report that shall be submitted to the implementing agency, USACE, RWQCB, and CDFW as appropriate, for review and approval, and the project shall be designed to minimize impacts to jurisdictional areas to the maximum extent feasible. The delineation shall serve as the basis to identify jurisdictional areas to be protected during construction, through implementation of the avoidance and minimization identified in measure BIO-2(f).

BIO-2(b) Wetlands, Drainages, and Riparian Habitat Restoration

Impacts to jurisdictional drainages, wetlands and riparian habitat shall be mitigated in accordance with the SJMSCP at a minimum ratio of 2:1 preservation plus 1:1 creation for natural lands (vernal pools) and 1:1 creation plus 2:1 preservation for natural lands (wetlands other than vernal pools) (acres of habitat restored to acres impacted), and shall occur on-site or as close to the impacted habitat as possible. A mitigation and monitoring plan shall be developed by a qualified biologist in accordance with the restoration plan component requirements in mitigation measure BIO-1(c) above and shall be implemented for no less than five years after construction of the segment, or until the implementing agency and/or the permitting authority (e.g., CDFW or USACE) has determined that restoration has been successful. 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 shall prepare a landscape plan for that project. This plan shall indicate the locations and species of plants to be installed. 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 Vegetation Community Avoidance and Mitigation

If the results of measure BIO-1(a) indicates projects implemented under the 2018 RTP/SCS would impact sensitive vegetation communities, impacts to sensitive communities shall be avoided through final project design modifications. Bright orange construction fencing shall be placed a minimum of 30 feet outside the edge of areas of sensitive communities that will be retained prior to any initiation of ground disturbance activities and shall remain in place until construction is complete. No vehicles, person, materials, or equipment shall be allowed in protected areas.

If the implementing agency determines that sensitive communities cannot be avoided, impacts shall be mitigated on-site or offsite at a ratio of 1:1 for permanently impacted sensitive communities (habitat restored for habitat lost). Temporarily impacted areas shall be restored to pre-project conditions. A Restoration Plan shall be developed by a qualified biologist. The restoration plan shall be implemented for a period of not less than five years. Off-site habitat acquisition and off-site restoration and/or enhancement may be considered if onsite restoration is determined as unachievable, as long as the off-site proposals result in equal compensatory value. Replacement ratios for off-site mitigation may be different than those required for onsite mitigation. The plan shall include, at a minimum, the same components in accordance with the restoration plan component requirements in mitigation measure BIO-1(c) above.

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 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 project sponsor, shall also include, but not be limited to, the following measures to prevent the introduction of invasive weed species:

- During construction, the project shall make all reasonable efforts to limit the use of imported soils for fill. Soils currently existing on-site should be used for fill material. 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.
- The erosion control/ restoration plans for the project must emphasize the use of native species that are expected to occur in the area and that are considered suitable for use at the project site.
- 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. In areas where construction is ongoing, hydroseeding shall occur where no construction activities have occurred within six (6) weeks since ground disturbing activities ceased. If exotic species invade these areas prior to hydroseeding, weed removal shall occur in consultation with a qualified biologist and in accordance with the restoration plan.

BIO-2(f) Wetlands, Drainages, and Riparian Habitat Best Management Practices During Construction

The following best management practices shall be required 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.
- All project-generated debris, building materials, and rubbish shall be removed from jurisdictional areas and from areas where such materials could be washed into them.
- 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. All workers shall be informed of the importance of preventing spills and of the appropriate measures to take should an accidental spill occur.

Significance After Mitigation

Compliance with the above mitigation measures and existing State, local and/or federal regulations would reduce impacts to a less than significant level.

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 IMPROVEMENTS AND THE LAND USE SCENARIO ENVISIONED BY THE 2018 RTP/SCS MAY IMPACT WILDLIFE MOVEMENT, INCLUDING FISH MIGRATION, AND/OR IMPEDE THE USE OF A NATIVE WILDLIFE NURSERY. THIS IMPACT WOULD BE SIGNIFICANT AND UNAVOIDABLE.

Transportation infrastructure projects in the 2018 RTP/SCS primarily involve expansion of existing facilities in urbanized or already developed areas, rather than the construction of new or extension of existing infrastructure into undeveloped portions of each county. However, expansion of existing

roadways can decrease connectivity as widening of roads creates a larger barrier and make movement more difficult, especially if roadways prior to widening and expansion were narrow enough and traffic volumes low enough that movement was still possible. Construction of new roadways and crossings (across rivers and drainages) would introduce new potential barriers to movement. In addition to the roadways themselves, transportation improvement projects could include new segments of fencing or walls that could hinder wildlife movement. Temporary disruption of wildlife movement could also occur during construction if temporary water diversions are required for projects located within creeks and rivers. In addition, construction activity and noise could also temporarily alter the behavior of wildlife in the area and therefore temporarily disrupt wildlife movement patterns.

New roadways, bike paths, and trails would also increase human activity in areas where sensitive biological resources could occur and have the potential to indirectly disrupt behavior of animals which could in turn disrupt wildlife movement patterns. In particular, proposed bridge, trail and bikeway, and new road construction projects could increase human activity (and domestic animals) in the vicinity of riparian areas, wildlife nurseries or corridors, and potentially sensitive habitats. 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.

The future land use scenario envisioned by the 2018 RTP/SCS would encourage infill and TOD within existing urbanized areas. The majority of the future infill and TOD projects would likely be in areas that provide limited or no wildlife movement. 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 related to transportation projects and impacts related to the future land use scenario envisioned by the 2018 RTP/SCS would remain potentially significant even with mitigation.

Mitigation Measures

Implementing agencies that choose to participate in the San Joaquin County Multi-Species Habitat Conservation and Open Space Plan (SJMSCP) can reduce impacts to biological resources resulting from a proposed project to a level of less-than-significant if the proposed project is consistent with the SJMSCP.

SJCOG and transportation project sponsor agencies can and should implement the following mitigation measures for applicable transportation projects identified in Appendix B. San Joaquin County and cities within the county can and should implement these measures, where relevant to land use projects implementing the 2018 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 SJCOG 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.

Significance After Mitigation

Compliance with the above mitigation measures and existing State, local and/or federal regulations would reduce impacts to a less than significant level.

Threshold 5: 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 2018 RTP/SCS WOULD NOT CONFLICT WITH ANY LOCAL POLICIES OR ORDINANCES PROTECTING BIOLOGICAL RESOURCES, SUCH AS A TREE PRESERVATION POLICY. THIS IMPACT WOULD BE LESS THAN SIGNIFICANT.

Most municipalities in San Joaquin County 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 (i.e., heritage oaks) 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 2018 RTP/SCS would occur and therefore there is potential for conflict with local ordinances and/or policies. Most of the transportation projects in the 2018 RTP/SCS are expansions or maintenance of existing roads. 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.

All future development projects potentially occurring within local jurisdictions as well as the transportation projects proposed for implementation under the 2018 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 potentially 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 approved development projects under the future land use scenario as well as proposed transportation project to conflict with local policies or ordinances protecting biological resources is considered less than significant.

Mitigation Measures

No Mitigation Measures are required.

Significance After Mitigation

Impacts would be less than significant without mitigation.

Threshold 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

IMPACT BIO-5 IMPLEMENTATION OF THE TRANSPORTATION IMPROVEMENTS AND THE LAND USE SCENARIO ENVISIONED BY THE 2018 RTP/SCS WOULD NOT CONFLICT WITH THE PROVISIONS OF AN ADOPTED HABITAT CONSERVATION PLAN, NATURAL COMMUNITY CONSERVATION PLAN, OR OTHER APPROVED LOCAL, REGIONAL, OR STATE HABITAT CONSERVATION PLAN. IMPACTS WOULD BE SIGNIFICANT BUT MITIGABLE.

One adopted and one draft conservation plan occur within San Joaquin County. The *San Joaquin County Multi-Species Habitat Conservation and Open Space Plan* (SJMSCP 2000) was adopted by the San Joaquin Transportation Authority on November 14, 2000. The purpose of the SJMSCP is to comprehensively minimize and mitigate impacts to the County's special-status plant and wildlife species. The SJMSCP estimates an overall habitat conversion of 109,302 acres of open space land to non-open space uses through the 50-year term of the SJMSCP. The Draft Bay Delta Conservation Plan (BDCP 2014) was completed in November 2014 and is currently under public review. The purpose of the BDCP is to assist restoration of key ecosystem functions in the highly altered environment of Suisun Bay/Marsh and the Delta while providing reliable water supplies to the residents and businesses of California. The BDCP covers activities primarily associated with activities related to the development and operation of water conveyance infrastructure associated with the State Water Project and activities that could affect the covered special-status species.

The 2018 RTP/SCS would not alter land use designations in any way that would adversely affect known wildlife linkages, migration corridors, etc. within areas covered by the SJMSCP or BDCP. The small quantity of low-quality habitat loss associated with implementation of the 2018 RTP/SCS would be considered a less than significant effect as a result of the amount of similar and higher value vegetation communities and land cover types within San Joaquin County that are already held in conservation or designated as open space. Implementation of Mitigation Measures BIO-1 through BIO-3 should be applied to each future project, as appropriate, that is tiering off from this Program EIR. Adherence to Mitigation Measure BIO-1 through BIO-3 would ensure that impacts related to compliance with the SJMSCP and BDCP remain less than significant.

Mitigation Measures

Implementation of Mitigation Measures BIO-1 through BIO-3 are required.

Significance After Mitigation

Implementation of Mitigation Measures BIO-1 through BIO-3 would reduce impacts to a less than significant level.

c. Cumulative Impacts

Biological resources impacts as described above are related to: direct and indirect impacts to sensitive/special-status species or their habitat; significant impacts to riparian, wetland, or other sensitive natural communities; or interference with wildlife movement. Implementation of the land use development pattern under the 2018 RTP/SCS could result in regional impacts on special-status species, riparian, wetland, or other sensitive natural communities, as well as wildlife movement. Similarly, development pursuant to other local and regional planning efforts within the greater cumulative impact area could also have impacts on these resources, and as a result, cumulative

impacts would be considered potentially significant. Due to the potential direct and indirect impacts that may occur as a result of the 2018 RTP/SCS, the proposed 2018 RTP/SCS would contribute considerably to this impact, and cumulatively is potentially significant.

The mitigation measures presented in Section 4.4.2.b set requirements for surveys and actions to be taken if biological resources have potential to be impacted by 2018 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 2018 RTP/SCS to cumulative impacts would reduce those impacts but would still be cumulatively considerable as biological impact could still occur.

4.5 Cultural Resources

This section analyzes impacts to historical, archaeological, and paleontological resources, as well as human remains, within the SJCOG region.

4.5.1 Setting

a. Background Setting

Prehistoric

The prehistoric populations of San Joaquin County included the Miwok in the north and Northern Valley Yokuts in the south.

Miwok populations focused their settlements alongside the waterways of the Sierra Nevada north from the Cosumnes River south to the Calaveras River and in California's central valley as far west as Mount Diablo. Miwok villages were the primary political unit and consisted of as many as two dozen to several hundred individuals. Miwok subsistence relied upon hunting, fishing, and the gathering of acorns (Levy 1978).

Northern Valley Yokuts populations were concentrated along waterways in the San Joaquin River. Settlements were typically composed of single-family dwellings, sweathouses, and ceremonial structures. Subsistence revolved around water resources in the San Joaquin Valley, with a focus on salmon and acorns (Wallace 1978).

Historic

Early explorers visited the San Joaquin valley with some frequency, though no missions or settlements were established until relatively late after European contact. Eighteenth-century explorers included Pedro Fages in 1772, Juan Bautista de Anza in 1776, and Francisco Eliza in 1793. Mission reconnaissance expeditions were led by Gabriel Moraga in 1806 and 1808, Father Ramon Abella in 1811, Jose Antonio Sanchez in 1811, and Father Narciso Duran in 1817 though no missions were ever established in California's central valley.

Jedediah Strong Smith was most likely the first American to traverse the San Joaquin Valley when he opened the Sacramento Trail in the late 1820s. He reported back to the Hudson Bay Fur Company, who founded the settlement of French Camp south of the modern city of Stockton in 1828.

Throughout the Spanish and Mexican periods, San Joaquin County remained largely unsettled. Following the gold rush, settlement of the area increased as the agricultural potential of the area was recognized and railroad development throughout the area provided direct access. When California gained statehood in 1850, San Joaquin was established as one of the original counties. The early San Joaquin Valley economy was focused on cattle-raising and dry farming. By the early 1900s, irrigation had replaced dry farming and the region emerged as a leader in the agricultural and dairy industry. Throughout the 20th and 21st centuries, San Joaquin County has remained largely agricultural.

Paleontological Resources

Paleontological resources, also known as fossils, are the remains, traces or imprints of once-living organisms preserved in rocks or sediment. Paleontological resources are commonly found in

sedimentary rock units. Paleontological sites are normally discovered in cliffs, ledges, steep gullies, or along wave-cut terraces where vertical rock sections are exposed. Fossil material may be exposed by a trench, ditch, or channel caused by construction.

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 (formations) 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. Paleontological sensitivity is derived from the known fossil data collected from the entire geologic unit, not just from a specific survey.

Invertebrate fossils in microscopic form such as diatoms, foraminifera, and radiolarians can be so prolific as to constitute major rock material in some areas. Invertebrate fossils normally are marine in origin, widespread, abundant, fairly well preserved, and predictable as to fossil sites. Therefore, the same or similar fossils can be located at any number of sites throughout central California. Vertebrate fossil sites are usually found in non-marine or continental deposits. Vertebrate fossils of continental material are usually rare, sporadic, and localized. Scattered vertebrate remains (mammoth, mastodon, horse, ground sloth, camel, and rodents) have been identified from the Pleistocene non-marine continental terrace deposits in various locations throughout the SJCOG region. Therefore, the SJCOG region contains areas of high paleontological sensitivity.

Cultural Resources Inventory

To compile a listing of recognized significant historic and prehistoric resources within San Joaquin County, information was obtained from the State Office of Historic Preservation. The statewide Historical Resources Inventory (HRI) is not available for public review according to the *California Historical Information System Information Center Rules of Operation Manual* (Section III.A). The HRI would be consulted after the determination of an Area of Potential Effect under project-level analysis of RTP/SCS transportation projects.

Table 14 presents identified cultural resources within San Joaquin County. Included in each table are sites listed online by the Office of Historic Preservation (OHP) on the National Register of Historic Places (National Register; NRHP), sites designated as a California State Landmark, sites listed in the California Register of Historical Resources (California Register, CRHR), and those that are considered California Points of Historical Interest. The NRHP, authorized by the National Historic Preservation Act (NHPA), lists the Nation's significant cultural resources. Resources listed in the NRHP are protected under the NHPA. The CRHR is maintained by the State Office of Historic Preservation and lists cultural resources important to the history of California, which are protected under CEQA. California Points of Historical Interest are resources that are of local significance. This list is limited to what is presented in the OHP's online database and is not exhaustive.

Table 14 Historical Resources in San Joaquin County

City or Community	Resource Name	National Register	State Landmark	California Register	Point of Historical Interest
Clements	Lone Star Mill		X		
French Camp	California Chicory Works		X		
French Camp	French Camp		X		
Lathrop	Eldon H. Gordon House				X
Lockeford	Elliott Cemetery				X
Lockeford	Harmony Grove Church				X
Lockeford	Liberty Cemetery				X
Lockeford	Locke House and Barn	X			
Lockeford	Locke's Meat Market	X			
Lockeford	Locke's Ford		X		
Lockeford	Old Lockeford School				X
Lodi	Hotel Lodi	X			
Lodi	Lodi Arch	X	X		
Lodi	Morse-Skinner Ranch House	X			
Lodi	Terminous Culling Chute	X			
Lodi	Theodore H. Beckmen Ranch House				X
Lodi	Women's Club of Lodi	X			
Ripon	Markham Hotel			X	
Ripon	New Hope		X		
Stockton	Hotel Stockton	X			
Stockton	Burial Place of John Brown (Juan Flaco)		X		
Stockton	Cole's Five Cypress Farm	X			
Stockton	Commercial and Savings Bank	X			
Stockton	El Dorado Elementary	X			
Stockton	Elks Building	X			
Stockton	Farmer's and Merchant's Bank				
Stockton	Fox California Theater	X			
Stockton	Benjamin Holt House	X			
Stockton	I.O.O.F. Lodge	X			
Stockton	Nippon Hospital	X			
Stockton	Oak Lawn/Shippee Home Ranch			X	
Stockton	Old Weber School	X			
Stockton	Reuel Colt Gridley Monument		X		
Stockton	Moses Rodgers House	X			
Stockton	Site of First Building in Present City of Stockton		X		
Stockton	Sperry Office Building	X			
Stockton	Sperry Union Flour Mill	X			

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City or Community	Resource Name	National Register	State Landmark	California Register	Point of Historical Interest
Stockton	Stockton Developmental Center		X		
Stockton	Stockton Savings and Loan Society Bank	X			
Stockton	Temple Israel Cemetery		X		
Stockton	Temporary Detention Camps for Japanese Americans- Stockton Assembly Center		X		
Stockton	Tretheway Block	X			
Stockton	U.S. Post Office	X			
Stockton	Weber Point		X		
Stockton	Weber School, Multi-National Multi-Lingual Center				X
Stockton	Western Pacific Railway Depot			X	
Thornton	Benson's Ferry		X		
Thornton	Site of Mokelumne City		X		
Tracy	Bank of Italy	X			
Tracy	Bank of Tracy	X			
Tracy	Carnegie		X		
Tracy	Corral Hollow		X		
Tracy	First Landing Place of Sailing Launch Comet		X		
Tracy	First Transcontinental Railroad- Site of Completion of Pacific Railroad		X		
Tracy	John Ohm House	X			
Tracy	Site of San Joaquin City		X		
Tracy	Tracy City Hall and Jail	X			
Tracy	Tracy Inn	X			
Tracy	West Side Bank	X			
Unincorporated	Site of Battle between forces under General Vallejo and San Joaquin Valley Native Americans		X		
Unincorporated	Trail of the John C. Fremont 1844 Expedition		X		
Woodbridge	I.O.O.F. Hall	X			
Woodbridge	San Joaquin Valley College		X		
Woodbridge	Site of Wood's Ferry and Wood's Bridge		X		
Woodbridge	Town of Woodbridge		X		
Woodbridge	Woodbridge Masonic Lodge No. 131	X			

Source: California Office of Historic Preservation, website, 2017

b. Regulatory Setting

A cultural resource may be designated as significant by national, State, or local authorities. In order for a resource to qualify for listing in the NRHP or the CRHR it must meet one or more identified criteria of significance. A resource may qualify for NRHP listing if it:

- a. Is associated with events that have made a significant contribution to the broad patterns of our history;
- b. Is associated with the lives of persons important in our past;
- c. Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values; or
- d. Has yielded, or may be likely to yield, information important in prehistory or history.

A cultural resource is also designated as 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; or
3. Is directly associated with a scientifically recognized important prehistoric or historic event or person.

CEQA Guidelines

Because San Joaquin County has not adopted its own guidelines for the analysis of impacts to cultural resources, the State CEQA Guidelines are appropriate for determining the significance of impacts. According to these guidelines, a “historical resource” can be defined by one of several criteria: listing or eligibility for listing in the CRHR; listing in a local register of historic resources; or historical significance according to the four NRHP criteria described above.

4.5.2 Impact Analysis

a. Methodology and Significance Thresholds

For the purpose of this discussion, the term cultural resource broadly includes historical, archaeological, and paleontological. The significance of a cultural resource impact is determined by whether that resource meets the criteria discussed above. Where the significance of a site is unknown, it is presumed to be a significant resource for the purpose of the impact evaluation in this EIR. Listings of historical resources in San Joaquin County were obtained from the State Office of Historic Preservation. Potential areas of disturbance associated with the 2018 RTP/SCS projects were compared to the identified historical sites listed on Table 14 to determine whether an impact may occur.

Appendix G of the State CEQA Guidelines identifies the following criteria for determining whether a project’s 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;
3. Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature; and/or
4. Disturb any human remains, including those interred outside of formal cemeteries.

According to the CEQA Guidelines § 15126.4(b)(3), public agencies should, whenever feasible, seek to avoid damaging effects on any historical resource of an archaeological nature. The following factors shall be considered for a project involving such an archaeological site:

- a. Preservation in place (avoidance) is the preferred manner of mitigating impacts to archaeological sites. Preservation in place maintains the relationship between artifacts and the archaeological context. Preservation may also avoid conflict with religious or cultural values of groups associated with the site.
- b. Preservation in place may be accomplished by, but is not limited to, the following:
 - Planning construction to avoid archaeological sites;
 - Incorporation of sites within parks, greenspace, or other open space;
 - Covering the archaeological sites with a layer of chemically stable soil before building tennis courts, parking lots, or similar facilities on the site.
 - Deeding the site into a permanent conservation easement.
- c. When data recovery through excavation is the only feasible mitigation, a data recovery plan, which makes provision for adequately recovering the scientifically consequential information from and about the historical resource, shall be prepared and adopted prior to any excavation being undertaken. Such studies shall be deposited with the California Historical Resources Regional Information Center. Archaeological sites known to contain human remains shall be treated in accordance with the provisions of Section 7050.5 Health and Safety Code.
- d. Data recovery shall not be required for an historical resource if the lead agency determines that testing or studies already completed have adequately recovered the scientifically consequential information from and about the archaeological or historical resource, provided that the determination is documented and that the studies are deposited with the California Historical Resources Regional Information Center.

b. Project Impacts and Mitigation Measures

This section describes generalized cultural resources impacts associated with the projects anticipated under the 2018 RTP/SCS. Due to the programmatic nature of the 2018 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 2018 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 as defined in §15064.5

IMPACT CR-1 IMPLEMENTATION OF PROPOSED TRANSPORTATION IMPROVEMENTS AND THE LAND USE SCENARIO ENVISIONED BY THE 2018 RTP/SCS COULD CAUSE A SUBSTANTIAL ADVERSE CHANGE IN OR DISTURB KNOWN AND UNKNOWN HISTORICAL RESOURCES AS DEFINED IN CEQA GUIDELINES SECTION 15064.5. IMPACTS TO HISTORICAL RESOURCES WOULD BE SIGNIFICANT AND UNAVOIDABLE.

Projects that may be located in proximity to historical resources or include repair or replacement of potentially historical structures (e.g. bridges) have the potential to directly or indirectly impact historical resources. Such improvements may alter the integrity of historical resources. Project-specific analysis would be required as individual projects are proposed.

In addition, the 2018 RTP/SCS also contains a future land use scenario that envisions infill development near transit. This land use scenario focuses future development within existing urbanized areas. There are no specific development projects pursuant to the land use scenario envisioned by the 2018 RTP/SCS identified currently, so a site-specific evaluation is not possible. However, because future infill near transit could be located near or adjacent to existing historic structures, the integrity of such structures could be indirectly or directly impacted as a result. Moreover, if future infill near transit would involve redevelopment/demolition of existing structures, it is possible that such structures could have historical significance (as determined by site-specific evaluation) given the presence of structures that are over 50 years old within the SJCOG region, particularly within existing urbanized areas. Redevelopment or demolition could result in the permanent loss of historic structures. Similarly, while proposed transportation projects would not impact known historic structures, it is possible that such projects may require reconstruction or demolition of transportation infrastructure or other structures that are over 50 years old, and which may be considered historically significant as determined by site-specific evaluation. Such reconstruction or demolition could result in the permanent loss of historic structures. Impacts would be potentially significant.

Mitigation Measures

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. Historic resources are also protected under the regulations of the National Historic Preservation Act and the Department of Transportation Act of 1966. County and city sponsored projects would be subject to local ordinance requirements, including General Plan provisions that protect cultural resources.

To minimize impacts to cultural resources, for transportation projects under their jurisdiction, SJCOG shall, and transportation project sponsor agencies can and should, implement the following mitigation developed for the 2018 RTP/SCS program where applicable for transportation projects that result in impacts to historic resources. The County and cities in the SJCOG region can and should implement these measures, where relevant to land use projects implementing the 2018 RTP/SCS.

CR-1 *Historical Resources Impact Minimization*

Prior to individual project permit issuance, the project sponsor of a 2018 RTP/SCS project involving earth disturbance or construction of permanent above ground structures or roadways shall prepare

a map defining the Area of Potential Effects (APE). This map shall indicate the areas of primary and secondary disturbance associated with construction and operation of the facility and will help in determining whether known historical resources are located within the impact zone. If a structure greater than 45 years in age is within the identified APE, a survey and evaluation of the structure(s) to determine their eligibility for recognition under State, federal, or local historic preservation 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. The evaluation shall comply with CEQA Guidelines section 15064.5(b). Study recommendations shall be implemented, which may include, but would not be limited to, the following:

- Realign or redesign projects to avoid impacts on known historic resources where possible.
- If avoidance of a significant architectural/built environment resource is not feasible, additional mitigation options include, but are not limited to, specific design plans for historic districts, or plans for alteration or adaptive re-use of a historical resource that follows the Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for Preserving, Rehabilitation, Restoring, and Reconstructing Historic Buildings.
- Comply with existing local regulations and policies that exceed or reasonably replace any of the above measures that protect historic resources.

Significance After Mitigation

Redevelopment or demolition that may be required to implement transportation improvements and/or infill development may result in the permanent loss of historic structures. While implementation of Mitigation Measure CR-1 would reduce impacts to the extent feasible, some project-specific impacts may be unavoidable. Whether this impact is significant would in part be dependent on local review and findings that determine the potential significance of historic structures that may be adversely affected by a specific project action.

Threshold 2: Cause a substantial adverse change in the significant of an archaeological resource pursuant to §15064.5

IMPACT CR-2 IMPLEMENTATION OF PROPOSED TRANSPORTATION IMPROVEMENTS AND THE LAND USE SCENARIO ENVISIONED BY THE 2018 RTP/SCS COULD CAUSE A SUBSTANTIAL ADVERSE CHANGE IN OR DISTURB KNOWN AND UNKNOWN ARCHEOLOGICAL RESOURCES AS DEFINED IN CEQA GUIDELINES SECTION 15064.5. IMPACTS TO ARCHEOLOGICAL RESOURCES WOULD BE SIGNIFICANT BUT MITIGABLE.

It is known that archeological resources are present throughout San Joaquin County. Therefore, it is possible to encounter known and unknown archaeological resources as a result of implementation of transportation improvement projects pursuant to the 2018 RTP/SCS. Many of the improvements proposed under the 2018 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 archaeological resources could be impacted. Projects that may impact previously undisturbed areas could adversely impact archaeological 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 2018 RTP/SCS contains a future land use scenario that envisions infill near transit and within existing urbanized areas. As a result, encroachment into undisturbed areas would be reduced when compared to land use scenario that does not focus future development within existing urbanized areas, thereby reducing the potential for impacts to known or unknown archaeological or paleontological resources in undisturbed areas. However, it is possible that archaeological resources could be located on or near future infill development sites. Project grading and excavation for infill sites may disturb these undiscovered resources. Impacts to archaeological resources would therefore remain potentially significant.

Mitigation Measures

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.

For transportation projects under their jurisdiction, SJCOG shall, and transportation project sponsor agencies can and should, implement the following mitigation developed for the 2018 RTP/SCS program where applicable for transportation projects that result in impacts to archeological resources. The County and cities in the SJCOG region can and should implement this measure where relevant to land use projects implementing the 2018 RTP/SCS.

CR-2 Archaeological Resources Impact Minimization

Before construction activities, project sponsors shall 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, project sponsors shall retain a qualified archaeologist to conduct archaeological surveys before construction activities. Project sponsors shall 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 (WEAP), construction monitoring by a qualified archaeologist, or avoidance of sites and preservation in place.

In the event that evidence of any prehistoric or historic-era subsurface archaeological features or deposits are discovered during construction-related earthmoving activities (e.g., ceramic shard, trash scatters, lithic scatters), all ground-disturbing activity in the area of the discovery shall be halted until a qualified archaeologist 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 project sponsor 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.

Project sponsors shall comply with existing local regulations and policies that exceed or reasonably replace any of the above measures that protect archaeological resources.

Significance After Mitigation

Implementation of Mitigation Measure CR-2 would reduce potential impacts to archaeological resources to a less than significant level.

Threshold 3: Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature

IMPACT CR-3 IMPLEMENTATION OF PROPOSED TRANSPORTATION IMPROVEMENTS AND THE LAND USE SCENARIO ENVISIONED BY THE 2018 RTP/SCS COULD CAUSE A SUBSTANTIAL ADVERSE CHANGE IN OR DISTURB KNOWN AND UNKNOWN PALEONTOLOGICAL RESOURCES AS DEFINED IN CEQA GUIDELINES SECTION 15064.5. IMPACTS TO PALEONTOLOGICAL RESOURCES WOULD BE SIGNIFICANT BUT MITIGABLE.

It is known that paleontological resources are present throughout the SJCOG region. Therefore, it is possible to encounter known and unknown paleontological resources as a result of implementation of transportation improvement projects pursuant to the 2018 RTP/SCS. Many of the improvements proposed under the 2018 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. The projects that would include the development of new infrastructure in previously undisturbed areas; it should be noted and 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 or bridge 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 2018 RTP/SCS also contains a future land use scenario that envisions infill near transit and within existing urbanized areas. As a result, encroachment into undisturbed areas would be reduced when compared to land use scenario that does not focus future development within existing urbanized areas, thereby reducing the potential for impacts to known or unknown paleontological resources in undisturbed areas. However, it is possible that paleontological resources could be located on or near future site infill sites. Project grading and excavation for infill sites may disturb these undiscovered resources. Impacts to paleontological resources would therefore be potentially significant.

Mitigation Measures

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.

For transportation projects under their jurisdiction, SJCOG shall, and transportation project sponsor agencies can and should, implement the following mitigation developed for the 2018 RTP/SCS program where applicable for transportation projects that result in impacts to paleontological

resources. The County and cities in the SJCOG region can and should implement this mitigation measure where relevant to land use projects implementing the 2018 RTP/SCS.

CR-3 Paleontological Resources Impact Minimization

The project sponsor of a 2018 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:

- **Paleontological Mitigation and Monitoring Program.** A qualified paleontologist shall prepare a Paleontological Mitigation and Monitoring Program to be implemented during ground disturbance activity. This program shall outline the procedures for construction staff Worker Environmental Awareness Program (WEAP) training, paleontological monitoring extent and duration (i.e., in what locations and at what depths paleontological monitoring shall be required), salvage and preparation of fossils, the final mitigation and monitoring report, and paleontological staff qualifications.
- **Paleontological Worker Environmental Awareness Program (WEAP).** Prior to the start of ground disturbance activity greater than two feet below existing grade, 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.** Ground disturbing activity with the potential to disturbed geologic units with high paleontological sensitivity shall be monitored on a full-time basis by a qualified paleontological monitor. Should no fossils be observed during the first 50 percent of such excavations, paleontological monitoring could be reduced to weekly spot-checking under the discretion of the qualified paleontologist. 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.
- **Salvage of Fossils.** 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 mitigation and monitoring

program. 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.

Significance After Mitigation

Implementation of Mitigation Measure CR-3 would reduce potential impacts to paleontological resources to a less than significant level.

Threshold 4: Disturb any human remains, including those interred outside of formal cemeteries

IMPACT CR-4 IMPLEMENTATION OF PROPOSED TRANSPORTATION IMPROVEMENTS AND THE LAND USE SCENARIO ENVISIONED BY THE 2018 RTP/SCS COULD RESULT IN DAMAGE TO OR DESTRUCTION OF HUMAN BURIALS; HOWEVER, REQUIRED COMPLIANCE WITH EXISTING REGULATIONS WOULD REDUCE IMPACTS TO A LESS THAN SIGNIFICANT LEVEL.

Human burials outside of formal cemeteries often occur in prehistoric archaeological contexts. Therefore, it is possible to encounter unknown human burials as a result of implementation of transportation improvement projects under the 2018 RTP/SCS. Excavation during construction activities in the SJCOG region would have the potential to disturb these resources, including Native American burials.

Human burials, in addition to being potential archaeological resources, have specific provisions for treatment in Section 5097 of the California Public Resources Code. 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. Public Resources Code §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 potential 2018 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.

Significance After Mitigation

Impacts would be less than significant without mitigation.

c. Cumulative Impacts

Development in the SJCOG region would increase under buildout of the 2018 RTP/SCS by increasing mobility and growth. The increase in growth in previously undisturbed areas contributes to regional impacts on existing and previously undisturbed and undiscovered historical, archaeological, and paleontological resources. While most cultural resources are typically site-specific, with impacts that are project-specific, others may have regional significance; for example, a historical structure that represents the last known example of its kind. For such a resource, cumulative impacts, and the contribution of the 2018 RTP/SCS to them, would be potentially significant. Mitigation measures outlined in this section would reduce impacts associated with 2018 RTP/SCS projects but would

remain significant and unavoidable. When combined with development in other areas surrounding the SJCOG region, cumulative impacts would remain significant and unavoidable, and the 2018 RTP/SCS contribution to them would be cumulatively considerable.

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4.6 Energy

This section was prepared pursuant to CEQA Guidelines Section 15126 and Appendix F of the CEQA Guidelines, which require that EIRs include a discussion of the potential energy impacts of projects, with particular emphasis on considering if the proposed Plan would result in inefficient, wasteful, and unnecessary consumption of energy.

This section discusses the energy impacts of implementing transportation projects in the proposed Plan, as well as the energy-related consequences of land use decisions that are consistent with the proposed Plan. For an analysis of greenhouse gas (GHG) production and proposed Plan impacts on climate change, please see Section 4.9, *Greenhouse Gas Emissions/Climate Change*.

4.6.1 Setting

Energy relates directly to environmental quality. Energy use can adversely affect air quality and other natural resources. The vast majority of California's air pollution is caused by burning fossil fuels. Consumption of fossil fuels is linked to changes in global climate and depletion of stratospheric ozone. 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); vehicle speeds; 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 usage of natural gas and electricity.

a. Energy Supply and Infrastructure

California's major sources of energy production mix in 2015 included 48.9 percent crude oil, 31.6 percent renewable sources, 11.3 percent natural gas, and 8.2 percent nuclear (U.S. Energy Information Administration [EIA] 2017e). Other sources of energy produced in California include nuclear electric power, natural gas, and biofuel (EIA 2015). As shown in Table 15, natural gas production in 2015 was 41,349,378 thousand cubic feet (Mcf) in San Joaquin County (California Department of Conservation, Division of Oil, Gas, and Geothermal Resources [DOGGR] 2017a) from the region's 167 active wells (DOGGR 2017b), constituting approximately 18 percent of statewide natural gas production. 2015 is used as the year to cross examine energy production and consumption across the SJCOG region and the state of California as it is the most recent year for available information for all areas and resources and 2015 represents the baseline year for this EIR.

Table 15 2015 SJCOG Oil and Natural Gas Production

Natural Resource	California	San Joaquin County	SJCOG Proportion of Statewide Production
Crude Oil (bbl)	201,284,000	0	0%
Natural Gas (Mcf)	231,060,000	41,349,378	17.8%

Sources: California Department of Conservation, Division of Oil, Gas and Geothermal Resources (DOGGR) Well Search. 2017a; United States Energy Information Administration (EIA). 2015a.

Natural gas services within the Plan Area are provided entirely by Pacific Gas & Electric (PG&E). However, electricity providers in the Plan Area include PG&E, Modesto Irrigation District (MID), Lodi Electric Utility, and the Port of Stockton. The California Public Utilities Commission (CPUC) regulates privately owned electric and natural gas companies. The CPUC has developed energy efficiency programs such as smart meters, low income programs, distribution generation programs, self-

generation incentive programs, and a California solar initiative (CPUC 2017). Additionally, the CEC maintains a power plant data base that describes all of the operating power plants in the State by county. San Joaquin County contains 22 power plants generating electricity, of which nine are natural gas-fired, six are solar-powered, four are biomass-powered, two are wind-powered, and one is hydro-powered (CEC 2017e).

Existing Transmission and Distribution Facilities

The components of transmission and distribution systems include the generating facility, switching yards and stations, primary substation, distribution substations, distribution transformers, various sized transmission lines, and the customers. The United States contains over a quarter million miles of transmission lines, most of them capable of handling voltages between 115 kilovolts (kv) and 345 kv, and a handful of systems of up to 500 kv and 765 kv capacity. Transmission lines are rated according to the amount of power they can carry, the product of the current (rate of flow), and the voltage (electrical pressure). Generally, transmission is more efficient at higher voltages.

Generating facilities, hydro-electric dams, and power plants usually produce electrical energy at fairly low voltages, which is increased by transformers in substations. From there, the energy proceeds through switching facilities to the transmission lines. At various points in the system, the energy is “stepped down” to lower voltages for distribution to customers. Power lines are either high voltage (115, 230, 500, and 765 kv) transmission lines or low voltage (12, 24, and 60 kv) distribution lines.

Overhead transmission lines consist of the wires carrying the electrical energy (conductors), insulators, support towers, and grounded wires to protect the lines from lightening (called shield wires). Towers must meet the structural requirements of the system in several ways. They must be able to support both the electrical wires, the conductors, and the shield wires under varying weather conditions, including wind and ice loading, as well as a possible unbalanced pull caused by one or two wires breaking on one side of a tower. Every mile or so, a “dead-end” tower must be able to take the strain resulting if all the wires on one side of a tower break. Every change in direction requires a special tower design. In addition, the number of towers required per mile varies depending on the electrical standards, weather conditions, and the terrain. All towers must have appropriate foundations and be available at a fairly regular spacing along a continuous route accessible for both construction and maintenance.

A right-of-way is a fundamental requirement for all transmission lines. A right-of-way must be kept clear of vegetation that could obstruct the lines or towers by falling limbs or interfering with the sag or wind sway of the overhead lines. If necessary, land acquisition and maintenance requirements can be substantial. The dimensions of a right-of-way depends on the voltage and number of circuits carried and the tower design. Typically, transmission line rights-of-way range from 100 to 300 feet in width.

The electric power supply grid within San Joaquin County is part of a larger supply network operated and maintained by PG&E that encompasses the entire northern California region. This system ties into yet a larger grid known as the California Power Pool that connects with the San Diego Gas and Electric and Southern California Edison Companies. These companies coordinate the development and operation, as well as purchase, sale, and exchange of power throughout the State of California.

Within San Joaquin County, PG&E owns most of the transmission and distribution facilities, except for those owned and maintained by Lodi Electric, MID, and the Port of Stockton. Two major 500

megawatt (MW) transmission lines pass through the county, connecting San Joaquin County to the national power grid, allowing the wheeling of power to locations where power is in demand.

b. Energy Consumption and Sources

Total energy consumption in the U.S. in 2015 was estimated at approximately 97,251 trillion Btu (EIA 2015b). In 2015, petroleum provided approximately 36.7 percent of the energy used in the U.S. (EIA 2015c). In the same year, coal provided approximately 15.98 percent of energy consumed, natural gas provided approximately 28.9 percent, nuclear energy provided approximately 8.5 percent, and total renewable sources supplied the rest at approximately 9.5 percent (EIA 2015c). On a per capita basis, California is ranked third lowest of the states in terms of energy use (197 million Btu per person), or about 43.5 percent less than the U.S.'s average per capita consumption of 348.7 million Btu per person (EIA 2017a).

Electricity and Natural Gas

In 2015, California produced 69 percent of the electricity it used. The remainder was imported from outside the state. In that year, California used 282,896.3 gigawatt hours (GWh) of electricity (California Energy Commission [CEC] 2017a), or approximately 965 trillion Btu, while a total of 196,194 GWh was produced in-state (CEC 2017b). Additionally, Californians consumed an estimated 24,505.5 million U.S. Therms, or approximately 2,278 trillion Btu of natural gas in 2015 (CEC 2017c). Table 16 illustrates the electricity and natural gas consumption in 2015 for the Plan Area.

Table 16 2015 SJCOG Electricity and Natural Gas Consumption

	Annual Consumption ¹	Proportion of Statewide Consumption	Annual Btu Equivalent (millions of Btu)	Per Capita Annual Consumption (millions of Btu)
Electricity	5,166.7	1.8%	965,242,175.6	1,334.1
Natural Gas	192.9	0.8%	17,934,684.6	24.7
Total	n/a	n/a	983,176,860.2	1,358.8

¹ Electricity consumption is quantified in Millions of Kilowatt-Hours (GWh), whereas natural gas is quantified in Millions of Btu.

Note: The per capita consumption for natural gas and electricity are determined by using 2015 data from the CEC for overall county-wide consumption and divided by the 2015 county population retrieved from the United States Census Bureau database.

Sources: CEC 2017b; CEC 2017c; U.S. Census Bureau 2017; Schremp 2017

As shown in Table 16, the Plan Area accounted for approximately 1.8 percent of the State's electricity consumption and 0.8 percent of the State's natural gas consumption in 2015 (CEC 2017b; CEC 2017c; U.S. Census Bureau 2016). With a 2015 population of 723,496 (U.S. Census Bureau 2016), the Plan Area consumed approximately 7,140 kilowatt-hours (kWh) of electricity and 265 therms (thm) of natural gas per capita, or approximately 1,358.8 million Btu per capita.

Petroleum

Petroleum fuels in the Plan Area are generally purchased by individual users such as residents and employees. While no petroleum refineries are located within the Plan Area, a local network of gas transmission and hazardous liquid pipelines exists in the Plan Area. According to the United States Department of Transportation (DOT) Pipeline and Hazardous Materials Safety Administration (PHMSA), San Joaquin County contains approximately 325 miles of natural gas transmission pipelines and 140 miles of hazardous liquid pipelines (PHMSA 2017).

Energy consumed by the transportation sector accounts for roughly 39.3 percent of California's energy demand, amounting to approximately 3,017 trillion Btu in 2015 (EIA 2017g). California's transportation sector, including on-road and rail transportation, consumed roughly 558,115,000 bbl of petroleum fuels in 2015 (EIA 2017h). Furthermore, petroleum-based fuels are used for approximately 98.5 percent of the State's transportation activity (EIA 2017h). 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 2016).

As stated in Section 4.14, *Transportation and Circulation*, approximately 6.5 billion vehicle miles were traveled within the SJCOG region in 2015. This equates to approximately 17.9 million VMT per day. Table 17 illustrates the daily and annual VMT for the SJCOG region in 2015.

Table 17 2015 Daily and Annual VMT for the SJCOG Region

Full Fleet	Daily VMT	Annual VMT
SJCOG Total	17,868,785	6,522,106,729
Source: SJCOG 2018		

As illustrated in Table 17, daily vehicle miles travelled (VMT) within the SJCOG region were estimated at approximately 17.9 million in 2015. Based on estimated gasoline and diesel consumption derived from fuel sales in the region for 2015, approximately 163 billion Btu were consumed per day in 2015, as shown in Table 18.

Table 18 2015 Fuel Consumption in the SJCOG region

	2015 Fuel Consumption (millions of gallons)	2015 Annual Fuel Use (billion Btu)	2015 Daily Energy Use (billion Btu)	2015 Daily Per Capita Energy Use (thousand Btu)
Gasoline	276.36	30,340.45	83.12	114.88
Diesel	235.00	29,953.10	80.06	100.65
Total	511.36	60,293.55	163.18	215.53

Note: Total fuel consumption was determined from data provided by CEC technical staff (Schremp 2017). Fuel use in terms of Btu was determined by applying the appropriate energy consumption factors, as provided by CEC technical staff (Schremp 2017). The per capita consumption for fuel was determined by the applying the 2015 San Joaquin County population retrieved from the United States Census Bureau database.

Note: Totals may not add up due to rounding.

Sources: Schremp 2017; United States Census Bureau 2016

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 (e.g. Low Carbon Fuel Standard and SB 32). Conventional gasoline and diesel may be replaced, depending on the capability of the vehicle, with many transportation fuels including the following:

Hydrogen

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 (two to three times

more efficient than gasoline vehicles). Currently, 34 hydrogen refueling stations are located in California; however, none are located in the SJCOG region (U.S. Department of Energy [DOE] 2017).

Biodiesel

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, but fueling stations have been slow to make it available. There are currently 10 biodiesel refueling stations in California, one of which is located in Lodi at 1126 East Pine Street (DOE 2017).

Electricity

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 on board the vehicle to power electric motors. There are currently 32 located in San Joaquin County (DOE 2017).

c. Regulatory Setting

Programs and policies at the State and national levels have emerged to bolster the previous trend towards energy efficiency, as discussed below.

Federal

Energy Policy Conservation Act (EPCA) and CAFE Standards

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 of 2007 (EISA)

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.

Clean Cities Program

The U.S. Department of Energy's (DOE) Clean Cities Program promotes voluntary, locally based government/industry partnerships for the purpose of expanding the use of alternatives to gasoline and diesel fuel by accelerating the deployment of AFVs and building local AFV refueling infrastructure. The mission of the Clean Cities Program is to advance the nation's economic, environmental and energy security by supporting local decisions to adopt practices that contribute to the reduction of petroleum consumption. The Clean Cities Program carries out this mission through a network of more than 80 volunteer coalitions, which develop public/private partnerships to promote alternative fuels and vehicles, fuel blends, fuel economy, hybrid vehicles, and idle reduction.

State

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 2017 IEPR 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.

Senate Bill X1-2: California Renewable Energy Portfolio Standard

In 2011, Governor Brown signed SB X1-2, which requires retail sellers of electricity, including investor-owned utilities and community choice aggregators, to provide at least 33 percent of their electricity supply (portfolio) from renewable sources by 2020. CPUC and CEC jointly implement the Statewide RPS program through rulemakings and monitoring the activities of electric energy utilities in the state.

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).

Energy Action Plan

The first Energy Action Plan (EAP) emerged in 2003 from a crisis atmosphere in California’s energy markets. The state’s three major energy policy agencies (CPUC, CEC, and the Consumer Power and Conservation Financing Authority [established under deregulation and now defunct]) came together to develop one high-level, coherent approach to meeting California’s electricity and natural gas needs. It was the first time that energy policy agencies formally collaborated to define a common vision and set of strategies to address California’s future energy needs and emphasize the importance of the impacts of energy policy on the California environment.

In the October 2005 *Energy Action Plan II*, CEC and CPUC updated their energy policy vision by adding some important dimensions to the policy areas included in the original EAP, such as the emerging importance of climate change, transportation-related energy issues and research and development activities. CEC adopted an update to the EAP II in February 2008 that supplements the earlier EAPs and examines the State’s ongoing actions in the context of global climate change.

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 2016, CEC updated Title 24 standards with more stringent requirements effective January 1, 2017. 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 (2016), 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 2016, 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.

Western Electricity Coordinating Council and the North American Electric Reliability Council

The Western Electricity Coordinating Council (WECC) is a voluntary consortium of electrical power providers that is responsible for coordinating and promoting electricity reliability from the Canadian provinces of Alberta and British Columbia in the north of its jurisdiction to the northern Mexican State of Baja California in the south of its jurisdiction, and the 14 western states of the United States

(WECC 2015). Both the Modesto Irrigation District (MID) and Pacific Gas & Electric (PG&E) are member organizations of the WECC. The WECC has implemented Standard BAL-STD-002-0 to require reliable operation of the power system while ensuring adequate generating capacity at all times. The WECC Standard BAL-STD-002-0 requires its providers to:

- Supply requirements for load variations;
- Replace generating capacity and energy lost due to forced outages of generation or transmission equipment;
- Meet on-demand obligations; and
- Replace energy lost due to curtailment of interruptible imports.

2016 California Gas Report

The 2016 California Gas Report presents a comprehensive outlook for natural gas requirements and supplies for California through the year 2035. This report is prepared in even-numbered years, followed by a supplemental report in odd-numbered years, in compliance with California PUC Decision D.95-01-039. The below projections in the California Gas Report are for long-term planning and do not necessarily reflect the day-to-day operational plans of the utilities.

California natural gas demand, including volumes not served by utility systems, is expected to decrease at a rate of 1.4 percent per year from 2016 to 2035. The forecast decline is due to a combination of moderate growth in the Natural Gas Vehicle (NGV) market and across-the-board declines in all other market segments: residential, commercial, electric generation, and industrial markets.

Residential gas demand is expected to decrease at an annual average rate of 0.5 percent. Demand in the commercial market is expected to decline at an annual rate of 1.0 percent, and demand in the industrial market (non-refinery) is expected to decrease at an annual rate of 1.7 percent. Aggressive energy efficiency programs make a significant impact in managing growth in the residential, commercial, and industrial markets. Gas demand in the refinery industrial market sector is forecast to decline approximately 0.34 percent per year.

Local

County Energy Conservation Strategies

The following County energy conservation strategies have been described and incorporated in the Gap Analysis of the County's 2035 General Plan:

- **Energy Strategy 1: Renewable Energy/PACE Program.** The County shall develop and implement an incentive program to encourage the installation of solar hot water heaters and solar PV on existing and new developments. The County shall establish a Property Assessed Clean Energy (PACE) (AB 811) program and for residential and commercial energy efficiency retrofit projects.
- **Energy Strategy 2: Participation in PG&E Renewable Energy.** The County shall participate in PG&E's Renewable Energy programs.
- **Transportation Strategy 1: Complete Streets.** The County shall encourage the development of complete streets.
- **Water and Wastewater Strategy 1: Water Conservation.** The County shall achieve a 20 percent reduction in water and wastewater in 2020.

- **Agriculture Strategy 1: Agricultural Equipment and Emissions.** The County shall implement the following measures pertaining to agricultural equipment and fuel efficiency:
 - Support SJVAPCD programs to fund equipment upgrades, retrofits, and replacement through the Carl Moyer heavy-duty vehicle and equipment program or other funding mechanisms (e.g., Rule 9510).
 - Work with SJVAPCD and stakeholders to identify practical and feasible options for fuel-efficient agricultural equipment.
 - Work with agricultural organizations and stakeholders to provide workshops and presentations and outreach materials focused on promoting fuel efficient farm equipment and operations and encourage participation in the Carl Moyer incentive program.
- **Agriculture Strategy 4: Agricultural Energy Use.** The County shall work with agricultural organizations, irrigation districts, and stakeholders to develop an outreach and incentives program (e.g., rebate opportunities, waive permit fees, registration amnesty program) to encourage farmers to improve the efficiency of irrigation pumps.

4.6.2 Impact Analysis

a. Methodology and Significance Thresholds

The following thresholds of significance were developed in accordance with Appendix F of the *CEQA Guidelines*, as well as based on the proposed 2018 RTP/SCS. The following Standards were used to evaluate the potential for energy impacts that may result from implementation of the 2018 RTP/SCS:

1. Result in an increase in overall per capita energy consumption relative to baseline conditions, or otherwise use energy in an inefficient, wasteful, or unnecessary manner;
2. Result in an increased reliance on fossil fuels and decreased reliance on renewable energy sources; and/or
3. Require or result in the construction of new energy facilities or the expansion of such facilities to adequately meet projected demands, the construction of which could cause a significant environmental effect.

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 2018 RTP/SCS projects, it also includes energy consumption that is not due to the 2018 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

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 baseline (2015) and 2042 VMT with and without the 2018 RTP/SCS (as analyzed in Section 4.14, *Transportation and Circulation*).

The 2015 gasoline and diesel fuel consumption data for San Joaquin County was converted to Btu (refer to Table 18) and divided by region-wide daily VMT (refer to Table 17) to derive a regional Btu/VMT conversion factor of 9,132 Btu per VMT.

It should be noted that the Btu/VMT factor is forecast to continue to decrease into the future as a result 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 2015-based factor to 2018 RTP/SCS horizon year (2042) VMT therefore provides a conservative evaluation of energy consumption, as the energy efficiency of vehicles in 2042 is likely to be higher than the 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 2018 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 19 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 19 Indirect Energy Consumption Factors

Mode	Factor (Btu/VMT)
Manufacturing	
Passenger Vehicles	1,410
Transit Buses	3,470
Roadway (Construction)	27,300
Rail (Construction)	2,108
Maintenance	
Passenger Vehicles	1,400
Transit Buses	13,142
Rail	7,060

Source: Caltrans 1983

b. Project Impacts and Mitigation Measures

This section describes generalized impacts associated with the 2018 RTP/SCS. Due to the programmatic nature of the 2018 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 2018 RTP/SCS could result in impacts as described in the following sections.

Threshold 1:	Result in an increase in overall per capita energy consumption relative to baseline conditions, or otherwise use energy in an inefficient, wasteful, or unnecessary manner
Threshold 2:	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 2018 RTP/SCS WOULD INCREASE DEMAND FOR ENERGY BEYOND EXISTING CONDITIONS. HOWEVER, THE 2018 RTP/SCS WOULD NOT RESULT IN INEFFICIENT, UNNECESSARY, OR WASTEFUL DIRECT OR INDIRECT CONSUMPTION OF ENERGY, AND WOULD BE CONSISTENT WITH APPLICABLE FEDERAL, STATE, AND LOCAL ENERGY CONSERVATION POLICIES. THIS IMPACT WOULD BE LESS THAN SIGNIFICANT.

Daily operation of the regional 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 2018 RTP/SCS would increase vehicle capacity, allowing a greater number of vehicles to use facilities in the region. Other improvement projects involve the increase in amount of rail cars in the region. 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 and employment growth. It should be noted that population growth and growth in VMT would occur within the region regardless of whether the 2018 RTP/SCS is implemented. As a result, energy consumption as it relates to vehicles would increase beyond the 2015 baseline in any scenario. However, many 2018 RTP/SCS projects (e.g., bikeway and pedestrian projects, rail projects, transit projects, active transportation projects, transportation control improvements, etc.) would improve the availability of alternative transportation modes, and help reduce congestion and resultant air pollutants in the SJCOG region.

Construction and maintenance of the proposed 2018 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 2018 RTP/SCS. The California Green Building Standards Code (CalGreen) includes specific requirements related to recycling, diversion rates, 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 2018 RTP/SCS and would help to minimize waste and energy consumption. All construction and maintenance conducted pursuant to the 2018 RTP/SCS, or as a result of operational improvements made by the 2018 RTP/SCS, would be required to comply with CalGreen.

Table 20 shows the VMT and estimated fuel consumption translated into energy use (Btu) in the SJCOG region under existing (2015) conditions and the 2018 RTP/SCS, as well as the “no build” scenario.

Table 20 Direct and Indirect Transportation Energy Use

Year	Daily VMT	Direct Daily Energy Use (Billion Btu)	Indirect Energy Use (Daily Billion Btu)	Total Energy Use (Daily Billion Btu)	Per Capita Energy Use (Daily Thousand Btu)
Baseline (2015)	17,868,785	163.18	53.66	216.84	299.71
2018 RTP/SCS	23,276,601	212.56	69.90	282.46	268.95
“No Build” 2042 Scenario	22,886,360	209.00	68.73	277.73	264.45

Notes: Daily VMT and Btu/VMT used to identify direct daily energy use utilizes information found in Table 17 and Table 18. Indirect energy use utilizes Daily VMT data from Table 17 and applies the energy consumption rates found in Caltrans’ *Energy and Transportation Systems* (1983). Per capita results are identified by adding the direct and indirect energy use for each scenario and dividing by the 2015 population (723,496) (U.S. Census Bureau 2017) and the forecasted 2042 population (1,050,218) (SJCOG 2018).

Sources: California Department of Transportation (Caltrans). July 1983. *Energy and Transportation Systems*.
http://www.oregon.gov/ODOT/GeoEnvironmental/Docs_Environmental/Energy_Trans_Systems.pdf.

As shown in Table 20, region-wide VMT and total energy use would increase over time as the result of regional socioeconomic (population and employment) growth. However, the 2018 RTP/SCS would result in an approximately 10 percent decrease in per capita energy usage when compared to baseline conditions.

Transportation Improvement Projects

The transportation improvements proposed under the 2018 RTP/SCS would result in a more efficient transit system. The 2018 RTP/SCS would result in greater availability of public transit and other alternative modes of transportation, such as Complete Streets and active transportation. For instance, the widening of Airport Way from four to six lanes between State Route 120 and Lathrop Road would help reduce idle time and provide congestion relief for traffic along this corridor. The reduction in overall congestion resulting from these service level improvements would reduce fuel consumption and promote fuel efficiency beyond what can be quantified in the above analysis.

New transportation facilities that require energy for operation, such as signal lighting; roadway, pedestrian, or parking lot lighting; and electronic equipment, would contribute to an increase in energy demand. New landscaping irrigation also increases energy demand through water pumping and treatment. However, energy consumption is not anticipated to be unnecessary or wasteful, as all lighting, signage, and irrigation systems would comply with applicable energy efficiency requirements within the California Building Code.

Land Use Changes

The 2018 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 and improved bicycle and pedestrian infrastructure. Mixed-use and infill projects would help 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 CalGreen and Title 24 of the California Energy Code, which set forth specific energy efficiency requirements related to design, construction methods and materials.

Consistency with Energy Conservation Policies

As previously discussed, the 2018 RTP/SCS would result in an approximately 10 percent decrease in per capita energy use in the region and would not result in energy used in an unnecessary or wasteful manner. Although implementation of the 2018 RTP/SCS would result in greater net energy consumption than 2015 baseline conditions, the 2018 RTP/SCS would not result in the inefficient, wasteful, or unnecessary consumption of energy if it is consistent with existing relevant energy conservation policies. Accordingly, inconsistencies between the 2018 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.

SJCOG monitors regulations related to fuel efficiency standards and alternative fuel vehicles. The 2018 RTP/SCS would not conflict with such regulations (e.g., *Energy Policy and Conservation Act* and *CAFE Standards, EPCAct, 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, the 2018 RTP/SCS would not result in wasteful, inefficient, or unnecessary use of energy. Therefore, the 2018 RTP/SCS is consistent with the *Warren-Alquist Act*.

Senate Bill (SB) 1078, as accelerated by Executive Order S014-08, establishes a renewable portfolio standard for electricity supply, and requires that retail sellers of electricity, including investor-owned utilities and community choice aggregators, provide 33 percent of their supply from renewable sources by 2020. In addition, the California Energy Action Plan (most recently updated in February 2008) includes a set of strategies to address California's future energy needs, including policy areas such as climate change, transportation-related energy issues, and research and development activities. The proposed 2018 RTP/SCS would not conflict with these policies. Refer to Section 4.8, *Greenhouse Gas Emissions/Climate Change*, for a discussion of greenhouse gas emissions reductions related to the proposed 2018 RTP/SCS.

As discussed in Section 2.0, *Project Description*, and consistent with the requirements of SB 375, SJCOG has the responsibility to prepare a Sustainable Communities Strategy (SCS) as part of the RTP. SB 375 requires each MPO to demonstrate, through the development of an SCS, how its region will integrate transportation, housing, and land use planning to meet the GHG reduction targets set by the State. In addition to creating requirements for MPOs, it also creates requirements for the California Transportation Commission (CTC) and the California Air Resources Board (CARB). Some of the requirements include the following:

- The California Transportation Commission (CTC) must maintain guidelines for the travel demand models Metropolitan Planning Organizations (MPO) develop for use in the preparation of their MTPs.

- California Air Resources Board (CARB) must develop regional GHG emission reduction targets for automobiles and light trucks for 2020 and 2035.
- Each MPO must prepare an SCS as part of its 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 MTP.
- After adoption, each MPO must submit its SCS to the 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.

The proposed 2018 RTP/SCS complies with these requirements and would not conflict with the *CTC Guidelines*.

SB 375 directed CARB to establish regional on-road GHG per capita emissions reduction targets from light-duty trucks and passenger vehicles for 2020 and 2035. For the SJCOG region, the targets set by CARB are “not to exceed 2005 emissions levels” by 2020 and a ten percent reduction by 2035. Implementation of the 2018 RTP/SCS will help the region achieve its SB 375 and AB 32 GHG emissions reduction targets; thus, the 2018 RTP/SCS is consistent with the requirements of SB 375, as well as AB 32.

In addition, many 2018 RTP/SCS projects promote energy efficiency as they support implementation of the San Joaquin Valley Air Pollution Control District’s (SJVAPCD) 2016 Ozone Plan and 2016 PM2.5 Plan transportation control measures including transportation demand management, transportation system management, commuter and public transit; rail, bike, and pedestrian programs, among others (refer to Section 4.2, *Air Quality*).

Locally, the proposed 2018 RTP/SCS would be consistent with the 2035 San Joaquin County General Plan. The County’s General Plan encourages the use of renewable energy, energy conservation, and energy efficiency techniques in all new building design, orientation, and construction, and support of alternative transportation and fuels. As described above, the 2018 RTP/SCS includes TDM and TSM intended to improve the efficiency and effectiveness of the transportation system, reducing fuel consumption, transit and other alternative modes of transportation, such as new pedestrian and bicycle facilities, and promotes mixed-use and infill development.

In summary, the 2018 RTP/SCS would not result in wasteful or inefficient energy consumption within the region, and is generally consistent with applicable policies regarding energy conservation. Therefore, the 2018 RTP/SCS would not have a significant impact on energy. 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: Require or result in the construction of new energy facilities or the expansion of such facilities to adequately meet projected demands, the construction of which could cause a significant environmental effect

IMPACT E-2 IMPLEMENTATION OF THE 2018 RTP/SCS WOULD GENERATE ENERGY DEMAND THAT WOULD NOT REQUIRE THE CONSTRUCTION OF NEW ENERGY FACILITIES OR THE EXPANSION OF EXISTING FACILITIES. IMPACTS WOULD BE LESS THAN SIGNIFICANT.

As shown in Table 20, implementation of the 2018 RTP/SCS would result in an approximately 10 percent increase in per capita energy consumption compared to 2015 baseline conditions. However, implementation of the 2018 RTP/SCS would not increase net energy demand that would require new or expanded energy facilities, including power plants, distributed generation, electrical transmission and distribution infrastructure, and natural gas facilities (e.g., storage, pipelines).

PG&E, which supplies the entire Plan Area with natural gas and much of the Plan Area with electricity, utilizes a long-term planning process to plan for increased energy demand in the future with its publication of ten-year Transmission Plans. The most recent, *2010 Electric Transmission Grid Expansion Plan*, details planned projects between 2010 and 2020 that aim to ensure compliance with North American Electric Reliability Corporation (NERC) 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 2010). Some projects encompassed within this Transmission Plan are located in San Joaquin County, including the addition of a line reconductor and circuit breaker, increased transmission capacity at a Tesla 115 kv plant, the addition of a second Valley Springs Transformer rated at 200 mega-volt ampere (MVA), and the replacement of limiting switches with larger ones (PG&E 2010). However, each of these projects are expected to be complete and in-service at this time as the most recent one, the replacement of limiting switches, had a targeted in-service date of 2015. Each Transmission Plan published by PG&E is a ten-year planning document, thus, PG&E 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 (Cal-ISO) and participating stakeholders.

Additionally, Cal-ISO's *2016-2017 Transmission Plan* provides a comprehensive evaluation of the Cal-ISO transmission grid to identify upgrades needed to successfully meet California's policy goals, in addition to examining conventional grid reliability. The *2016-2017 Transmission Plan* identified two reliability-driven transmission goals to ensure compliance with North American Electric Reliability Corporation (NERC) requirements and Cal-ISO standards. However, these projects are located within Southern California Edison's (SCE) service area and the *2016-2017 Transmission Plan* further identified that no new transmission projects would be needed to meet California's 2020 renewables portfolio standard (RPS).

Implementation of the 2018 RTP/SCS would not result in energy demand that would require new or the expansion of existing energy facilities that could impose short-term construction-related impacts and long-term operational impacts, such as air quality, noise, traffic, and other resource areas. As stated above, no projects have been identified as needed to meet new policy-driven or economic-driven energy demands by PG&E, which owns and operates a majority of electricity and

natural gas infrastructure in the SJCOG region, or Cal-ISO, which assesses the reliability and capacity of California's independent electricity system operators' energy facilities. In conclusion, the 2018 RTP/SCS would not result in energy demands that exceed existing or planned capacity for the service area and would not result in the construction of new or expansion of existing energy facilities. 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.

c. Specific MTP/SCS Projects that May Result in Impacts

As discussed above, the 2018 MTP/SCS would result in less than significant impacts related to energy consumption. No specific projects have been identified that would result in significant consumption of energy.

d. Cumulative Impact Analysis

The 2018 RTP/SCS would increase demand for transportation energy resources by approximately 28 percent over the 25-year planning horizon. However, many of the transportation improvement projects under the 2018 RTP/SCS would conserve transportation energy by relieving congestion and contributing towards other transportation efficiencies, resulting in lower per capita transportation energy consumption in 2042 than in the 2015 baseline year by approximately 10 percent. 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 2018 RTP/SCS would not contribute to significant impacts related to wasteful or inefficient use of energy resources and services because energy would be used more efficiently on a per capita basis with the 2018 RTP/SCS as compared to existing 2015 conditions.

In addition, adherence to existing applicable policies and regulations, such as CalGreen 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 2018 RTP/SCS. As such, the 2018 RTP/SCS would not contribute to a cumulative impact to the wasteful, unnecessary, or inefficient use of energy. Based on the analysis provided above, the 2018 RTP/SCS's contribution to cumulative impacts related to energy consumption would not result in the inefficient use of energy resources. As such, the 2018 RTP/SCS's impacts related to per capita energy consumption and reliance on fossil fuels would not be cumulatively considerable, and therefore, impacts would be less than significant.

Moreover, new or expanded facilities for generation, transmission, storage, and distribution of electricity, natural gas, diesel and alternative transportation fuels would not be needed to meet the increased demand associated with the 2018 RTP/SCS, the construction of which could cause potentially significant environmental effects. Combined with impacts from projected growth and development located throughout the region causing increased demand for electricity, natural gas, and diesel, the 2018 RTP/SCS's contribution to impacts resulting from the construction of new or expanded energy facilities would not be cumulatively considerable.

4.7 Environmental Justice

This section analyzes the impacts of the 2018 RTP/SCS on low-income populations, minority individuals and populations, and low mobility populations.

4.7.1 Setting

a. Overview

Environmental justice 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 State 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.”

At the federal level, Executive Order 12898 - Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations 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 (USDOT) issued its own order, 5680.2, to clarify and reinforce environmental justice policies related to transportation planning. A branch of the USDOT, the Federal Highway Administration (FHWA), 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.

No new policies or regulations have been implemented as they pertain to Environmental Justice impact determinations under CEQA. Data related to environmental justice have been updated to the latest available data.

Issues of environmental justice impact low-income populations, minority individuals and populations, and low-mobility populations, as defined below, 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.

In addition, urban development has been ongoing in the region since certification of the 2014 RTP/SCS EIR, primarily concentrated in existing urban or suburban areas.

b. Demographics

San Joaquin County consists of seven major cities: Escalon, Lathrop, Lodi, Manteca, Ripon, Stockton, and Tracy. The County contains other census designated places, and unincorporated communities. Tables 14, 15, and 16 summarize 2015 demographic information for these regions. The most recent available demographics data is from the year 2015, therefore 2015 has been used to characterize 2017 baseline conditions. For the purposes of this analysis, “communities of concern” were identified through analysis of demographic and socioeconomic data for minority, low-income, low community engagement, and low-mobility populations based on 2015 U.S. Census data, 2011-2015 American Community Survey data, SJCOG population estimates, and SJCOG employment and population projections.

Race/Ethnicity

The environmental justice analysis evaluates communities to determine their minority and low income status based on absolute and relative criteria. A community qualifies as minority or low-income if it meets either of the two criteria that apply to each designation shown in Table 21.

Table 21 Absolute and Relative Criteria used to Evaluate Environmental Justice Communities

Designation	Absolute Criteria	Relative Criteria
Minority blocks	Minority population that is greater than 50 percent of the total block population	Minority population that is more than 10 percentage points higher than the surrounding area
Low-income block groups	Low-income population that is greater than 25 percent of the total block group population	Low-income population that is more than 10 percentage points higher than the surrounding area

Source: Council on Environmental Quality 1997; Environmental Justice, Guidance under the National Environmental Policy Act.

The 2014 RTP/SCS defined environmental justice areas as groups which contained 60 percent or more minority populations. This analysis bases uses the Council on Environmental Quality criteria of 50 or more minority populations as communities of concern. This is a conservative assumption as the 2014 RTP/SCS analyzed 60 percent or greater minority populations.

Table 22 shows the racial and ethnic composition of San Joaquin County and cities and census designated places (CDP). In 2015, approximately 40% of all San Joaquin County residents identified themselves as Hispanic by ethnicity. The Cities of Lathrop, Manteca, and Stockton were comprised of the highest percentage Hispanic population by ethnicity in San Joaquin County, with 41.5%, 40.3%, and 42.1% Hispanic, respectively. The highest percentage of Hispanic populations in the CDPs were Garden Acres and Victor, with 77.7% and 93.9%, respectively.

There are no cities in San Joaquin County with populations composed of larger than 60 percent minorities. The CDPs with minority populations higher than 50% include the communities of Acampo, August, French Camp, Garden Acres, Kennedy, Taft Mosswood, Thornton, and Victor. These areas have minority groups that comprise greater than 50% of that communities’ total population.

Table 22 Race and Ethnicity in San Joaquin County, 2015

Location	White	Black	American Indian	Asian	Pacific Islander	Other	Two or More Races	Hispanic
County (All)	57%	7.1%	0.7%	14.8%	0.5%	11.7%	8.2%	40.1%
Cities								
City of Escalon	91.3%	0.0%	0.1%	1.1%	0.2%	2.8%	4.4%	25.4%
City of Lathrop	47.6%	8.8%	0.2%	22.9%	0.3%	10.8%	9.3%	41.5%
City of Lodi	72.2%	1.2%	0.6%	8.4%	0.4%	7.0%	10.1%	35.8%
City of Manteca	68.2	3.9	0.6	7.7	0.5	12.7	6.5	40.3%
City of Ripon	86.2	0.5	0.7	2.7	0.0	3.9	6.0	22.2
City of Stockton	44.2	11.6	0.7	21.4	0.7	13.2	8.2	42.1
City of Tracy	59.4	5.7	0.4	15.1	0.7	9.5	9.2	38.1
Census Designated Places (CDP)								
Acampo	100%	0.0	0.0	0.0	0.0	0.0	0.0	53.1
August	42.6	3.4	1.6	11.7	0.0	30.6	10.0	67.5
Collierville	79.8	0.0	0.5	2.4	0.0	0.0	17.3	30.8
Country Club	69.0	3.2	0.9	5.1	0.7	7.4	13.6	49.8
Dogtown	87.7	0.0	1.1	1.5	0.0	0.0	9.7	19.1
Farmington	100	0.0	0.0	0.0	0.0	0.0	0.0	10.0
French Camp	62.8	8.6	1.9	3.2	0.2	17.1	6.1	62.0
Garden Acres	61.6	1.1	1.4	2.0	0.4	28.7	4.7	78.9
Kennedy	62.9	4.8	1.0	10.8	0.0	17.1	3.4	77.7
Lincoln Village	67.4	6.8	0.0	1.7	0.0	8.1	15.9	25.1
Linden	87.5	0.5	0.8	0.0	0.0	2.7	8.6	23.6
Lockeford	84.0	0.0	0.6	3.6	0.0	7.0	4.8	30.3
Morada	68.0	0.3	0.0	26.9	0.0	1.0	3.9	8.9
Mountain House	41.5	16.6	1.2	43.4	5.4	7.4	14.1	17.7
Peters	84.3	0.0	7.3	0.0	0.0	28.2	19.8	35.9
Taft Mosswood	46.1	12.0	4.1	19.6	0.0	25.0	6.8	66.4
Terminous	96.8	0.0	0.0	3.2	0.8	0.0	0.8	25.6
Thornton	76.4	0.0	3.1	7.1	0.0	16.7	3.3	69.3
Victor	10.3	0.0	4.2	0.0	0.0	89.7	4.2	93.9
Waterloo	98.3	0.0	0.0	0.0	0.0	1.7	0.0	0.0
Woodbridge	90.5	0.5	1.9	4.6	0.0	4.4	1.8	26.5

Source: U.S. Census 2011-2015 5-Year American Community Survey

Income

The average poverty rate for San Joaquin County in 2015 was 18.6%. This represents the percent of individuals who fall below the U.S. Department of Health and Human Services poverty threshold. Table 23 illustrates the median income, poverty rate, and unemployment rate for each City and census designated place in San Joaquin County. Any city/community higher than the County average was conservatively analyzed as low income compared to the standards laid out in Table 23. The City

of Stockton (21.2%) and the census designated places of August (36.6%), Taft Mosswood (18.6%), Thornton (31.2%) and Victor (44.4%) all had percentages of persons living below the poverty line in the County above the overall County rate of 18.6%.

Table 23 Income and Poverty Rate in San Joaquin County, 2015

Location	Household Income	Poverty Rate - All people	% Unemployed
County (All)	\$53,274	18.6%	13.7%
Cities			
City of Escalon	\$52,125	8.8%	3.4%
City of Lathrop	\$62,267	11.0%	11.9%
City of Lodi	\$49,316	13.8%	12.1%
City of Manteca	\$62,364	9.8%	14.7%
City of Ripon	\$80,374	7.1%	5.3%
City of Stockton	\$50,151	21.2%	15.2%
City of Tracy	\$76,310	6.9%	11.1%
Census Designated Places (CDP)			
Acampo	\$152,713	0.0	0.0
August	\$31,763	36.6	17.8
Collierville	\$49,375	17.5	23.7
Country Club	\$44,106	12.9	18.2
Dogtown	\$73,333	3.6	11.3
Farmington	n/a	0.0	0.0
French Camp	\$35,313	15.4	17.7
Garden Acres	\$39,375	18.2	19.5
Kennedy	\$38,088	18.2	18.5
Lincoln Village	\$55,221	3.7	15.7
Linden	\$84,239	7.6	9.3
Lockeford	\$44,244	15.7	12.3
Morada	\$105,658	1.9	5.3
Mountain House	\$106,976	5.5	17.4
Peters	\$112,679	0.0	0.0
Taft Mosswood	\$26,149	18.6	20.9
Terminous	\$52,750	0.0	8.7
Thornton	\$33,036	31.2	17.9
Victor	n/a	44.4	25.8
Waterloo	\$109,485	0.0	6.9
Woodbridge	\$77,000	6.2	9.0

Source: U.S. Census 2011-2015 5-Year American Community Survey

Mobility

Mobility refers to the movement of people via multiple modes, including individual cars, public transit, walking, and cycling, among others. Mobility can be an important indicator of quality of life, as mobility is correlated with accessibility, which is the ease with which individuals can reach their destinations. Enhanced mobility is a means to increase accessibility of desired goods or destinations. Low-mobility populations are limited in their ability to access needed goods and services or the means by which they reach their destination are relatively expensive or inconvenient. Auto-oriented municipalities and communities with few safe or reliable transportation alternatives are mobility-limiting, leaving the individual without a choice in means of transportation. Limited public transit options, few cycling infrastructure improvements, or lack of pedestrian safety measures limit individual mobility. Low-income populations may be faced with restricted mobility if they do not have access to a private vehicle. Elderly populations are frequently limited in individual mobility in auto-oriented transportation systems. As aging populations lose their ability to drive privately-owned vehicles, it is increasingly important to address multiple modes of transportation to prevent isolation, economic hardship, or reduced quality of life of the expanding senior population.

Table 24 lists demographic factors that may affect mobility within the County, cities, and communities in San Joaquin County. All cities and communities in the County have roughly similar commuting patterns, with single-occupancy vehicles being the most common choice. The communities of Farmington, Terminous, and Waterloo have considerably higher population percentages of elderly individuals aged 65 and above (above 25%). These communities may face a greater need for alternative modes of transportation to ensure elderly populations remain mobile. The City of Stockton (10.0%) and Lodi (8.0%) have the highest percentages of households without a vehicle. The majority of Cities and census designated places within San Joaquin County have relatively low percentages of households without a vehicle, which could be due to the long commute distances that homeowners travel to work. This can be conversely applied to the fact that the majority of Cities have a higher percentage of households without vehicles, as urban cities are denser, with increased transit oriented development.

Table 24 Factors that Affect Mobility in San Joaquin County, 2015

	Age 65 and Over	No vehicle	Drive Alone	Carpool	Public Transit	Walk	Other	Work at Home
County (All)	9.7%	6.7%	76.6%	14.8%	1.5%	1.9%	1.6%	3.7%
Cities								
City of Escalon	15.5	5.0%	89.9%	1.3%	2.2%	1.5%	2.6%	2.5%
City of Lathrop	7.5	5.3%	76.9%	14.4%	2.2%	0.6%	1.0%	4.8%
City of Lodi	14.2	8.0%	77.4%	14.1%	0.6%	2.2%	1.9%	3.9%
City of Manteca	11.0	4.4%	78.5%	13.2%	1.8%	1.5%	1.6%	3.5%
City of Ripon	13.1	2.2%	81.6%	11.8%	0.7%	1.2%	1.0%	3.8%
City of Stockton	11.0	10.0%	76.7%	15.9%	1.4%	1.4%	1.7%	2.9%
City of Tracy	8.0	3.5%	75.2%	14.7%	2.8%	1.6%	1.8%	3.7%
Census Designated Places (CDP)								
Acampo	0.0	0.0	35.6	39.8	0.0	8.0	9.3	7.3
August	5.4	5.0	67.5	26.9	0.3	0.9	3.0	1.4
Collierville	6.7	0.0	75.6	13.6	0.0	0.0	5.3	5.5
Country Club	15.0	2.7	82.1	14.2	0.9	0.9	1.1	0.8
Dogtown	22.8	1.8	81.1	3.8	0.0	2.9	0.0	12.2
Farmington	66.3	0.0	76.3	10.0	0.0	0.0	0.0	13.8
French Camp	5.8	1.6	69.0	23.0	0.4	2.1	0.0	5.5
Garden Acres	8.4	4.6	71.0	23.8	0.5	0.5	0.8	3.2
Kennedy	8.8	5.2	81.7	10.2	2.2	0.0	0.0	5.9
Lincoln Village	16.6	2.1	82.0	8.4	0.0	0.0	0.0	7.7
Linden	15.9	1.0	84.8	8.7	0.0	2.4	0.0	4.0
Lockeford	13.1	6.7	80.7	9.0	0.0	3.7	1.1	5.5
Morada	24.5	0.0	80.5	14.6	0.0	0.0	0.0	4.9
Mountain House	5.3	1.9	75.4	16.2	1.8	0.0	0.8	5.8
Peters	11.2	0.0	68.1	31.9	0.0	0.0	0.0	0.0
Taft Mosswood	12.7	0.0	63.4	29.0	0.0	4.8	0.0	2.9
Terminous	36.4	0.0	69.9	15.8	0.0	5.5	0.0	8.9
Thornton	13.4	0.0	69.3	14.1	0.0	3.4	0.0	13.2
Victor	4.2	0.0	65.8	34.2	0.0	0.0	0.0	0.0
Waterloo	28.6	0.0	85.6	5.6	0.0	0.0	0.0	8.8
Woodbridge	19.4	0.9	73.1	21.1	0.0	0.5	0.0	3.9

Source: U.S. Census 2011-2015 5-Year American Community Survey

Communities of Concern

For the purposes of this analysis, “communities of concern” were identified through analysis of demographic and socioeconomic data for minority, low-income, and low-mobility populations based on 2015 U.S. Census data, 2011-2015 American Community Survey data, SJCOG population estimates, and SJCOG employment and population projections (see above discussion).

In addition to the identified places above, the 2018 RTP/SCS included defined environmental justice areas which are areas of low income and high minority regions living throughout San Joaquin County. Other factors included in the identification of communities of concern were households within 500 feet of a major transportation facility, and transportation accessibility.

c. Regulatory Setting

Federal

SJCOG receives funding from federal agencies such as the Federal Highway Administration and Federal Transit Administration for some of its programs and activities. Therefore, SJCOG conducts its federally funded programs and activities in accordance with guidance issued by the federal agencies pursuant to federal laws, executive orders, and regulations (discussed above).

State

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.

4.7.2 Impact Analysis

a. Methodology and Significance Thresholds

A significant impact is defined as “a substantial or potentially substantial adverse change in the environment” (CEQA Section 21068). Based on the information provided above, an impact is significant if it would cause disproportionately high and adverse environmental and public health effect and interrelated difficult social and/or economic effect for minority or low-income populations. Therefore, the 2018 RTP/SCS would have a significant impact on a community of concern if:

- 1 Implementation of 2018 RTP/SCS would lead to disproportionately high and adverse human health or environmental impacts to the minority populations, low-income populations, low community engagement populations and/or populations with low mobility in the SJCOG region.
- 2 The mobility benefits derived from 2018 RTP/SCS in terms of travel times and accessibility by transit and/or single-occupancy vehicle would be substantially less for minority populations, low-income populations, low community engagement populations, and/or populations with low mobility in the SJCOG region.

b. Project Impacts and Mitigation Measures

This section describes generalized impacts associated with proposed transportation improvements and the future land use scenario envisioned under the 2018 RTP/SCS.

IMPACT EJ-1 IMPLEMENTATION OF THE PROJECTS CONTAINED IN THE 2018 RTP/SCS MAY CAUSE ADVERSE EFFECTS ON A MINORITY OF LOW-INCOME POPULATION; HOWEVER, THESE POTENTIAL IMPACTS WOULD NOT BE DISPROPORTIONATELY HIGH AS PER EXECUTIVE ORDER 12898 REGARDING ENVIRONMENTAL JUSTICE. IMPACTS WOULD BE LESS THAN SIGNIFICANT.

Short-Term Impacts

During construction of some transportation improvement projects and future infill and TOD under 2018 RTP/SCS, some minority and/or low-income populations may be affected. The potentially significant improvement projects may have short-term impacts on surrounding communities related to construction; including impacts related to air quality, noise and traffic (refer to Sections 4.3 *Air Quality* and 4.13 *Noise* and 4.14 *Transportation and Circulation*). Specific air quality impacts could include exposure to dust due to the operation of construction vehicles (e.g., scrapers, loaders, dump trucks), and clearing and grading activities. Other air quality impacts include short-term exposure to hazardous air emissions, including diesel emissions from construction equipment. Construction noise impacts from clearing, grading, and laying asphalt could expose nearby receptors to levels up to 88 decibels at 50 feet from the source. Minority populations may be exposed to these impacts; however, such impacts would be mitigated to a less than significant level after implementation of the mitigation measures listed in Section 4.3 *Air Quality* and 4.13 *Noise*. Temporary traffic impacts include delays during road closures or other disturbances from construction activities; however, due to their temporary nature, traffic delay impacts would not be considered significant.

While it is likely that numerous construction sites of individual improvement projects may experience temporary air quality, noise and construction impacts, mitigation measures have been identified to minimize potential impacts and protect sensitive receptors or special populations located near the individual improvement sites, including low-income or minority communities (refer to Sections 4.3 *Air Quality* and 4.13 *Noise*, and 4.14 *Transportation and Circulation*). These temporary impacts would be distributed to all communities within proximity to the project construction site. All municipalities and unincorporated communities may experience periods of temporary dust, hazardous air emissions, elevated noise levels, and increased traffic congestion prior to the completion of the roadway, circulation, infrastructure, or transit improvement. As discussed above, minority and/or low-income communities would not be disproportionately affected. As a result, short-term impacts are considered less than significant.

Long-Term Impacts

Minority populations located in close proximity to major highways, particularly State Route 4, and Interstate 5 and Interstate 205, may be exposed to hazardous criteria pollutants. However, as discussed in Section 4.3 *Air Quality*, diesel PM_{2.5}, PM₁₀ and NO_x emissions under 2018 RTP/SCS would be notably lower than existing conditions and future conditions without the projects listed in the 2018 RTP/SCS. As a result, impacts to minority populations that may occur in close proximity to major freeways would be less than significant. In addition, ambient noise throughout the region, particularly in urbanized areas, would increase due to an overall increase in vehicle activity. Mitigation measures identified in Section 4.13 *Noise* would reduce these potential impacts to a less than significant level. It is also important to note that while some minority populations may be exposed to these conditions, there are many other non-minority populations that may be exposed as well, as non-minority populations also live within close proximity to major highways, particularly along State Route 120, Interstate 580 and State Route 99. The projects contained in the 2018 RTP/SCS are dispersed throughout the region. The dispersion of projects is shown on the project location map (Figures 3) in Section 2.0 *Project Description*. One example includes the Caltrans Mainline Improvement Project (SJ18-1001), which proposes to widen State Route 99, and includes reconstruction of interchanges and pedestrian crossings. A variety of populations reside along this corridor. Therefore, minority populations would not be disproportionately impacted.

In addition, the 2018 RTP/SCS envisions a land use scenario that encourages infill and TOD, which would locate people closer to existing goods and services, as well as transportation hubs. As a result, this land use scenario would locate people closer to areas with increased concentrations of air pollutants, elevated noise levels and increased light and glare. These specific impacts are discussed in Sections 4.1 *Aesthetics*, 4.3 *Air Quality* and 4.13 *Noise*. While future residents of infill and TOD projects could include minority populations, this land use scenario would not disproportionately impact minority populations, as future infill and TOD projects would serve a wide array of the population and would be dispersed throughout urbanized areas. In addition, transportation system improvements, as well as the land use scenario envisioned by 2018 RTP/SCS, would provide greater mobility for low-income and minority groups.

The communities of Acampo, August, French Camp, Garden Acres, Kennedy, Taft Mosswood, Thornton, and Victor were identified through demographic and economic analysis summarized above as communities of concern. In general, transportation improvement projects in the 2018 RTP/SCS are not prioritized in these areas, as little existing TOD occurs in these areas. In turn, transportation improvement projects would therefore not disproportionately affect these areas. The identified communities contain various minority populations and may be impacted by 2018

RTP/SCS projects, but would not be disproportionately impacted as other non-minority populations have the potential to be impacted by similar projects included in 2018 RTP/SCS.

In addition, SJCOG has explicitly outlined policies and supportive strategies to address equity and health and safety in the RTP/SCS in compliance with EO 12898, including:

- Policy-Maximize Mobility and Accessibility. Strategy #5: Optimize Public Transportation System to Provide Efficient and Convenient Access for Users at All Income Levels.
- Policy-Promote Interagency Coordination and Public Participation for Transportation Decision Making and Planning Efforts. Strategy #19: Provide Equitable Access to Transportation Planning and Strategy 21: Use a Variety of Methods to Engage the Public, Encouraging Representation from Diverse Income and Ethnic Backgrounds.
- Policy-Improve the Quality of Life for Residents: Strategy 25: Encourage Transportation Investments that Support a Greater Mix of Housing Options at All Income Levels.

Therefore, based on the analysis above and proposed policies, the 2018 RTP/SCS would not disproportionately expose minority populations, low-income population or low-mobility populations to adverse environmental impacts. Impacts would be less than significant.

Mitigation Measures

No Mitigation Measures are required.

Significance After Mitigation

Impacts would be less than significant without mitigation.

IMPACT EJ-2 THE BENEFITS DERIVED FROM THE 2018 RTP/SCS IN TERMS OF TRAVEL TIMES AND ACCESSIBILITY BY TRANSIT, SINGLE-OCCUPANCY VEHICLES, BICYCLING OR WALKING AND ACCESS AND AVAILABILITY OF HOUSING OPTIONS WILL NOT BE SUBSTANTIALLY LESS IN ENVIRONMENTAL JUSTICE COMMUNITIES IN THE SJCOG REGION. IMPACTS WOULD BE LESS THAN SIGNIFICANT.

The 2018 RTP/SCS identifies several performance measures to evaluate the effectiveness of the SCS at achieving SJCOG's planning goals and objectives. Performance measures related to social equity and mobility include but are not limited to:

- Average travel time driving alone and carpooling (minutes)
- Work-related trips less than 30 minutes driving alone or carpooling
- Average travel time for public transit (minutes)
- Average travel time for walking (minutes)
- Average travel time for bicycling (minutes)
- Household transit access within 0.5 miles

Transit Accessibility

An equity analysis was performed for the 2018 RTP/SCS bus transit investments, which analyzed both EJ vs. non-EJ for both households and employment for high quality transit areas as defined by SB 375. For San Joaquin County, this includes all rail stations, bus transit hubs and transfer stations, and BRT (also called express bus) routes within the City of Stockton. The percentage of the total EJ population within a half-mile walking distance of a transit stop, relative to the percentage of

households and employment for within EJ communities, was calculated. The results indicated that the EJ community percentages, both in terms of households and employment within walking distance of transit, are significantly higher than the percentages calculated for non-EJ communities. Just over 50 percent of the households located in EJ communities have access to high-quality transit compared to only 12 percent for non-EJ areas. These findings are similar for employment access to high quality transit in the EJ communities versus non-EJ communities, with nearly 64 percent of jobs in EJ communities in proximity to high-quality transit versus 24 percent for non-EJ communities. Based on these results, equitable if not more favorable benefits resulting from transit investments can be inferred for EJ communities. As discussed in the 2018 RTP/SCS, this is likely attributed to EJ communities being more geographically concentrated within developed areas of the county where transit service provision is the greatest. As such, transit accessibility for communities of concern would not disproportionately affected by the 2018 RTP/SCS, and impacts would be less than significant.

Households Within 500 Feet of a Major Transportation Facility

Given that the proximity to major transportation facilities can increase population exposure to health based emissions and particulate matter from vehicles, an equity analysis was performed for the 2018 RTP/SCS to compare the number and percentage of general population households relative to EJ households located within 500 feet of a major transportation facility. Taking into account total countywide households, 4.2 percent of all households are within 500 feet of any major facility versus 4.0 percent for households in EJ communities. Overall, households in EJ areas represent 31.8 percent of households located near major transportation facilities, compared to 33.8 percent of total households in San Joaquin County. New household growth as forecasted by the land use patterns envisioned by the 2018 RTP/SCS would focus 32 percent of EJ households within 500 feet of a major roadway, and 70 percent for non-EJ communities. As such, the 2018 RTP/SCS would not disproportionately place EJ communities within major transportation facilities, and impacts would be less than significant.

Roadway Expenditure Benefits

To gauge the extent to which EJ communities proportionately benefit from roadway improvement expenditures compared to the general population, an equity analysis was performed as part of the 2018 RTP/SCS. Using the SJCOG travel demand model, a select link analysis was performed on regionally significant roadways identified for capacity improvements in the 2018 RTP/SCS. The analysis yields the percentage of vehicle demand whose origin is in an EJ community versus a non-EJ community. Results indicate that approximately 31.5 percent of daily vehicle trips utilizing these improved roadways originate from EJ communities. This indicates that a significant proportion of EJ communities will benefit from future roadway investments resulting from the Plan. While this share is slightly less than the countywide percentage of total EJ households, 33.8 percent, the difference is relatively small at 2.3%.

Based on the evaluation of the transportation improvement projects and future land use patterns envisioned by the 2018 RTP/SCS, mobility benefits would not be significantly less for communities of concern populations compared to effects for the total population. Overall, the 2018 RTP/SCS would improve mobility benefits for minority populations and communities of concern, as well as non-minority populations. In areas of increase, communities of concern would not be impacted in a disproportionate manner compared to the total population. Impacts would be less than significant.

Mitigation Measures

No mitigation measures are required.

Significance After Mitigation

Impacts would be less than significant without mitigation.

c. Cumulative Impacts

This chapter evaluates the environmental justice impacts of the 2018 RTP/SCS on identified communities of concern in San Joaquin County through the year 2042. Although identified communities of concern may be exposed to environmental impacts such as air quality contaminants, and noise, identified communities of concern would not be impacted in a disproportionate manner compared to the total population. The 2018 RTP/SCS would improve mobility benefits for minority populations and communities of concern, as well as non-minority populations through 2042. In addition, as discussed in Impact EJ-2, the 2018 RTP/SCS would not disproportionately expose minority populations, low-income population or low-mobility populations to adverse environmental impacts. The 2018 RTP/SCS's contribution to environmental justice impacts would not be cumulatively considerable.

4.8 Geology and Soils

This section discusses impacts of the 2018 RTP/SCS pertaining to geologic conditions in the San Joaquin County Planning Area.

4.8.1 Setting

San Joaquin County is located within the Great Valley Geomorphic Province, an asymmetrical synclinal trough, approximately 50 miles wide and 400 miles long. The region is an unusual lowland in that sediments within the basin are relatively underformed, while the surrounding rock units are highly deformed. Little geologic variation exists within the Great Valley, with surficial deposits consisting primarily of unconsolidated Quaternary sediments. The Great Valley is flanked on the east by the west-sloping Sierran bedrock surface, which continues westward beneath alluvium and older sediments. The Western border is underlain by east-dipping Cretaceous and Cenozoic strata that form a deeply buried synclinal trough. The San Joaquin Valley comprises the southern portion of the Great Valley, while the Sacramento Valley is present in the northern portion. Oil fields follow anticlinal uplifts that mark the southwestern border of the San Joaquin Valley and its southernmost basin. The Sacramento Valley plain is interrupted by the Marysville Buttes, an isolated Pliocene volcanic plug approximately 2,000 feet high. Existing geologic, soils, and flooding conditions are briefly summarized below.

a. Existing Conditions

Geologic Formations

San Joaquin County is located at the northern end of the San Joaquin Valley, a sedimentary basin filled with an up to 6-mile thick sequence of interbedded clay, silt, sand, and gravel deposits ranging in age from more than 144 million years old to less than 10,000 years. Recent sediments consist of coarse-grained sand and gravel deposits along river courses and fine-grained alluvium consisting of silt and clay deposited in low-lying areas or flood basins. Older alluvial deposits underlie the edges of the valley and slope gradually towards the center. The foothills of the Diablo Range in the southwestern part of the County are composed of alluvial deposits and older marine sediments deposited during the Tertiary Period when an inland sea occupied the Central Valley (SJCOG, 2014). Geologic formations underlying 2018 RTP/SCS projects include the Pleistocene-age Modesto and Riverbank Formations consisting of granitic sand over stratified silt and sand through the central and eastern portion of the county; the Dos Palos alluvium, consisting of granitic sand over gravel in the Delta region within the western portion of the County; Quaternary-age dune sand in the Manteca area; Quaternary-age alluvial fan deposits in the southwestern portion of the County; and Miocene-age fanglomerate at the base of the foothills of the Diablo range in the southwestern portion of the County (CGS, 1981, 1991; CDMG, 1962).

Earthquake Ground-Shaking and Fault Rupture

The State of California designates faults as active, potentially active, and inactive depending on how recent the movement that can be substantiated for the fault. Active faults show evidence of movement within the Holocene Epoch, or last 11,000 years, while potentially active faults show evidence of movement within the last 1.6 million years, or within the Quaternary period. Inactive faults have not moved within the last 1.6 million years.

The California legislature passed the Alquist-Priolo Special Studies Zone Act in 1972 to address seismic hazards associated with faults and to establish criteria for development within areas identified as seismic hazard zones. Based on a review of the California Geological Survey Alquist-Priolo Fault Zone and Seismic Hazard Zone Maps, there are no Alquist-Priolo Zones located within San Joaquin County.

San Joaquin County is located between two areas of significant tectonic activity. Active faults of the San Andreas Fault System are present to the west of the county line, with the Marsh Creek-Greenville active fault located immediately west of the southern tip of the county. The regional shear zone associated with the Sierra Nevada foothills known as the Foothills Fault System, including the Melones and Bear Mountain fault zones, is present to the east of the county. Active faults potentially affecting San Joaquin County include the San Andreas (Peninsula Section), Hayward, Calaveras, Marsh Creek-Greenville, Midland, Mt. Diablo Thrust, and Concord Faults. These faults are capable of producing earthquakes of a maximum moment magnitude between 6.2 and 7.1. Several potentially active faults are located in the southwest area of the County, in or near the Tracy Planning Area. These include the San Joaquin Fault Zone, Midway-Black Butte Fault, the Vernalis Fault, and the Corral Hollow-Carnegie Fault Zone (CGS 2010; SJCOG 2014; SJC 2014). Notable active faults present in the region are discussed below and Figure 13 shows potentially active faults that are known within San Joaquin County.

San Andreas Fault

The San Andreas Fault is one of the longest and most active faults in the world. The surface trace of this fault extends from the Northern California coastline to the Gulf of California, a distance of over 600 miles. The Peninsula Segment is located approximately 35 miles to the southwest of San Joaquin County. The last major ground rupture of this fault in the Bay Area occurred in 1906 and induced strong seismic shaking in San Joaquin County. The probability of a large earthquake (magnitude 6.7 or greater) within the next 30 years along the northern section of the San Andreas Fault is 6.4 percent.

Hayward Fault

The Hayward Fault is located east of San Francisco Bay and extends southeast to where it most likely merges with the Calaveras Fault north of the City of Hollister. The recent history of this fault shows two major earthquakes (1836 and 1868) each with an estimated Richter scale magnitude of 6.5 to 7.5. In addition, between January 1969 and September 1973 approximately 70 small earthquakes were recorded along the fault. Tectonic creep continues to damage structures that cross the fault zone. The probability of a large earthquake (magnitude 6.7 or greater) within the next 30 years is 14.3 percent.

Calaveras Fault

The Calaveras Fault, approximately 100 miles long, borders the eastern flank of the Berkeley-Hayward Hills and extends southeast where it joins the San Andreas Fault south of the City of Hollister. The fault is located approximately 15 miles southwest of San Joaquin County. Due to the physiographic and geologic evidence and earthquake epicenters located along the trace of the fault, the Calaveras Fault Zone is considered active. The probability of a large earthquake (magnitude 6.7 or greater) within the next 30 years is 7.4 percent.

Marsh Creek-Greenville Fault

This fault zone extends from east of Concord southeastward approximately 57 miles to the San Antonio Valley. The fault is located approximately 1 mile southwest of the southwestern portion of the county. The northern section experiences creep at rate of 2 millimeters per year. A magnitude 5.8 earthquake occurred in 1980 north of Livermore. The maximum moment magnitude for an earthquake on this fault is expected to be 6.9.

Liquefaction

Liquefaction, or the loss of soil bearing strength during a strong earthquake, is a potential occurrence in areas with younger soils as well as in areas where the groundwater table is less than 50 feet deep. Specifically in areas of loose sand and silt that is saturated with water, soils can behave like liquid during earthquakes. Liquefaction can cause serious damage to foundations and bases of structures (USGS n.d.). The California Department of Conservation has not identified any liquefaction hazard zones within San Joaquin County (CGS 2017); however, various areas of the county may be subject to liquefaction during seismic events due to high groundwater levels. Liquefaction is found near the Manteca-Lathrop area, the area just west of Woodbridge (including a small portion of the town site), and the Delta region. The soils in the Tracy area are not considered to be as susceptible to liquefaction, even though the groundwater is high, because the near-surface soils are predominantly clays or sands with high silt and clay content. The east and northeast portions of the county are less susceptible because groundwater is deep. The most serious liquefaction threat lies in the Delta, with many levees directly underlain by relatively clean, water-saturated sands and peats. Strong ground shaking could cause liquefaction under these levees and lead to levee failure and localized flooding (SJCOG 2014; SJC 2014).

Slope Stability

Landslides and surficial slope failures are most likely to occur in areas of greater than 25 percent slope (hillside areas) and along steep bluffs. Landslides also occur due to specific events, such as loss of vegetation after fires or earthquakes adding loads to barely stable slopes. Small landslides are common in the County's mountain areas as loose material moves naturally down slope. The potential for landslides is considered remote in the valley floors due to the lack of significant slopes. Portions of San Joaquin County that are susceptible to this hazard are located in the foothills in the eastern and southwestern portions of the county, the steep banks along the major rivers, and in the Delta. The foothills are most susceptible to unstable slope conditions and specifically include the steep hills of the Diablo Range in the southwest section of the county and the Sierra Nevada Foothills along the county's eastern edge (SJCOG 2014). The California Geological Survey has not designated any areas within San Joaquin County as a landslide hazard zone (CGS 2017).

Expansive Soils

Soils with relatively high clay content are expansive because the clay absorbs water and swells (expands). According to the General Plan, soil survey data for San Joaquin County indicates that close to half of the upper five feet of soils have a low shrink-swell potential, a lesser portion is considered to have a moderate potential, and about an eighth of the area, primarily in the southwestern end of the county, has been mapped with a high potential. The hazards associated with expansive soils can be mitigated through proper geotechnical engineering, which is a requirement in San Joaquin County (SJCOG 2014; SJC 2014).

Erosion

Erosion naturally occurs on the surface of the earth as surface material (i.e., rock, soil, debris, etc.) is loosened, dissolved, or worn away, and transported from one place to another by gravity. Two common types of soil erosion include wind erosion and water erosion. The steepness of a slope is an important factor that affects soil erosion. Erosion potential in soils is influenced primarily by loose soil texture and steep slopes. Loose soils can be eroded by water or wind forces, whereas soils with high clay content are generally susceptible only to water erosion. The potential for erosion generally increases as a result of human activity, primarily through the development of facilities and impervious surfaces and the removal of vegetative cover. The Delta and portions of the southeast County are subject to wind erosion, as well as some areas in Stockton, Lathrop, and Tracy. During times of high winds (15 mph or higher), clouds of peat dust are visible in the Delta area, sometimes creating road closures. As a result of loose soils, steep slopes and high rates of runoff, water erosion is also occurring in the Delta (SJCOG 2014).

Water erosion from a combination of loose soils, steep slopes, and high rates of runoff is taking place in the Delta and in the foothills in the southwest and eastern sections of the County. By reducing the ability of the Delta levees to withstand water pressure, erosion caused by tidal action, wind-induced waves, and boating, increases the potential for failure and flooding (SJC 2014).

Subsidence

Land subsidence is the gradual, local settling or sinking of the earth's surface with little or no horizontal motion. Land subsidence occurs in San Joaquin County and is generally attributed to the overdrafting of groundwater basins and peat oxidation of the Delta islands. This type of ground failure can be aggravated by ground shaking, and is often caused by the withdrawal of large volumes of fluid from underground reservoirs. Other causes of subsidence include sinking tectonics, oil and gas extraction, and deficient alluvial deposits. Subsidence from any cause accelerates maintenance problems on roads, canals, and underground utilities, and contributes to drainage and flood problems. Seismic activities also aggravate subsidence areas. Maintenance or raising water tables can mitigate effects from subsidence.

Subsidence caused by hydrocompaction of moisture-deficient alluvial deposits is a onetime densification from collapse of the soil structure in near-surface strata where the rainfall or other moisture has not penetrated during a long period of time (SJCOG 2014).

Settlement

Loose, soft soil material comprised of sand, silt and clay, if not properly engineered, has the potential to settle after a building is placed on the surface. Settlement of the loose soils generally occurs slowly but over time can amount to more than most structures can tolerate. Building settlement could lead to structural damage such as cracked foundations and misaligned or cracked walls and windows. Settlement problems are site-specific and can generally be remedied through standard engineering applications (SJCOG 2014).

b. Regulatory Setting

State

The 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 (Hart and Bryant 1997).

Seismic Hazards Mapping Act

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 Standards Code (CBSC) is based on the Uniform Building Code (International Code Council 1997), which is used widely throughout United States and has been modified for California conditions with numerous, more detailed or more stringent regulations. The CBSC provides standards for various aspects of construction, including, but not limited to: excavation, grading, and earthwork construction; fills and embankments; expansive soils; foundation investigations; and liquefaction potential and soil strength loss. In accordance with California law, proponents of specific projects are required to comply with all provisions of the CBSC for certain aspects of design and construction.

California Department of Transportation - 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.

Regional and Local

San Joaquin County General Plan

The 2035 San Joaquin County General Plan Public Health and Safety Element contains goals and policies related to seismic and geologic hazards. Goal PHS-3 is "To protect life and property from seismic and geologic hazards." The County shall consider the risk to human safety and property from seismic and geologic hazards in designating the location and intensity for new development (PHS-3.1). Emergency services, major utility lines and facilities, manufacturing plants using or storing hazardous materials, high occupancy structures, and facilities housing dependent populations are not to be located within one-eighth of a mile of any active fault or on soil that is highly susceptible to liquefaction (PHS-3.2). Emergency service facilities must be capable of withstanding earthquakes and remain operational to provide emergency response (PHS-3.3). New developments in areas determined to have high liquefaction potential must include detailed site-specific liquefaction studies (PHS-3.4). All proposed structures, utilities, or public facilities within County-recognized areas of near-surface subsidence or liquefaction shall be located and constructed in a manner that minimizes or eliminates potential damage (PHS-3.5). The county shall promote regional and local efforts to reduce subsidence in the Delta (PHS-3.6). The county shall encourage the planting of vegetation to decrease loss of soil by erosion (PHS-3.7). The county shall support soil conservation and restoration efforts of the US Soil Conservation Service and the Resource Conservation Districts (PHS-3.8).

4.8.2 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. Expose people or structures to 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, creating substantial risks to life or property; and/or
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.

Projects under the 2018 RTP/SCS would not require the use of septic tanks and land use projects are anticipated to connect to existing facilities. Therefore, Threshold 5 is discussed in Section 4.16, *Less Than Significant Environmental Factors*. Because the location of each proposed improvement can be different in geologic character, the determination of impact significance and identification of mitigation measures is based on site-specific analysis at the time of the project design and environmental review. Therefore, for the purposes of this EIR, proposed transportation

modifications and future projects under the land use scenario envisioned by the 2018 RTP/SCS that are located in areas of moderate to high geologic or soil hazards shall be considered to have a potentially significant impact.

b. Project Impacts and Mitigation Measures

This section describes generalized impacts associated with the 2018 RTP/SCS. Due to the programmatic nature of the 2018 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 2018 RTP/SCS could be exposed to impacts caused by geology/soil conditions as described in the following sections.

Threshold 1: Expose people or structures to 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 IMPLEMENTATION OF PROPOSED TRANSPORTATION IMPROVEMENTS AND FUTURE PROJECTS FACILITATED BY THE LAND USE SCENARIO ENVISIONED IN THE 2018 RTP/SCS COULD BE SUBJECT TO SEISMIC HAZARDS, INCLUDING FAULT RUPTURE, GROUND-SHAKING, LIQUEFACTION, AND LANDSLIDING, THAT COULD EXPOSE PEOPLE OR STRUCTURES TO SUBSTANTIAL ADVERSE EFFECTS. IMPACTS WOULD BE SIGNIFICANT BUT MITIGABLE.

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. There are no active faults that intersect the County; therefore the ground surface rupture is considered very unlikely. However, several potentially active faults cross San Joaquin County. The Vernalis Fault, a potentially active Quaternary fault exhibiting displacement within the last 1.6 million years, crosses several transportation projects in the southwestern corner of the County.

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.

Seismic-related ground failure such as liquefaction or landslides may result from an earthquake in or near San Joaquin County. Projects in the Delta region and near the Manteca-Lathrop area are particularly susceptible to liquefaction. Projects in mountainous areas, along steeply sloped streambanks, or within the Delta region, are most susceptible to landslides which may be triggered during an earthquake.

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 and liquefaction. These requirements would partially reduce seismic impacts. However, compliance with the California Building Code would not completely reduce the potential of seismic hazards and seismic damage may still occur as

a result of implementation of 2018 RTP/SCS projects. Seismic impacts would be potentially significant.

Mitigation Measures

For transportation projects under their jurisdiction, SJCOG shall implement, and transportation project sponsor agencies can and should implement, the following mitigation measure developed for applicable transportation projects identified in Appendix B. Municipalities in the SJCOG region can and should implement this measure, where relevant to land use projects implementing the 2018 RTP/SCS.

GEO-1 Geotechnical Analysis

Project sponsors shall complete site-specific geotechnical reports conducted by a qualified geotechnical expert. Any investigations shall comply with the California Geological Survey's Guidelines for Evaluating and Mitigating Seismic Hazards in California and projects shall comply with the recommendations stated in the geotechnical analysis. Recommendations may include, but are not limited to, the following: fill placement and compaction, isolated and continuous footing, site specific pipe bedding, and site specific seismic design criteria.

Significance After Mitigation

Implementation of Mitigation Measure GEO-1 would reduce impacts to a less than significant level.

Threshold 2: Result in substantial soil erosion or the loss of topsoil

IMPACT GEO-2 GRADING ASSOCIATED WITH TRANSPORTATION IMPROVEMENTS AND FUTURE PROJECTS FACILITATED BY THE LAND USE SCENARIO ENVISIONED IN THE 2018 RTP/SCS COULD CAUSE SOIL EROSION. HOWEVER, COMPLIANCE WITH APPLICABLE ORDINANCE CODES WOULD ENSURE THAT IMPACTS WOULD REMAIN LESS THAN SIGNIFICANT.

Typically, erosion impacts 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. The UBC and CBC regulate slope instability and conditions that can lead to erosion, and requires foundation engineering and investigation of soils on sites proposed for development in geologic hazard areas. The reports from these investigations must demonstrate the hazard from the project will be eliminated or there is no danger for the intended use of the site. All major earthwork requires a grading permit to minimize erosion, and local grading ordinances ensure that development in geologic hazard areas does not pose a threat to human life and property. Erosion control can be accomplished on critical slopes being affected by natural agents.

In addition, 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. 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.

Further, transportation improvement projects include roadway widening, bicycle and pedestrian infrastructure improvements, roundabouts, new turn lanes, new rail lines, and upgrades to

interchanges. Soil erosion and loss of topsoil could result from implementation of 2018 RTP/SCS projects that involve the expansion or extension of the transportation system into previously undeveloped land. Soil erosion and loss of topsoil could be impacted through transportation network improvements, since these usually involve grading or earthwork, and increased impervious surfaces and removal of vegetative cover. Transportation network improvements would be subject to a variety of state and local regulations, including the UBC, CBC, and NPDES requirements and local ordinances and regulations, which are designed to avoid potential hazards associated with soil erosion. With adherence to the applicable ordinance codes and other local, State, and county regulatory programs, impacts related to erosion 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:	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 PROPOSED TRANSPORTATION IMPROVEMENTS AND FUTURE PROJECTS FACILITATED BY THE LAND USE SCENARIO ENVISIONED IN THE 2018 RTP/SCS COULD BE LOCATED ON POTENTIALLY UNSTABLE SOILS, OR IN AREAS OF HIGH LIQUEFACTION POTENTIAL. HOWEVER, ADHERENCE TO EXISTING REGULATORY REQUIREMENTS WOULD REDUCE THIS IMPACT TO LESS THAN SIGNIFICANT.

Implementation of proposed transportation improvements and future projects under the land use scenario envisioned by the 2018 RTP/SCS could be prone to slope instability, liquefaction, and other soil-related hazards. Excavation related to construction projects or as needed to construct anticipated development could result in unstable soils. Some projects could be located on geologic units or soils that are unstable, or that could become unstable. Slope failure can occur naturally through rainfall or seismic activity, or through earthwork and grading related activities.

The hazards of unstable soil or geologic units would be addressed largely through the integration of geotechnical information in the planning and design process for projects to determine the local soil suitability for specific projects in accordance with standard industry practices and state-provided requirements, such as local and CBC requirements, used to minimize the risk associated with these hazards. Incorporation of geotechnical recommendations such as foundation design and site preparation prior to construction enforced through compliance with local building codes and ordinances would avoid or reduce hazards relating to unstable soils and slope failure. In addition, Policy PHS-3.6 of the San Joaquin County General Plan specifically addresses the ongoing hazard of subsidence in the Delta and recognizes the need to reduce this hazard. With implementation of the existing regulatory requirements, such as local and CBC building code requirements and proposed policies, this impact would be less than significant.

According to the 2035 County General Plan, soil survey data for the county indicates that close to half of the upper five feet of soils have a low shrink-swell potential and areas with a high potential are primarily confined to the southwestern end of the county. In most developed areas, any native

existing layers of clay have been blended into more granular soils as a part of the general site excavation, which helps to reduce the overall expansiveness of the soil. However, the hazard of expansive soils can only definitively be determined based on site-specific data that would be included as part of a typical development process as required by Policy PHS-3.1 in the General Plan. With implementation of this policy and existing regulatory requirements such as local and CBC building code requirements, impacts associated with expansive soils would be less than significant.

Mitigation Measures

No Mitigation Measures are required.

Significance After Mitigation

Impacts are less than significant without mitigation.

c. Cumulative Impacts

Geology, soils and seismicity impacts may be related to: increased exposure to seismic hazards, increased erosion and/or loss of topsoil, and the presence of unstable/expansive soils. 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 not be significant, and the 2018 RTP/SCS would not make a cumulatively considerable contribution to significant cumulative impacts related to geology, soils and seismicity.

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4.9 Greenhouse Gas Emissions/Climate Change

This section discusses potential impacts related to greenhouse gas emissions and climate change. Air quality impacts are discussed in Section 4.3, *Air Quality*. The section also provides a discussion of the applicable federal, state, regional, and local agencies that regulate, monitor, and control GHG emissions. Calculations made to estimate GHG emissions associated with the 2018 RTP/SCS and supporting technical data are provided in Appendix C of this EIR.

4.9.1 Setting

a. Climate Change and Greenhouse Gases

Gases that absorb and re-emit infrared radiation in the atmosphere are called greenhouse gases (GHGs). The GHGs that are widely seen as the principal contributors to human-induced climate change include carbon dioxide (CO₂), methane (CH₄), nitrous oxides (N₂O), fluorinated gases such as hydrofluorocarbons (HFCs) and perfluorocarbons (PFCs), and sulfur hexafluoride (SF₆). Water vapor is excluded from the list of GHGs because it is short-lived in the atmosphere and its atmospheric concentrations are primarily determined by natural processes, such as oceanic evaporation.

GHGs are emitted by both natural processes and human activities. Of these gases, CO₂, CH₄, and N₂O are emitted in the greatest quantities from human activities. Emissions of CO₂ are largely by-products of fossil fuel combustion, whereas CH₄ results from off-gassing associated with agricultural practices and landfills. N₂O is produced by microbial processes in soil and water, including those reactions that occur in fertilizers that contain nitrogen, fossil fuel combustion, and other chemical processes.

Man-made GHGs, many of which have greater heat-absorption potential than CO₂, include fluorinated gases and SF₆ (California Environmental Protection Agency [CalEPA] 2006). Different types of GHGs have varying global warming potentials (GWPs). 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 (CO₂) is used to relate the amount of heat absorbed to the amount of the gas emissions, referred to as “carbon dioxide equivalent” (CO₂e), and is the amount of a GHG emitted multiplied by its GWP. Carbon dioxide has a 100-year GWP of one. By contrast, methane has a GWP of 25, meaning its global warming effect is 25 times greater than carbon dioxide on a molecule-per-molecule basis (Intergovernmental Panel on Climate Change [IPCC] 2007).

b. Greenhouse Gas Emissions Inventories

Federal Emissions Inventory

Total U.S. GHG emissions were 6,586.7 million metric tons (MMT or gigatonne) CO₂e in 2015 (U.S. EPA 2017). Total U.S. emissions have increased by 3.5 percent since 1990. However, emissions decreased by 2.3 percent from 2014 to 2015 (U.S. EPA 2017). The decrease from 2014 to 2015 was a result of multiple factors, including: (1) substitution from coal to natural gas consumption in the electric power sector, (2) warmer winter conditions in 2015 resulting in a decreased demand for heating fuel in the residential and commercial sectors, and (3) a slight decrease in electricity demand (U.S. EPA 2017). Since 1990, U.S. emissions have increased at an average annual rate of 0.2 percent. In 2015, the industrial and transportation end-use sectors accounted for 29 percent and 27

percent of CO₂ emissions (with electricity-related emissions distributed), respectively. Meanwhile, the residential and commercial end-use sectors accounted for 16 percent and 17 percent of CO₂ emissions, respectively (U.S. EPA 2017).

California Emissions Inventory

Based on the California Air Resources Board (CARB) California Greenhouse Gas Inventory for 2000-2014, California produced 440.4 MMT CO₂e in 2015 (CARB 2017c). The largest single source of GHG in California is transportation, contributing 39 percent of the state's total GHG emissions. Industrial sources are the second-largest source of the state's GHG emissions, contributing 23 percent of the state's GHG emissions (CARB 2017c). California's relatively high magnitude of GHG emissions are due largely to its greater size and population as compared to other states. However, the state's mild climate reduces California's per capita fuel use and GHG emissions as compared to other states. CARB has projected statewide unregulated GHG emissions for the year 2020 will be 509.4 MMT CO₂e (CARB 2017d). These projections represent the emissions that would be expected to occur in the absence of any GHG reduction measures.

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 three decades has been warmer than all the previous decades in the instrumental record, and the decade from 2000 through 2010 has been the warmest. The global combined land and ocean temperature data show an increase of about 0.89°C (0.69°C to 1.08°C) over the period 1901 to 2012, and about 0.72°C (0.49°C to 0.89°C) over the period 1951 to 2012 when described by a linear trend. Several independently analyzed data records of global and regional Land-Surface Air Temperature (LSAT) obtained from station observations are in agreement that LSAT as well as sea surface temperatures have increased. In addition to these findings, there are identifiable signs that global warming is currently taking place, including substantial ice loss in the Arctic over the past two decades (IPCC 2014).

Potential impacts of climate change in California may include loss in snow pack, sea level rise, more extreme heat days per year, more high-ozone days, more large forest fires, and more drought years (CalEPA 2010). Below is a summary of some of the potential effects that could be experienced in California as a result of climate change.

Air Quality

Higher temperatures, which are conducive to air pollution formation, could worsen air quality in California. Climate change may increase the concentration of ground-level ozone, but the magnitude of the effect, and therefore its indirect effects, are uncertain. If higher temperatures are accompanied by drier conditions, the potential for large wildfires could increase, which, in turn, would further worsen air quality. However, if higher temperatures are accompanied by wetter rather than drier conditions, the rains would tend to temporarily clear the air of particulate pollution and reduce the incidence of large wildfires, thereby ameliorating the pollution associated with wildfires. Additionally, 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 (CEC 2009).

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 water supplies in California. However, the average early spring snowpack in the Sierra Nevada decreased by about 10 percent during the last century, a loss of 1.5 million acre-feet of snowpack storage. During the same period, sea level rose eight inches along California's coast. California's temperature has risen 1°F, mostly at night and during the winter, with higher elevations experiencing the highest increase. Many Southern California cities have experienced their lowest recorded annual precipitation twice within the past decade. In a span of two years, Los Angeles experienced both its driest and wettest years on record (California Department of Water Resources [DWR] 2008, California Climate Change Center [CCCC] 2009).

This uncertainty 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 Sierra snowpack provides the majority of California's water supply by accumulating snow during the state's wet winters and releasing it slowly during the state's dry springs and summers. Based on historical data and modeling, the DWR projects that the Sierra snowpack will experience a 25 to 40 percent reduction from its historic average by 2050. Climate change is also anticipated to bring warmer storms that result in less snowfall at lower elevations, reducing the total snowpack (DWR 2008). Climate change may reduce groundwater recharge, putting further strain on an already limited water supply in the region.

Hydrology

Climate change could potentially affect the amount of snowfall, rainfall, and snow pack; the intensity and frequency of storms; flood hydrographs (flash floods, rain or snow events, coincidental high tide and high runoff events); sea level rise and coastal flooding; coastal erosion; and the potential for saltwater intrusion. According to *The Impacts of Sea-Level Rise on the California Coast*, climate change has the potential to induce substantial sea level rise in the coming century (CCCC 2009). The rate of increase of global mean sea levels over the 2001 to 2010 decade, as observed by satellites, ocean buoys, and land gauges, was approximately 3.2 mm per year, which is double the observed 20th century trend of 1.6 mm per year (World Meteorological Organization [WMO] 2013). The most recent IPCC report (2013) predicts a mean global sea level rise of 11 to 38 inches by 2100. In its report, *Rising Seas in California*, the Ocean Protection Council (OPC) predicts that sea levels along the California coast would likely (67% probability) rise by 0.2 to 1.1 feet by 2050 and 0.7 to 3.6 feet by 2100 (OPC 2017). A rise in sea levels could result in coastal flooding and erosion, and could jeopardize California's water supply due to saltwater intrusion. In addition, increased CO₂ emissions can cause oceans to acidify due to the carbonic acid it forms. Increased storm intensity and frequency could affect the ability of flood-control facilities, including levees, to handle storm events.

The ocean covers over 70 percent of the earth's surface and acts as a major carbon sink in the global carbon cycle. As the concentration of CO₂ in the atmosphere increases, so does the concentration of carbon in the ocean. The reaction of dissolved CO₂ with seawater results in the creation of carbonic acid (H₂CO₃), carbonate, bicarbonate, and hydrogen ions, which lowers pH causing higher seawater acidity. Higher acidity in seawater affects many aquatic animals ability to fix calcium for body structure, which could have significant negative effects across the entire food chain.

Agriculture

California has a \$30 billion annual agricultural industry that produces approximately half of the country's fruits and vegetables. Higher CO₂ levels can stimulate plant production and increase plant water-use efficiency. However, if temperatures rise and drier conditions prevail, water demand could increase, crop-yield could be threatened by a less reliable water supply, and greater air pollution could render plants more susceptible to pest and disease outbreaks. In addition, temperature increases could change the time of year certain crops, such as wine grapes, bloom or ripen, and thereby affect their quality (CCCC 2006).

Ecosystems and Wildlife

Climate change and the potential resulting changes in weather patterns could have ecological effects on a global, regional, and local scale. Increasing concentrations of GHGs are likely to accelerate the rate of climate change. Scientists project that the average global surface temperature could rise by 1.0 to 4.5°F (0.6 to 2.5°C) in the next 50 years, and 2.2 to 10°F (1.4 to 5.8°C) in the next century, with substantial regional variation. Soil moisture is likely to decline in many regions, and intense rainstorms are likely to become more frequent. Rising temperatures could have four major impacts on plants and animals:

- Timing of ecological events;
- Geographic range;
- Species' composition within communities; and
- Ecosystem processes, such as carbon cycling and storage (Parmesan 2006).

d. Regulatory Setting

Federal

The U.S. Supreme Court in *Massachusetts et al. v. Environmental Protection Agency et al.* ([2007] 549 U.S. 05-1120) held 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 establishes 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 2014, the U.S. Supreme Court in *Utility Air Regulatory Group v. EPA* (134 S. Ct. 2427 [2014]) held that U.S. EPA may not treat GHGs as an air pollutant for purposes of determining whether a source is a major source required to obtain a PSD or Title V permit. The Court also held that PSD permits that are 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 (BACT).

State

CARB is responsible for the coordination and oversight of State and local air pollution control programs in California. California has established numerous programs and 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. Pavley I regulates model years from 2009 to 2016 and Pavley II, which is 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 Low Emissions Vehicles (LEV), Zero Emissions Vehicles (ZEV), and Clean Fuels Outlet programs, and would provide major reductions in GHG emissions. By 2025, when the rules will be fully implemented, new automobiles will emit 34 percent fewer GHGs and 75 percent fewer smog-forming emissions from their model year 2016 levels (CARB 2011).

Assembly Bill 32

California's major initiative for reducing GHG emissions is outlined in Assembly Bill 32, the "California Global Warming Solutions Act 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. The initial Scoping Plan was approved by CARB on December 11, 2008, and included measures to address GHG emission reduction strategies related to energy efficiency, water use, and recycling and solid waste, among other measures. 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 approval of the Scoping Plan.

In May 2014, CARB approved the first update to the original Scoping Plan. The 2013 Scoping Plan Update defined CARB's climate change priorities for the next five years and set the groundwork to reach post-2020 statewide goals. The update highlights 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, such as for water, waste, natural resources, clean energy and transportation, and land use (CARB 2018).

Executive Order No. S-3-05 and B-30-15

EO-S-3-05, issued in June 2005, established short-term, mid-term, and long-term GHG emission reduction targets for California of reducing GHG emissions to 2000 levels by 2010, to 1990 levels by 2020, and 80 percent below 1990 levels by 2050. EO-B-30-15, issued in April 2015, added an intermediate reduction target of 40 percent below 1990 levels by 2030.

Senate Bill 97

Senate Bill (SB) 97, signed in August 2007, acknowledges that climate change is an environmental issue that requires analysis in CEQA documents. In March 2010, the California Resources Agency adopted amendments to the State CEQA Guidelines for the feasible mitigation of GHG emissions or the effects of GHG emissions. The adopted guidelines give lead agencies the discretion to set quantitative or qualitative thresholds for the assessment and mitigation of GHG and climate change impacts.

Senate Bill 375

Senate Bill 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 for 2020 and 2035. In addition, SB 375 directs each of the state's 18 major Metropolitan Planning Organizations (MPO) to prepare a "sustainable communities strategy" (SCS) that contains a growth strategy to meet these emission targets for inclusion in the Regional Transportation Plan (RTP). Current GHG reduction targets set by CARB for SJCOG are a 5 percent per capita reduction from 2005 levels by 2020 and a 10 percent per capita reduction from 2005 levels by 2035.

Senate Bill 32

On September 8, 2016, the governor signed Senate Bill 32 (SB 32) into law, extending AB 32 by requiring the State to further reduce GHGs to 40 percent below 1990 levels by 2030 (the other provisions of AB 32 remain unchanged). On December 14, 2017, CARB adopted the 2017 Scoping Plan, which provides a framework for achieving the 2030 target (CARB 2017e). The 2017 Scoping Plan relies on the continuation and expansion of existing policies and regulations, such as the Cap-and-Trade Program, as well as implementation of recently adopted policies and policies, such as SB 350 and 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 a statewide per capita goal of six metric tons (MT) CO₂e by 2030 and two MT CO₂e by 2050 (ARB 2017c). As stated in the 2017 Scoping Plan, these goals may be appropriate for plan-level analyses (city, county, subregional, or regional level), but not for specific individual projects because they include all emissions sectors in the state.

Senate Bill 1383

Adopted in September 2016, SB 1383 requires the CARB to approve and begin implementing a comprehensive strategy to reduce emissions of short-lived climate pollutants. The bill requires the strategy to achieve the following reduction targets by 2030:

- Methane – 40% below 2013 levels
- Hydrofluorocarbons – 40% below 2013 levels
- Anthropogenic black carbon – 50% below 2013 levels

The bill also requires CalRecycle, in consultation with the State board, to adopt regulations that achieve specified targets for reducing organic waste in landfills.

Senate Bill 350

Adopted on October 7, 2015, SB 350 supports the reduction of GHG emissions from the electricity sector through a number of measures, including requiring electricity providers to achieve a 50 percent renewables portfolio standard by 2030 and a cumulative doubling of statewide energy efficiency savings in electricity and natural gas by retail customers by 2030.

California Environmental Quality Act

Pursuant to the requirements of SB 97, the Resources Agency has adopted amendments to the State CEQA Guidelines for the feasible mitigation of GHG emissions or the effects of GHG emissions. The

adopted State CEQA Guidelines provide general regulatory guidance on the analysis and mitigation of GHG emissions in CEQA documents, while giving lead agencies the discretion to set quantitative or qualitative thresholds for the assessment and mitigation of GHGs and climate change impacts. To date, a variety of air districts have adopted quantitative significance thresholds for GHGs.

For more information on the Senate and Assembly Bills, Executive Orders, and reports discussed above, and to view reports and research referenced above, please refer to the following websites: www.climatechange.ca.gov and www.arb.ca.gov/cc/cc.htm.

Regional and Local

Dibs (formerly Commute Connection)

Dibs (formerly Commute Connection) is a program of SJCOG serving San Joaquin, Stanislaus, and Merced counties. It was established to promote and encourage smart travel through carpooling, vanpooling, riding transit, walking, & biking. The program's core focus is to reduce single occupant vehicle commutes, thus reducing congestion and improving air quality.

Local GHG Reduction Plans

Four of SJCOG's member jurisdictions have adopted GHG reduction plans that set goals and outline policies to achieve GHG reduction targets. Baseline and target GHG emissions established in the GHG reduction plans are shown in Table 25.

Table 25 Local GHG Reduction Plans in the SJCOG Region

Jurisdiction	Type	Status	Baseline Annual Emissions (MT CO ₂ e)	Emission Targets	
				2020	2030
City of Lodi	Climate Action Plan	Adopted November 2014	2008: 486,628	4.5 MT CO ₂ e/ service population	3.0 MT CO ₂ e/ service population
City of Manteca	Climate Action Plan	Adopted October 2013	2005: 400,346	429,693 MT CO ₂ e 4.91 MT CO ₂ e/ service population	–
City of Stockton	Climate Action Plan	Adopted August 2014	2005: 2,360,932	2,122,000 MT CO ₂ e	–
City of Tracy	Sustainability Action Plan	Adopted February 2011	2006: 11.6	9.86 MT CO ₂ e	–

Sources: City of Lodi 2014, City of Manteca 2013, City of Stockton 2014, City of Tracy 2011

The completed climate action planning documents address issues related to emissions produced by transportation, energy usage, and other operational emissions such as water supply and conveyance, wastewater treatment, and solid waste disposal. The types and quantity of emissions produced in the SJCOG region vary among jurisdictional boundaries. However, for most jurisdictions, transportation and energy usage produce a majority of GHG emissions.

Climate action planning policies in the region establish a framework for improved circulation networks and energy conservation. Transportation policies aim to reduce vehicle miles traveled (VMT) by offering more opportunities for alternative transportation modes, including bicycling, walking, and transit use. In addition, many of the documents include policies to promote transit oriented development (TOD) and land use policies that encourage a greater diversity of land use in

closer proximity to one another. In order to reduce emissions caused by energy usage, jurisdictions have established policies that will facilitate and encourage energy efficiency for both residential and commercial land uses. Cities and counties include programs to improve energy efficiencies in old and new buildings and decrease the use of fossil fuels by providing incentives for use of renewable energy.

Other Local Plans

GHG reduction policies can also be found in other local plans, particularly General Plans. A summary of GHG reduction policies adopted by jurisdictions in San Joaquin County are summarized below.

SAN JOAQUIN COUNTY GENERAL PLAN 2035 (2016)

The County's General Plan 2035 includes a suite of policies that support reductions in GHG emissions by promoting transportation alternatives to single-occupancy driving, energy efficiency, incorporation of sustainable technologies, alleviation of congestion, sustainable land use patterns (including infill development), development of alternative fueling stations, and other sustainability strategies. Appendix A of the General Plan provides a compilation of Sustainability Policies and Programs with some quantified emission reductions (County of San Joaquin 2016).

4.9.2 Impact Analysis

a. Significance Thresholds and Methodology

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 GHG emissions:

1. Generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment. SJCOG has determined that significant adverse impacts related to GHG emissions could result if the project would meet the following criteria:
 - Generate a net increase in GHG emissions compared to baseline conditions
 - Generate GHG emissions exceeding CARB's recommended plan-level GHG emission reduction goals of six MT CO₂e per capita by 2030 and two MT CO₂e per capita by 2050
 - Generate substantial short-term emissions
2. Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases. SJCOG has determined that significant adverse impacts related to GHG emissions could result if the project would meet the following criteria:
 - Obstruct the state's ability to achieve AB 32 and SB 32 GHG reduction targets. The project would obstruct achievement of statewide targets if it would:
 - Exceed SB 375 regional emission reduction targets for passenger vehicle emissions established by CARB (five percent reduction from 2005 levels by 2020 and 10 percent from 2005 levels by 2035)
 - Conflict with local GHG reduction plans and policies

CEQA Guidelines Section 15064.4(b) indicates that a lead agency should consider the following in determining the significance of GHG emissions: 1) the extent to which a project may increase or

reduce GHG emissions as compared to the existing environmental setting, 2) whether project emissions exceed a threshold of significance that the lead agency determines applies to the project, and 3) the extent to which the project complies with plans and policies to reduce GHG emissions. The first requirement is addressed under Threshold 1a (see below), the second requirement is addressed under Threshold 1b, and the third requirement is addressed under Threshold 2a and 2b.

The 2017 Scoping Plan recommends statewide targets of no more than six MT CO₂e per capita by 2030 and two MT CO₂e per capita by 2050 to achieve the 2030 SB 32 target and the longer term reduction goal of 80 percent below 1990 levels by 2050 set forth in EO S-3-05. The 2017 Scoping Plan also states, “These goals are appropriate for the plan level (city, county, subregional, or regional level), but not for specific individuals because they include all emissions sectors in the State.” Thus, these targets are applicable to the 2018 RTP/SCS, which is a plan-level document, and are applied as significance thresholds under Threshold 1b.

The 2017 Scoping Plan also identifies implementation of SB 375 as a key mechanism to achieving statewide emission targets established under AB 32 and SB 32. Therefore, consistency with SB 375 reduction targets is required for the 2018 RTP/SCS to be consistent with AB 32 and SB 32 and is included as Threshold 2a.

The SJVAPCD provides guidance to land use agencies in determining the significance of project-specific GHG emissions in its document, *District Guidance for Land-Use Agencies in Addressing GHG Emissions*. However, this guidance is intended to be applied to individual projects, rather than a program of projects or a plan, such as the RTP/SCS, and it is ultimately up to the lead agency to establish criteria for determining significance. Therefore, SJVAPCD guidance is not used in this analysis.

Short-Term Emissions Methodology

Construction emissions typically comprise a relatively small portion of a project’s GHG footprint due to their short duration relative to the lifetime of a project (i.e. months to a few years of construction versus 30 to 50 years of operation). In addition, construction-related emissions are speculative at the plan level because they are highly dependent on the characteristics of individual projects. Consequently, impacts related to construction emissions are evaluated qualitatively.

Long-Term Emissions Methodology

The project’s total operational GHG emissions were calculated by estimating emissions generated by mobile sources, electricity use, natural gas use, waste disposal, and water treatment, distribution, and conveyance, and wastewater treatment. Mobile source emissions were modeled using VMIP2 and EMFAC 2014, as previously described in Section 4.3, *Air Quality*; mobile source emissions take into consideration emission reductions from the Advanced Clean Cars program, as well as per-capita VMT reductions resulting from more compact growth. Electricity and natural gas emissions were estimated using the number of residential units and square feet of commercial space (derived from employment estimates), statewide average consumption rate, and emission factors for electricity and natural gas. Waste emissions were estimated using the total population, the statewide average disposal rate, and an emission factor for waste. Water emissions were estimated using total population, energy intensity for water treatment, conveyance, distribution, and wastewater treatment, and the emission factor for electricity. Emission factors and consumption rates were not adjusted for 2042 to reflect adopted policies that would reduce the carbon intensity of energy and improve energy efficiency (SB 350), or statewide initiatives to enhance water conservation and water efficiency and reduce waste disposal, and thus provide a

conservative estimate of future emissions from these sources. Calculations for emissions from non-mobile sources, along with data sources are provided in Appendix C.

To determine project per-capita emissions, emissions were totaled for all sectors and divided by the service population (employment + residential population).

Project emissions to evaluate consistency with SB 375 reduction targets were calculated with EMFAC 2014 using the SB 375 mode, in accordance with CARB guidance; SB 375 emissions only include emissions from passenger vehicles (automobiles and light trucks), do not include reductions associated with the Advanced Clean Car Program, and exclude pass-through trips.

b. Project Impacts and Mitigation Measures

This section describes generalized GHG and climate change impacts associated with the 2018 RTP/SCS. Due to the programmatic nature of the plan, a quantitative, 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 2018 RTP/SCS could result in GHG and climate change impacts as described in the following sections.

Threshold 1: Generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment. A significant impact would occur if the project would:

- a. Generate a net increase in GHG emissions compared to baseline conditions
- b. Generate GHG emissions exceeding six MT CO₂e per capita by 2030 and two MT CO₂e per capita by 2050.

IMPACT GHG-1 IMPLEMENTATION OF THE 2018 RTP/SCS WOULD RESULT IN A NET DECREASE IN REGIONAL LONG-TERM GHG EMISSIONS AS COMPARED TO EXISTING 2015 CONDITIONS AND WOULD NOT EXCEED STATEWIDE PER-CAPITA TARGETS FOR 2030 AND 2050. IMPACTS WOULD BE LESS THAN SIGNIFICANT.

The 2018 RTP/SCS would impact long-term regional GHG emissions by supporting compact land use development and implementing transportation improvement projects, as well as adopting regional policies to reduce GHG emissions. Table 26 summarizes estimated GHG emissions under 2015 conditions and 2042 with project conditions. Mobile source emissions would decrease under 2042 with project conditions primarily due to a decrease in per-capita VMT and more stringent vehicle emission standards implemented through statewide policies. GHG emissions from non-mobile sources are estimated to increase due to population and job growth; however, as discussed in the methodology section, estimated emissions presented in this analysis do not take into consideration adopted policies and statewide initiatives that could reduce future consumption rates and the carbon intensity of these sources, such as SB 350. Because mobile source emissions comprise the majority of the project's associated emissions, overall, regional emissions would decrease under 2042 with project conditions by 648,843 MT CO₂e relative to 2015 conditions.

Under 2015 conditions, per capita emissions are estimated to have been 4.3 MT CO₂e per service population, which already meets the 2030 statewide target of six MT CO₂e per service population by 2030. Per capita emissions would decrease over time with the project; thus, the project would not obstruct the San Joaquin County region from meeting the 2030 statewide per capita target. Under 2042 with project conditions, per capita emissions would decrease to 2.6 MT CO₂e. This level of emissions would be consistent with the trajectory set by the 2030 and 2050 targets, which, assuming a linear trajectory, would require an emission reduction of 0.2 MT CO₂e per capita per

year between 2030 and 2050, resulting in a 2042 target of 3.6 MT CO₂e per capita. Because 2042 with project emissions would be below 3.6 MT CO₂e per capita, the project would be consistent with statewide per-capita targets and the project would not generate substantial quantities of GHG emissions. Project impacts would be less than significant.

Table 26 Net Change in Operational GHG Emissions (tons/day)

Emission Sources	Annual Emissions (MT CO ₂ e)	
	SJCOG 2015 Baseline	2042 with Project
Mobile sources (all vehicle classes)	3,620,070	2,834,590
Residential electricity	216,852	320,597
Commercial electricity	184,749	211,245
Residential Natural Gas	11,543	17,024
Commercial Natural Gas	3,524	4,030
Waste Disposal	747	1,081
Water treatment, conveyance, distribution, and wastewater treatment	167	241
Total	4,037,652	3,388,809
Net Change	–	-648,843
Per Capita Emissions	4.3	2.6

Notes: Calculations for emissions from non-mobile sources are provided in Appendix C. Mobile source emissions were calculated using EMFAC 2014.

Mitigation Measures

No mitigation measures are required.

Significance After Mitigation

Impacts would be less than significant without mitigation.

Threshold 1: Generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment. A significant impact would occur if the project would:

- c. Generate substantial short-term emissions

IMPACT GHG-2 IMPLEMENTATION OF THE 2018 RTP/SCS WOULD RESULT IN SHORT-TERM MOBILE GHG EMISSIONS RELATED TO CONSTRUCTION ACTIVITIES. IMPACTS WOULD BE SIGNIFICANT BUT MITIGABLE.

Construction activities associated with transportation improvement projects and future land use patterns envisioned by the 2018 RTP/SCS would generate GHG emissions from the operation of construction equipment, as well as employee travel and truck trips to and from the construction site. Due to the temporary and limited nature of construction activities, construction emissions typically comprise only a small portion of a project's GHG footprint. Because project-level details are not currently known, construction-related emissions at the RTP/SCS level are speculative and cannot be quantified. Therefore, impacts related to short-term emissions would be potentially significant, but mitigable.

Mitigation Measure

For all transportation projects under SJCOG's jurisdiction, transportation project sponsor agencies can and should implement the following mitigation measure developed for the 2018 RTP/SCS program for transportation projects generating construction GHG emissions. Local agencies in the SJCOG region can and should implement this measure, where relevant, to land use projects implementing the 2018 RTP/SCS.

GHG-2 Construction GHG Reduction Measures

The project sponsor shall require the construction contractor to incorporate the most recent GHG reduction measures and/or technologies for reducing diesel particulate and NO_x emissions measures for off-road construction vehicles. The required measures shall be noted on all construction plans and the project sponsor shall perform periodic site inspections. Current GHG-reducing measures include, but are not limited to, 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 Tier 3 engines are not feasible, Tier 2 certified engines shall be used;
- Use of on-road heavy-duty trucks that meet the CARB's 2007 or cleaner certification standard for on-road heavy-duty diesel engines, and comply with the State On-Road Regulation;
- All on and off-road diesel equipment shall not idle for more than 5 minutes. 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;
- Substitute gasoline-powered in place of diesel-powered equipment, when feasible;
- Use of alternatively fueled construction equipment, such as compressed natural gas (CNG), liquefied natural gas (LNG), propane or biodiesel, in place of diesel powered equipment for 15 percent of the fleet;
- Use of materials sourced from local suppliers, as feasible; and
- Recycling of at least 50 percent of construction waste materials.

Significance After Mitigation

With implementation Mitigation Measure GHG-2, impacts related to construction GHG emissions would be less than significant.

Threshold 2: Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases. A significant impact would occur if the project would: a. Obstruct the state’s ability to achieve AB 32 and SB 32 GHG reduction targets. The project would obstruct achievement of statewide targets if it would: - Generate emissions exceeding SB 375 regional emission reduction targets for passenger vehicle emissions established by CARB (five percent reduction from 2005 levels by 2020 and 10 percent from 2005 levels by 2035)

IMPACT GHG-3 IMPLEMENTATION OF THE 2018 RTP/SCS WOULD NOT INTERFERE WITH THE ACHIEVEMENT OF STATEWIDE GHG REDUCTION TARGETS ENCODED IN AB 32 AND SB 32. THERE WOULD BE NO IMPACT.

As discussed above under “Significance Thresholds,” SB 375 comprises one of California’s key strategies to reduce GHG emissions from transportation sources, which generate the majority of California’s GHG emissions. SB 375 requires that local MPOs develop integrated land use and transportation plans to meet GHG reduction targets for cars and light trucks established by CARB; importantly, CARB is required to review and revise reduction targets every eight years, allowing for increasingly stringent reduction targets over time and updated time horizons. According to the Scoping Plan, with implementation of SB 375 and other strategies outlined in the Scoping Plan, California will be able to meet statewide targets set forth in AB 32 and SB 32.

For San Joaquin County, the current per capita emission reduction targets set by CARB are a five percent reduction relative to 2005 levels by 2020, and a 10 percent reduction from 2005 levels by 2035. Table 27 shows SB 375 regional emissions and targets for 2020 and 2035, as well as 2005 baseline conditions. As shown in Table 27, the 2018 RTP/SCS exceeds currently adopted targets, providing GHG reductions of 7.0 percent in 2020 and 17.6 percent in 2035. In addition, as discussed under Impact GHG-1, plan-level emissions would meet statewide per capita targets consistent with AB 32, SB 32, and the state’s long-term 2050 target, set forth in EO-S-3-05. Therefore, the project would not impede California’s achievement of statewide targets encoded in AB 32 and SB 32. There would be no impact.

Table 27 SB 375 Regional Emissions and Targets

Scenario	CO ₂ Emissions (lbs/day)	Population	Per Capita CO ₂ Emissions (lbs/day/person)	% Reduction in Emissions Compared to 2005 Baseline
2005 Baseline	13,307,632	652,339	20.4	–
2020 with 2018 RTP/SCS	14,714,243	775,819	19.0	7.0
2035 with 2018 RTP/SCS	15,927,732	947,835	16.8	17.6

Mitigation Measures

No mitigation measures are required.

Significance After Mitigation

There would be no impact without mitigation.

Threshold 2: Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases. A significant impact would occur if the project would:

b. Conflict with local GHG reduction plans and policies

IMPACT GHG-4 THE 2018 RTP/SCS SUPPORTS COMPACT, TRANSIT-ORIENTED GROWTH, INCLUDES TRANSIT AND ACTIVE TRANSPORTATION PROJECTS, AS WELL AS INITIATIVES TO FURTHER SUPPORT REGIONAL GHG REDUCTIONS AND CLIMATE CHANGE ADAPTATION. THEREFORE, THE PROJECT WOULD NOT CONFLICT WITH LOCAL GHG REDUCTION PLANS AND POLICIES. THERE WOULD BE NO IMPACT.

Within San Joaquin County, the cities of Lodi, Manteca, Stockton, and Tracy have adopted CAPs that establish community GHG emission baselines, set GHG reduction targets, and outline policies and implementing measures to help achieve those targets. As discussed above under *Local GHG Reduction Plans*, these plans include policies and implementing measures to reduce local GHG emissions by promoting active transport, zero emission vehicle adoption, infill and transit-oriented development, increased building energy efficiency, and/or other strategies.

The 2018 RTP/SCS supports local efforts to reduce GHG emissions by adopting a compact growth land use scenario and including active transportation and transit projects in its project list. As discussed under Impact GHG-1, implementation of the 2018 RTP/SCS would help the region reduce emissions and achieve statewide per capita targets. In addition, Chapter 3 of the 2018 RTP/SCS identifies two future studies to be implemented by SJCOG that would further support efforts to reduce GHG emissions and address climate change: an SCS Implementation Study that would provide insight on the barriers to SCS implementation, focusing on first mile/last mile planning, impediments to transit use to job centers, and recommendations on shared mobility initiatives and emerging technologies; a Climate Adaptation and Resiliency Planning Study that identifies current risks and vulnerabilities and develops regional level strategies to assist in meeting state goals and federal planning requirements. Therefore, the project would not conflict with local GHG reduction plans. There would be no impact.

Mitigation Measures

No mitigation measures are required.

Significance After Mitigation

The project would have no impact without mitigation.

c. Cumulative Impacts

Climate change is inherently a cumulative impact as it is the accumulation of large quantities of GHGs in the atmosphere that results in impacts to global climate. While the vast majority of individual projects do not generate sufficient GHG emissions to directly influence climate change, project emissions can contribute incrementally to cumulative effects that are significant, even if individual changes resulting from a single project are limited. Thus, the issue of climate change typically involves an analysis of whether a project's contribution towards an impact is cumulatively considerable. "Cumulatively considerable" means that the incremental effects of an individual project are significant when viewed in connection with the effects of past projects, other current projects, and probable future projects (CEQA Guidelines, Section 15064[h][1]).

As discussed above under Impacts GHG-1 and GHG-3, the 2018 RTP/SCS would reduce mobile source GHG emissions relative to 2015 conditions and would achieve overall quantitative reductions in GHG emissions consistent with statewide per capita targets and SB 375. Thus, based on criteria established in state statutes and guidance documents, the project's contribution to atmospheric GHGs would be considered less than significant.

For this reason, at its December 14, 2017 meeting, the CARB Board of Directors expressed consensus that CARB will shift its recommended approach to implementing SB 375 away from an emphasis on modeling to an emphasis on implementing strategies and solutions that have been proven to be effective. Furthermore, the 2017 Scoping Plan identifies that "there is a gap between what SB 375 can provide and what is needed to meet the State's 2030 and 2050 goals." Appendix C of the Scoping Plan provides strategies to close the gap, including the following:

- Explore and develop financing, regulatory, and other tools to support more efficient and more equitable development: The State will evaluate and develop financing mechanisms, incentives, guidelines, and other tools to substantially accelerate more efficient and equitable development outcomes. This includes: reducing barriers to housing development in infill areas; promoting infill development and necessary infrastructure in existing communities; and implementing strategies to ensure that long-time residents can stay in place as neighborhoods improve.
- Support transportation policies such as priced express lanes, reduced parking requirements for development, and transit commuter incentives that promote infill development and reduce vehicle miles traveled: The State will implement road user and parking pricing policies, and coordinate these policies with programs to avoid adverse impacts on low-income drivers and with infrastructure investments as described above. Further, the State will invest in technology to improve transportation system efficiency that provide choices that enable people and goods to reach destinations quickly and cleanly.

Due to the uncertainty associated with project emissions and future statewide emission reductions, as well as the gap identified by the Scoping Plan for achieving reductions from SB 375 sufficient to meet statewide targets, the project would have a potentially significant cumulative impact related to GHG emissions.

Mitigation Measure

GHG-Cumulative Regional Measures to Support GHG Reductions

To support GHG reductions on a regional level, as well as address the gap between SB 375 and needed reductions from the transportation and land use sectors to achieve statewide targets, SJCOG shall take the following actions, as feasible (the following measures have been adapted from Appendix C of the 2017 Scoping Plan):

- Explore and develop financing and tools to support more efficient and more equitable development, including reducing barriers to housing development in infill areas; promoting infill development and necessary infrastructure in existing communities; and implementing strategies to ensure that long-time residents can stay in place as neighborhoods improve.
- Support transportation policies such as priced express lanes, reduced parking requirements for development, and transit commuter incentives that promote infill development and reduce vehicle miles traveled.

- Explore transit pass subsidies or other ways to reduce transit fares, particularly for disadvantaged communities, students, seniors, the disabled, and other transit-dependent users.
- Support expansion and improvement of active transportation infrastructure to help meet the California Transportation Plan goal of quadrupling active transportation mode share by 2040.
- Explore ways to expand access to car share, bike share, and ride share services.
- Explore ways to increase use of lower-carbon construction materials for transportation infrastructure projects.
- Implement sustainable landscaping practices for transportation infrastructure projects that contribute to the enhancement of a multi-modal transportation system.
- Explore ways to:
 - Promote teleworking and alternative work schedules.
 - Incentivize use of transit and active transportation for commuting.
 - Increase ride sharing to work to help meet the California Transportation Plan goal of increasing carpool vehicles by 15% by 2040.

SJCOG and member agencies shall promote the use of Dibs (formerly Commute Connection), a program of SJCOG serving San Joaquin, Stanislaus, and Merced counties. Dibs promotes and encourages smart travel through carpooling, vanpooling, riding transit, walking, & biking. The program's core focus is to reduce single occupant vehicle commutes, thus reducing congestion and GHG emissions, and improving air quality. Information on Dibs can be found here:

<https://www.dibsmyway.com/>

4.10 Hazards and Hazardous Materials

This section analyzes impacts related to hazardous materials, airports, emergency planning, and wildland fires in San Joaquin County. This section also describes the existing conditions for hazardous materials, airports, emergency planning, and wildland fires in San Joaquin, as well as the regulatory framework.

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. EPA) (2017), 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 points⁷ below 60 degrees Celsius, non-liquids that cause fire through specific conditions, ignitable compressed gases and oxidizers.
- Corrosivity. Capable of corroding other materials, aqueous wastes with a pH of 2 or less or greater than or equal to 12.5.

⁷ Flash point is the lowest temperature at which the vapors of a volatile combustible substance ignite in the air when exposed to flame.

- 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.

Generation and Disposal of Hazardous Materials and Waste

Many chemicals used in household cleaning, construction, light and heavy industry, dry cleaning, film processing, 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 within San Joaquin County are monitored by U.S. EPA; the San Joaquin County Environmental Health Department; the Central Valley Regional Water Quality Control Board (RWQCB); the San Joaquin County Environmental Health Department (EHD); Local Enforcement Agency (LEA) programs; and San Joaquin Valley Air Pollution Control District (Valley Air District). 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 a U.S. EPA 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. EPA 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. EPA 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 San Joaquin County. 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 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 25 registered hazardous waste transporters in San Joaquin County (DTSC 2017a).

Transportation of hazardous materials and wastes within San Joaquin County occurs through a variety of modes: truck, rail, air, ship, and pipeline. Transportation of hazardous materials by truck is

regulated by the DOT. The DOT, Federal Motor Carrier Safety Administration, identifies several highways and county roads in San Joaquin County as a Hazardous Materials Route in its National Hazardous Materials Route Registry (2017). These highways and roads include sections of:

▪ Ahern Road	▪ State Highway 26
▪ Bird Road	▪ State Route 33
▪ Byron Road	▪ State Highway 88
▪ Chrisman Road/11 th Street	▪ State Highway 99
▪ Grant Line Road	▪ State Highway 120
▪ Patterson Pass Road	▪ State Highway 132
▪ Kasson Road	▪ Interstate 5
▪ State Highway 4	▪ Interstate 205
▪ State Highway 12	▪ Interstate 580

On a tonnage basis, transport by truck accounted for approximately 94.6 percent of the hazardous materials transported in the nation in 2007 (FHWA, 2013). Considering the abundance of roads compared to rail and pipelines in the San Joaquin region, trucks are likely responsible for transporting the majority of hazardous materials within the SJCOG region. According to the DOT (2017), truck transport consistently accounts for the largest share of reportable incidents each year in California. For example, in 2016, truck transport accounted for approximately 90 percent of the reportable incidents in the State, while rail and air transport accounted for the other 10 percent. Reportable incidents in 2017, through and October 23, 2017, have shown a similar trend, with truck transport accounting for approximately 90 percent of the reportable incidents in the state (DOT 2017). 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, and individual railroads conduct additional local training for first responders (Association of American Railroads 2015). Freight railroads also work with State emergency planning committees and local first responders to develop emergency response plans. In accordance with a February 2014 agreement between the DOT and Association of American Railroads, 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 (Association of American Railroads 2015). A list of the rail facilities in San Joaquin County is provided in Section 4.14, *Transportation and Circulation*.

Pipelines, primarily underground, are used to transport a variety of potentially hazardous substances, including natural gas, crude oil, and other petroleum products throughout San Joaquin County. For example, Pacific Gas & Electric maintains and operates a natural gas pipeline that is roughly parallel to Interstate 5 through most of the County, passing through the city of Stockton, and Phillips 66 Pipeline operates a crude oil pipeline parallel to Interstate 580 in the southwestern portion of the county, among other (NPMS 2017). 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 (American Petroleum Institute, 2004). The Transportation Research Board (1988) 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.

The Port of Stockton is located within San Joaquin County, on the Stockton Deepwater Ship Channel, 80 miles from the Pacific Ocean along the San Joaquin River. The Port owns and operates a major, diversified intermodal transportation center that encompasses more than 2,000 acres of operating area and real estate. The Port of Stockton has over 11,000 lineal feet of waterside docking for berthing and cargo operations of up to 17 vessels, as well as 1.1 million square feet of dockside transit sheds and shipside rail trackage, with 40 miles of rail track that can be served by Union Pacific or Burlington Northern Santa Fe (BNSF) Railroads. Existing facilities include 7.7 million square feet of warehousing for both dry bulk and general cargo, which compose the largest percentage of the Port's dockside operations. Stockton's deepwater channel has an average depth of 37 feet at average low tide and 40 feet at average high tide. Panamax-sized vessels with load capacity up to 45,000-ton dead-weight class, which are fully loaded, and partially loaded 80,000-ton dead-weight vessels can be accommodated. There is no width restriction of vessels, and ships up to 900 feet in length can navigate the Stockton Ship Channel. The Port is 1 mile from I-5 and all interconnecting major highway systems. The nearest port of entry for container cargo is the Port of Oakland (SJCOG 2014).

Potential for Hazardous Materials and Hazardous Materials Sites

Many activities in San Joaquin County involve the use, storage, or production of hazardous materials. The use of hazardous materials is commonplace in commercial, industrial, and manufacturing activities, and many businesses within San Joaquin County 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, automotive service stations, and medical offices, and industrial uses such as metal fabrication, metal scrap yards, railways, cement companies, food manufacturing, chemical manufacturing, and Pacific Gas & Electric substations (U.S. EPA, 2017). 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 San Joaquin County.

California Government Code Section 65962.5 requires the California Environmental Protection Agency (CalEPA) 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 (2017a);
- DTSC EnviroStor database (DTSC 2017b) (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 2017) 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;
- California Office of Emergency Services (OES) Hazardous Materials Spill Notification database (2017) that includes information on reported hazardous material accidental releases or spills;
- The DOT's Hazardous Materials Incident Report System database (DOT 2017), which is maintained by the U.S. EPA and contains data on hazardous material spill incidents;
- California Department of Resources Recycling and Recovery's (CalRecycle) Solid Waste Inventory System database (CalRecycle 2017) of active and closed solid waste sites;
- The U.S. EPA Envirofacts database (2017b) of Resource Conservation and Recovery Act (RCRA) sites, as well as other hazardous sites, such as superfund and brownfield sites; and
- The United States Army Corps of Engineers (USACE) list of Formerly Used Defense Sites for California (2015).

All of the databases listed above have identified sites within San Joaquin County. As described above, the DTSC Active Transporter County Search Report identifies 23 registered hazardous waste transporters in the county. The DOT's Hazardous Materials Incident Report System database identified 35 hazardous materials spill incidents in San Joaquin County between January 1, 2017, and November 30, 2017. Seven incidents were in Stockton, 19 were in Tracy, two were in Manteca, five were in Lathrop, one was in French Camp, and one was in Escalon. Of these, only one incident was considered a serious incident. On July 31, 2017, approximately 7,000 gallons of alcohol was released from a tank car. No injuries were reported. Five sites in San Joaquin County are identified on the USACE list of Formerly Used Defense Sites for California. According to CalRecycle's Solid Waste Inventory System database, there are seven active landfill sites in San Joaquin County and an additional 29 landfill sites that have been closed.

For some databases, such as the DTSC's EnviroStor database and the U.S. EPA Envirofacts database, the list of identified sites is too exhaustive to provide in its entirety for purposes of this EIR. For example, the EnviroStor identifies 341 cleanup sites in San Joaquin County, 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. EPA 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, medical facilities, automobile dealerships, paint stores, and trucking companies. The SWRCB GeoTracker database identifies 1,236 cleanup sites, some have been which remediated and closed, and some of which have yet to be closed. For purposes of this EIR, it is more important to note that many sites on the Cortese list exist throughout San Joaquin County, 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-1527-05). 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.

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. According to the California Department of Education (DOE) (2017b), there are 246 public schools in San Joaquin County. There are an additional 41 private schools in the county (DOE 2017a). According to the San Joaquin County Office of Education, there are 14 school districts with more than 135,000 students enrolled (SJCOE 2017).

Airports

San Joaquin County has six public-use aviation airports, which include the following:

- Kingdon Executive
- Lodi
- Lodi Precissi Airpark
- New Jerusalem
- Stockton Metropolitan
- Tracy Municipal

Of these airports, only the Stockton Metropolitan Airport provides scheduled air carrier service. There are also seven private airports in the county, including hospital heliports and small agricultural airstrips. Currently, there are no operational military airfields in the county.

Municipalities and communities in San Joaquin County must consider housing and economic development along with airport interests in making decisions concerning the amount and type of new development to allow in and near airport flight corridors. 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). Applicable ALUCPs to the SJCOG region are discussed in the Regulatory Setting, below.

Wildland Fires

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. The State of 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).

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 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 wildland fire risk areas: 1) Wildland Areas That May Contain Substantial Forest Fire Risks and Hazards, and 2) Very High Fire Hazard Severity Zones. Each risk area carries with it code requirements to reduce the potential risk of wildland fires. 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 San Joaquin County, moderate hazard zones are present in the northeastern and southwestern portions of the county, and high hazard zones are mapped in the southwestern portion of the county (CAL FIRE 2007).

b. Regulatory Setting

Federal

The U.S. EPA 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.

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.

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.

Code of Federal Regulations, Title 14, Part 77

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.

State

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 California Accidental Release Prevention (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 CalEPA 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:

- CalEPA is directly responsible for coordinating the administration of the Unified Program. The Secretary of the CalEPA 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 San Joaquin County is the San Joaquin County Environmental Health Department (EHD). The EHD is responsible for implementing the federal and state laws and regulations pertaining to the handling of hazardous wastes and hazardous materials.

California Health and Safety Code

Pursuant to the California Health and Safety Code section 25150, the Department of Toxic Substances Control shall adopt, and revise when appropriate, standards and regulations for the management of hazardous wastes to protect against hazards to the public health, domestic livestock, wildlife, or the environment. Pursuant to section 25159.5, in adopting or revising standards and regulations pursuant to this chapter, the department shall, insofar as practicable, make the standards and regulations conform with corresponding regulations adopted by the Environmental Protection Agency pursuant to the federal act. This section does not prohibit the department from adopting standards and regulations that are more stringent or more extensive than federal regulations.

Pursuant to the Health and Safety Code section 57008, CalEPA, in cooperation with the DTSC and the State Water Resources Control Board and the Office of Environmental Health Hazard Assessment, shall publish a list of screening numbers for select contaminants. Screening numbers are defined as the concentration of a contaminant published by CalEPA as an advisory number. In determining screening numbers, CalEPA considers the toxicology of the contaminant, risk assessments prepared by federal or state agencies, epidemiological studies, risk assessments or other evaluations of the contaminant during remediation of a site, and screening numbers that have been published by other agencies.

In 2017 DTSC Office of Human and Ecological Risk (HERO) issued Human Health Risk Assessment Note Number 3. HERO Note 3 lists DTSC-Modified screening levels (DTSC-SL) for select compounds in soil, tap water, and air.

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 CalEPA. 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 EPA and CalEPA. The CHHSLs can be used to screen sites for potential human health concerns where releases of hazardous chemicals to soil gas have occurred. Under most circumstances, the presence of a chemical in soil gas 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 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.

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 with regard to 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.

Regional and Local

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.

As of January 1, 2014, Senate Bill 1241 (SB 1241) requires that, upon the next revision of the housing element, jurisdictions review and update the Safety Element as necessary to address the risk of fire in SRAs and very-high fire hazard severity zones. These revisions must take into account specified considerations, including the provisions outlined in "Fire Hazard Planning" by the Office of Planning and Research.

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. Applicable hazard mitigation plans for San Joaquin County apply.

Emergency Response and Evacuation Plans

Emergency response plans include elements to maintain continuity of government, emergency functions of governmental agencies, mobilization and application of resources, mutual aid and public information. Emergency response plans are maintained at the federal, state and local levels for all types of disasters, human-made and natural. Local governments have the primary responsibility for preparedness and response activities.

The San Joaquin County Office of Emergency Services (OES) coordinates planning, preparing, and training for, responding to, and recovering from, emergencies for the San Joaquin Operational Areas. The OES has direct responsibility to support and coordinate the efforts of County departments carrying out their functions in the field and provides disaster information, logistical support, facilitates mutual aid requests, and facilitates inter-jurisdictional coordination.

In cooperation with others, OES maintains and oversees the Multi-Hazard Functional plans in place, which is the Countywide disaster preparedness program, including dam evacuation procedures and hazardous materials incidents response.

Airport Land Use Compatibility Plans

The six public airports within San Joaquin County are: Kingdon Airport, Lodi (Lind's) Airport, Lodi (Precissi) Airpark, New Jerusalem Airport, Stockton Metropolitan Airport, and Tracy Municipal

Airport. The ALUC adopted two ALUCPs for these airports. The Stockton Metropolitan ALUCP was adopted in 2016, and the other ALUCP, which covers the other five airports, was adopted in 2009. The ALUCP establishes areas of influence within which airport operations are likely to affect land uses or land uses could affect airport operations. 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).

4.10.2 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 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 for people residing or working in the project area;
6. For a project within the vicinity of a private airstrip, result in a safety hazard for people residing or working in the project area;
7. Impair implementation or physically interfere with an adopted emergency response plan or emergency evacuation plan; and/or
8. Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands.

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 San Joaquin County to determine the potential for implementation of the 2018 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 San Joaquin County, 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 2018 RTP/SCS.

The evaluation of hazards and hazardous materials impacts assumes that the construction and development under the 2018 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 describes generalized impacts associated with the 2018 RTP/SCS. Due to the programmatic nature of the 2018 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 2018 RTP/SCS would result in hazards and hazardous materials impacts as described in the following sections.

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 PROPOSED TRANSPORTATION IMPROVEMENT PROJECTS AND LAND USE PATTERNS INCLUDED IN THE 2018 RTP/SCS WOULD FACILITATE THE ROUTINE TRANSPORT, USE, OR DISPOSAL OF HAZARDOUS MATERIAL, AND MAY RESULT IN REASONABLY FORESEEABLE UPSET AND ACCIDENT CONDITIONS. MANDATORY COMPLIANCE WITH EXISTING REGULATIONS AND PROGRAMS WOULD MINIMIZE THE RISK ASSOCIATED WITH THESE ACTIVITIES OR ACCIDENT CONDITIONS. THUS, HAZARDS TO THE PUBLIC OR ENVIRONMENT WOULD BE LESS THAN SIGNIFICANT.

Land use patterns and transportation projects associated with implementation of the 2018 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.

As described above, the DOT has identified several highways and a county road within San Joaquin County as hazardous material routes (DOT 2017). Additionally, trucks transporting hazardous material would also have to use local collector and arterial streets to access individual project sites in the County. 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 affecting drivers and people along these routes, as well as drivers of those trucks. 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.

Construction associated with implementation of the 2018 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 construction of land use patterns and transportation projects included in the 2018 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. 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 would minimize the risk of exposure.

Land use patterns included in the 2018 RTP/SCS would have the potential to 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 patterns included in the 2018 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 County. 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 patterns included in the 2018 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 CalEPA regulations.

Transportation projects included in the 2018 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 2018 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 2018 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 patterns included in the 2018 RTP/SCS. To be declared a sustainable communities project under Public Resources Code Section 21155.1, projects in transit priority areas must demonstrate that there would not be an “unusually high” risk of fire or explosion from materials stored or used on or near the property and the project would not result in a risk of exposure to a potentially hazardous material at levels that exceed state and federal standards. This would occur on a project-specific basis, and does not affect the other streamlining strategies and statutes under the Sustainable Communities Act.

As described above in the Regulatory Setting discussion, 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 CalARP 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 patterns and transportation projects could increase the routine transport, use, storage, and disposal of hazardous wastes in the County. The planned land use patterns 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.

Significance After Mitigation

Impacts would be less than significant without mitigation.

Threshold 3: Emit hazardous emissions or handles hazardous or acutely hazardous materials, substances or waste within one-quarter mile of an existing or proposed school

IMPACT HAZ-2 PROPOSED TRANSPORTATION IMPROVEMENT PROJECTS AND LAND USE PATTERNS INCLUDED IN THE 2018 RTP/SCS WOULD FACILITATE HAZARDOUS EMISSIONS OR HANDLING OF ACUTELY HAZARDOUS MATERIALS, SUBSTANCES OR WASTE WITHIN ONE-QUARTER MILE OF AN EXISTING OR PROPOSED SCHOOL. EXISTING REGULATIONS AND PROGRAMS WOULD REDUCE THE RISK TO SCHOOLS. IMPACTS WOULD BE LESS THAN SIGNIFICANT.

Land use patterns included in the 2018 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 handling of hazardous materials such as household hazardous substances (e.g., paints, cleaning supplies, solvents, and petroleum products) and commercial and industrial hazardous waste. Thus, the 2018 RTP/SCS could increase the amount of hazardous materials handled within 0.25 mile of schools, depending on the specific location of land uses relative to schools in the region. 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 0.25 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 land use patterns included in the 2018 RTP/SCS, the California Education Code, including 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. Therefore, hazardous emissions and handling impacts on schools related to land use patterns included in the 2018 RTP/SCS would be less than significant.

The transportation projects included in the 2018 RTP/SCS could increase the capacity to transport hazardous materials on roads within San Joaquin County, 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 2018 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 2018 RTP/SCS would be less than significant.

Mitigation Measures

No Mitigation Measures are required.

Significance After Mitigation

Impacts would be less than significant without mitigation.

Threshold 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

IMPACT HAZ-3 THE 2018 RTP/SCS INCLUDES LAND USE PATTERNS AND TRANSPORTATION PROJECTS THAT COULD OCCUR ON PREVIOUSLY UNKNOWN HAZARDOUS MATERIAL SITES OR SITES ON THE LIST COMPILED BY GOVERNMENT CODE SECTION 65962.5. THUS, CONSTRUCTION OF THESE PROJECTS COULD CREATE A HAZARD TO THE PUBLIC OR ENVIRONMENT. IMPACTS WOULD BE SIGNIFICANT BUT MITIGABLE.

Throughout San Joaquin County 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 above, 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. Further, because the precise timing of future land use developments is unknown, an evaluation of the potential for specific sites of known contamination within the County to be affected by land use patterns included in the 2018 RTP/SCS cannot be conducted at this time. 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.

A common practice that is typically required by lending institutions when properties change hands is for a Phase I ESA to be prepared to research and disclose the prior uses of the site and the likelihood that residual hazardous materials and/or waste might be present in underlying soil and/or groundwater. Also, 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 in land use patterns included in the 2018 RTP/SCS would be potentially significant.

Similarly, there would be potential for transportation projects to encounter previously unidentified contamination from past practices on sites that have not been listed in environmental databases

pursuant to Government Code Section 65962.5. Thus, the impacts of transportation projects included in the 2018 RTP/SCS would be significant.

Mitigation Measures

For transportation projects under their jurisdiction, SJCOG shall implement, and transportation project sponsor agencies can and should implement, the following mitigation measure developed for the 2018 RTP/SCS program where applicable for transportation projects that would be located on or near hazardous materials. Municipalities in the SJCOG region can and should implement this measure, where relevant to land use projects implementing the 2018 RTP/SCS.

HAZ-1 Site Remediation

If an individual project included in the 2018 RTP/SCS is located on or near a hazardous materials and/or waste site pursuant to Government Code Section 65962.5, or has the potential for residual hazardous materials and/or waste as a result of location and/or prior uses, the project sponsor 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.

Significance After Mitigation

With implementation of Mitigation Measure HAZ-1, impacts would be reduced to less than significant because project sites with hazardous material contamination that are previously unknown and not included 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. These measures would prevent construction workers or other people from substantial exposure to hazardous materials. Thus, impacts would be reduced to a less than significant level.

Threshold 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 for people residing or working in the project area

Threshold 6: For a project within the vicinity of a private airstrip, result in a safety hazard for people residing or working in the project area

IMPACT HAZ-4 TRANSPORTATION IMPROVEMENT PROJECTS AND LAND USE SCENARIO ENVISIONED BY THE 2018 RTP/SCS MAY BE LOCATED AT OR NEAR A PUBLIC USE AIRPORT OR PRIVATE AIRSTRIP. EXISTING REGULATIONS AND REGULATORY OVERSIGHT WOULD REDUCE THE INHERENT HAZARD OF DEVELOPMENT NEAR AIRPORTS TO SAFE LEVELS, AND IMPACTS WOULD BE LESS THAN SIGNIFICANT.

Land use patterns and transportation projects included in the 2018 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 2018 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 2018 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. 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 2018 RTP/SCS would be less than significant.

Mitigation Measures

No Mitigation Measures are required.

Significance After Mitigation

Impacts would be less than significant without mitigation.

Threshold 7: Impair implementation or physically interfere with an adopted emergency response plan or emergency evacuation plan

IMPACT HAZ-5 TRANSPORTATION IMPROVEMENT PROJECTS AND THE LAND USE SCENARIO ENVISIONED BY THE 2018 RTP/SCS COULD INTERFERE WITH EXISTING EMERGENCY AND EVACUATION. HOWEVER, REQUIRED REGULAR UPDATES TO EMERGENCY RESPONSE AND EVACUATION PLANS WOULD ACCOUNT FOR DEVELOPMENT AND PROJECTS. IMPACTS RELATED TO INTERFERENCE OR IMPAIRMENT OF AN ADOPTED EMERGENCY RESPONSE PLAN OR EMERGENCY EVACUATION PLAN WOULD BE LESS THAN SIGNIFICANT.

Construction of the land use development and transportation projects included in the 2018 RTP/SCS would require temporary road closures that could impair implementation of, or physically interfere with, an adopted emergency response plan or emergency evacuation plan. Some of the transportation projects may require multiple years to construct. However, standard construction practices include notification of emergency responders where road closures are required. Because road closures are temporary and would be coordinated with emergency responders so that

alternative evaluation routes could be developed and employed, construction activities would have a less than significant impact.

The land use patterns included the 2018 RTP/SCS emphasize infill and transit-oriented development, which would generally focus growth in existing urbanized areas of San Joaquin County. Thus, population density in urbanized areas would increase, which may improve emergency response by eliminating the need to travel to more rural and dispersed locations in the region. Alternatively, large concentrations of people could also cause adverse effects related to the implementation emergency plans because the increased population may overburden adopted evacuation routes and other emergency response resources. However, the management of emergency response and emergency evacuation plans includes regular updates to these plans that incorporate new or proposed developments. Thus, land use patterns in the 2018 RTP/SCS would be reflected in the regular updates of emergency and evacuation plans applicable to San Joaquin County.

Additionally, the proposed transportation projects would generally increase mobility and circulation capacity and, thereby, have the potential to improve response times for police, fire, and emergency service providers, especially in heavily-congested areas. Overall, congestion for the region is projected to increase between the baseline 2017 conditions and 2042, as discussed in Section 4.14, *Transportation and Circulation*. However, as described above, emergency and evacuation plans are regularly updated to incorporate current conditions. Therefore, potential impacts related to interference with emergency response and evacuation plans would be less than significant.

Mitigation Measures

No Mitigation Measures are required.

Significance After Mitigation

Impacts would be less than significant without mitigation.

Threshold 8: Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands

IMPACT HAZ-6 THE 2018 RTP/SCS INCLUDES TRANSPORTATION PROJECTS WITHIN AREAS OF MODERATE FIRE HAZARD. INFILL DEVELOPMENT EMPHASIZED IN THE 2018 RTP/SCS AND EXISTING REGULATIONS AND PROGRAMS WOULD REDUCE THE VULNERABILITY OF PEOPLE AND STRUCTURES TO WILDLAND FIRE. IMPACTS WOULD BE LESS THAN SIGNIFICANT.

As described above, CAL FIRE has mapped areas in the northeast and southwest portions of the San Joaquin County as having moderate or high fire hazard. The 2018 RTP/SCS focuses on infill development, which would concentrate people and structures in existing urbanized areas where the risk of wildland fire is less than in more rural areas where fuels are more abundant. However, not all projects and development included in the 2018 RTP/SCS would be infill projects in urbanized areas, and some projects would inevitably be located in areas at risk of wildland fires.

New construction would be subject to the California Fire Code, which includes safety measures to minimize the threat of fire, including ignition-resistant construction with exterior walls of noncombustible or ignition resistant material from the surface of the ground to the roof system and sealing any gaps around doors, windows, eaves and vents to prevent intrusion by flame or embers. Title 14 of the CCR sets forth the minimum development standards for emergency access, fuel

modification, setback, signage, and water supply, which help prevent loss of structures or people by reducing wildfire hazards. The codes and regulations would reduce the risk of loss, injury or death from wildland fire, but not entirely. The 2018 RTP/SCS does not direct growth into areas of high fire hazard and with the required adherence to the identified codes and regulations, impacts would be less than significant.

Mitigation Measures

No Mitigation Measures are required.

Significance After Mitigation

Impacts would be less than significant without mitigation.

c. Specific 2018 RTP/SCS Projects That May Result in Impacts

The analysis within this section discusses the potential hazards and hazardous materials related impacts associated with the transportation improvement projects and the land use scenario included in the 2018 RTP/SCS. The projects within the 2018 RTP/SCS are evaluated herein in their entirety and all would be subject to existing federal, state, and local regulations and programs that regulate and manage hazards and hazardous materials. As described above, the 2018 RTP/SCS includes land use development patterns and transportation projects that could increase the transport, use, storage, and disposal of hazardous materials and waste within San Joaquin County. A comprehensive list of specific projects that could increase the transport, use, storage, and disposal of hazardous materials and waste within San Joaquin County cannot be provided in this section because the specific location of land use development projects is undetermined. However, the transportation projects would involve increasing the capacity on roads that the U.S. DOT has identified as hazardous material routes. Increasing the capacity of these roads could increase the amount of hazardous material and waste transported on the roads. Furthermore, construction of any number of the land use development and transportation projects would presumably require the use of petroleum products, at a minimum.

As described above, the land use development and transportation projects could also be located on hazardous material sites, including sites on the list compiled by Government Code Section 65962.5 (i.e., Cortese list). Land use development would also locate structures and people in areas susceptible to wildland fire hazards. However, there are no specific projects that can be listed in this section because the specific timing of land use development projects is undetermined.

As described above, some transportation projects would be located within areas that CAL FIRE has mapped as moderate fire hazard. Additionally, catastrophic fires could occur anywhere in San Joaquin County. Thus, any number of the projects included in the 2018 RTP/SCS could be susceptible to risk of wildland fire impacts, but with adherence to California Fire Code and required construction safety standards, these impacts would be less than significant.

d. Cumulative Impacts

Impacts associated with hazards and hazardous materials related to implementation of the 2018 RTP/SCS are analyzed above. Hazards and hazardous materials impacts may be related to: the transport, use, or disposal of hazardous materials; reasonably foreseeable upset or accidental conditions involving the release of hazardous materials; emission of hazardous materials within 0.25 mile of a school; location on an unknown or known hazardous materials site; conflicts with

emergency response plans; and wildland fires. These effects occur independently of one another, related to site-specific and project-specific characteristics and conditions. Thus, the analysis of hazards and hazardous materials impacts presented above is a cumulative analysis compliant with the requirements of CEQA.

As described above, with implementation of Mitigation Measure HAZ-3, Site Remediation, and mandatory compliance with existing regulations that must occur during project development and operation, including transport, use, disposal of hazardous materials, impacts of the 2018 RTP/SCS would not be cumulatively considerable with regard to hazardous materials and wastes and emergency and evacuation plans.

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4.11 Hydrology and Water Quality

This section describes generalized water quality, groundwater supply, drainage, runoff, flooding, and dam inundation impacts of development facilitated by the 2018 RTP/SCS.

4.11.1 Setting

San Joaquin County (County) encompasses approximately 1,440 square miles in central California, and includes rivers, streams, sloughs, marshes, wetlands, channels, harbors, and underground aquifers.

The extensive Delta Basin waterway system is one of the County's most valuable water resources. Over 700,000 acres of agricultural land and 700 miles of interlacing waterways form the Sacramento-San Joaquin Delta. The San Joaquin River Hydrologic Region encompasses San Joaquin County and other parts of the San Joaquin Valley. The San Joaquin Valley 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 and the complexly folded and faulted Coast Ranges on the west.

a. Surface Water

The major rivers in this hydrologic region are the San Joaquin, Cosumnes, Mokelumne, Calaveras, Stanislaus, Tuolumne, Merced, Chowchilla, and Fresno. The Calaveras, Mokelumne, and Stanislaus Rivers flow through or border San Joaquin County and discharge directly into the Delta or into the San Joaquin River which in turn flows to the Delta. The west and southwestern portion of the County is part of the Delta (Eastern San Joaquin IRWMP 2014).

San Joaquin River

The San Joaquin River is approximately 330 miles long and originates on the western slopes of the Sierra Nevada Mountains. It drains an area of approximately 13,500 square miles including most of the area from the southern border of Yosemite, south to Kings Canyon National Park. It flows northwest through the County before entering the Delta.

Cosumnes River

The Cosumnes River is a tributary to the Mokelumne River, with the confluence of these two rivers located just north of the San Joaquin-Sacramento County line, near the town of Thornton.

Mokelumne River

The Mokelumne River flows westward from its headwaters in the high Sierra Nevada to the eastern edge of the Delta, where it combines with the Cosumnes River.

Calaveras River

The Calaveras River flows southwest for approximately 80 miles and originates in northeast Calaveras County. The Calaveras River flows through San Joaquin County and the City of Stockton before entering into the San Joaquin River.

Stanislaus River

The Stanislaus River is approximately 65 miles long and is extensively dammed. It drains an 1,075-square-mile watershed, and is one of the largest tributaries to the San Joaquin River. It has a North, Middle, and South Fork and originates in the Sierra Nevada. The Stanislaus River forms the southern boundary of San Joaquin County, just north of Modesto.

Tuolumne River

The Tuolumne River originates in the Sierra Nevada Mountains and is the largest tributary to the San Joaquin River. It has a watershed of approximately 1,500 square miles and an unimpaired annual runoff of approximately 1.8 million acre-feet. Flows in the lower reaches of the Tuolumne River are regulated by the New Don Pedro Dam, which was constructed in 1971 and is owned by Turlock and Modesto Irrigation Districts. New Don Pedro Reservoir has a capacity of approximately 2 million acre-feet and is operated for irrigation, hydroelectric generation, fish/wildlife protection, recreation, and flood control. Irrigation water is diverted downstream from New Don Pedro at La Grange into the Modesto Main Canal and Turlock Main Canal. The City and County of San Francisco operate O'Shaughnessy Dam in the Hetch Hetchy Valley, Lake Eleanor, and Cherry Lake in the upper watershed of the Tuolumne. These facilities are operated for municipal and industrial supply as well as hydropower (Eastern San Joaquin IRWMP 2014).

Dry Creek

Dry Creek is a minor tributary to the Mokelumne River and forms the northern boundary between San Joaquin and Sacramento Counties.

County Reservoirs

The County has eight significant reservoirs, including Camanche Reservoir which is located at the juncture of Amador, Calaveras, and San Joaquin counties. Table 28 provides the water source, reservoirs size, and operating agency of each reservoir.

Table 28 Reservoirs in San Joaquin County

Reservoir	River	Size (acre/feet)	Owning/Operating Agency
Pardee Reservoir	Mokelumne River	197,950	East Bay Municipal Utility District
Camanche	Mokelumne River	417,120	East Bay Municipal Utility District
New Hogan Lake	Calaveras River	317,000	US Bureau of Reclamation, US Army Corp. of Engineers, Stockton East Water District, Calaveras County Water District
New Melones Reservoir	Stanislaus River	2,400,00	US Bureau of Reclamation, Central Valley Water Project
Beardsley Reservoir	Stanislaus River	77,600	Oakdale Irrigation District and South San Joaquin Irrigation District
Donnells Reservoir	Stanislaus River	56,893	Oakdale Irrigation District and South San Joaquin Irrigation District
Tulloch Reservoir	Stanislaus River	68,400	Oakdale Irrigation District and South San Joaquin Irrigation District
Friant Dam	San Joaquin River	520,500	US Bureau of Reclamation

Source: State of California, California Statistical Abstract, 2002 presented in the 2014 Eastern San Joaquin IRWMP.

b. Ground Water

Three groundwater subbasins fall within the County, including the Eastern San Joaquin, Tracy, and Cosumnes.

Eastern San Joaquin Subbasin

Measurements over the past 40 years show a fairly continuous decline in groundwater levels in Eastern San Joaquin County. Groundwater levels have declined at an average rate of 1.7 feet per year and have dropped as much as 100 feet in some areas. It is estimated that groundwater overdraft during the past 40 years has reduced storage in the basin by as much as 2 million acre feet (af). Due to the continued overdraft of groundwater within the subbasin, significant groundwater depressions are present below the City of Stockton, east of Stockton, and east of Lodi. Several of these groundwater depressions extend to depths of about 100 feet below ground surface (or more than 40 feet below mean sea level)

The total available groundwater storage capacity from a depth of 20 feet to the base of the groundwater basin is about 42,400,000 af based on a total aquifer material volume of 579,900,000 af and an average specific yield of 7.3 percent (DWR 1967). This estimate was based on a study area that encompassed approximately 586,000 acres. Since the currently defined subbasin size is over 707,000 acres, the storage value mentioned above underestimates the total storage capacity for the subbasin as defined in Bulletin 118 (California Department of Water Resources 2006)⁸.

Tracy Subbasin

Review of hydrographs for the Tracy Subbasin indicate that, except for seasonal variation resulting from recharge and pumping, the majority of water levels in wells have remained relatively stable over at least the last 10 years. There are no published groundwater storage values for the entire basin; however it is estimated that the groundwater storage capacity for the Tracy-Patterson Storage Unit at 4,040,000 af. This storage unit includes the southern portion of the currently defined Tracy Subbasin from approximately one-mile north of Tracy to the San Joaquin-Stanislaus County line. Since the Tracy Subbasin comprises roughly one third of the Tracy-Patterson Storage Unit, it can be inferred that the approximate storage capacity of the southern portion of the Tracy Subbasin is on the order of 1,300,00 af (California Department of Water Resources 2006)⁹.

Cosumnes Subbasin

A review of 23 long-term hydrographs dating back to the early 1960s shows a fairly consistent pattern of water level trends through much of the subbasin. Wells outside the influence of the Cosumnes River declined on the order of 20 to 30 feet from the mid-1960s to about 1980. From 1980 through 1986, water levels recovered on the order of 5 to 10 feet. During the 1987 through 1992 drought, water levels once again declined by 10 to 15 feet. From 1993 through 2000, much of the basin recovered by 15 to 20 feet, leaving water levels at about the same elevation or slightly higher than they were in the mid-1980s. One exception is along the eastern subbasin margin where water levels remained fairly constant during the 1993 through 2000 recovery period. Prior to that, those eastern wells behaved similarly to other wells in the subbasin.

⁸ <http://www.water.ca.gov/groundwater/bulletin118/basindescriptions/5-22.01.pdf>

⁹ <http://www.water.ca.gov/groundwater/bulletin118/basindescriptions/5-22.15.pdf>

Groundwater storage capacity is estimated to be on the order of 6,000,000 af based on data from DWR 1967 and DWR 1974. This estimate is based on a surface area of 281,000 acres, an aquifer thickness of 290 feet (20 to 310 feet depths), and an average specific yield of 7.4 percent (California Department of Water Resources 2006)¹⁰.

c. Water Quality

Water quality is a concern because of its potential effect on human health, aquatic organisms, and ecosystem conditions. Quality is determined by factors such as native condition of groundwater and surface water, and sources of contamination (natural and human induced).

In addition, the County is largely characterized by impervious surfaces, such as buildings, roads, sidewalks, parking lots, and other impervious surfaces. These features alter the natural hydrology of the region, preventing infiltration, augmenting hydromodification, and ultimately increase the risk of pollutant discharge and flooding.

Surface Water

Impaired surface waters within San Joaquin County are those listed by the Central Valley Regional Water Quality Control Board (CVRWQCB) as impaired due to one or more pollutants. Table 29 lists all 303(d) listed waterbodies within San Joaquin County. Contamination of these waterbodies is largely due to urban and agriculture runoff, as well as resource extraction.

Table 29 2010 303(d) List of Impaired Water Bodies – San Joaquin County

Water Body Name	Water Body Type	Pollutant
Avena Drain	River and Stream	Ammonia Pathogens
Bear Creek; partly in Delta Waterways, eastern portion)	River and Stream	Copper Diazinon, Escherichia coli, Low Dissolved Oxygen
Calaveras River, Lower (from Bellota Weir to Stockton Diverting Canal)	River and Stream	Unknown Toxicity
Calaveras River, Lower (from Stockton Diverting Canal to the San Joaquin River; partly in Delta Waterways, eastern portion)	River and Stream	Chlorpyrifos Diazinon Mercury Organic Enrichment/Low Dissolved Oxygen Pathogens
Camanche Reservoir	Lake and Reservoir	Copper Mercury Zinc
Delta Waterways (Stockton Ship Channel)	Estuary	Chlorpyrifos, DDT (Dichlorodiphenyltrichloroethane) Diazinon, Furan Compounds Group A Pesticides Invasive Species Mercury Organic Enrichment/Low Dissolved Oxygen PCBs (Polychlorinated biphenyls) Pathogens Unknown Toxicity
Delta Waterways (Central portion)	Estuary	Chlorpyrifos DDT (Dichlorodiphenyltrichloroethane) Diazinon Group A Pesticides Invasive Species Mercury Unknown Toxicity

¹⁰ <http://www.water.ca.gov/groundwater/bulletin118/basindescriptions/5-22.16.pdf>

Water Body Name	Water Body Type	Pollutant
Delta Waterways (eastern portion)	Estuary	Chlorpyrifos DDT (Dichlorodiphenyltrichloroethane) Diazinon Group A Pesticides Invasive Species Mercury Unknown Toxicity
Delta Waterways (export area)	Estuary	Chlorpyrifos DDT (Dichlorodiphenyltrichloroethane) Diazinon Electrical Conductivity Group A Pesticides Invasive Species Mercury Unknown Toxicity
Delta Waterways (southern portion)	Estuary	Chlorpyrifos DDT (Dichlorodiphenyltrichloroethane) Diazinon Electrical Conductivity Group A Pesticides Invasive Species Mercury Unknown Toxicity
Duck Creek (San Joaquin County)	River & Stream	Chlorpyrifos Escherichia coli (E. coli) Mercury
Five Mile Slough (Alexandria Place to Fourteen Mile Slough; in Delta Waterways, eastern portion)	River & Stream	Chlorpyrifos Diazinon Organic Enrichment/Low Dissolved Oxygen Pathogens
French Camp Slough (confluence of Littlejohns and Lone Tree Creeks to San Joaquin River, San Joaquin Co; partly in Delta Waterways, eastern portion)	River & Stream	Chlorpyrifos Diazinon Escherichia coli (E. coli) Oxygen, Dissolved Sediment Toxicity Unknown Toxicity
Hospital Creek (San Joaquin and Stanislaus Counties)	River & Stream	DDE (Dichlorodiphenyldichloroethylene) Dieldrin Dimethoate Escherichia coli (E. coli) Pyrethroids Salinity Sediment Toxicity Trifluralin Unknown Toxicity
Little Johns Creek	River & Stream	Escherichia coli (E. coli) Unknown Toxicity
Middle River (in Delta Waterways, southern portion)	River & Stream	Low Dissolved Oxygen
Mokelumne River, Lower (in Delta Waterways, eastern portion)	River & Stream	Chlorpyrifos Copper Mercury Oxygen, Dissolved Unknown Toxicity Zinc
Mormon Slough (Commerce Street to Stockton Deep Water Channel; partly in Delta Waterways, eastern portion)	River & Stream	Organic Enrichment/Low Dissolved Oxygen Pathogens Chlorpyrifos Unknown Toxicity
Mormon Slough (from Stockton Diverting Canal to Bellota Weir-- Calaveras River)	River & Stream	Chlorpyrifos Unknown Toxicity
Mosher Slough (downstream of I-5; in Delta Waterways, eastern portion)	River & Stream	Chlorpyrifos Diazinon Mercury Organic Enrichment/Low Dissolved Oxygen Pathogens
Mountain House Creek (from Altamont Pass to Old River, Alameda and San Joaquin Counties; partly in Delta Waterways, southern portion)	River & Stream	Chloride Salinity

Water Body Name	Water Body Type	Pollutant
Pixley Slough (San Joaquin County; partly in Delta Waterways, eastern portion)	River & Stream	Chlorpyrifos Diazinon Escherichia coli (E. coli) Oxygen, Dissolved Oxygen, Dissolved
San Joaquin River (Bear Creek to Mud Slough)	River & Stream	Arsenic Boron Chlorpyrifos DDT (Dichlorodiphenyltrichloroethane) Electrical Conductivity Escherichia coli (E. coli) Group A Pesticides Mercury Unknown Toxicity
San Joaquin River (Tuolumne River to Stanislaus River)	River & Stream	Chlorpyrifos DDT (Dichlorodiphenyltrichloroethane) Diazinon Electrical Conductivity Group A Pesticides Mercury Temperature, water Unknown Toxicity
San Joaquin River (Stanislaus River to Delta Boundary)	River and Stream	Chlorpyrifos DDE (Dichlorodiphenyldichloroethylene) DDT (Dichlorodiphenyltrichloroethane) Diuron Electrical Conductivity Escherichia coli (E. coli) Group A Pesticides Mercury Temperature, water Toxaphene Unknown Toxicity
Smith Canal (in Delta Waterways, eastern portion)	River and Stream	Organic Enrichment/Low Dissolved Oxygen Organophosphorus Pesticides Pathogens
Stanislaus River, Lower	River and Stream	Chlorpyrifos Diazinon Group A Pesticides Mercury Temperature, water Unknown Toxicity
Sutter Bypass	River & Stream	Mercury
Temple Creek	River and Stream	Ammonia
Tom Paine Slough (in Delta Waterways, southern portion)	River & Stream	Chloride Oxygen, Dissolved Salinity
Walker Slough (partly in Delta Waterways, eastern portion)	River and Stream	Pathogens

Groundwater

Localized impairments including total dissolved solids (TDS), sodium chloride, nitrate, and inorganic compounds are common in the County's groundwater, impairing the water quality. A brief water quality description for each of the County's subbasins is provided below.

Eastern San Joaquin Subbasin

As a result of declining water levels, poor quality water has been moving east along a 16-mile front on the east side of the Delta. The degradation was particularly evident in the Stockton area where the saline front was moving eastward at a rate of 140 to 150 feet per year. Data from 1980 and 1996 indicate that the saline front has continued to migrate eastward up to about one mile beyond its 1963 extent. Large areas of elevated nitrate in groundwater exist within the subbasin located

southeast of Lodi and south of Stockton and east of Manteca extending towards the San Joaquin – Stanislaus County line (California Department of Water Resources 2006)¹¹.

Tracy Subbasin

Areas of poor water quality exist throughout the subbasin. Areas of elevated chloride occur in several areas including: along the western side of the subbasin; in the vicinity of the City of Tracy; and along the San Joaquin River. Areas of elevated nitrate occur in the northwestern part of the subbasin and in the vicinity of the City of Tracy. Areas of elevated boron occur over a large portion of the subbasin from south of Tracy and extending to the northwest side of the subbasin (California Department of Water Resources 2006)¹².

Cosumnes Subbasin

Groundwater contained in the water-bearing deposits underlying most of Sacramento County is of excellent mineral quality for irrigation and domestic use. Within the subbasin, calciummagnesium and calcium-sodium bicarbonate water types are most common. Groundwater from wells in the San Joaquin County portion of the subbasin typically show specific conductance values of less than 500 µmhos/cm. Based on analyses of 20 water supply wells in the subbasin, TDS ranges from 140 to 438 mg/L and averages about 218 mg/L. No significant impairments were identified (California Department of Water Resources 2006)¹³.

Sustainable Groundwater Management Act

In September 2014 the state passed legislation requiring that California’s critical groundwater resources be sustainably managed by local agencies. The Sustainable Groundwater Management Act (SGMA) gives local agencies the power to sustainably manage groundwater and requires Groundwater Sustainability Plans (GSPs) to be developed for medium- and high-priority groundwater basins. The RTP/ SCS region is part of a collaborative effort to implement SGMA and form groundwater sustainability agencies (GSA). GSAs for medium- and high-priority groundwater basins in the SJCOG region include:

▪ Banta-Carbona Irrigation District	▪ North San Joaquin Water Conservation
▪ Byron-Bethany Irrigation District	District Oakdale Irrigation District Eastern San
▪ California Water Service Company	Joaquin Sub-basin Ground
▪ Central Delta Water Agency	▪ San Joaquin County
▪ Central San Joaquin Water	▪ San Joaquin County Flood Control and Water
Conservation District	Conservation District
▪ City of Lathrop	▪ South Delta Water Agency
▪ City of Lodi	▪ South San Joaquin Groundwater
▪ City of Manteca	Sustainability Agency
▪ City of Stockton GSA	▪ South San Joaquin Irrigation District
▪ City of Tracy	▪ Stockton East Water District
▪ DM-II	▪ West Side Irrigation District
▪ Linden County Water District	▪ West Stanislaus Irrigation District
▪ Lockeford Community Service District	▪ Woodbridge Irrigation District

¹¹ <http://www.water.ca.gov/groundwater/bulletin118/basindescriptions/5-22.01.pdf>

¹² <http://www.water.ca.gov/groundwater/bulletin118/basindescriptions/5-22.15.pdf>

¹³ <http://www.water.ca.gov/groundwater/bulletin118/basindescriptions/5-22.16.pdf>

These agencies will be preparing the required sustainability plans for their respective groundwater basins.

d. Water Supply

Water delivery in San Joaquin County is provided by several agencies and projects including federal, state, regional, and local water projects; special districts (e.g., irrigation, water, and water conservation); and private water systems. Irrigation and domestic water systems within San Joaquin County are operated and maintained by irrigation districts, water districts, and water conservation districts. The County's main water resources are provided in Table 30, presenting the primary users of these resources, and the beneficial uses associated with each source.

Table 30 San Joaquin County Water Resources

Water Source	A	B	C	D	E	Primary Users
San Joaquin River	X		X	X	X	Riparian Farmers Shipping Industry Irrigation Industry
Mokelumne River	X		X		X	Irrigation Industry
Camanche Reservoir	X		X			Local Residents
Calaveras River	X	X			X	Water Districts
Stanislaus River	X		X		X	Irrigation Districts
Delta	X		X	X	X	Recreation Wildlife Shipping Industry DWR USBR
Delta-Mendota Canal	X	X	X		X	City of Tracy Irrigation Districts Commercial Businesses
California Aqueduct	X	X	X		X	Commercial Businesses Irrigation Districts
Lodi Lake			X			Local Residents
Groundwater	X	X				Private Individuals Cities Towns

Source: 2009 San Joaquin County General Plan Update, Natural Resources Element Notes:

DWR= California Department of Water Resources

USBR= US Bureau of Reclamation

Beneficial Uses: A=Irrigation, B=Municipal/Industrial, C=Recreation, D=Transportation, E= Estuary/Wildlife Area.

Surface Water

Water supplies in the County are subject to the complex system of riparian and appropriative rights and are further complicated by numerous agreements and water service contracts. It is estimated that the County has approximately 1.2 million acre-feet per year (afy) of surface water available. This amount includes approximately 500,000 afy applied by farmers in the Delta (Northeastern San Joaquin County Groundwater Banking Authority, Eastern San Joaquin Groundwater Management Plan, Section 2.6 Water Supplies). The actual quantity of water delivered varies significantly from year to year due to contractual and water rights conditions. The actual quantities utilized within the County also vary significantly with climatic fluctuations, infrastructure limitations, and facility operation.

Surface water supplies are likely to decrease in the future. Several current contracts are for "interim" supplies, which are available subject to requirements of upstream or senior rights holders.

As development increases in areas with senior water rights, County surface water supplies will be reduced.

Groundwater and Groundwater Banking

Beginning in 1850 the development of groundwater for agriculture expanded rapidly. Within the Central Valley irrigated agriculture has grown from less than 1 million acres to an estimated 7 to 8 million acres at present over the last 100 hundred years. In average years almost 870,000 acre-feet of groundwater is pumped per year from the Regional Planning Area. In Bulletin 118-80, DWR designated the Eastern San Joaquin Basin as “critically overdrafted” (2014 Eastern San Joaquin Integrated Regional Water Management Plan, Section 6.5 Groundwater Conditions).

Long-term overdraft has created opportunities for groundwater banking to the benefit of regional and statewide interests. Groundwater banking is the storage/recharge of excess water supplies into aquifers during wet periods for later withdrawal/recovery for use during dry periods. Historically, during wet periods, surface water imports have been substantial enough to satisfy irrigation and urban water needs and thus, excess water has been recharged to groundwater aquifers. The groundwater is then pumped/ extracted through private and publicly owned wells located throughout the region during dry periods when local or imported surface water supplies are insufficient.

e. Water Demand

The demand for water in San Joaquin County appears to have peaked in the 1990s and is projected to continue to decline as more efficient urban and irrigation practices are adopted (2014 Eastern San Joaquin Integrated Regional Water Management Plan). Demand within the County is serviced by a variety of water purveyors, including the County’s 14 irrigation districts and 22 domestic water districts, investor-owned water companies, mutual water companies, municipalities and private well owners. The water demand summarized below represents the data presented in the 2014 Eastern San Joaquin IRWMP.

Urban Demand

Table 31 summarizes the 2010 water demands for the urban areas in the County. Annual water was summarized based on current Urban Water Management Plans, water production data obtained from water service providers, or other general planning documents. Urban water demand for the County’s CSAs is not included in the table. Various factors determine how these unincorporated portions of the County receive their water. Some unincorporated areas are located close enough to one of the cities and have connected to the cities’ water infrastructure.

Table 31 San Joaquin County Urban Water Demand

Urban Areas	2010 Urban Water Demand (afy)
Escalon	2,705
Lathrop	19,043
Lodi	21,109
Manteca	29,588
Ripon	8,235
Stockton	73,886
Total	154,566

Source: 2014 Eastern San Joaquin Integrated Regional Water Management Plan, Section 6.2 Urban Land and Water Use

Agricultural Demand

Agricultural water use is based on various crop Evapotranspiration (ET) and efficiency data collected by DWR. The ET of a crop represents the total amount of water transpired by the plant, retained in the plant tissue, and evaporated from adjacent soil surfaces during the growing period. In dry years, the effective precipitation (EP) is less than normal, thus, the amount of applied water (AW) must be increased to meet the total ET of the crop. Also, the irrigation efficiency of applied water varies due to cultural practices, canal or ditched delivery, pressurized delivery systems, and soil drainage conditions. Table 32, provides the approximate 2010 water demand for agricultural use in the entire County (most recent water demand data available).

Table 32 San Joaquin County Applied Water Demands for Agricultural Use

Agricultural Areas	2010 Estimated Agriculture Water Demand (afy)
Central Delta Water Agency	108,440
Central San Joaquin Water Conservation District	159,988
North San Joaquin Water Conservation District	181,906
Oakdale Irrigation District	19,059
South Delta Water Agency	37,596
South San Joaquin Irrigation District	155,237
Stockton East Water District	197,956
Woodbridge Irrigation District	70,921
Other Agriculture	120,752
Total	1,051,855

Source: 2007 Eastern San Joaquin Integrated Regional Water Management Plan, Section 4.3.2 Agricultural Water Use

f. Flooding and Dam Inundation

The risks of flooding hazards in the County are related to the failure of levees in the Delta, dam failures, and 100-year flood events. These risks of flooding are greatest during the rainy season, between November and April, yet snowmelt from the Sierra Nevada can also extend the period of time for water flows, typically between April and June. A majority of levees within the County have

not been built and/or maintained in accordance to federal standards as either federal flood control project levees or by local districts. Most levees are privately constructed and maintained by local landowners or local agencies. Many of these levees are in poor condition and have been identified for reconstruction or improvement to meet to higher standards (2014 Eastern San Joaquin Integrated Regional Water Management Plan).

The 100-Year floodplain denotes an area that has a one percent chance of being inundated during any particular 12-month period. The risk of this area being flooded in any century is one percent but statistically the risk is almost 40 percent in any 50-year period.

Floodplain zones are determined by the Federal Emergency Management Agency (FEMA) and used to create Flood Insurance Rate Maps (FIRMs). These tools assist communities in mitigating flood hazards through land use planning. FEMA also outlines specific regulations for any construction located within a 100-year floodplain, whether residential, commercial, or industrial. San Joaquin County's FIRM number is 06077C0470F and was last updated in October of 2009.

A description of each FEMA flood zone is provided below:

- **Zone A:** This zone is listed as a high risk and special flood hazard area; in addition, FEMA has designated these lands as within the 100-year floodplain. Further, these areas are subject to inundation by the 1-percent-annual-chance flood event.
- **Zone AE:** This zone is listed as a high risk and special flood hazard area. Further, these areas are subject to inundation by the 1-percent-annual-chance flood event. Base Flood Elevations (BFEs) have been established for this zone.
- **Zone AH:** This zone is listed as a high risk and special flood hazard area. Further, these areas are subject to inundation by the 1-percent-annual-chance shallow flooding (usually in areas of ponding) where average depths of water are 1-3 feet.
- **Zone AO:** This zone is listed as a high risk and special flood hazard area. Further, these areas are subject to inundation by the 1-percent-annual-chance shallow flooding (usually caused by sheet flow on sloping terrain) where average depths of water are 1 to 3 feet. Average flood depths have been derived from detailed hydraulic analyses.
- **Zone X:** This zone is listed as a moderate and minimal risk area. These areas include: moderate risk areas within the 0.2-percent-annual-chance floodplain, areas of 1-percent-annual-chance flooding where average depths are less than 1 foot, areas of 1-percent-annual-chance flooding where the contributing drainage area is less than 1 square mile, and areas protected from the 1-percent-annual-chance flood by a levee.

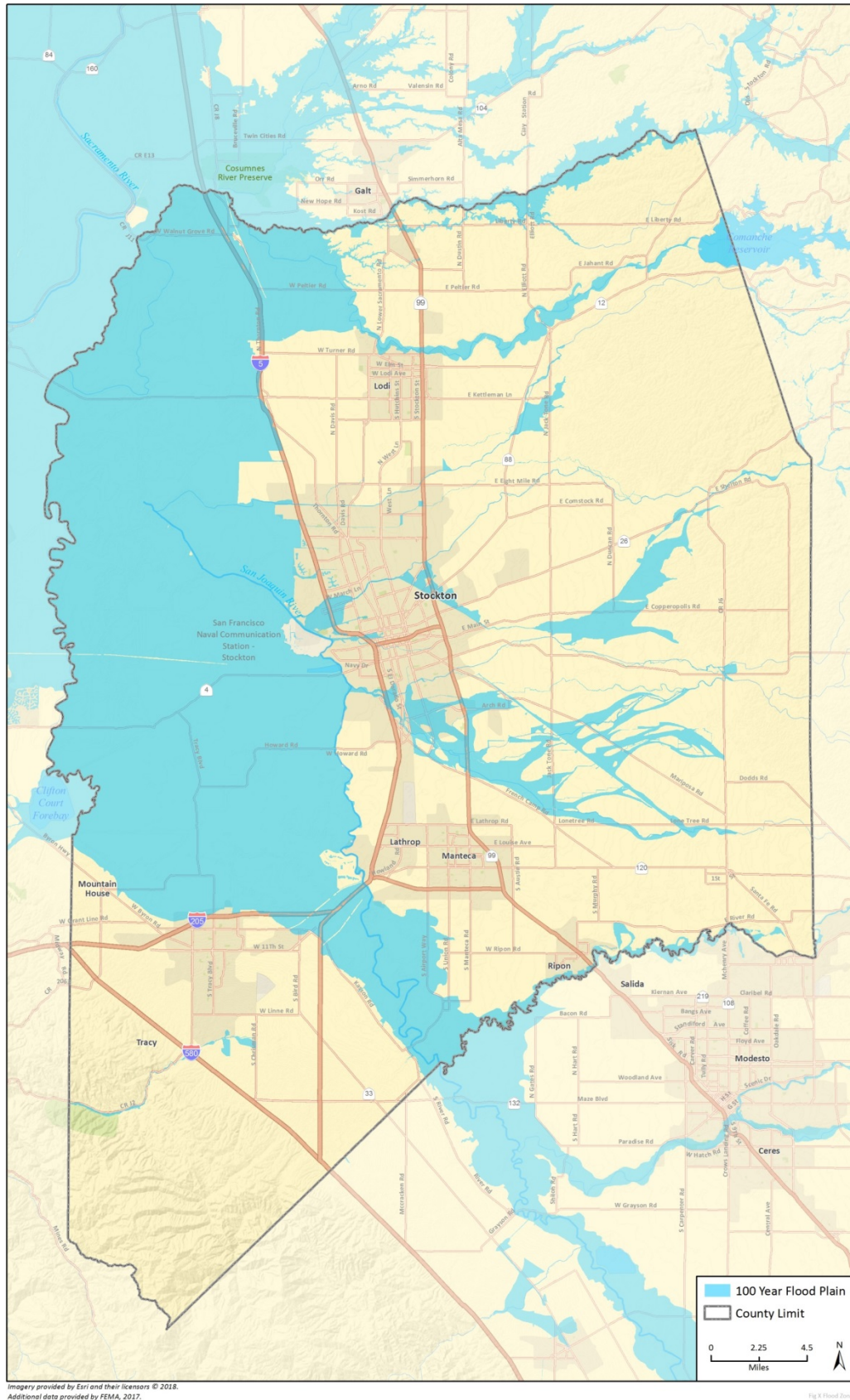
Figure 14 illustrates the 100-year flood zone located throughout San Joaquin County.

Dam Failure

According to the County's Office of Emergency Services (OES) Dam Failure Plan, there are 14 dams located in and around San Joaquin County. Each of these dams has the potential to inundate portions of the County if they were to fail. The failure of any one of these dams could result from structural instability caused by improper design or construction, instability resulting from seismic shaking, or overtopping and erosion of the dam.

Larger dams that are higher than 25 feet or with storage capacities over 50 acre-feet of water are regulated by the California Dam Safety Act, which is implemented by the California Department of Water Resources, Division of Safety of Dams (DSD). The DSD is responsible for inspecting and

Figure 14 San Joaquin County Flood Map



monitoring these dams. The Act also requires that dam owners submit to the California Office of Emergency Services inundation maps for dams that would cause significant loss of life or personal injury as a result of dam failure. The County Office of Emergency Services is responsible for developing and implementing a Dam Failure Plan that designates evacuation plans, the direction of floodwaters, and provides emergency information.

g. Regulatory Setting

Federal

A number of federal regulations, agencies and programs are pertinent to the 2018 RTP/SCS and shall be considered as part of this PEIR as well as in the analysis of proposed individual projects.

Clean Water Act (CWA)

Enacted by Congress in 1972, the Clean Water Act mandates cooperative efforts by federal, state, and local governments to implement its pollution control measures. The National Pollutant Discharge Elimination System (NPDES) was established by the Clean Water Act to regulate point source discharges into “navigable waters” of the United States. The Act also established Storm Water Management Plans, municipal authority for non-point source NPDES permits, in communities with populations greater than 100,000 to control urban storm water runoff.

Safe Drinking Water Act

The Safe Drinking Water Act (SDWA) ensures the quality of Americans’ drinking water. The law requires actions to protect drinking water and its sources—rivers, lakes, reservoirs, springs and groundwater wells—and applies to public water systems serving 25 or more people. It authorizes the EPA to set national health-based standards for drinking water to protect against both naturally occurring and manmade contaminants. In addition, it oversees the states, municipalities, and water suppliers that implement the standards.

US Army Corps of Engineers

The USACE regulates placement of dredged or fill material in waters of the United States, and regulates work in its navigable waters. Section 404 of the CWA obligates the USACE to issue permits for the movement of dredge and fill material into and from “waters of the United States.” Additionally Section 404 requires permits for activities affecting hydrologically important areas. For example, alterations of wetlands, rivers, or ephemeral creek beds resulting from construction activities require Section 404 permits.

US Environmental Protection Agency

The US Environmental Protection Agency (EPA) is the federal agency responsible for water quality management and administration of the federal Clean Water Act (CWA). In California, the EPA has delegated most of the administration of the CWA to the State Water Resources Control Board (SWRCB). Much of the responsibility for implementation of the SWRCB’s policies is delegated to the RWQCB.

US Fish and Wildlife Service

The US Fish and Wildlife Service (USFWS) administers the Federal Endangered Species Act (FESA) and designates critical habitat for Endangered species to carry out its mission to conserve, protect,

and enhance the nation's fish and wildlife and their habitats for the continuing benefit of people. Critical habitat areas cannot be disturbed without permission from the USFWS or other federal agencies, depending on land ownership. The USFWS also manages a system of land and waters for the conservation of wildlife and associated ecosystems. These National Wildlife Refuges are primarily managed for the preservation and protection of unique or important resources and ecosystems.

Federal Emergency Management Agency

The US Congress passed the National Flood Insurance Act in 1968 and the Flood Disaster Protection Act in 1973 in order to restrict certain types of development on floodplains and provide for a national flood insurance program. The purpose of these programs is to reduce the need for large publicly funded flood control structures and disaster relief.

The US Bureau of Reclamation

The US Bureau of Reclamation (USBR) operates the Colorado River project, an extensive network of dams, canals, and related facilities. The USBR serves as Water master, overseeing contentious water rights issues, and runs drought protection programs.

State

A number of state regulations, agencies and programs are pertinent to the 2018 RTP/SCS and shall be considered as part of this PEIR as well as in the analysis of proposed individual projects.

California State Water Resource Control Board (SWRCB)

The SWRCB was established through the California Porter Cologne Water Quality Act of 1969. It is the primary state agency responsible for water quality management issues. Section 303(d) of the CWA requires the SWRCB to list impaired water bodies in the state and determine total maximum daily loads (TMDLs) of pollutants or other stressors that are contributing excessively to these impaired waters. SWRCB is also responsible for granting water rights permits, approving water right transfers, investigating violations, and may reconsider or amend water rights.

Regional Water Quality Control Board Central Valley Region (RWQCB)

The RWQCB is responsible for implementing policies of the SWRCB, such as ensuring compliance with discharge thresholds and operating standards. The County is located within the RWQCB's Central Valley Region. As described above, the EPA has delegated most of the administration of the CWA in California to the SWRCB. In turn, much of the responsibility for the implementation of the SWRCB's policies is delegated to the nine RWQCBs. The nine RWQCBs develop and enforce water quality objectives and implementation plans.

California Department of Fish and Wildlife

The mandate of the California Department of Fish and Wildlife (CDFW) is to manage California's diverse fish, wildlife, and plant resources, and the habitats upon which they depend, for their ecological values and for public use and enjoyment. In particular, CDFW is required under the California Endangered Species Act, the California Native Plant Protection Act, the California Environmental Quality Act (CEQA), and the Natural Community Conservation Planning Act to conserve species through listing, habitat acquisition, and protection, review of local land use

planning, multi-species conservation planning, stewardship, recovery, research, and education. The CDFW protects Rare, Threatened and Endangered species by managing habitat in legally designated ecological reserves or wildlife areas.

Delta Stewardship Council

In November 2009, the California Legislature enacted the Sacramento-San Joaquin Delta Reform Act (Delta Reform Act) of 2009, also known as Sen. Bill No. 1 (Stats. 2009, 7th Ex. Sess., ch. 5) (SB X7-1). The Delta Reform Act created the Delta Stewardship Council (DSC). The DSC is made up of seven members that are advised by a 10-member board of scientists. The DSC is tasked with addressing the coequal goals of providing a more reliable water supply for California and protecting, restoring, and enhancing the Delta ecosystem. According to the Delta Reform Act, the coequal goals shall be achieved in a manner that protects and enhances the unique cultural, recreational, natural resource, and agricultural values of the Delta as an evolving place. The DSC regulates covered actions, as statutorily defined, to address the coequal goals.

Delta Water Agency

The Delta Agency was established in 1965 to maintain agricultural water quality throughout the Delta. In 1973, the agency was replaced by three distinctive agencies: North, Central, and South Delta Water Agencies.

The Delta Protection Act of 1992

The Delta Protection Act of 1992 (Act) refined the definition of the Legal Delta by designating a primary zone and a secondary zone. It also established the Delta Protection Commission for the purpose of developing a long-term management plan for the primary zone, which constitutes approximately two-thirds of the Delta's area. The Act recognizes the importance of maintaining agricultural uses in the primary zone, and the difficulty of providing flood protection for the islands in the primary zone, and for these and other reasons, states that the primary zone "should be protected from the intrusion of nonagricultural uses." The Legal Delta includes two zones – the Primary Zone and the Secondary Zone.

Delta Protection Commission

The Delta Protection Act of 1992 (Pub. Resources Code § 29760 et seq.) recognized the Sacramento-San Joaquin Delta as a natural resource of statewide, national, and international significance, containing irreplaceable resources. It created the policy to recognize, preserve, and protect those resources, and established the Delta Protection Commission. The Delta Protection Commission was charged with creating the Land Use and Resources Management Plan for the Delta Primary Zone, which was adopted in 1995. The management plan provides direction for local jurisdictions in the Delta region on land use decisions. Local jurisdictions with lands in the primary zone have amended their general plans to incorporate the management plan.

Bay Delta Conservation Plan

The Bay Delta Conservation Plan (BDCP) is a part of California's overall water management portfolio, and develops a 50-year habitat conservation plan with the goals of restoring the Sacramento-San Joaquin Delta ecosystem and securing California water supplies. The BDCP would secure California's water supply by building new water delivery infrastructure and operating the system to improve the ecological health of the Delta.

The BDCP is a Habitat Conservation Plan (HCP) under the federal Endangered Species Act, and a Natural Community Conservation Plan (NCCP) under the California Natural Community Conservation Planning Act. The BDCP would result in long-term permits from regulatory agencies in return for meeting the Delta's ecological needs. The regulatory nature of the HCP/NCCP creates a durable regulatory framework that would allow for fundamental and systematic improvements in the Delta. This reflects a significant departure from the species-by-species approach utilized in previous efforts to manage Delta-specific species and habitats. Instead, the BDCP seeks to improve the health of the ecological system as a whole.

Delta-Vision Blue Ribbon Task Force

California Executive Order S-17-06 created the Delta Vision Blue Ribbon Task Force and directed it to develop a vision statement for sustainable management of the Delta and a management plan for the long term restoration and maintenance of identified functions and values that are determined to be important to the environmental quality of the Delta and the economic and social well-being of the people of California.

The Department of Water Resources

The DWR is responsible for the planning, construction, and operation of State Water Project (SWP) facilities, including the California Aqueduct, and sets conditions on use of SWP facilities. In addition, DWR is responsible for statewide water planning, evaluating urban water management plans, overseeing dam safety and flood control, and transfer of certain water rights permits (e.g., pre-1914).

The California Department of Public Health

The California Department of Public Health (DPH) implements the Safe Drinking Water Act. In addition, it oversees the operational permitting and regulatory oversight of public water systems. DPH requires public water systems to perform routine monitoring for regulated contaminants that may be present in their drinking water supply. In addition, DPH conducts water source assessments, oversees water recycling projects, permits water treatment devices, certifies water system employees, promotes water system security, and administers grants under the State Revolving Fund and state bonds for water system improvements.

The California Department of Toxic Substances Control

The California Department of Toxic Substances Control (DTSC) is responsible for oversight of hazardous substances and remediation of contaminated sites, including in some cases water sources.

Porter Cologne Water Quality Control Act

The Porter Cologne Water Quality Control Act of 1967 (Water Code Section 13000 et seq.) 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 to the applicable and numerical water quality standards, and implementation procedures.

The Porter-Cologne Water Quality Control Act authorizes the state boards to adopt, review, and revise policies for all waters of the state (including both surface and ground waters) and directs the regional boards to develop Basin Plans. The act also authorizes state boards to adopt Water Quality

Control Plans. In the event of inconsistencies among state and regional board plans, the more stringent provisions apply.

California Administrative Code Title 20 and Title 25

Title 20 (Sections 1604 and 1606) and Title 24 (Sections 2-5307 and 2-5352) of the California Administrative Code establishes efficiency standards for all new showerheads, lavatory faucets, and sink faucets. These regulations also prohibit the sale of fixtures that do not comply with the current regulations; prohibit the installation of fixtures unless the manufacturer has certified compliance with the flow rate standards; and address pipe insulation requirements that can reduce water used before hot water reaches fixtures. Other applicable state water conservation laws include the Health and Safety Codes.

State Senate Bills 610 and 221

State Senate Bills (SB) 610 and SB 221 were adopted in 2001, and require lead agencies to obtain an assessment from the local water supplier to determine the sufficiency of the water supply for a proposed development. SB 610 applies at the time an EIR is prepared, while SB 221 applies at the time a Tentative Tract Map or other related project actions are approved. Additionally, water agencies must coordinate with land use planning agencies in the development of their Urban Water Management Plans (UWMPs), which include projections of future water demand and water supply availability during normal and dry periods.

Senate Bill X 7-7

Senate Bill 7 of Special Extended Session 7 (SB X7-7) was signed into law in November 2009, setting a goal of 20 percent reduction in per capita water use statewide by 2020. As a result, the legislation now mandates each urban water retail supplier to develop and report a water use target. DWR has also developed methodologies for calculating base daily per capita water use, baseline commercial, industrial and institutional water use, compliance daily per capita water use, gross water use, service area population, indoor residential water use and landscape area water use. Agencies not in compliance with SB X7-7 will be ineligible for state loan and grant funding.

SB X7-7 contains requirements for agricultural water suppliers. All agricultural water suppliers, either publicly or privately owned which irrigate 10,000 or more acres are required by SB X7-7 to implement critical Efficient Water Management Practices (EWMPs) and additional EWMPs if locally cost effective and technically feasible. Affected agricultural water suppliers must implement EWMPs by July 31, 2012.

SB X7-7 also created the Agricultural Water Management Planning Act, which requires affected agricultural water suppliers to adopt Agricultural Water Management Plans (AWMPs). These plans facilitate management and conservation of water suppliers, and also guide and document the implementation of EWMPs. The plans are mandatory for many suppliers and are required to be completed and adopted for affected agricultural water suppliers by December 31, 2012.

Assembly Bill 3616

This bill was enacted in 1990 and authorized the development of Agricultural Water Management Planning Act and the formation of the Agricultural Water Management Council (AWMC). Entities join the AWMC by signing the Agricultural Memorandum of Understanding (MOU) Regarding Efficient Water Management Practices (EWMPs) by Agricultural Water Suppliers in California.

Assembly Bill 1881

AB 1881, the Water Conservation in Landscaping Act of 2006, enacted many landscape efficiency recommendations of the California Urban Water Conservation Council (CUWCC) for improving the efficiency of water use in new and existing urban irrigated landscapes in California. The law requires the Energy Commission to adopt 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.

The Model Local Water Efficient Landscape limits the water budget for new landscapes (or rehabilitated landscapes), greater than 2,500 square feet, to 70 percent of the local reference evapotranspiration (ET). The model ordinance lays out the procedures for evaluating potential landscape water use during the land development process. In addition, the ordinance contains requirements for planting as well as the design and maintenance of irrigation systems, all with the intent of limiting outdoor water use and avoiding irrigation runoff.

Assembly Bill 1420

AB 1420, passed in 2007 and in effect as of January 2009, changes the funding eligibility requirements of Section 10631 of the Water Code (Urban Water Management Planning Act). For any urban water supplier to be eligible for grant or loan funding administered by DWR, the SWRCB, or the Bay-Delta Authority (such as Propositions 50 and 84), the supplier must show implementation of the 14 water use efficiency demand management measures/best management practices (DMMs/BMPs) listed and described in the UWMP Act and the CUWCC Memorandum of Understanding, or show the schedule by which the supplier will begin implementing the DMMs/BMPs. Any supplier not implementing the measures based on cost-effectiveness must submit proof showing why the measures are not cost-effective.

Assembly Bill 2882

This bill was passed in 2008 and encourages public water agencies throughout California to adopt conservation rate structures that reward consumers who conserve water. Prior to AB 2882 state law authorized water agencies to promote conservation using rate structures; however, some agencies were concerned that such rate structures may be inconsistent with other parts of state law. AB 2882 clarifies the allocation-based rate structures and establishes standards that protect consumers by ensuring a lower base rate for those who conserve water.

California Public Resources Code

As defined in Public Resources Code 10910, a city or county determines whether the projected water demand associated with a proposed project was included as a part of the most recently adopted urban water management plan. If the water demand associated with the proposed project was not accounted for in the most recently adopted urban water management plan, the water supply assessment for the proposed project must include a discussion with regard to whether the public water system's total projected water supplies available during normal, single dry and multiple dry water years during a 20-year projection would meet the projected water demand associated with the proposed project, in addition to the water systems' existing and planned future uses.

California Water Plan

The California Water Plan provides a framework for water managers, legislators, and the public to consider options and make decisions regarding California's water future. The plan, updated every five years, presents basic data and information on California's water resources including water supply evaluations and assessments of agricultural, urban, and environmental water uses to quantify the gap between water supplies and uses. The plan also identifies and evaluates existing and proposed statewide demand management and water supply augmentation programs and projects to address the state's water needs.

Urban Water Management Plan

Urban Water Management Plans (UWMPs) are prepared by California's urban water suppliers to support their long-term resource planning and ensure adequate water supplies are available to meet existing and future water demands. Every urban water supplier that either provides over 3,000 acre-feet of water annually or serves more than 3,000 or more connections is required to assess the reliability of its water sources over a 20-year planning horizon considering normal, dry, and multiple dry years. This assessment is to be included in its UWMP, which are to be prepared every five years and submitted to the Department of Water Resources. DWR then reviews the submitted plans to make sure they have completed the requirements identified in the Urban Water Management Planning (UWMP) Act (Division 6 Part 2.6 of the Water Code §10610 - 10656).

Groundwater Management Act

The Groundwater Management Act of 1992 (Wat. Code § 10750 et seq.), also known as AB 3030 (Stats. 1992, ch. 947), provides guidelines for local agencies to acquire authority over the management of groundwater resources in basins recognized by DWR. Its intent is to promote the voluntary development of groundwater management plans and provide criteria for the plans in order to ensure sustainable groundwater supplies for the future.

Storm Water Pollution Prevention Plans

The purpose of Storm Water Pollution Prevention Plans (SWPPPs) is to develop a strategy for construction projects to comply with Federal and State stormwater regulations. These regulations are put in place to minimize sediment and other pollutants in stormwater runoff commonly associated with construction activities. Typically, SWPPPs are only required for construction projects that disturb more than 1 acre of developed or undeveloped land. Additionally, the California Green Building Code (CalGreen) requires SWPPPs for projects that disturb less than 1 acre.

Standard Urban Stormwater Mitigation Plan

The State Regional Water Quality Control Board adopted the Standard Urban Stormwater Mitigation Plan (SUSMP) in 2000. It was developed as part of the municipal stormwater program to address stormwater pollution from new developments and redevelopment projects. Project applicants falling into specific categories are required to prepare and implement a Standard Urban Stormwater Mitigation Plan.

The County Service Area Law

The County Service Area Law allows residents or county supervisors to initiate the formation of a County Service Area (CSA). A CSA is authorized to provide a wide variety of services, including extended police protection, fire protection, park and recreation facilities, libraries, low power

television and translation facilities and services. CSAs also may provide other basic services such as water and garbage collection if they are not already performed on a countywide basis. A CSA may span all unincorporated areas of a county or only selected portions.

Regional and Local

A number of local regulations, agencies and programs are pertinent to the 2018 RTP/SCS and shall be considered as part of this PEIR as well as in the analysis of proposed individual projects.

Delta Protection Act of 1959

The Delta Protection Act, enacted in 1959, defined the boundaries of the Delta within the Water Code of the State of California. These boundaries are often referred to as the Legal Delta. The Delta Protection Act was passed during the same legislative session as the Burns-Porter Act, which authorized construction of the State Water Project (SWP). The Delta Protection Act guarantees an adequate water supply to Delta water users and protection from increased levels of salinity due to the export of water through the CVP and SWP.

Framework for Delta Legislative Options

On April 14, 2009, the County Board of Supervisors approved a set of goals, conditions, and actions that address the County's legislative interests in the Delta. The framework lays out criteria for the creation of a Delta Plan, requests \$51 million for emergency response and levee repair during a flood, expresses the need for a "water master" type of public official position, and calls on the state to allow enough water storage projects in the state to increase water capacity 5 million acre-feet more than the needs of the Delta.

Stockton Urbanized Area NPDES Municipal Permit

The County of San Joaquin includes the City of Stockton, surrounding incorporated and unincorporated urbanized areas (which contain densely settled territory containing 100,000 or more people). Due to the proximity of the County's urbanized areas to the City of Stockton, the urbanized area's physical interconnection to the City's storm drain system, and the locations of their discharges relative to the City's system, the County is designated as a part of the medium Small Municipal Separate Storm Sewer System (MS4). This MS4 designation must comply with the CWA under the NPDES Phase I program.

The City of Stockton, the urbanized areas of the County that are enclosed within the City, and the urbanized areas of the County which surround the City are referred to as the Stockton Urbanized Area and are subject to the NPDES Phase I municipal permit, Order No. RS-2007-0173 (CAS083470). Phase II of the NPDES Stormwater program builds on the Phase I program by requiring smaller communities not covered by Phase I to be permitted to develop and implement a comprehensive stormwater management program. The County is currently completing the permit process for the Phase I portion of the NPDES program.

San Joaquin Stormwater Management Program

The December 2007 update of the City of Stockton and the County of San Joaquin NPDES municipal stormwater permit Stormwater Management Program (SWMP) continues most of the previous program objectives and proposes a range of continuing and enhanced Best Management Practices (BMPs) and control measures. The implementation of the stormwater management program

requires a coordinated management effort by the City of Stockton and the County. While named as co-permittees to one permit, the City and County currently have separate programs and submit documents and reports separately to the CVRWQCB. However, the programs are essentially identical and the co-permittees collaborate with each other to address common issues and to ensure consistency in program development and implementation. Although the co-permittees coordinate with each other, each agency is responsible for implementing within their respective jurisdictions and their storm drains and/or watercourses. The City and County are legal entities with the authority to administer, implement, and enforce the stormwater management program within their separate jurisdictions.

San Joaquin County Department of Public Works

The San Joaquin County Water Resources Division of the Department of Public Works has primary responsibility for the development and implementation of the SWMP.

Stormwater Management and Discharge Control Ordinance No. 3966

In March 1998, the County enacted a Stormwater Management and Discharge Control Ordinance No. 3966 (codified in Title 5, Division 10). This ordinance reorganized the existing County stormwater-related rules into a single document and added new regulations to protect and enhance the water quality of the waters of San Joaquin County consistent with the CWA. It sets forth general discharge prohibitions against wastewater, pollutants, substances or material of any kind into the County storm drainage system that interfere with the operation or performance of the County storm drainage system or that violate any condition of the County NPDES Permit or any other federal, state, or local regulation. (Ord. 3966 § 1 (part), 1998). It also addresses construction activities, new development, redevelopment, and BMPs.

County and City General Plans

General plans can be described as a city or county's "blueprint" for future development. It represents the community's view of its future; a constitution made up of the goals and policies upon which the city council, board of supervisors, or planning commission 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. If inconsistent, they must not be approved.

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 (Government 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 seven cities included in San Joaquin County have created general plans. The general plans of the County and its local jurisdictions include the following:

- San Joaquin County General Plan
- City of Escalon General Plan
- City of Lathrop General Plan
- City of Lodi General Plan
- City of Manteca General Plan
- City of Ripon General Plan

- City of Stockton General Plan
- City of Tracy General Plan

4.11.2 Impact Analysis

This section presents the programmatic impact analysis regarding hydrology and water quality for the SJCOG 2018 RTP/SCS.

a. Methodology and Significance Thresholds

Appendix G of the State CEQA Guideline 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;
2. Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level;
3. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site;
4. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site;
5. 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;
6. Otherwise substantially degrade water quality;
7. Place housing within a 100-year flood hazard area;
8. Place within a 100-year flood hazard area structures which would impede or redirect flood flows;
9. Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam;
10. Be subject to inundation by seiche, tsunami, or mudflow; and/or
11. Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed.

The known water resources located within the region were evaluated using the criteria set forth by the California Department of Water Resources, FEMA, and the State CEQA Guidelines. The research analysis includes water resources of local significance.

b. Project Impacts and Mitigation Measures

This section describes generalized water quality, groundwater supply, drainage, runoff, flooding, and dam inundation impacts associated with the 2018 RTP/SCS. Due to the programmatic nature of the 2018 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 2018 RTP/SCS could result in the hydrology and water quality conditions as described in the following sections.

Threshold 1:	Violate any water quality standards or waste discharge requirements
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, in a manner which would result in substantial erosion or siltation on- or off-site
Threshold 4:	Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site
Threshold 6:	Otherwise substantially degrade water quality

IMPACT W-1 IMPLEMENTATION OF PROPOSED TRANSPORTATION IMPROVEMENTS AND FUTURE PROJECTS FACILITATED BY THE LAND USE SCENARIO ENVISIONED IN THE 2018 RTP/SCS COULD RESULT IN SUBSTANTIAL ERODED SEDIMENTS AND CONTAMINANTS IN RUNOFF, AS WELL AS CHANGES IN DRAINAGE PATTERNS WHICH COULD DEGRADE SURFACE AND GROUND WATER QUALITY. IMPACTS WOULD BE SIGNIFICANT BUT MITIGABLE.

Implementation of proposed transportation improvements and future projects facilitated by the land use scenario envisioned in the 2018 RTP/SCS would result in both short-term and long-term impacts to water quality.

Certain transportation improvements would increase overall impervious surface area throughout the SJCOG region. For example, new roadways or road widening projects would introduce pavement in areas that are currently unpaved. Infill development projects envisioned under the land use scenario could also introduce impervious surfaces, if the infill site is currently unpaved. These and other projects that would increase impervious surfaces may generate significant adverse impacts to surface water quality. Pollutants and chemicals associated with urban activities would run off new roadways and 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. Similarly, any 2018 RTP/SCS projects with landscaping may require fertilizer/pesticide application, which could enter nearby bodies of water and cause adverse effects to water quality. Such contaminated urban runoff may remain largely untreated, thus resulting in the incremental long-term degradation of water quality.

Short-term adverse impacts to surface water quality may also occur during the construction periods of individual improvement projects because areas of disturbed soils would be highly susceptible to water erosion and downstream sedimentation. This impact is of particular concern where projects are located on previously contaminated sites. Without effective erosion and storm water control, contaminated soils exposed during construction activities may result in surface water contamination. In addition, grading and vegetation removal in proximity to creeks for construction, widening, and bridge repair could increase erosion and sedimentation of creek banks. This could affect both water quality and the stability of slopes along the creeks. Regulations under the federal CWA require that a NPDES storm water permit be obtained for projects that would disturb greater than an acre. Acquisition of the General Construction permit is dependent on the preparation of a SWPPP that contains specific BMPs to control the discharge of pollutants, including sediment, into the local surface water drainages. Many of the 2018 RTP/SCS projects, especially new and extended roadways, would disturb more than one acre and would be subject to these regulations. Therefore, compliance with regulations would reduce impacts from project construction by requiring measures to prevent runoff and pollutants from leaving a project site. However, operation of 2018 RTP/SCS projects and projects not under these regulations or under the jurisdiction of SJCOG would not have

such requirements or cannot be required by SJCOG and therefore impacts are considered significant and unavoidable.

Mitigation Measures

For transportation projects under their jurisdiction, SJCOG shall implement, and transportation project sponsor agencies can and should implement, the following mitigation measure developed for the 2018 RTP/SCS program where applicable for transportation projects that would introduce new impervious surfaces, alter existing drainage patterns, or otherwise degrade water quality. Municipalities in the SJCOG region can and should implement this measure, where relevant to land use projects implementing the 2018 RTP/SCS.

W-1(a) Fertilizer/Pesticide Application Plan

The project sponsor of a 2018 RTP/SCS project shall ensure that fertilizer/pesticide application plans for any new right-of-way landscaping are prepared to minimize deep percolation of contaminants. The plans shall specify the use of products that are safe for use in and around aquatic environments.

W-1(b) Runoff Capture

The project sponsor of a 2018 RTP/SCS project involving construction of a new roadway, or widening or extension of an existing roadway, shall ensure that the improvement directs runoff into subsurface percolation basins and traps which would allow for the removal of urban pollutants, fertilizers, pesticides, and other chemicals.

Significance After Mitigation

The increased development would increase pollutant runoff, but projects would be required to comply with requirements to prepare and implement (SWPPPs and SUSMPs). Compliance with Mitigation Measure W-1(a) through W-1(b) would reduce impacts to less than significant.

Threshold 2:	Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level
Threshold 11:	Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed

IMPACT W-2 IMPLEMENTATION OF PROPOSED TRANSPORTATION IMPROVEMENTS AND FUTURE PROJECTS FACILITATED BY THE LAND USE SCENARIO ENVISIONED IN THE 2018 RTP/SCS WOULD INCREMENTALLY INCREASE WATER DEMAND ABOVE AND BEYOND EXISTING USE IN THE SJCOG REGION. THIS DEMAND MAY DEplete GROUNDWATER SUPPLIES, INTERFERE WITH RECHARGE, AND POTENTIALLY REQUIRE NEW OR EXPANDED WATER SUPPLIES, ENTITLEMENTS, OR FACILITIES. IMPACTS WOULD BE SIGNIFICANT AND UNAVOIDABLE.

Implementation of proposed transportation improvements and future projects facilitated by the land use scenario envisioned in the 2018 RTP/SCS would result in both short-term and long-term impacts to water supply throughout the SJCOG region.

During grading and general construction activities, water would be needed to suppress fugitive dust generated by construction equipment. Given the current state of overdraft of many groundwater basins in the study area, and the likelihood that more than one project would be constructed

simultaneously in areas with overdrafted basins, the short-term water impact of the proposed 2018 RTP/SCS is potentially significant.

Projects that require long-term commitments of water, whether from irrigation for landscaping or from development facilitated by the proposed land use scenario, could also generate impacts on water supplies in the SJCOG region. Most transportation improvements involve modification of existing facilities and would not result in a substantial increase in landscaped areas that require irrigation. New and extended roadways could include tree and shrub plantings. In addition, future transit projects with restrooms envisioned by the 2018 RTP/SCS would require potable water, such as Project SJ14-7021 at Tracy Municipal Airport.

Major 2018 RTP/SCS projects, particularly new and extended roadways, and parking facilities could also 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 within existing rights-of-way at the expense of natural infiltration. The magnitude of impacts associated with individual 2018 RTP/SCS projects cannot be accurately determined at this programmatic stage of analysis. Nevertheless, given the overdrafted nature of many of the area's groundwater basins, the reduction in groundwater recharge is potentially significant.

Mitigation Measures

For transportation projects under their jurisdiction, SJCOG shall implement, and transportation project sponsor agencies can and should implement, the following mitigation measure developed for the 2018 RTP/SCS. Municipalities in the SJCOG region can and should implement this measure, where relevant to land use projects implementing the 2018 RTP/SCS.

W-2(a) Monitoring Systems, Long-Term Administrative Procedures, and Uniform Building Code For Dewatering Facilities

Project sponsors shall ensure that projects requiring continual dewatering facilities implement monitoring systems and long-term administrative procedures to ensure proper water management that prevents degrading of surface water and minimizes, to the greatest extent possible, adverse impacts on groundwater for the life of the project. Construction designs can and should comply with appropriate building codes and standard practices including the Uniform Building Code.

W-2(b) Maximize Permeable Surface Areas

Implementing and local agencies shall maximize, where practical and feasible, permeable surface area in existing urbanized areas to protect water quality, reduce flooding, allow for groundwater recharge, and preserve wildlife habitat. New impervious surfaces can and should be minimized to the greatest extent possible, including the use of in-lieu fees and off-site mitigation.

Implementing and local agencies should avoid development in groundwater recharge areas. Where feasible, transportation facilities should not be sited in groundwater recharge areas, to prevent conversion of those areas to impervious surface.

W-2(c) Avoid Development In Groundwater Recharge Areas

Project sponsors shall avoid development in groundwater recharge areas. To the extent practicable, transportation facilities shall be sited away from areas of groundwater recharge in order to prevent impervious surface creation.

W-2(d) Reduce Hardscape To Facilitate Groundwater Recharge

As appropriate, project sponsors shall reduce hardscape to the extent feasible in order to facilitate groundwater recharge.

W-2(e) Bioswale Installation

The project sponsor of a 2018 RTP/SCS project, such as new roads or roadway extensions, that would substantially increase impervious surfaces shall ensure that bioswales are installed, where feasible, to facilitate groundwater recharge using stormwater runoff from the project site while improving water quality.

W-2(f) Porous Pavement

Projects that involve streetscaping, parking, transit, and land use improvements shall ensure that porous pavement materials are utilized, where feasible, to allow for groundwater percolation.

W-2(g) Construction Dust Suppression

Ensure that sponsored 2018 RTP/SCS projects, where economically feasible and available, utilize reclaimed and/or desalinated water is used for dust suppression during construction activities. This measure shall be noted on construction plans and shall be spot checked by the local jurisdiction.

Significance After Mitigation

If the implementing agency adopts these mitigation measures, impacts would be reduced, although not to a level of less than significant level in all cases. Because this document evaluates impacts at the programmatic level, all project circumstances are not foreseeable and therefore, even with implementation of Mitigation Measures W-2(a) through W-2(g), impacts could remain significant and unavoidable. As appropriate, SJCOG will encourage lead agencies to adopt these mitigation measures through its Intergovernmental Review process. However, SJCOG cannot require implementing agencies to adopt these mitigation measures, as it is ultimately the responsibility of a lead agency to determine and adopt mitigation. Therefore, this impact remains significant and unavoidable.

Threshold 7:	Place housing within a 100-year flood hazard area
Threshold 8:	Place within a 100-year flood hazard area structures which would impede or redirect flood flows
Threshold 9:	Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam
Threshold 10:	Be subject to inundation by seiche, tsunami, or mudflow

IMPACT W-3 IMPLEMENTATION OF PROPOSED TRANSPORTATION IMPROVEMENTS AND FUTURE PROJECTS FACILITATED BY THE LAND USE SCENARIO ENVISIONED IN THE 2018 RTP/SCS COULD BE SUBJECT TO FLOOD HAZARDS, DAM FAILURE, OR TSUNAMI, WHICH MAY EXPOSE PEOPLE OR STRUCTURES TO A SIGNIFICANT RISK OF LOSS, INJURY, OR DEATH. IMPACTS WOULD BE SIGNIFICANT BUT MITIGABLE.

The proposed 2018 RTP/SCS assumes the construction of an additional 107,974 housing units (single and multi-family) by 2042 and substantial additional transportation infrastructure.

While the majority of growth will take place outside of flood zones, some new housing could occur within flood zones. The proposed 2018 RTP/SCS could increase the amount of housing in flood hazard areas, but state regulations, in combination with local ordinances and federal regulations, as well as ongoing improvements to flood protection infrastructure, would likely mitigate the risk associated with housing in these areas. Further, individual project sponsors are required by state and federal regulations to obtain necessary approvals for construction within designated floodplains.

A portion of the transportation projects included in the proposed 2018 RTP/SCS could occur within the 100-year flood hazard area, thus increasing the potential to obstruct or exacerbate floodwaters. The construction of projects involving support structures in the floodway could obstruct floodwaters at some locations. Placement of structures within a floodplain can displace floodwaters and alter the base flood elevations in the surrounding areas. Structures can form a backwater effect, resulting in an increase in the flood elevation level upstream and in neighboring areas. Likewise, floodwater can cause scour effects, resulting in erosion and sedimentation problems downstream from structures. Drainage areas could be altered by highway corridors, in which floodwaters could be detained by medians and along the roadside. Proposed bridge supports could block debris in waterways, creating obstructions and further elevating upstream flood levels. The Plan could alter existing drainage patterns or substantially increase the rate or amount of surface runoff in a manner that would result in flooding or produce or contribute runoff water that would exceed the capacity of existing or planned storm water drainage systems.

Storm water runoff is influenced by rainfall intensity, ground surface permeability, watershed size and shape, and physical barriers. The introduction of impermeable surfaces greatly reduces natural infiltration, allowing for a greater volume of runoff. In addition, paved surfaces and drainage conduits can accelerate the velocity of runoff, concentrating peak flows in downstream areas faster than under natural conditions. Significant increases to runoff and peak flow can overwhelm drainage systems and alter flood elevations in downstream locations. Increased runoff velocity can promote scouring of existing drainage facilities, reducing system reliability and safety.

The 2018 RTP/SCS would result in increased impervious surfaces through transportation projects and development. Additional impervious surfaces increases storm water runoff volumes and peak flow rates. This increase has the potential to create or contribute runoff flows that would exceed the capacity of existing or planned storm water drainage systems. In addition, placing new structures within an existing floodplain can impede flood waters, altering the flood risks both upstream and downstream.

In areas of San Joaquin County where soils have naturally low permeability and are subject to quick saturation, high rain volumes remain on the surface as runoff, and can cause flash flooding. When impervious surfaces such as highways are placed within these areas of an existing flood plain the public is exposed to the hazards of flash flooding.

The highway and arterial projects proposed in the 2018 RTP/SCS generally include widening existing highways, constructing new interchanges, new highway segments, and new rail lines. Some of the proposed transit projects would involve construction of new rail lines, new stations, and upgrades to existing stations, and are not included in the calculation of approximately 256 new lane miles.

Placing new structures within an existing floodplain can impede flood waters, altering the flood risks both upstream and downstream. The flooding risks associated with projects located in flood zones can be modified with appropriate design and alignment considerations. The amount of new urbanized acreage (consuming previously vacant land) would be on the order of 18,123 acres. The

additional urbanized acreage expected by 2042 could increase stormwater runoff and therefore require mitigation.

The impacts associated with land use changes and transportation projects from the implementation of the proposed 2018 RTP/SCS are considered potentially significant but mitigable.

Mitigation Measures

For transportation projects under their jurisdiction, SJCOG shall implement, and transportation project sponsor agencies can and should implement, the following mitigation measure developed for the 2018 RTP/SCS program where applicable for transportation projects that would be exposed to flood hazards. Municipalities in the SJCOG region can and should implement this measure, where relevant to land use projects implementing the 2018 RTP/SCS.

W-3(a) Project-Specific Hydrology Studies

Project sponsors conduct or require project-specific hydrology studies for projects proposed to be constructed within floodplains to demonstrate compliance with applicable federal, state, and local agency flood-control regulations. These studies should identify project design features or mitigation measures that reduce impacts to either floodplains or flood flows to a less than significant level. For the purposes of this mitigation, less than significant means consistent with federal, state, and local regulations and laws related to development in the floodplain.

W-3(b) Development In Flood Hazard Areas

Project sponsors shall, to the extent feasible and appropriate, prevent development in flood hazard areas that do not have appropriate protections.

W-3(c) Elevated Structures In Flood Zones

If a 2018 RTP/SCS project is in an area with high flooding potential, project sponsors shall ensure that the structure is elevated at least one foot above the 100-year flood zone elevation and that bank stabilization and erosion control measures are implemented along creek crossings, where applicable.

Significance After Mitigation

If the project sponsor adopts these mitigation measures, impacts would be reduced, although not to a level of less than significant in all cases. Because this document evaluates impacts at the programmatic level, all project circumstances are not foreseeable and therefore, even with implementation of Mitigation Measures W-3(a) through W-3(c), impacts could remain significant and unavoidable. As appropriate, SJCOG will encourage lead agencies to adopt these mitigation measures through its Intergovernmental Review process. With adoption of these mitigation measures, this impact would be significant but mitigable.

Threshold 2: Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level

Threshold 11: Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed

IMPACT W-4 IMPLEMENTATION OF PROPOSED TRANSPORTATION IMPROVEMENTS AND FUTURE PROJECTS INCLUDED IN THE LAND USE SCENARIO ENVISIONED IN THE 2018 RTP/SCS WOULD INCREASE WATER DEMAND IN THE SJCOG REGION. THIS DEMAND MAY POTENTIALLY REQUIRE NEW OR EXPANDED WATER SUPPLIES, ENTITLEMENTS, OR FACILITIES. IMPACTS WOULD BE SIGNIFICANT AND UNAVOIDABLE.

This impact addresses the potential for projects to substantially increase demand for water such that existing supplies and facilities would not be able to accommodate demand. Water agencies that either provide over 3,000 acre-feet of water annually or serve more than 3,000 or more connections in San Joaquin County are required to submit Urban Water Management Plans (UWMPs) to the California Department of Water Resources every five years. Urban water management plans include an estimation of water usage across all sources (commercial, residential, agricultural etc.). Most urban water management plans do not plan for water demand to 2042, therefore, estimates of supply and demand in this EIR are considered approximate.

As discussed in the Environmental Setting above, the largest water usage in San Joaquin County is for agricultural resources. Agricultural demand is based on various crop evapotranspiration (ET) and efficiency data collected by DWR. Although the historic trend of agricultural water use has been decreasing, for purposes of the 2018 RTP/SCS analysis, future agricultural water demands are assumed to stay the same at 1,051,855 afy (acre-feet/year). However, by 2042, with the 2018 RTP/SCS, agricultural land would be reduced by approximately 8,000 acres which would be expected to reduce the overall water demand from agricultural lands. Other factors such as crop type, climate, and availability of water are also expected to impact demand from the agricultural sector.

The projected population in San Joaquin County is anticipated to increase by approximately 294,169 people by the year 2042 (San Joaquin County 2016). Water consumption estimated for the new growth is expected to be approximately 274.7 gallons per day per household (San Joaquin COG, 2014). As discussed above, many water service providers have not identified water supplies through 2042 in their plans.

Other sources of water demand include commercial and industrial uses. It is beyond the scope of this EIR to estimate water usage associated with each of these sectors and no sufficient data currently is available to make such estimation. While it is expected there would be an increase among these sectors, due to various state and federal programs, increasing awareness of drought conditions, and water restrictions, it is assumed that each of these areas would become more efficient in water usage.

Reduction in water supply, as well as uncertainty in the reliability of that supply, could result from increased temperatures due to global climate change, as well as regulatory or legislative decisions that affect the availability of imported water. Thus, many agencies are implementing aggressive water conservation, recycling and planning strategies (water transfer and water banking) to reduce demand and even out supply in wet and dry years.

Meeting future water demand is ultimately the responsibility of local and regional water agencies. Water supplies are either produced locally from groundwater and surface water sources or are

imported via the California Aqueduct and the CVP. Other means of providing water without increasing imported supplies include reclamation and recycling, conservation, water transfers, groundwater banking, developing brackish groundwater, and ocean desalination.

Each water district develops its own policy for determining its planning horizon and for acquiring and building water facilities. Further, water districts provide water for the growth planned and authorized by the appropriate land use authority. If water agencies can supply the water necessary to meet future demand and/or minimize that demand, impacts would be less than significant. However, given the challenges to imported water supplies and reducing groundwater depletion, and the uncertainty of water supplies in general meeting future demand is expected to be difficult. Therefore, water demand impacts related to land use and transportation changes from implementation of the proposed 2018 RTP/SCS are considered potentially significant, and Mitigation Measures are required.

Mitigation Measures

For transportation projects under their jurisdiction, SJCOG shall implement, and transportation project sponsor agencies can and should implement, the following mitigation measure developed for the 2018 RTP/SCS program. Municipalities in the SJCOG region can and should implement this measure, where relevant to land use projects implementing the 2018 RTP/SCS.

W-4(a) Coordinated Development And Support Of Sustainable Policies In Accommodating Growth

SJCOG, in coordination with regional water agencies and other stakeholders, shall encourage the kind of regional coordination throughout California that develops and supports sustainable policies in accommodating growth.

W-4(b) Reduce Exterior Uses Of Water And Promote Reductions In Water Consumption

Project sponsors should reduce exterior uses of water in public areas, and promote reductions in private homes and businesses by shifting to drought-tolerant native landscape plantings, using weather-based irrigation systems, educating other public agencies about water use, and installing related water pricing incentives. Local jurisdictions should work with local water retailers to promote the availability of drought resistant landscaping options and provide information on where these can be purchased. Use of reclaimed water especially in median landscaping and hillside landscaping can and should be implemented where feasible.

W-4(c) Minimize Future Impacts To Water Supply

Future impacts to water supply should be minimized through cooperation, information sharing, and program development as part of the SJCOG's ongoing regional planning efforts, in-coordination with regional water agencies, and other stakeholders.

W-4(d) Water Demand/Pressure Requirements

Project sponsors should coordinate with the local water provider to ensure that existing and/or planned water supply and water conveyance facilities are capable of meeting water demand/pressure requirements. In accordance with state law, a water supply assessment can and should be required for projects that meet the size requirements specified in the regulations. In coordination

with the local water provider, each project sponsor will identify specific on- and off-site improvements needed to ensure that impacts related to water supply and conveyance demand/pressure requirements are addressed prior to issuance of a certificate of occupancy. Water supply and conveyance demand/pressure clearance from the local water provider will be required at the time that a water connection permit application is submitted.

W-4(e) Water Conservation Measures In New Development

Project sponsors should implement water conservation measures in new development that should include but not be limited to the following:

- High efficiency toilets
- Restroom faucets with automatic shut-off
- High efficiency clothes washers
- High efficiency dishwashers
- Use of reclaimed water for appropriate uses
- Water saving irrigation measures including: weather-based irrigation controller with rain shut-off.

W-4(f) Identify Feasible and Reasonable Measures To Reduce Water Consumption

Project sponsors shall consult with the local water provider to identify feasible and reasonable measures to reduce water consumption, including, but not limited to, systems to use reclaimed water for landscaping, drip irrigation, re-circulating hot water systems, water conserving landscape techniques (such as mulching, installation of drip irrigation systems, landscape design to group plants of similar water demand, soil moisture sensors, automatic irrigation systems, clustered landscaped areas to maximize the efficiency of the irrigation system), water conserving kitchen and bathroom fixtures and appliances, thermostatically controlled mixing valves for baths and showers, and insulated hot water lines.

W-4(g) Water Conservation and Recycled Water

Project sponsors should adopt and implement a comprehensive strategy to increase water conservation and the use of recycled water.

W-4(h) Water-Efficient Building Design

Project sponsors should establish building design guidelines and criteria to promote water-efficient building design, including minimizing the amount of non-roof impervious surfaces around the building(s) and menus and check-lists for developers and contractors to ensure water-efficient infrastructure and technology are used in new construction, including low-flow toilets and shower heads, moisture-sensing irrigation, and other such advances.

W-4(i) Safe And Effective Use Of Gray Water (On-Site Water Recycling)

Project sponsors should establish criteria and standards to permit the safe and effective use of gray water (on-site water recycling), and review and appropriately revise, without compromising health and safety, other building code requirements that might prevent the use of such systems.

Significance After Mitigation

If the project sponsor adopts these mitigation measures, impacts would be reduced, although not to a level of less than significant. Because this document evaluates impacts at the programmatic level, all project circumstances are not foreseeable and therefore, even with implementation of Mitigation Measures W-4(a) through W-4(i), impacts could remain significant and unavoidable. As appropriate, SJCOG will encourage lead agencies to adopt these mitigation measures through its Intergovernmental Review process. However, SJCOG cannot require implementing agencies to adopt these mitigation measures, as it is ultimately the responsibility of a lead agency to determine and adopt mitigation. Therefore, this impact remains significant and unavoidable.

Threshold 5: 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

IMPACT W-5 IMPLEMENTATION OF PROPOSED TRANSPORTATION IMPROVEMENTS AND FUTURE PROJECTS FACILITATED BY THE LAND USE SCENARIO ENVISIONED IN THE 2018 RTP/SCS WOULD INCREMENTALLY INCREASE STORMWATER FLOWS IN THE SJCOG REGION. IMPACTS WOULD BE LESS THAN SIGNIFICANT.

Implementation of proposed transportation improvements and future projects facilitated by the land use scenario envisioned in the 2018 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 projects would be designed to comply with existing jurisdiction requirements related to stormwater runoff and drainages, such as curb and gutter design, and would build drainage infrastructure to control and accommodate the increase in stormwater flows. 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.

c. Cumulative Impacts

Impacts to hydrology and water quality may be related to: violation of water quality standards, interference with groundwater recharge, increased erosion, increased non-point source pollution, increased runoff, affects to flood zones, and exposure of people to a significant risk of loss, injury, or death involving flooding (including flooding as a result of the failure of a levee or dam), seiche, tsunami, or mudflow.

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 2018 RTP/SCS, individual construction projects within the cumulative impact area would be required to comply with applicable water quality regulations, as discussed in the Regulatory Setting and Impact W-1 above. 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 2018 RTP/SCS's contribution to this impact would not be cumulatively considerable.

Water supply in the cumulative impact development area is derived from a variety of sources that vary depending on the location. As in the SJCOG region, both groundwater and surface water supplies in portions of the cumulative impact development area may be limited. Cumulative development would create additional water demand, which may exceed supply in some localized areas. Compliance with SB 610 and SB 221, as well as preparation of GSPs where applicable, pursuant to the Sustainable Groundwater Management Act, would partially limit these cumulative effects. However, given that these regulations would not apply to all projects or all groundwater basins, this cumulative impact would be significant and unavoidable. As discussed in Impact W-2 and impact W-4, the 2018 RTP/SCS may impact groundwater supply in the SJCOG region because of the water required for land use projects and some transportation projects. Even with the implementation of mitigation measures, these impacts would be significant and unavoidable. Therefore, the 2018 RTP/SCS's contribution to cumulative water supply impacts would be cumulatively considerable. There are no feasible mitigation measures to ensure that there is sufficient water supply to support anticipated growth in the region. Given the overdraft conditions of area groundwater basins and other regional water supply concerns, impacts would be cumulatively considerable.

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4.12 Land Use

This section describes the land uses in San Joaquin County and its incorporated communities, describes the land use regulations for each jurisdiction, and evaluates the environmental effects of implementation of the 2018 RTP/SCS.

4.12.1 Setting

San Joaquin County is located in the San Joaquin Valley in what is considered the Central Valley of California. The County covers approximately 1,440 square miles and is predominantly flat land with some gently rolling hills. The County is bordered to the southwest by the Diablo Range and to the east by the Sierra Nevada foothills. The County contains a combination of metropolitan and rural areas with a history of agricultural activities. Incorporated cities within San Joaquin County include the cities of Escalon, Lathrop, Lodi, Manteca, Ripon, Stockton, and Tracy.

a. Land Use Patterns

San Joaquin County is situated in a geographically diverse region with peaks of the Sierra Nevada framing its eastern region. The western portion of the county includes the San Joaquin Valley floor, which is extensively cultivated. Unincorporated land accounts for about 89 percent (814,528 acres) of land in the county. Agriculture is the predominant use in the County, with approximately 89 percent of the County devoted to agricultural activities (San Joaquin County 1992). The second largest land use is residential land, with about 175,870 acres in this use (approximately 20 percent of the county total). The majority of the unincorporated residential acreage is concentrated along the edges of existing cities and in urban and rural communities in the county.

Due to the multiple highway corridors, the county is considered a “transportation hub,” especially in conjunction with the rail corridors and the Port of Stockton where large cargo ships are available to dock. West of the urbanized development, in the Delta, is agricultural use, with a variety of irrigated row crops. To the east of the development corridors, orchards, vineyards, and grazing lands are the predominant agricultural uses. Grazing land encompasses large portions of the northeast and southwest corners of the county.

In addition to the agricultural and residential land uses mentioned above, commercial, industrial, public and quasi-public land uses contribute to the overall total county acreage. These lands include hospitals, airports, cemeteries, landfills, public utilities, schools, military facilities and other government-owned land. For example, approximately 6,000 acres of federally owned land are located in the City of Tracy Planning Area, while approximately 3,000 acres of land in the eastern portion of the county is owned by the East Bay Municipal Utility District.

Agricultural Land Uses

Agriculture consisting of crop farming is the largest industry in San Joaquin County and contributes a substantial amount of money to San Joaquin County’s economy. San Joaquin County ranks number seven in agricultural producing counties in the United States and is one of eleven California counties with a billion dollars or more production in crop value. Per the 2016 Agricultural Report for San Joaquin County, the gross value of agricultural production for 2016 was \$2,337,922,000, a 14.5 percent decrease from 2015. The top ten crops produced in the County for 2016 consisted of: grapes, milk, almonds, walnuts, cattle, tomatoes, cherries, hay, potatoes, and melons (San Joaquin

County 2016). The Cities of Escalon and Lodi are among the County's leading agricultural areas, and are noted for their high quality irrigated crops, including vineyards and grapes.

The County's transportation system traverses many rural areas, including areas overlain by rich agricultural soils, a high percentage of which are in production. The agricultural edges of San Joaquin County abut Sacramento County to the north, Amador and Calaveras Counties to the northeast and east, Contra Costa and Alameda Counties to the west, and Stanislaus County to the south. The only urbanized areas that abut these adjoining counties are the Mountain House community (an unincorporated community) that abuts Alameda County to the west, and Ripon, an incorporated city that abuts Stanislaus County to the south.

b. Population, Housing, and Employment

Over the next 27 years, the San Joaquin region is expected to continue to grow rapidly. SJCOG projects a total employment of 328,048 persons for San Joaquin County by 2045. This would accompany an increase in population in the County of 367,560 persons between 2017 and 2045, an increase in population of approximately 66 percent. In 2045, the estimated total population for San Joaquin County is 1,094,253 persons.

Population growth continues increase due to the following factors (but not limited to):

- Bay Area jobholders taking up residence in the County, creating a market demand for interregional commute alternatives;
- A shortage of affordable housing in neighboring Bay Area counties;
- Significantly less expensive housing costs in the Central Valley;
- Job relocations to the Central Valley due to lower cost of doing business;
- A decentralization of Stockton's commercial and retail businesses;
- An increase in the economic interaction with surrounding counties;
- Major growth in cities neighboring bay area counties.

Population

San Joaquin County population ranks as one of the top nine of the fastest growing regions within the state's 58 counties. The rate of growth is having profound effects on the ability to finance, deliver, and maintain the infrastructure needed to support the population. For SJCOG, the primary issue is transportation, but similar concerns apply to water delivery, sewer and storm water runoff, and education. Table 33 provides a summary of forecasted population trends.

Table 33 Population Forecasts

	2020	2025	2030	2040	2045
City of Escalon	7,612	7,889	8,186	8,878	9,257
City of Lathrop	28,896	35,475	42,109	58,969	67,976
City of Lodi	69,219	73,397	77,610	88,317	94,037
City of Manteca	77,018	82,912	88,855	103,958	112,027
City of Ripon	16,525	17,850	19,186	22,582	24,396
City of Stockton	329,729	352,239	374,939	432,627	463,445
City of Tracy	95,040	102,236	109,492	127,933	137,784
County Total	775,819	829,426	883,484	1,020,862	1,094,253

Source: San Joaquin County 2016 Forecast Summary

This existing population of San Joaquin County is 726,693 persons. The most rapid growth is forecasted to occur in the developed city areas within San Joaquin. As shown in Table 33, the County's population is expected to be 775,819 by 2020 and reach over one million in 2040.

Housing

As indicated by population and employment trends, growth pressures are increasing at a significant rate. Because most of this growth comes from outside of the County, in particular employment opportunities in the Bay Area, the growth within San Joaquin County is focused on the development of single-family homes. Currently, the region supports 223,055 households. Housing forecasts are shown below in Table 34.

Table 34 Housing Forecasts

	2020	2025	2030	2040	2045
City of Escalon	2,674	2,771	2,866	3,108	3,230
City of Lathrop	7,440	9,310	11,162	15,441	17,737
City of Lodi	24,756	26,206	27,782	31,406	33,375
City of Manteca	26,570	28,404	30,343	34,975	37,513
City of Ripon	5,702	6,174	6,638	7,745	8,344
City of Stockton	102,702	110,037	117,235	134,504	143,700
City of Tracy	27,767	29,920	32,357	37,539	40,247
County Total	246,715	263,876	280,716	321,379	343,170

Source: San Joaquin County 2016 Forecast Summary

Employment

Currently, there are 234,862 persons employed in San Joaquin County. Table 35 shows employment trends between 2020 and 2045 in San Joaquin County. As shown in the table, non-farm and private service jobs have steadily increased while manufacturing jobs have decreased.

Table 35 Employment by Industry in San Joaquin County

Industry	2020	2025	2030	2040	2045
Construction, Natural Resources, and Mining	12,773	15,055	16,393	19,978	22,140
Manufacturing	20,943	21,183	20,935	20,448	20,373
Wholesale Trade	12,635	13,418	13,775	13,890	13,743
Retail Trade	25,820	26,265	27,640	30,880	32,285
Transportation, Warehousing, and Utilities	24,898	25,605	26,518	26,528	26,675
Information	2,153	2,413	2,598	3,163	3,375
Financial Activities	6,825	6,920	7,045	7,668	7,813
Professional and Business Services	22,775	26,565	29,758	36,505	39,833
Educational and Health Services	39,703	42,983	46,673	54,948	58,345
Leisure and Hospitality	29,925	22,433	23,255	25,475	26,240
Other Services	7,173	7,320	7,668	8,250	8,455
Agriculture, Forestry, Fishing, and Hunting	15,781	15,447	15,382	14,702	14,428
Government	42,618	44,580	47,435	52,113	54,345
County Total Employment	256,019	270,185	285,072	314,544	328,048

Source: San Joaquin County 2016 Forecast Summary

As shown in Table 35, Construction, Natural Resources & Mining; and Professional & Business Services both see employment more than double between existing conditions and year 2045. Educational & Health Services; Leisure & Hospitality; and Government all see increases as well. While no sectors see a shrinking of the workforce, the smallest increase is expected to be in the Financial Activities sector. As a commuter focused region, the majority of residents commute out of the County (such as into the Bay Area).

c. Regulatory Setting

There are numerous Federal, State, and local laws, regulations, policies, programs, plans, codes, and ordinances that regulate land use in the SJCOG region. Local land use changes are regulated by the general plans, specific plans, and zoning ordinances of San Joaquin County as well as the cities within the county.

Federal

Fixing America's Surface Transportation Act (FAST Act)

The FAST Act is a funding and authorization bill, passed by Congress in December 2015, that governs Federal surface transportation spending. The FAST Act is the first long-term authorization for funding for surface transportation in a decade, at over \$305 billion for fiscal years 2016 through 2020. The Moving Ahead for Progress in the 21st Century Act (MAP 21), passed in 2012, transformed the policy and programmatic framework for the National surface transportation system, and included provisions to make the program more streamlined, performance-based, and multimodal. The FAST Act builds on changes made by MAP-21.

State

The Sustainable Communities Strategy and Climate Protection Act (SB 375)

This 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. The details of the FAST Act and SB 375 are discussed in Section 2.0, *Project Description*. Related to SB 375, California's major initiative for reducing greenhouse gas emissions is Assembly Bill 32, the "California Global Warming Solutions Act of 2006" (AB 32). AB 32 codified the statewide goal of reducing GHG emissions to 1990 levels by 2020. In 2016, SB 32 expanded the AB 32 mandate, requiring the California to reduce statewide emissions of greenhouse gasses to 40 percent below 1990 levels by 2030. The transportation sector accounts for more than one-third of total emissions, meaning transportation may experience dramatic changes to meet this requirement.

Caltrans Smart Mobility 2010: A Call to Action for the New Decade

The California Department of Transportation (Caltrans) notes that the State faces demographic, environmental, economic, and quality of life challenges that influence transportation policy. The Caltrans Smart Mobility plan provides a new approach to implementation and sets the framework for an expanded State Transportation Planning Program. The focus is on the role of mobility in meeting state transportation challenges. The Plan addresses:

- The State mandate to find solutions to climate change. Achieving the State's goals for reduction of GHG emissions requires a positive and integrated approach to the transportation future.
- The need to reduce per capita vehicle miles traveled. Reduced per capita auto use will lower emissions of GHG gas and conventional pollutants, reduce petroleum consumption and associated household transportation costs, and minimize negative impacts on air quality, water quality, and noise environments.
- Demand for a safe transportation system that gets people and goods to their destinations. Smart Mobility must be achieved with vigilant attention to serving the safety and reliability needs of the State's people and businesses. The Call to Action endorses the application of land use strategies and the use of transit, carpool, walk, and bike travel to satisfy travel needs through a shift away from higher-polluting modes.
- The commitment to create a transportation system that advances social equity and environmental justice. Caltrans' California Transportation Plan (CTP) already sets forth a commitment to equity, the environment, and the economy. Smart Mobility integrates social equity concerns into transportation decisions and investments.

Regional and Local

At the local level, a number of agencies, including the Local Area Formation Commission, San Joaquin County Airport Land Use Commission, San Joaquin Council of Governments, San Joaquin County, and the Cities of Escalon, Lathrop, Lodi, Manteca, Ripon, Stockton, and Tracy, all have a role in land use and planning throughout the County. The County and cities typically serve as a lead agency with the discretionary approval authority.

Local Area Formation Commission

The San Joaquin Local Area Formation Commission (LAFCo) is a legislatively established commission responsible for coordinating logical and timely changes in local governmental boundaries, conducting special studies that review ways to reorganize, simplify, and streamline governmental structure, and preparing a sphere of influence for each city and special district within each county. LAFCo is directed to see that services are provided efficiently and economically while agricultural and open-space lands are protected.

Zoning

The zoning code of the County and each incorporated community is the set of detailed requirements that implement the general plan land use designations and policies at the individual parcel level. The zoning code presents standards for different uses and identifies which uses are allowed in the various zoning districts of the jurisdiction. Since 1971, state law has required the city or county zoning code to be consistent with the jurisdiction's general plan, except in charter cities.

Specific and Community Plans

The County or the incorporated communities may also provide additional specificity in land use planning beyond that identified in their respective General Plans by developing community or specific plans for smaller, more specific areas within their jurisdiction. These more localized plans, which are often referred to as "Master Planned Communities," provide focused guidance for developing a specific area, with development standards tailored to the area, as well as systematic implementation of the general plan. Specific and community plans are required to be consistent with the applicable city and/or county's general plan.

San Joaquin County Regional Blueprint Process

The primary purpose of San Joaquin County Regional Blueprint is to establish a coordinated long-range (year 2050) regional vision between transportation, land use, and the environment from an overall quality of life perspective. As a vision, the Blueprint recognizes that economic, environmental, and social issues are interdependent and only integrated approaches would affect needed changes. The location of jobs, housing, and commerce affects the transportation system, the nature of the transportation system affects air quality, and air quality affects health outcomes. The San Joaquin County Regional Blueprint Guiding Principles were developed based, primarily, on citizen-identified visions, values, and aspirations for San Joaquin County.

General Plans

California 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" (Government Code § 65300). 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.

The policies of the general plan are intended to underlie most land use decisions. Pursuant to state law, subdivisions, capital improvements, development agreements, and many other land use actions must be consistent with the adopted general plan. In counties and general law cities, zoning and specific plans are also required to conform to the general plan.

San Joaquin County and each of the incorporated cities have adopted general plans that govern the land use decisions within their respective jurisdictions. The general plans include numerous goals,

objectives, policies, programs, and implementation measures that control land uses and population growth.

SAN JOAQUIN COUNTY GENERAL PLAN

The San Joaquin County General Plan was updated in 2016. Their updated land use goals are listed below.

- The County shall discourage urban sprawl and promote compact development patterns, mixed-use development, and higher development intensities that conserve agricultural land resources, protect habitat, support transit, reduce vehicle trips, improve air quality, make efficient use of existing infrastructure, encourage healthful, active living, conserve energy and water, and diversify San Joaquin County's housing stock.
- The County shall ensure that the General Plan designates sufficient land for urban development to accommodate projected population and employment growth.
- The County shall regulate the levels of building intensity and population density according to the standards and land use designations set out in the General Plan and the San Joaquin County Development Title. Within these designations, cumulative development from 2010 shall not exceed 35,500 new dwelling units and 31,700 new employees by 2035.
- The County shall encourage infill development to occur in Urban and Rural Communities and City Fringe Areas within or adjacent to existing development in order to maximize the efficient use of land and use existing infrastructure with the capacity to serve new development. The County shall balance infill development within outward expansion of communities and new development in other unincorporated areas.
- The County shall strive to preserve agricultural and open space areas that contribute to maintaining clear boundaries among cities and unincorporated communities.
- The County shall direct new employment generating uses to locate within Urban and Rural Communities and City Fringe Areas, at freeway interchanges, and in other areas designated for commercial or industrial development. The County may allow employment-generating uses in other unincorporated areas when development proposals demonstrate that the project will not conflict with adjacent uses and will provide: jobs to County residents; adequate infrastructure and services (i.e., water, sewer, drainage, and transportation); and positive tax benefits to the County.
- The County shall consider information from the State Farmland Mapping and Monitoring Program when designating future growth areas in order to preserve prime farmland and limit the premature conversion of agricultural lands.
- The County shall encourage land use patterns that promote walking and bicycling and the use of public transit as alternatives to the personal automobile.
- The County shall apply new urban zoning classifications to areas planned for urban development only when adequate infrastructure and services (i.e., water, wastewater, drainage, and transportation) can be provided. Until that time these areas shall be zoned Agriculture-Urban Reserve.
- The County shall coordinate with San Joaquin LAFCo and cities within the County to ensure future annexation proposals and requests to expand Spheres of Influence reflect the growth and development patterns envisioned in this General Plan. The County shall provide input on annexation proposals and requests to expand Spheres of Influence in an effort to play a more active role in future expansion of cities into the unincorporated County.

- The County shall coordinate with the San Joaquin Council of Governments to direct State regional housing needs allocations predominantly to cities in an effort to promote compact development patterns and support the principles of the San Joaquin County Blueprint and implementation of SB 375.
- The County shall work with the San Joaquin Council of Governments to develop and periodically update the Sustainable Communities Strategy or Alternative Planning Strategy as part of the Regional Transportation Planning process.
- The County shall consider the San Joaquin Council of Governments Regional Transportation Plan, including the Sustainable Communities Strategy or Alternative Planning Strategy, and adopted city general plans and those of surrounding counties each time it considers an update to the General Plan or any master plan, strategy, or zone.
- The County shall support expanded incentives and CEQA streamlining opportunities for projects that are consistent with the adopted San Joaquin Council of Governments RTP/SCS and implement the objectives of SB 375.

CITY OF ESCALON GENERAL PLAN

- Develop design review standards for structures, landscaping and related development to facilitate compatibility with surrounding uses and the overall character of the community.
- Gateways to Escalon and the downtown shall be designated and identified by well-designed, landscaped entrances to enhance access corridors. Land uses in the vicinity of Gateways should be of high quality design which reflects favorably on the image of the community.
- Emphasize pedestrian amenities in the downtown area including landscaped open space areas, street furniture, lighting and signage.
- Develop a Citywide tree and landscape master plan to delineate neighborhoods, master and specific plan areas.
- Develop scenic entryways (gateways) and roadway corridors into the City through special setback and landscape standards, entry signage open space and park development, and/or land use designations. These corridors shall also have enhanced landscape standards. Gateways and entryways to be considered should include:
 - Gateways:
 - North: Escalon Avenue/Mahon Avenue
 - South: McHenry Avenue/Jones Avenue
 - East: SR 120/Campbell
 - West: SR 120/Brennan Avenue
- Give priority consideration to infill development of vacant and underutilized land within the City limits through expedited permit processing. Consideration shall be given to financially assisting such development through special infrastructure financing programs.
- Consider annexations which are consistent with the extension of public services and facilities and other City policies and plans. The City shall maintain at least a 10-year supply of zoned land in the City for all residential land use types, and a minimum five-year supply of "ready to go" zoned land served by infrastructure. Designate an adequate amount of residential land in the General Plan for a 30-year supply of single-family and multifamily land uses.
- In reviewing proposals for changes in land use to or from a residential land use, a fiscal/economic impact analysis shall be completed to ensure that the change is fiscally and

economically beneficial to the City. The City shall also determine if the change will result in residential land use inventory that is insufficient to meet the City's Regional Housing Needs Allocation.

- Encourage the use of site development techniques which ensure that a good mix of housing types is provided through such methods as inclusion of duplexes on corner lots in low-density areas where they can be made to be compatible with surrounding development.
- Plan and coordinate residential development in close proximity to planned urban facilities and services such as schools, parks, sanitary sewer, water, storm drainage, circulation network, transportation facilities and commercial centers.
- Promote comprehensively planned and high quality building and site design for multi-family developments with the following criteria:
 - Exterior Elevations. Use design features such as offsets, balconies, projections, landscaping or similar elements to preclude large expanses of uninterrupted building surfaces.
 - Building, Parking, Walkway Separation. Provide privacy, light, air, and access to dwellings within the development by ensuring adequate distances among buildings, parking lots and driveways, and walkways.
 - Open Space, Landscaping, and Screening. Designate private open space exclusive of required setbacks, right-of-way, and easements within each development for the use of residents.
 - Open space, landscaping and screening should provide outdoor space for the residents and mitigate negative impacts related to land use compatibility between the development and adjacent land uses, noise, lighting, parking (screening and shading), on-site traffic circulation, and preservation of natural features.
 - Energy Efficiency-Encourage the following measures: 1) appropriate landscaping materials to provide shade in the summer and protection from the weather in winter; 2) eaves, canopies, awnings, along south and west elevations; 3) secured bicycle storage areas with lock-up capabilities.
 - Continue to encourage the distribution of low and moderate-income housing throughout the community and on smaller sites.
- Encourage development of housing for seniors and other special populations (i.e. developmentally disabled and physically handicapped). Locational criteria for these development proposals, at a minimum, should include proximity to health care, recreation/cultural, and/or commercial facilities; and, aesthetic quality of area, including noise impact compatibility, and open space.
- In order to avoid over concentration of multifamily dwelling units, they should be spread throughout the community, integrated as part of overall neighborhood planning, and be in concentrations consistent with Policy 22.
- Encourage planned unit developments according to the following criteria:
 - For mixed-use developments which include a Convenience Center or a Neighborhood Center, the minimum site area shall be 20 acres. Sites less than 20 acres may be considered upon recommendation of the Planning Commission.
 - Common usable open space, exclusive of right-of-way and required setbacks, shall be encouraged to the greatest extent possible for recreation and open space purposes.

- Existing natural features shall be preserved and enhanced consistent with the Conservation, Open Space, Parks and Recreation Element.
- Density shall not exceed the underlying zoning provisions. Density increases may be granted in accordance with the Zoning Ordinance such as density bonuses or for infill projects, or for affordable housing.
- Identify residential areas adjacent to roadways and other noise-sources. (i.e., railroads, airport, industry) which require setbacks and/or special soundproofing to reduce negative noise-related impacts, as identified in the Noise Element. Mitigation measures shall include the following:
 - The performance standards of the City's Noise Element.
 - Noise mitigation "packages" including the use of setbacks to ensure that the exterior noise levels at the closest building façade do not exceed 65 dB Ldn and interior noise exposure of 45 dB Ldn or below.
 - For multi-family development, site design techniques shall be used to reduce the need for supplemental noise mitigation requirements. Also, investigate the feasibility of requiring greater setbacks for multi-family residential development along arterials and collectors as an alternative to walls and fences.
- Develop design measures to buffer residential development from non-residential land uses. These measures should, at a minimum, include setbacks; roadways; community waterways, landscaping; and landforms such as berming, fences, and walls.
- Encourage higher density residential development near employment centers, commercial development, transit, and parks.
- Provide for the continued viability of existing single-family areas in the downtown of the community and encourage medium and high-density residential development in the central business district where such uses do not conflict with existing neighborhoods.
- Require special site development standards for proposed non-residential or more intensive land uses adjacent to established residential areas to minimize negative impacts on abutting properties.
- Estate Residential areas shall be designed to provide opportunities for residential dwellings or in conjunction with small-scale farming and animal husbandry or in a semi-rural setting. Estate Residential development (6 persons per acre - up to 2 dwelling units per gross acre) shall be directed to areas where:
 - All urban services (i.e. storm drainage, schools, sidewalks, lighting) may not be required; Adjacent to long-term agricultural areas where more intensive future urban development is unlikely because of public safety conflicts such as the airport protection area;
 - Boundaries between dissimilar land uses (i.e., industrial to residential in the northwest and agriculture to residential in the southwest);
 - In areas where the viability of large-scale agriculture may ultimately be threatened due to the encroachment of non-agricultural uses, and which do not warrant designation to a higher density.
- Subject to the following minimum conditions:
 - Developments will not be permitted to have farm animals.
 - Full road, sewer, and water improvements shall be installed.
 - Development setbacks and buffering will ensure that there will be no conflicts with adjacent rural residential uses.

- One half-acre lot shall be allowed in the R-E zone through the approval of a conditional use permit if the City determines that the size or shape of the site limits the development of a standard size subdivision or the approval of 1/2-acre parcels would facilitate infill development.
- Continue to encourage comprehensively planned Low Density Residential development (up to 21 persons/acre - 2 to 10 dwelling units net acre). Developments in excess of 7 units per acre may be permitted through the PD process. Usage of duplex or halfplex units shall be encouraged to increase overall densities where they are made to be compatible with the overall residential development.
- Promote Medium Density Residential development (up to 40 persons per acre - 10 to 15 dwelling units per net acre) which typically consists of duplex, triplex and four-plex development for in-fill or new development at Local/Collector and/or Collector/Collector intersections to a maximum of 50 units in one contiguous development on sites ranging from 3.5 to 5 acres. Medium Density Residential developments on sites less than 3.5 acres at arterial/collector intersections may also be considered. Medium density developments may be permitted on corner lots in single-family zones where they can be provided in conformance with Policy 18. Medium density residential developments may also be used in infill areas where they can be made to be consistent with adjacent properties through the PD process and contract zoning.
 - Locate High Density Residential development (up to 58 persons per acre - 15 to 29 dwelling units per net acre) throughout the City at arterial, collector and Data locations according to the following criteria:
 - Arterial intersections. 100-unit maximum on sites ranging from 3.5 to 5 acres.
 - Arterial/collector intersections. 75-unit maximum on sites ranging from 2 to 5 acres.
 - Mid-block arterials. 50-unit maximum on sites ranging from 1 to 3 acres.
 - Downtown. At in-fill locations, which do not jeopardize the viability of existing single-family areas.
 - High-density residential developments may also be used in in-fill areas where they can be made to be consistent with adjacent properties through the PD process and conditional zoning. Consistency and compatibility with adjacent properties shall be evaluated based on issues including but not limited to: adjacent zoning, adjacent land use, proposed building mass, and the adequacy of public facilities available to the site.
- Densities in excess of 20 units/acre will be reviewed on a case-by- case basis and may be approved through a the PD process where measurable community benefit is demonstrated and where infrastructure including mass transit facilities is available (or can be made available) to accommodate impacts of increased density.
- Future growth of the City shall conform to the Growth Management Ordinance of the City of Escalon. Residential building permits shall be limited as provided by the City's Growth Management Ordinance in effect.
- Ensure that future commercial development is concentrated in shopping districts and nodes to discourage expansion of new strip commercial development.
- It shall be a priority of the City to develop commercial land on the west and east sides of the community along SR 120.
- In order to accommodate modern shopping center formats, the depth of new commercial areas shall be at least 500 feet. The depth of existing commercial development along SR 120 and McHenry Avenue may be extended on a case-by-case basis if the extension increases the

feasibility of commercial development and the proposed action will not create land use conflicts or reduce viability of adjacent residential properties.

- Encourage convenience commercial development in residential areas that serve the needs of the area and include site development standards which minimize negative impacts on adjacent properties.
- Development standards for the interface between commercial or office uses and residential uses shall be as follows:
 - A landscaped setback of at least ten feet wide containing deciduous and evergreen trees shall be planted and maintained along the property line between commercial or office uses and residential properties that have a common property line.
 - A masonry wall eight feet in height shall be erected along the property line where commercial and office uses have a common property line with residentially designated properties.
 - A masonry wall three and one-half feet in height or landscape berm shall be erected along the front setback line, parallel to, and ten feet from the local streets abutting planned residential uses.
 - A commercial loading and storage areas shall be screened from view of adjoining residential property by a combination of landscape planting and a masonry wall. Loading areas shall be enclosed and be located so that there are no noise impacts to adjacent residential properties. All storage shall be within an enclosed structure.
 - Roof-mounted and detached mechanical equipment shall be acoustically baffled to prevent noise from the equipment from exceeding 55dB (A) measured at the nearest residential property line.
- In order to encourage the integration of Neighborhood and Community Commercial uses into neighborhoods, designs should de-emphasize the usage of walls as buffers where they create barriers to pedestrian access. Continuous block walls shall be discouraged and offsets, landscaping pockets and openings shall be encouraged.
- In order to promote non-vehicular modes of transportation, and to limit the unnecessary usage of Collectors and Arterials for vehicular access, commercial development shall provide direct pedestrian and vehicular access to adjoining residential areas through Minor Collectors, Local Streets and/or through pedestrian access points.
- Designate Convenience Centers for personal and convenience goods and services for nearby residential areas. Such centers may be in new, in-fill, and/or consolidated existing strip commercial developments and at a scale which is compatible with surrounding residences. Special site design standards shall be imposed on these facilities including high quality architecture, landscaping, signage and lighting to ensure that they are aesthetically pleasing. Convenience Centers may be approved by a planned development permit on the corner of arterial/ collector intersections on sites of three acres or less, and at least at one-half mile away from neighborhood shopping centers. Where possible, such centers are to be developed as part of specific plans or master plans.
- Designate Neighborhood Centers for shopping centers with a major grocery store as an anchor and supporting businesses which serve one square mile residential area. Location shall be at one corner of arterial/arterial or arterial/collector intersections on sites of approximately 10 acres in area. Centers shall be located no closer than approximately one mile from other General Plan designated neighborhood centers, from existing Grocery stores, or from General Plan

designated community centers. The center's scale and site design must be compatible with the surrounding residential area with an emphasis on access, circulation, parking, signage, noise, and landscaping. Where possible, these facilities should be planned and integrated into neighborhoods as part of a specific plan or master plan.

- Preserve and enhance the Central Business District (CBD) as the community's historic services center. Promote retail commercial, specialty retail, professional/administrative office, personal services, professional services, public and community facilities and urban residential uses.
- Visitor-serving commercial areas are to be promoted along the SR 120 corridor for tourists and travelers uses. Development in these areas shall be in compliance with the goals, policies and development standards of the Community Design Element to promote the SH 120 corridor as a scenic entrance to the community.
- Designate an Historic Preservation Conversion zone district to preserve distinctive structures and areas proposed for conversion in the Central Business District where adequate parking can be provided.
- Promote a mix of industrial uses that provide the City with a sound, diverse industrial base.
- Provide adequate land for a wide range of industrial uses. Heavy industrial uses (warehousing) and higher intensity uses not compatible with residential development should be located in the industrial area along McHenry Avenue and light industrial uses should be located in the industrial area north of SR 120. In order to increase the capture rate of industries in the community, such areas should be master planned to expedite processing of applications, and aggressively marketed (along with the industrial park) to targeted industries.
- Industrial development should not create significant off-site circulation, noise, dust, odor, visual, and hazardous materials impacts that cannot be adequately mitigated.
- Prepare a specific plan for the south industrial area to provide for an adequate mix of parcel sizes, identification of needed infrastructure, transportation routes and development of guidelines for future annexations.
- In order to achieve a high-quality natural environment, it shall be the policy of the City to encourage industries which demonstrate minimum air and water quality impacts and to discourage air and water quality impacts which cannot be offset.
- Update the water, wastewater and storm drainage master plans, and any other specific or master plans related to infrastructure development on a periodic basis.
- Annually monitor the need for law enforcement, fire and other emergency services personnel as the City grows.
- Continue to implement a recycling and source reduction program to promote recycling.
- Continue to plan and provide efficient public safety and leisure/cultural facilities and services for the community.
- In considering development proposals which have the potential to affect school capacity, the City shall refer such proposals to the Escalon Unified School District for review and comment to ensure that adequate school facilities are implemented to serve the proposed developments. Developers should mitigate impacts to schools in accordance School District plans.
- Provide for orderly outward expansion of new urban development that is contiguous with existing development, allows for the incremental expansion of infrastructure and public services, and minimizes impacts on the environment.

- When reviewing proposed changes to the land use map, circulation map, and/or zoning code, consider air quality and mobility.
- Preserve and enhance existing neighborhoods and commercial districts having transit and pedestrian-oriented designs.
- Encourage development of vacant and underutilized in-fill parcels, particularly those that support pedestrian and other alternative modes of transportation.
- Limit provision of public services to the incorporated city boundaries.

CITY OF LATHROP GENERAL PLAN

- Areas designated for industrial use are intended to take advantage of rail and freeway access.
- Areas designated for industrial use are to assure that there will be sufficient long-term availability of industrial land to expand the City's economic base and capability for meeting the on-going costs of public services required by the community. A slow pace of industrial development is not to be construed alone as justification for designating industrial land areas for another type of urban use unless such use would be of a regional commercial character.
- Industrial proposals should be located where possible within an industrial park designed for the accommodation of a community of industries that are compatible in terms of operational characteristics, aesthetic qualities, utility service requirements and street circulation.
- Industries are to be developed and operated in such manner as to avoid damage, destruction or degradation of the environment.
- A Specific Plan shall be prepared to guide and specify the distribution, location and extent of land uses for Sub-Plan Area #3. 4-A-23
- Development of Sub-Plan Area #3 shall be designed to promote the efficient use of the Stewart Tract while preserving important natural resources.
- The City shall promote patterns of development that facilitate the efficient and timely provision of urban infrastructure and services.
- The Specific Plan for Sub-Plan Area #3 shall identify the ranges of housing and population densities expected for the SPA's residential areas.⁶
- Sub-Plan Area #3 represents the largest remaining area in Lathrop that is available for future master planned development. The 5,794-acre Stewart Tract represents a unique opportunity to control phasing of a large-scale mixed use development designed to establish an integrated community environment west of Interstate 5.
- Residential development within Sub-Plan Area #3 shall provide a variety of housing types and a range of lot sizes throughout the Stewart Tract.
- Housing diversity within Sub-Plan Area #3 shall be encouraged through a mix of housing types and sizes, attractive design, innovation in site planning and design, and housing opportunities for a variety of income levels.
- The City shall promote residential project design within Sub-Plan Area #3 which reflects and considers natural features, noise exposure of residents, visibility of structures, circulation, access, and the relationship of the project to surrounding uses. Residential densities and lot patterns will be determined by these and other factors.
- Residential subdivisions within Sub-Plan Area #3 shall be designed to provide well-connected internal and external street and pedestrian systems.

- The City shall discourage the development of isolated, remote, and/or walled residential projects that do not contribute to the sense of community desired for Sub-Plan Area #3.]
- Generally, areas proposed for Lower Density Residential Development in Sub-Plan Area #3 should be located along the San Joaquin River and along Paradise Cut where lower density is compatible with these natural habitat areas. They would also be located in the western part of the Stewart Tract in proximity to golf course and other open space amenities. The Low Density housing environment will be given specific physical dimension as part of the Specific Plan for West Lathrop.
- Areas proposed for Higher Density in Sub-Plan Area #3 should be located within and nearby the town center, central canal or lake and employment center, as well as near convenience retail or other workplaces.
- An employment center on the Stewart Tract shall be developed at a minimum FAR of .25 and a maximum FAR of .5 (1 to 10 stories).
- An employment center shall be designed to support a variety of employment-generating, commercial uses, including, but not limited to R&D, office and administrative uses.
- Commercial development within Sub-Plan Area #3 shall be designed to encourage and facilitate pedestrian circulation within and between commercial sites and nearby residential areas.
- The City shall encourage development of a new town center within Sub-Plan Area #3 to provide a variety of goods and services to area residents.
- The City shall require minimal, or in some cases no, building setbacks for commercial and office uses in a town center within Sub-Plan Area #3.
- Mixed Use Commercial uses shall be developed at a minimum FAR of .5 and a maximum of (1 to 10 stories). The higher densities and building heights may be considered as they provide special opportunities to combine mixed-use residential and commercial uses.
- The Mixed Use Commercial designation shall provide for the development of buildings and sites that contain a mix of uses, including the vertical integration of housing with retail, office, civic or other uses.
- Town Center Commercial development should be allowed in commercial areas where the residential component is compatible with the desired commercial function of the area.
- Public uses (e.g., day and senior care facilities, community meeting rooms, recreation facilities, police and fire stations, etc.) shall be integrated, as necessary, with other commercial and residential uses in areas designated for Mixed Use.
- The City shall encourage the location of new neighborhood commercial development within Sub-Plan Area #3 near residential neighborhoods, the town center, and/or major transportation corridors.
- New public and quasi-public facilities necessary for emergency response, health care, and other critical functions shall be located outside areas subject to natural or artificial hazards.
- Public facilities, such as wells, pumps, tanks, and yards, shall be located and designed so that noise, light, odors, and appearance do not adversely affect nearby land uses.
- Sub-Plan Area #3 should provide sufficient land area for school sites. In the alternative, the City may establish appropriate mechanisms for funding development of school facilities through the use of development fees.

- New parks and recreational facilities including, but not limited to, parks, plazas and ball fields, should be integrated with residential neighborhoods, as new residential development occurs within Sub-Plan Area #3.
- Water-oriented recreational development, such as marinas, boating areas, and parks shall be encouraged within residential neighborhoods and commercial areas along Stewart Tract waterways.
- Significant natural open space and cultural resources should be identified prior to development and incorporated into site-specific development project design.
- Development within Sub-Plan Area #3 should be planned and designed to avoid or minimize effects on areas rich in wildlife or of a fragile ecological nature (e.g., areas of rare or endangered plant and animal species, riparian areas). Alternatively, where avoidance is infeasible or where equal or greater ecological benefits can be obtained through off-site mitigation, the City shall allow project proponents to contribute to offsite mitigation efforts in lieu of on-site mitigation.

CITY OF LODI GENERAL PLAN

- Create a balanced and sustainable land use pattern that provides for a diversity of uses and satisfies existing and future needs.
- Encourage development of downtown as a mixed-use activity center with a range of commercial, residential, and civic uses.
- Promote revitalization of key commercial spines of the community with focused, mixed-use development.
- Foster development of walkable new neighborhoods, with a mix of uses and diversity of housing types.
- Maintain land use patterns that maximize residents' access to parks, open space, and neighborhood shopping centers.
- Ensure the continued economic sustainability of the community and fiscal health of the City government.
- Strengthen the City's economic base and provide employment opportunities for residents to achieve a more balanced jobs housing ratio.
- Update the City's Zoning Ordinance and Subdivision Regulations contained in the Municipal Code for consistency with the General Plan, including the General Plan Diagram. Zoning changes that will need to be made include:
 - Establishment of new base districts, consistent with the land use classifications in the General Plan, such as for mixed-use centers, corridors and downtown; and
 - New development regulations that reflect policy direction contained throughout the General Plan (e.g. parking standards).
- Require sites designated for mixed-use development—downtown, corridors, and in new neighborhood centers—to be developed with a variety of residential and non-residential uses, in accordance with the General Plan designation.
- Do not allow development at less than the minimum density prescribed by each residential land use category, without rebalancing the overall plan to comply with the "no net loss provisions of state housing law."
- Maintain the highest development intensities downtown, and in mixed-use corridors and centers, with adequate transition to Low-Density Residential neighborhoods.

- Maintain a centralized economic development and land information system to continually monitor land use availability, ensuring sufficient land for appropriate use designations, development intensities and locations.
- Locate new medium- and high-density development adjacent to parks or other open space, in order to maximize residents' access to recreational uses; or adjacent to mixed-use centers or neighborhood commercial developments, to maximize access to services.
- Encourage new neighborhood commercial facilities and supermarkets in locations that maximize accessibility to all residential areas.
- Permit child-care centers in all districts except Industrial.
 - Regulations would also need to be in accordance with criteria for family day care homes established in Chapter 3.4 and Chapter 3.6, Division 2 of the California Health and Safety Code.
- Focus new business park growth in the southeast portion of the city and new industrial growth along the two railroad lines, as shown in the Land Use Diagram.
- Allow employee-serving amenities and services such as restaurants, cafés, dry cleaners, and other complementary uses in Business Park areas.
- Promote clustering of industrial uses into areas that have common needs and are compatible in order to maximize their efficiency. Work closely with industry contacts to identify specific needs to be addressed through development standards.
- Prioritize economic development activities on potential growth industries that are appropriate for Lodi, including retail and tourism, as well as office/industrial users in need of large parcels.
- Continue to publish a handbook and/or fact sheets of permitting procedures and fees for new and existing businesses.
- Partner with business and community groups to proactively pursue companies and industries and to implement economic development programs.
- Continue efforts to locate a hotel in conjunction with or in proximity to Hutchins Street Square.
- Promote downtown as the center of tourism, business, social, and civic life by directing high intensity office uses, government, and entertainment uses to locate downtown.
- Establish land use regulations and development standards in the Zoning Code to reinforce Downtown's assets and traditional development pattern. These should include:
 - Extending the Downtown Mixed Use classification to parcels along Main Street on the Eastside to improve connectivity, while retaining the respective identities of downtown and the Eastside.
 - Establishing maximum setbacks or build-to lines for development in areas designated Downtown Mixed Use.
 - Requiring retail, eating and drinking establishments, or other similar active uses—except for sites designated Public—at the ground level. Alleyway corners shall be “wrapped” with retail uses as well.
- Encourage medium- and high-density residential development in downtown by permitting residential uses at upper levels; and east and northwest of downtown, as depicted on the Land Use Diagram, by identifying vacant and underutilized sites that are appropriate for redevelopment.
- Maintain parking regulations for downtown that are lower than elsewhere in the city, reflecting its position as a pedestrian- and transit-friendly center.

- Expand the Downtown Parking District to include the Downtown Mixed Use area in order to consolidate parking areas. Require all development within these boundaries to either meet the established off-street parking requirements or contribute an appropriate share to the Downtown Parking District.
- Allow an appropriate range of single uses or mixed-use development, with use requirements/ mixes as follows:
 - Kettleman Lane. Allow any mix of uses as permitted within the Mixed Use Corridor classification. Ensure that residential uses are sited at upper levels or, if at ground level, then not directly facing the highly trafficked Kettleman Lane.
 - Cherokee Lane. Require that any new development/redevelopment of sites with
- Mixed Use designation south of Tokay Street to devote at least one-quarter of the built-up area to commercial or business park uses, while allowing the full spectrum of single or mixed-uses permitted within the designation.
 - Lodi and Central avenues. Require any development or redevelopment of sites to have active uses—retail, restaurants, cafés, and personal service establishments— fronting the streets at the ground level. A range of compatible uses, such as residential or office, may be located at upper levels and in portions not fronting the streets.
- Promote infill development that maintains the scale and character of established neighborhoods.
- Establish bulk and Floor Area Ratio standards for older residential neighborhoods surrounding Downtown to preserve their character.
- Guide new residential development into compact neighborhoods with a defined Mixed-Use Center, including public open space, a school or other community facilities, and neighborhood commercial development.
- Require a centrally located Mixed-Use Center within each new residential neighborhood: one west of Lower Sacramento Road and two south of Harney Lane, as shown on the Land Use Diagram. Centers should serve as a focal point for the surrounding neighborhood, be pedestrian-oriented and encourage a mix of uses to serve local needs.
- Require a master or specific plan in areas with a Mixed-Use Center and adjacent complementary uses, as a condition of subdivision approval. Uses should include neighborhood commercial, civic and institutional uses, parks, plazas, and open space—consistent with Land Use Diagram (unless any of these uses are found infeasible and/or alternative locations are available to carry out mixed-use policies). Streets should adhere to the pattern depicted on the Land Use Diagram.
- Provide for a full range of housing types within new neighborhoods, including minimum requirements for small-lot single-family homes, townhouses, duplexes, triplexes, and multi-family housing.

CITY OF MANTECA GENERAL PLAN

- To provide for orderly, well-planned, and balanced growth consistent with the limits imposed by the city's infrastructure and the city's ability to assimilate new development.
- Growth shall mitigate its own impacts and shall provide a positive benefit to the City of Manteca.
- Growth must contribute to a strong diversified economic base and an effective balance between employment and housing opportunities for all income levels.

- The City shall encourage a pattern of development that promotes the efficient and timely development of public services and facilities.
- The City shall encourage a development pattern that is contiguous with the boundary of the City.
- The City shall establish and maintain a Primary Urban Service Boundary line designating lands eligible for annexation and urban development prior to the year 2013
- The City shall establish and maintain a Secondary Urban Service Boundary line designating lands eligible for annexation and urban development beyond the year 2013. Lands outside the Primary Urban Service Boundary line, but within the Secondary Urban Service Boundary line, shall not be annexed to the City of Manteca prior to their inclusion within the Primary Urban Service Boundary line. Prior to 2013, the Primary Urban Service Boundary line may be amended through adoption of a specific plan, an area plan, or comparable planning process, or an amendment to the General Plan.
- All lands within the Primary and Secondary Urban Service Boundary lines to be ultimately developed to urban standards should be developed under the jurisdiction of the City of Manteca. Pending annexation to the City, all such lands should remain in agricultural, open space, or other low intensity uses. The City shall work cooperatively with the County to ensure that development approved by the County on unincorporated lands within the Primary and Secondary Urban Service Boundary lines is developed according to standards consistent with those of the City of Manteca. The City shall request all proposals for development on unincorporated lands within the Primary and Secondary Urban Service boundary lines be referred to the City for review and comment prior to formal consideration by the County.
- The City will review proposals for residential, commercial or industrial development in unincorporated areas within the General Plan Study Area. Urban development should occur within the City boundary.
- The City will consider applications for annexations that:
 - Are contiguous with city boundaries and provide for a logical expansion of the city;
 - Create clear and reasonable boundaries;
 - Ensure the provision of adequate municipal services;
 - Reflect a long-term fiscal balance to the city and its residents, when reviewed cumulatively with other annexations;
 - Are consistent with State law and San Joaquin County Local Agency Formation Commission standards; and
 - Are consistent with the General Plan.
- The City will consider expanding its sphere of influence to incorporate areas that logically should be planned and serviced by Manteca. The City shall consider the following factors when making determinations involving sphere of influence boundaries:
 - Present and planned land uses in the area;
 - Present and probable need for public facilities and services in the area;
 - Present capacity of public facilities and adequacy of public services; and
 - Existence of any social or economic communities of interest in the area.
- The City shall manage the rate and type of growth in Manteca according to a growth management program that provides for an annual allocation of residential, commercial and industrial development. The growth management program shall consider the capacities of City

facilities and services, and the ability of the community to assimilate new development, and fluctuations in the balance of market demand for new housing and new job development.

- The City will encourage the use of specific plans as needed to ensure orderly, well-planned growth.
- The City may designate areas on the Land Use Map as Urban Reserve. Such areas are not planned for development prior to 2023, but are recognized by the City as areas of future growth that may be annexed to the City at the appropriate time.
- To provide adequate land in a range of densities to meet the housing needs of all income groups expected to reside in Manteca, and to regulate residential growth consistent with the capacities of City facilities and services and the ability of the community to assimilate new development.
- The City shall promote the development of a variety of housing types and prices to meet the needs of all households, including very low-, low-, and moderate-income households.
- Higher density housing shall be located in areas served by the full range of urban services, preferably along collector and arterial streets, and within walking distance of shopping areas.
- The City shall promote the preservation and integrity of existing stable residential neighborhoods.
- The City shall encourage neighborhood revitalization and improvement including replacement, renovation or conversion to alternative use of buildings in serious disrepair.
- The City shall seek funding to undertake neighborhood improvement programs designed to stabilize and enhance the quality of existing neighborhoods. Such improvement may include, but are not limited to sidewalk upgrade and repair, street tree programs, street lighting, signage, trash collectors, bus stop shelters and benches and similar improvements to the public areas.
- Provide adequate land for the development of commercial uses that provide goods and services to Manteca residents and Manteca's market area.
- The City shall promote and assist the maintenance and expansion of Manteca's commercial sector to meet the needs of both Manteca residents and those living within Manteca's market area.
- The City shall promote the establishment, maintenance and expansion of businesses in Manteca that generate high retail sales taxes as important contributors to the local economy.
- The City shall promote the downtown as a significant pedestrian oriented, commercial and financial center of Manteca and as the primary civic and cultural center.
- New commercial development serving citywide and regional shopping needs shall be located along major arterial streets.
- New visitor-serving commercial development shall be located in areas with easy access to freeway interchanges.
- New commercial development shall be designed to avoid the appearance of strip development.
- The City and Redevelopment Agency will continue to support the downtown merchants in the improvement of facades, promotion of downtown and the solution of problems specific to downtown.
- Redevelopment incentives shall be used judiciously to promote and assist commercial development and revitalization in approved Project Areas and in areas benefiting the approved Project Areas.

- The City shall monitor commercial development to balance growth in residential, commercial and industrial development.
- The City shall monitor revenues relative to new growth to ensure that projected cumulative revenue of all land uses in the City would be sufficient to support public service costs.
- The City shall support and encourage small business development and retention through providing appropriately zoned land and through such programs to reduce development and operations costs as may be available to the City.
- Provide for land uses that expand employment, education, recreation and cultural opportunities for residents and enhance Manteca as the commercial and service center for southern San Joaquin County.
- The City shall promote, cooperate in, and assist in the maintenance and expansion of Manteca's industrial sector employment development within the City of Manteca and in the south San Joaquin County area that will help reduce the home-to-work commute distance for Manteca residents.
- New employment centers that may include office, business professional, research and development, and light industrial or industrial development and shall be located in areas served by full City services or served by suitable facilities approved by the City. Employment centers should be located along major arterials with easy freeway access and with access from public transit, and accessible to bicyclists and pedestrians.
- The City shall continue to support full development of its existing industrial park.
- The City shall promote the development of "clean" industries that do not create problems or pose health risks associated with water and air pollution or potential leaks or spills. However, the City will designate appropriate locations that accommodate light industrial and heavy industrial uses.
- Redevelopment incentives shall be used judiciously to promote industrial employment development in approved Project Areas and for projects benefiting approved Project Areas.
- The City shall monitor employment development to maintain the balance of residential, commercial, and industrial development.
- The City shall promote and plan for at least one Primary Employment Center to accommodate a variety of employment opportunities compatible with the employment skills of the Manteca
- To provide adequate land for development of public and quasi-public uses to support existing and new residential, commercial, and industrial land uses.
- The City shall designate adequate land, appropriately located for City, County, and School District facilities.
- The City shall designate adequate land, appropriately located for quasi-public uses such as hospitals, churches, private school facilities and utility uses.
- In determining appropriate locations for public and quasi-public uses, the City shall consider, among other things, proximity to major streets, the cost to develop access to public facilities, and the safety of pedestrians and motorists.
- Development shall be managed to ensure that adequate public facilities and services, as defined in the Public Services and Facilities Element, are planned and provided.
- Provide open space as a framework for the city, and meet the active and passive recreational needs of the community.

- The City shall encourage the continuation of agricultural uses on lands within the Primary and Secondary Urban Services Boundary lines pending their development as urban uses consistent with the General Plan.
- The City will encourage the continuation of small, specialty agricultural operations and demonstration or educational agricultural operations that are compatible with the adjacent urban uses.
- The City shall promote the provision of both public and private open space within urbanized Manteca to provide visual contrast with the built-environment and to provide for the recreational needs of Manteca residents. Private open space shall not be considered for public use, other than as visual open space, and shall not be constrained from other uses as identified in the General Plan, unless as provided for by agreement with the land owner.
- The City shall develop an Open Space Master Plan that is consistent with the General Plan, the Bicycle Master Plan and Recreation Master Plan. The Open Space Master Plan should address the potential linkages between public plazas, promenades, parks, utility easements suitable for public access, landscape areas, nature preserves, open drainages, parks and similar public lands and right-of-ways that provide open space. The Open Space Master Plan may also identify future extensions of pedestrian and bikeway corridors, natural features, and nature preserve areas that may be suitable for acquisition by the City as public land or other agency to be held as public land in or in a public trust.
- The City shall encourage commercial recreation uses at the Oakwood Lake Resort, and on other appropriate lands within the City.
- Reinforce land use and development patterns that encourage walking and the use of public transit within the community.
- The City shall allow for higher density housing opportunities along major streets so as to provide residents with access to the public transit system.
- The City shall develop and apply standards for pedestrian circulation that enable residents to select a reasonably direct and safe pedestrian route to schools, parks, transit stops and commercial services.
- Storm drainage systems within new development areas should include open drainage corridors, where feasible, that would provide bike and pedestrian paths, and visual open space within neighborhoods. The pedestrian connection should link parks and open space to residential neighborhoods.
- To reinforce strong urban design, quality development and a compact city form.
- The City shall give priority to in-fill development and new development contiguous to existing developed areas, whenever practical.
- The City shall encourage and direct growth that supports the downtown as the geographic, civic, cultural, and economic center of Manteca.
- New residential land uses (developments with no less than 5 units) within the Stockton Metro Airport Area of Influence must have an avigation easement recorded in favor of the airport. The Deed of Avigation and Hazard Easement must be filed with the County Recorder prior to development construction.
 - Occupied structures must be soundproofed to reduce interior noise to 45 dB.
 - Reflective materials are not permitted to be used in structures or signs to avoid distracting pilots.

- All proposed acquisitions of property within a 2-mile radius of an airport runway for the purpose of constructing a school requires a review and approval by the State Department of Transportation, Division of Aeronautics.
- No transmission which would interfere with aircraft communications or navigation are permitted. Power lines must be under grounded if necessary to prevent hazard to aircraft.
- The City of Manteca shall refer all applications for development within the Stockton Metro Airport Area of Influence to the Airport Land Use Commission, and the Stockton Metro Airport.
- The City of Manteca shall cooperate with City of Ripon in implementing the principle points of the Memorandum of Understanding regarding future land use and public services and facilities in the area between the two cities.
- The City of Manteca shall cooperate with City of Ripon in identifying a suitable location for an interchange at Highway 99 connecting to major roads in Ripon and Manteca.
- The City shall maintain a growth management system that provides a mechanism for the annual allocation of the amount of residential, commercial, and industrial development that may occur. The growth management system shall have the following objectives:
 - Maintain, and where necessary enhance, the community's current public services and facilities;
 - Protect against the construction of development projects which will require sewage treatment capacity in excess of that determined available by the City Council;
 - Preserve and protect the environment;
 - Preserve and protect the quality of life and character of the community.
 - Provide for the orderly and adequate expansion of the City's housing stock in order to advance housing opportunities and to accommodate a reasonable share of expected regional growth.
 - Provide for the adequate and orderly expansion of the City's commercial and employment development base in balance with the city's housing stock;
 - Provide for a balance between multi-family and single family residential development;
 - Conserve viable agricultural and open space lands; and
 - Encourage and facilitate development proposals that accomplish the goals, policies, and programs of the General Plan through development innovations that cannot be accomplished by conventional zoning.
- The growth management system shall consist of the following features:
 - Establishment of the maximum number and types of residential dwelling units and the acres or square feet of commercial, industrial, and public facility projects that may be approved for a subsequent period, as determined by the City Council based on the following considerations:
 - The goals, policies, and programs of the General Plan including the Housing Element goals, objectives, and programs for affordable housing, housing mix, and jobs/housing balance.
 - The number of projects previously approved but not developed, including exempt projects.
 - The general availability of existing and projected public utilities, facilities, and services. The City shall establish and maintain a geographic information system (GIS) that is common to all departments to provide a base for data collection and management

relative to city growth and provision of public services and infrastructure maintenance and expansion.

- The specific availability of sewage capacity.
 - The development review report to be drafted by the Staff and/or Growth Management Committee in order to assist the City Council in their growth management determinations. The City Manager shall address the status of public services in the annual budget report. This report should document growth trends the capacity and level of service for public services and facility planning efforts. The City Manager shall address land use in the annual budget report. This report will document the growth in residential and commercial development and estimate the increase in employment in the City over the previous year.
 - The land use summary shall include a reference to the range of land use projected for future needs in the Land Use Element and determine the then current and five-year projection of land use in the City.
 - Comments received at public hearings held in conjunction with the annual growth determinations. In a public hearing process, the City shall establish guidelines and procedures for periodic monitoring and evaluation of the growth in the City budget, the number of dwelling units, growth in sales tax revenue and other factors that affect the fiscal stability and health of the City. The intent is to maintain balance
- Exemptions of certain small residential projects and specific plans, vested subdivision maps, income- restricted residential developments, and other projects subject to a development agreement that are exempt from the annual allocations.
 - A competitive rating system for evaluating and approving developments. Such rating system shall at a minimum include the following general categories of criteria:
 - i. Availability of or contribution toward public utilities, facilities, and services.
 - ii. Location factors (in-fill/redevelopment area).
 - iii. Response to housing needs specified in the Housing Element.
 - iv. Environmental impacts.
 - v. Traffic impacts.
 - vi. Employment impacts.
 - vii. Contribution to tax base.
 - viii. Other community benefits.
 - The City shall monitor implementation of the growth management system and new commercial and industrial development so that General Plan objectives for a balanced community are achieved.
 - The City shall request the San Joaquin County LAFCo to adopt a sphere of influence for Manteca based on the long-term growth plans of the City as reflected in the General Plan goals and policies and proposed land use.
 - The City shall review and revise, as necessary, the Zoning Ordinance to accomplish the following purposes:
 - Ensure consistency with the General Plan in terms of zoning districts and development standards;
 - Ensure consistency with the General Plan in terms of the distribution and boundaries of zoning districts;

- Establish a Central Business District Zoning District;
- Provide for density bonuses for projects that reserve units for low- and/or moderate-income households.
- Provide for a mixed-use zone that permits residential, commercial, office, business-professional and commercial recreation subject to a use permit.
- Provide for an accelerated project review and entitlement process for commercial, office, business-professional, research and development, industrial and light industrial uses.
- The City shall maintain a Main Street program to promote economic development in the downtown area.
- The City will continue to cooperate with planning efforts among local jurisdictions to minimize the impacts of growth to Manteca and in the south San Joaquin County area.

CITY OF RIPON GENERAL PLAN

A balance between jobs, housing, educational, and recreational opportunities.

- Designate adequate land to meet residential, commercial, and industrial development needs.
- Designate adequate land intended for public and quasi-public uses to support existing and new residential, commercial, and industrial development.
- Urban development should be kept as contiguous as possible to avoid premature urbanization of valuable farmland, promote resident convenience, and provide for economy in city services.
- Preserve natural resource areas while providing open space to meet recreation needs.
- The city may require that development occurring on newly annexed lands are done as a planned unit development or that a specific plan be prepared.
- The city may require execution of an annexation agreement before the annexation of any land to the city.
- The City may require the execution of a Development Agreement for any commercial or industrial development or residential development of ten or more units.
- The City will annex enough residentially designated land to provide for a projected residential growth rate in the 3% - 6% range for the urban planning period. At its discretion the City Council will annually review development activities and determine the rate of growth to be followed during a specified period.
- The City will annex sufficient land designated for job generating uses to provide for a projected ratio of at least two jobs per household.
- The City will ensure that proposed development within newly annexed territory will not be a fiscal burden. Development project applications may be required to include a financial analysis of the projects impact on the City.
- Development within the Stanislaus River floodplain and residential development within the sewer buffer from the wastewater treatment ponds will be prohibited by the City.
- Nonresidential uses, large group care facilities, small shelters, and mobile home parks in residential districts should be on major streets because of increased traffic and noise.
- Assure economic viability of the community by retaining and renewing existing commercial and industrial uses and designating sufficient new commercial and industrial areas to meet future city needs.
- Create job generating development corridors at strategic locations.

- Encourage diversified industry and other job generating uses in the City.
- Ensure that land use proposals can fund services.
- Encourage businesses and professional uses in the commercial centers.
- Encourage a prosperous and vibrant downtown.
- Create both a physical and financial environment that enhances the desirability to locate certain new businesses in the downtown area
- Encourage expansion and/or retention of established businesses.
- Ensure that new businesses in the downtown area are carefully integrated into the surrounding area.
- Provide adequate public services to serve the community.
- Require residential and commercial development to connect to city water, non-potable water, wastewater Treatment and storm drainage systems.
- Industrial, mixed use and highway service development may install on site water, non-potable water, wastewater treatment and storm drainage systems if approved by the City Engineer and City Council.
- Adopt, and update as required, City fee ordinance, which reflects current estimates of public facilities costs and the allocation of those costs to future urban development.
- Subdivision projects shall be referred to utility agencies for comment. Easements necessary to provide service to the project shall be dedicated on the final map or parcel map.
- Subdivision projects shall be referred to the Ripon Unified School District and Ripon Consolidated Fire District for comment.
- The City shall require, to the extent possible, that new school facilities, fire facilities, and police facilities are constructed concurrently with new residential development.
- The City shall ensure that new development provides necessary infrastructure to develop residential projects that will meet the needs of the community, including schools, irrigation and drainage facilities and water wells.

CITY OF STOCKTON GENERAL PLAN

- To ensure that Stockton's future growth will proceed in an orderly manner, encourage and provide incentives for infill development, prevent urban sprawl, and promote the efficient and equitable provision of public services.
- The City shall utilize and maintain the Land Use Diagram to designate the location and extent of each land use designation within the Planning Area (Figure 3-1).
- The City shall designate an Urban Service Area boundary beyond the existing City limits within which City services and facilities will be available for extension upon annexation and where future urban development shall be in conformance with City Council adopted master utility and circulation plans.
- The City shall expand the Urban Service Area Boundary only when applicable General Plan policies can be met and appropriate services and efficient infrastructure can be provided.
- The City shall designate all lands outside the Urban Service Area boundary as Agriculture/Open Space (with the exception of the Wright/Elwood Tract).
- Future urban development within the Planning Area should occur under the jurisdiction of the City. To this end, the City shall require that vacant unincorporated properties be annexed into

the City prior to the provision of any City services, or that a conditional service agreement be executed agreeing to annex when deemed appropriate by the City.

- The City shall regulate the levels of building intensity and population density according to the standards and land use designations set out in the Land Use Element and the City's Development Code.
- The City shall continue to apply the regulations and procedures of the Development Code and shall use the environmental process to prevent or mitigate land use conflicts.
- The City shall encourage San Joaquin County to honor the City's Urban Service Area policies and to approve no development within the City's Planning Area that is inconsistent with the City's General Plan.
- The City shall work with San Joaquin County and surrounding cities to develop a uniform land use policy for the lands within and adjacent to the city so no inconsistencies will arise should these areas eventually be annexed to the City.
- The City shall participate in the San Joaquin Council of Governments' regional planning programs and shall coordinate City plans and programs with those of the Council of Government.
- The City shall limit urban growth in areas with hazardous nuisance conditions such as noise, flooding or unstable soils if such conditions cannot be adequately mitigated.
- The City shall strive to minimize the commuting distances between residential concentrations and employment centers by encouraging infill development and a mix of residential densities.
- The City shall phase growth based on the availability of adequate water supplies, market forces, infrastructure financing capacity, and the timing of the design, approval, and construction of water supply and transportation facilities and other infrastructure.
- The City shall annually review the General Plan in order to monitor its implementation.
- The City shall conduct a major review of the General Plan, including the General Plan Policy Document and Background Report, every five years from the date of final approval of this General Plan and shall revise it as deemed necessary.
- The City shall not approve new development beyond the amount of development assumed in the final EIR for the Stockton General Plan 2035 without re-evaluating the General Plan and conducting appropriate environmental analysis.
- To promote a variety of housing types and densities throughout the City that address the housing needs of various age and socio-economic groups.
- The City shall strive to maintain a ratio of 70 percent single family and 30 percent multifamily residential uses in the overall housing stock.
- The City shall encourage higher residential densities at appropriate infill locations through the design flexibility made possible by the Planned Development provisions of the Development Code.
- The City shall encourage the development of senior housing in areas that are accessible to public transportation, near commercial services, and health and community facilities.
- The City shall provide for open space in residential development in either private yards or common areas to partially meet the residents' recreational needs.
- The City shall encourage the use of planned development provisions in residential development to provide flexibility, to meet various socioeconomic needs, and to address environmental and site design constraints.

- The City shall review proposed rezonings that would increase density in existing residential areas considering such factors as: neighborhood character and identity; compatibility of land use; impact on services and facilities (including schools); and impact on streets and highways.
- The City shall protect existing residential neighborhoods from the encroachment of incompatible activities and land uses (i.e., traffic, noise) and environmental hazards (i.e., flood, soil instability).
- The City shall approve proposals to convert residential properties along major streets to office or commercial uses only when there already is a substantial non-residential character to the area, the proposal is compatible with the surrounding land use, and adequate off-street parking can be provided.
- The City shall designate new residential developments in areas that will not create conflicts with existing or planned industrial or intensive commercial uses.
- To encourage commercial and mixed use commercial/housing development at locations that provide convenient neighborhood retail and services to existing and new housing areas, and that maximize regional shopping opportunities where their economic viability can be sustained.
- The City shall encourage the upgrading, beautification, revitalization, and appropriate reuse of existing commercial areas and shopping centers.
- The City shall maximize development opportunities within the City/County locally designated Enterprise Zone.
- The City shall encourage the compatible integration of commercial and new residential uses. Existing residential areas shall be integrated with new commercial uses through the provisions of the Development Code.
- The City shall require commercial projects to provide frontage roads and/or access controls to reduce traffic congestion.
- The City shall require that new commercial development incorporate landscaping and good design in accordance with Citywide Design Guidelines.
- The City shall discourage the creation of new strip commercial areas along arterial streets to reduce
 - traffic congestion and to enhance the visual appearance of the city.
- The City shall require that signage in commercial development complement rather than detract from the visual quality of the commercial development and surrounding neighborhood.
- The City shall encourage small neighborhood serving commercial uses adjacent to and within residential areas where such uses are compatible with the surrounding area and mitigate any significant impacts (i.e., traffic, noise, lighting).
- The City shall encourage the redevelopment and conversion of distressed commercial strips into housing and mixed-use areas.
- The City shall encourage the clustering of commercial uses and discourage the splitting of commercial clusters or centers by arterial roadways.
- The City shall authorize developments in the Mixed Use designation subject to approval of a Master Development Plan and rezoning the area to a MX zoning district. Land uses proposed for a mixed use development in the Mixed Use designation shall support each other by providing an integrated

- Master Development Plan that may include one or more industries, services, offices, retail uses, with residential uses for the common needs of the occupants and users of the mixed use development.
- To encourage, facilitate, and assist the location of new industry, and the expansion of existing industry.
- The City shall encourage industrial activities to locate where municipal services are available including adequate sanitary, storm drainage and water facilities as well as easy access to multiple modes of transportation.
- The City shall encourage the clustering of industrial uses into areas that have common needs and are compatible in order to maximize their efficiency.
- The City shall support the assembly of land for new industrial growth where the fragmentation of parcels and/or the limited size of existing parcels act as a deterrent to new industrial development.
- The City shall discourage industrial development in locations where access conflicts with neighboring land uses.
- The City shall ensure an adequate separation between sensitive land uses (residential, educational, healthcare) and industrial land uses to minimize land use incompatibility associated noise, odors, and air pollutant emissions from industrial uses.
- The City shall require that industrial development incorporate landscaping and good design in accordance with Citywide Design Guidelines.
- The City shall guide industrial uses near the Stockton Metropolitan Airport and the Port of Stockton by the policies of the Airport Land Use Commission and the Port of Stockton Master Development Plan, respectively.

CITY OF TRACY GENERAL PLAN

- New development and redevelopment in existing areas shall be organized as a series of residential Neighborhoods, Employment Areas, Corridors, Village Centers, the Downtown and the I-205 Regional Commercial Area. Each is defined as follows:
 - Neighborhoods are residential areas of the city that are approximately ½ mile in diameter and centered on a focal point such as a park, school or public open space.
 - Employment Areas are the job-centers of the city and include office districts, retail centers and industrial areas.
 - The Downtown provides a focal point of community life in the City and contains a mix of uses including commercial, residential, public facilities and community services.
 - Village Centers are retail areas that may contain a mix of uses, such as housing and office uses. These areas serve several neighborhoods and are designed to be walkable, main-streets.
 - Corridors refer to several arterial streets, each with a mix of uses.
 - The I-205 Regional Commercial Area is a special district north of I-205 that contains big-box retail, automobile sales establishments and a large, regional shopping mall.
- The City shall maintain a Sphere of Influence that is consistent with the long-term land use vision in this General Plan.
- The proposed general distribution and general location and extent of land uses throughout the City and Sphere of Influence, including Specific Plan and PUD areas is shown on Figure 2-2.

- The Urban Reserve designation shall be applied to relatively large, contiguous geographic areas where comprehensive planning is expected to occur.
- The City shall periodically review and modify Urban Reserve areas as needed to ensure an adequate, long-term supply of developable land and balance land uses. The first applicant for development in each Urban Reserve shall be responsible for preparing a General Plan amendment and a Specific Plan or Planning Unit Development (PUD) for the entire area.
- Schools and parks should be located and designed to serve as focal points of neighborhood and community life and should be distributed in response to user populations.
- Schools and parks should be accessible by automobile and bicycle and within walking distance from residential areas.
- Schools and parks should have full frontage on at least two streets.
- Where possible, schools should locate and be planned together with other public facilities, such as parks and community centers, to increase the availability and decrease the costs of public facilities.
- Projects that provide lands for private open spaces, parks, community service facilities, such as places of worship and daycare facilities, and public facilities shall be allowed to transfer density to other portions of the site.
- The City shall use guidelines for residential growth detailed in the Growth Management Ordinance.
- The City shall prioritize the allocation of Residential Growth Allotments (RGAs) for new residential development to meet the goals of the General Plan including, but not limited to, concentrated growth, infill development, affordable housing, senior housing, and development with a mix of residential densities and housing types, as a high priority.
- The City shall encourage residential growth that follows an orderly pattern with initial expansion targeted for areas shown in Figure 2-3. Applications for residential development shall only be considered in the following instances:
 - In areas designated within Figure 2-3
 - In areas and Urban Reserves that primarily contain land uses focused on the generation of jobs with ancillary residential development. However, the residential portions of such areas or Urban Reserves shall not be considered eligible to apply for RGAs until RGAs necessary to develop all areas within Figure 2-3 have been awarded, unless those RGAs sought for projects in such areas are for affordable housing as defined by the Tracy Municipal Code, in which cases RGAs for affordable housing may be awarded.
- The City shall continue to make available RGAs for infill development as a high priority.
- New development shall not be approved unless there is infrastructure in place or planned to support the growth.
- Development with a vertical mix of uses, such as residential or office above retail is encouraged within ¼ mile of existing and proposed transit stations.
- The Bowtie shall include high-density residential development in close proximity to the multi-modal station.
- A new, mixed-use, high-density Village Center should be developed in Urban Reserves 10 and 11 along the Union Pacific Railroad.
- The City's priorities for future growth, in order of priority are job-generating development, diversification of housing types and continued growth of the retail base.

- Regional-scale retail development, such as shopping malls, big-box retail and auto sales, shall be primarily located in the I-205 Regional Commercial Area.
- New neighborhood-serving retail and service commercial uses, such as supermarkets, dry cleaners, coffee shops, banks and drug stores, shall be located in Village Centers and the Downtown and be designed to meet the principles presented in the Community Character Element.
- New restaurants and specialty retail shall be encouraged to locate in the Downtown.
- The Northeast Industrial Area should contain a mix of heavy industrial, light industrial, warehouse, and distribution users to maximize rail and highway access on large parcels of land.
- The Industrial Areas Specific Plan south of Valpico Road and east of Tracy Boulevard should focus on flex office uses since the area is in close proximity to existing residential areas. Examples of office/flex uses include research and development centers, office, institutional, day care facilities, places of worship and minimal impact industrial uses.
- Consistent with goals in the Economic Development Element, office-flex uses or higher-quality space should be located in areas at entryways to the city such as in Tracy Gateway, Cordes Ranch, and the Tracy Hills Specific Plan area along I-205 and I-580.
- Large-scale office buildings shall be encouraged to locate in the Tracy Gateway area.
- Small-scale office uses should be located in the following areas:
 - Tracy Boulevard south of Valpico Road
 - The Downtown, with the exception of the ground floor of buildings on Tenth Street between B Street and D Street and on Central Avenue between Sixth Street and Eleventh Street
 - Identified mixed-use corridors, such as Eleventh Street, Tracy Boulevard and Grant Line Road
 - Village Centers
- Medical offices should be located in Gateway, near the intersection of Grant Line Road and Corral Hollow Road, in the vicinity of the Sutter Tracy Hospital and in Tracy Hills.
- The City should support the development of a range of cultural and arts facilities throughout the City, such as museums, performing arts centers and art exhibition spaces.
- The City shall support the efforts of non-profit organizations and the private sector that are working to increase cultural arts facilities and events in Tracy.
- Residential neighborhoods should contain a mix of housing types including single family homes on a range of lot sizes; townhomes; duplexes, triplexes and fourplexes; and apartments.
- Second units on individual parcels shall be allowed and encouraged in existing and new neighborhoods.
- Within the range of allowable residential densities, intensities and uses, the City shall determine the most appropriate density, intensity, or use for any individual site. Consideration may include, but is not limited to: quality of design; implementation of the General Plan Housing Element; mitigation of potential adverse impacts such as noise and traffic; compatibility with the character, circulation system, and general improvements of adjacent neighborhoods; and the shape, configuration and natural character of the site.
- Commercial uses that provide goods and services to support daily life should be located within walking distance to as many neighborhoods as possible.

- Direct, pedestrian connections shall be created between residential areas and nearby commercial areas.
- New neighborhoods shall be designed to incorporate neighborhood parks and other gathering spaces into developments.
- Home occupations shall be restricted to those with negligible impacts on the surrounding residential uses.
- The City shall pursue additional “anchors” that generate significant new visitations to the downtown.
- Cultural uses should be concentrated in the Downtown, including museums, theaters, art galleries, and regional festivals such as the Dry Bean Festival.
- New residential development or redevelopment of existing residential shall be allowed and encouraged in or around the Downtown.
- Specialty retail and restaurants shall be encouraged to locate in the Downtown.
- Downtown parking shall be expanded and remain convenient.
- City government and quasi-public uses are encouraged to establish or retain locations in the Downtown or in close proximity to the Downtown.
- The Downtown Urban Design and Specific Plan shall include an analysis of grouping of uses and key locations for desirable uses so as to continue to foster the Downtown “walk, shop, eat” atmosphere as the heart of the City. Such an analysis should include provisions on where office uses are most desirable, and where they should be considered for land use limitations.
- New industrial or mining uses shall be designed to not adversely impact adjacent uses, particularly residential neighborhoods, with respect to, but not limited to, noise, dust and vibration, water quality, air quality, agricultural resources and biological resources.
- All proposed development shall comply with existing applicable County and State waste management plans and standards.
- Use of berms, landscaped buffer zones, soundwalls, and other similar measures between quarrying operations and noise-sensitive adjacent uses is encouraged to ensure consistency with standards established in City’s Noise Element of the General Plan.
- Uses that are compatible with the noise, air quality and traffic impacts associated with freeways, such as auto oriented commercial and industrial uses, should be located near and along freeway corridors whenever possible.
- Adequate environmental protection and mitigation shall be provided for uses that are less compatible with development near and along freeway corridors.
- New development and expansion of existing development shall conform to the safety and development restrictions in the San Joaquin County Airport Land Use Plan.
- All developers and landowners within San Joaquin County Airport Land Use Plan influence area shall be required to file aviation agreements.
- The City shall provide opportunities for individuals, organizations and neighborhood associations to participate in the planning process.
- Sponsors of new development projects should have early and frequent communication with affected citizens and stakeholders.
- The City shall not support development within the Sphere of Influence until it is annexed.

- The City shall not make new commitments to provide water and wastewater services to areas outside the City limit unless such commitment is accomplished by a pre annexation agreement and approved by LAFCO if required.
- The City shall support existing San Joaquin County land use designations in the Planning Area and discourage changes that result in increased urbanization.
- The City shall encourage the County to preserve significant agricultural lands outside of Tracy's Sphere of Influence.

SAN JOAQUIN COUNTY MULTI-SPECIES HABITAT CONSERVATION AND OPEN SPACE PLAN

The San Joaquin County Multi-Species Habitat Conservation and Open Space Plan (SJMSCP 2000) was adopted by the San Joaquin Transportation Authority on November 14, 2000. The key purpose of the SJMSCP is to provide a strategy for balancing the need to conserve Open Space and the need to Convert Open Space to non-Open Space uses while protecting the region's agricultural economy; preserving landowner property rights; providing for the long-term management of plant, fish, and wildlife species, especially those that are currently listed, or may be listed in the future, under the Federal Endangered Species Act (ESA) or the California (CESA); providing and maintaining multiple open-spaces which contribute to the quality of life of the residents of San Joaquin County; and accommodating a growing population while minimizing costs to Project Proponents and society at large. The SJMSCP is a 50 year plan, and the Plan is based on a 50 year planning horizon.

4.12.2 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;
2. Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect; and/or
3. Conflict with any applicable habitat conservation plan or natural community conservation plan.

In addition, impacts are considered potentially significant if a specific transportation improvement or land use change would displace homes or businesses or result in significant population growth. Impacts related to conflicts with agriculturally zoned land or conversion of agricultural land to other uses are discussed in Section 4.2, *Agriculture and Forestry Resources*. Impacts related to conflicts with habitat conservation plans or natural community conservation plans (Threshold 3 above) are discussed in Section 4.4, *Biological Resources*.

b. Project Impacts and Mitigation Measures

Land use conflict impacts were assessed based upon the level of physical impact anticipated in the various issues that can affect compatibility related to air quality, noise, and light and glare. Due to the programmatic nature of the 2018 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.

However, this section describes generalized impacts associated with the transportation improvement projects and the land use scenario envisioned by the 2018 RTP/SCS.

Threshold 1: Physically divide an established community

IMPACT LU-1 IMPLEMENTATION OF TRANSPORTATION IMPROVEMENTS AND THE LAND USE SCENARIO ENVISIONED BY THE 2018 RTP/SCS WOULD NOT PHYSICALLY DIVIDE EXISTING ESTABLISHED COMMUNITIES. THIS IMPACT WOULD BE LESS THAN SIGNIFICANT.

In general, the 2018 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 2018 RTP/SCS is intended 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, while roads may be expanded and widened under the 2018 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 the 2018 RTP/SCS to increase mobility and decrease VMT, therefore the projects should result in bringing communities closer together rather than dividing them. New road, highway interchanges, bicycle lanes, and ADA accessibility projects included in the 2018 RTP transportation system 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 land use scenario envisioned by the 2018 RTP/SCS would encourage infill and higher density development within existing urbanized areas. The land use scenario follows adopted city and county General Plans and regulations and promotes infill development in existing communities. This type of development would not divide a community; rather it would promote the development of existing vacant or underutilized properties. This 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 the 2018 RTP/SCS originate from either local circulation plans or state projects supported by the County and its cities. 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.

Significance After Mitigation

Impacts would be less than significant without mitigation.

Threshold 2: Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect

IMPACT LU-2 THE 2018 RTP/SCS WOULD BE CONSISTENT WITH APPLICABLE ADOPTED STATE AND LOCAL GOALS, POLICIES, AND REGULATIONS. THIS IMPACT WOULD BE LESS THAN SIGNIFICANT.

State-level policies applicable to the 2018 RTP/SCS include MAP-21, Caltrans Smart Mobility 2010, SB 375 and AB 32. The 2018 RTP/SCS contains goals that guide future transportation improvement projects and land use patterns within the region. The goals of the 2018 RTP/SCS are based on, and consistent with, both the planning factors stated in MAP-21, and the Caltrans Smart Mobility 2010 framework, tailored to the Stanislaus County region. The approach embraces MAP-21's new emphasis on performance measurement and continues the transition in emphasis from mode specific to program goals. The approach to the 2018 RTP/SCS is one of a refresh and further implementation of the over-arching goals that guided the 2014 plan. Those goals are articulated below:

- Enhance the Environment for Existing and Future Generations & Conserve Energy
- Maximize Mobility & Accessibility
- Increase Safety & Security
- Preserve the Efficiency of the Existing Transportation System
- Support Economic Vitality
- Promote Interagency Coordination & Public Participation for Transportation Decision-Making & Planning Efforts
- Maximize Cost Effectiveness
- Improve the Quality of Life for Residents

The 2018 RTP/SCS aligns the sustainability goals with transportation investment strategies by focusing on the following building blocks:

- Identifies land uses patterns that encourage infill development and compact development
- Makes provisions for new residential development growth that makes shifts from single-family development to more multi-family development
- More focus on a multimodal strategy of investments that de-emphasizes highway or roadway expansion but still delivers a system to reduce vehicle miles travelled and peak hour traffic congestion
- Specifically, provides a multimodal transportation network of bus and rail transit, freeway/highway/local roadways, bikeways, walkways, and streetscape projects within available financial resources
- Increases transit operational efficiency through investments in bus and rail transit service that includes more frequency of transit service for all income levels as well as expanded transit service

- Promotes transit-oriented development and furthermore, provides for intermodal connections near or within transit-oriented development such as park and ride lots and bicycle lanes/paths

The recently updated San Joaquin County General Plan, updated in 2016, after the adoption of the 2014 RTP/SCS, has incorporated the same goals as the Regional Transportation Plan creating consistency between these two plans. These goals are listed in full under 4.12.1 Setting. These compatible goals include; LU-1.1 Compact Growth and Development, LU-1.3 Building Intensity and Population Density, LU-1.4 Encourage Infill Development, LU-1.5 Clear Boundaries, LU-1.6 New Employment-Generating Uses, LU-1.7 Farmland Preservation, LU-1.8 Support for Alternative Transportation Modes, LU-1.9 New Urban Zoning Classifications, LU-1.10 LAFCo and City Coordination, LU-1.11 Regional Housing Needs Allocations, LU-1.12 Regional Coordination, LU-1.13 Regional Growth Considerations, and LU-1.14 Incentives and Streamlined Development.

Specifically, LU1.11, LU-1.12, LU-1.13, and LU-1.14 specifically state cooperation and consideration of SJCOG's RTP/SCS in their land use planning. LU-1.12 states, "The County shall work with the San Joaquin Council of Governments to develop and periodically update the Sustainable Communities Strategy or Alternative Planning Strategy as part of the Regional Transportation Planning process." LU-1.13 states, "The County shall consider the San Joaquin Council of Governments Regional Transportation Plan, including the Sustainable Communities Strategy or Alternative Planning Strategy, and adopted city general plans and those of surrounding counties each time it considers an update to the General Plan or any master plan, strategy, or zone." And, LU-1.14 states, "The County shall support expanded incentives and CEQA streamlining opportunities for projects that are consistent with the adopted San Joaquin Council of Governments RTP/SCS and implement the objectives of SB 375." Other goals align with the 2018 RTP/SCS in directing growth to urban centers, encouraging infill development, and encouraging preservation of farmland.

The proposed 2018 RTP/SCS goals encourage compact, mixed-use and infill development to reduce distance between trip destinations and increase transportation options, which support the land pattern. This approach is consistent with the general provisions of MAP-21, and the Caltrans Smart Mobility 2010 framework local transportation. This is also consistent with the County's new goals presented above.

In addition, the 2018 RTP/SCS would help the region reach its GHG emission reduction targets established by the California Air Resource Board (CARB) under AB 32 and SB 375, as discussed in Section 4.9 *Greenhouse Gas Emissions/Climate Change*. The 2018 RTP/SCS encourages mixed-use and infill development to reduce automobile traffic and commute trip lengths. The 2018 RTP/SCS would meet the CARB established goal of a 5% reduction from 2005 emissions levels by 2020 and a 10% reduction from 2005 emissions levels by 2035 (see Section 4.9, *Greenhouse Gas Emissions/Climate Change*).

At the local level, the 2018 RTP/SCS builds on and incorporates local planning efforts of its member agencies. The preferred land use scenario uses existing general plan densities with actual projected development occurring in the higher end of allowed densities.

In planning for projected growth in the region, the 2018 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 be consistent with the 2018 RTP/SCS Plan. Full implementation of the 2018 RTP/SCS is therefore dependent on local government policy decisions and voluntary local government action.

The proposed 2018 RTP/SCS includes a list of planned and programmed projects including local and regional capital improvements that have been anticipated or accounted for in:

- Each local jurisdiction's General Plan
- The Federal Transportation Improvement Plan (FTIP), including Federal Transit Administration (FTA) grant allocations
- The Statewide Transportation Improvement Plan (STIP)
- The Regional Transportation Improvement Program (RTIP)

In summary, the objective of the 2018 RTP/SCS is to provide for a comprehensive transportation system of facilities and services that meets the public's need for the movement of people and goods, and that is consistent with the social, economic, and environmental goals and policies of the region.

Improvements included in the 2018 RTP/SCS have been proposed by the various jurisdictions that comprise the SJCOG region and consistent with the San Joaquin County's updated General Plan. The 2018 RTP/SCS and associated programmed or planned projects are generally consistent with local and regional plans and policies. Additionally, the 2018 RTP/SCS includes policies for encouraging consistency with other State, regional, and local policies. In addition, the 2018 RTP/SCS is based on the buildout of the San Joaquin County General Plan, which incorporates population growth and land use projections. The individual transportation projects in the 2018 RTP/SCS would be required to adhere to applicable jurisdictions, regulations, municipal codes, general plan policies/programs/goals, as well as established zoning and land use ordinances. As a result, impacts would be less than significant.

Mitigation Measures

No Mitigation Measures are required.

Significance After Mitigation

Impacts would be less than significant without mitigation.

c. Cumulative Impacts

Planned growth in counties neighboring the SJCOG region, when combined with the projected growth of the SJCOG planning area, could have significant cumulative land use impacts related to either the physical division of communities or conflicts with land use goals, plans, policies, or regulations adopted for the purpose of avoiding or mitigating environmental effects. The SJCOG region is adjacent to seven counties: Sacramento, Amador, Calaveras, Stanislaus, Contra Costa, and Alameda. The land between each of these counties and the SJCOG region is primarily undeveloped agricultural land, grazing land, or open space. There are few developed communities or urban growth areas at or near the five county boundaries adjacent to the SJCOG region. Therefore, the 2018 RTP/SCS would not cumulatively contribute to the physical division of communities.

Each of five adjacent counties has adopted general plans that direct new growth to existing developed areas, strongly support agricultural land preservation, and are part of other regional RTP/SCS's. These general plans include goals, policies, and programs adopted for the purpose of avoiding or mitigating environmental effects. All of the counties have zoning ordinances. Since the geographic reach of the 2018 RTP/SCS does not extend into the adjacent counties, and the goals, policies, programs, and regulations adopted by the five counties is geographically limited to each of

those five counties, the potential for cumulative considerable conflict between the subject goals, policies, programs, and regulations is minimal. Therefore, the cumulative impacts resulting from the implementation of the proposed 2018 RTP/SCS related to division of communities and conflict with goals, policies, programs, and regulations would be less than significant.

4.13 Noise

This section evaluates noise and vibration impacts of the proposed 2018 RTP/SCS. Both temporary impacts relating to construction activities and long-term impacts associated with implementation of the planned transportation projects and the land use scenario envisioned in the 2018 RTP/SCS are discussed.

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

Noise level (or volume) is generally measured in decibels (dB) using the A-weighted sound pressure level (dBA). The A-weighting scale is an adjustment to the actual sound power levels to be consistent with that of human hearing response, which is most sensitive to frequencies around 4,000 Hertz (about the highest note on a piano) and less sensitive to low frequencies (below 100 Hertz). In addition to the actual instantaneous measurement of sound levels, the duration of sound is important since sounds that occur over a long period of time are more likely to be an annoyance or cause direct physical damage or environmental stress. One of the most frequently used noise metrics that considers both duration and sound power level is the equivalent noise level (Leq). The Leq is defined as the single steady A-weighted level that is equivalent to the same amount of energy as contained in fluctuating levels of sound over a period of time. Typically, Leq is summed over a one-hour period.

Sound pressure is measured on a logarithmic scale with the 0 dB level based on the lowest detectable sound pressure level that people can perceive (an audible sound that is not zero sound pressure level). Based on the logarithmic scale, a doubling of sound energy is equivalent to an increase of 3 dB and a sound that is 10 dB less than the ambient sound level has no effect on ambient noise. Because of the nature of the human ear, a sound must be about 10 dB greater than the reference sound to be judged as twice as loud. In general, a 3 dBA change in community noise levels is noticeable, while 1-2 dBA changes generally are not perceived. Quiet suburban areas typically have noise levels in the range of 40 to 50 dBA, while noise levels along arterial streets are generally in the 50 to 60+ dBA range. Normal conversational levels are in the 60-65 dBA range and ambient noise levels greater than that can interrupt conversations.

Noise levels typically attenuate at a rate of 6 dBA per doubling of distance from point sources such as industrial machinery. Noise from roads typically attenuates at a rate of about 4.5 dBA per doubling of distance over absorptive ground surfaces (e.g., grass). Noise from roads typically attenuates at about 3 dBA per doubling of distance over reflective ground surfaces (e.g., pavement).

The actual time period in which noise occurs is also important since noise that occurs at night tends to be more disturbing than that which occurs during the daytime. To evaluate community noise on a 24-hour basis, the day-night average sound level was developed (Ldn). Ldn is the time average of all

A-weighted levels for a 24-hour period with a 10 dB upward adjustment added to those noise levels occurring between 10:00 PM and 7:00 AM to account for the general increased sensitivity of people to nighttime noise levels. The Community Noise Equivalent Level (CNEL) is identical to the Ldn with one exception. The CNEL adds 5 dB to evening noise levels (7:00 PM to 10:00 PM). Thus, both the Ldn and CNEL noise measures represent a 24-hour average of A-weighted noise levels with Ldn providing a nighttime adjustment and CNEL providing both an evening and nighttime adjustment.

Vibration

Vibration is an oscillatory motion through a solid medium in which the motion's amplitude can be described in terms of displacement, velocity, or acceleration. Vibration can be a serious concern, causing buildings to shake and rumbling sounds to be heard. In contrast to noise, vibration is not a common environmental problem. It is unusual for vibration from sources such as buses and trucks to be perceptible, even in locations close to major roads.

There are several different methods that are used to quantify vibration. The peak particle velocity (PPV) is defined as the maximum instantaneous peak of the vibration signal. The PPV is most frequently used to describe vibration impacts to buildings and is usually measured in inches per second. The root mean square (RMS) amplitude is most frequently used to describe the effect of vibration on the human body. The RMS amplitude is defined as the average of the squared amplitude of the signal. Decibel notation (VdB) is commonly used to measure RMS. The decibel notation acts to compress the range of numbers required to describe vibration.

High levels of vibration may cause physical personal injury or damage to buildings. However, groundborne vibration levels rarely affect human health. Instead, most people consider groundborne vibration to be an annoyance that can affect concentration or disturb sleep. In addition, high levels of groundborne vibration can damage fragile buildings or interfere with equipment that is highly sensitive to groundborne vibration (e.g., electron microscopes).

In contrast to noise, groundborne vibration is not a phenomenon that most people experience every day. The background vibration velocity level in residential areas is usually 50 RMS or lower which is well below the threshold of perception for humans (human perception is around 65 RMS). Most perceptible indoor vibration is caused by sources within buildings, such as operation of mechanical equipment, movement of people, or slamming of doors. Typical outdoor sources of perceptible groundborne vibration are construction equipment, steel-wheeled trains, and traffic on rough roads. If the roadway is smooth, the vibration from traffic is rarely perceptible.

b. Noise and Vibration Sources

Many principal noise generators within the SJCOG region are associated with transportation (i.e., airports, freeways, arterial roadways and railroads). Local collector streets are not considered significant noise sources as traffic volume and speeds are generally much lower than for freeways and arterial roadways. Generally, transportation-related noise is the dominant noise source within urban environments.

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 vibrations that vary depending on vehicle type, weight and pavement conditions. Nonetheless, vibration due to roadway traffic is typically not perceptible.

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 SJCOG region. This can be attributed to the network of major, primary and secondary arterials, as well as the large number of vehicle trips that occur each day. Within San Joaquin County, Interstate 5 and State Route 99 have the largest vehicle volumes and the highest noise levels, mostly notably State Route 99. In 2016, daily traffic volumes on State Route 99 ranged from 65,000 vehicles south of the Sacramento-San Joaquin County line to 129,000 vehicles between Milgeo Avenue and Jackton Road, near the southern County line (Caltrans 2016). Levels of highway noise typically range from 70 to 80 dB(A) at a distance of 50 feet from the highway (Federal Highway Administration [FHA] 2003).

Additionally, the SJCOG region has many arterial roadways. Typical arterial roadways have one or two lanes of traffic in each direction. Noise from these sources can be a substantial environmental concern where buffers (e.g., buildings, landscaping, etc.) are inadequate to reduce noise levels or where the distance from centerline to sensitive uses is relatively small. Given typical daily traffic volumes of 10,000 to 40,000 vehicle trips, noise levels along arterial roadways can typically range from Ldn 65 to 70 dBA at a distance of 50 feet from the roadway centerlines (FHA 2003).

Aircraft Operation

San Joaquin County has six public-use aviation airports, which include the following:

- Kingdon Executive
- Lodi
- Lodi Precissi Airpark
- New Jerusalem
- Stockton Metropolitan
- Tracy Municipal

Of these airports, only the Stockton Metropolitan Airport provides scheduled air carrier service. There are also seven private airports in the county, including hospital heliports and small agricultural airstrips. Currently, there are no operational military airfields in the county.

Stockton Municipal Airport is the only airport to offer commercial and cargo air carrier service in the County (SJCOG 2016). Most aircrafts using the facility are single-engine piston aircrafts; however, as the airport retains the longest runway in the County, a significant number of operations are performed by twin-engine turboprops and jets (SJCOG 2016).

The major private civilian facilities have potential for significant noise level impacts as urban development continues to encroach into the rural areas. San Joaquin County noise contour measurements and estimates for airports can be found in the 2009 San Joaquin County Airport Land Use Compatibility Plan (ALUCP) and 2016 Stockton Metropolitan Airport ALUCP.

Airport noise contours have been established for all airport facilities in the County and are consistent with the Federal Aviation Administration (FAA) Integrated Noise Model. In addition, noise contours for existing and future conditions at each of the airports are contained in plans or studies, including: Airport Master Plans, Airport Land Use Compatibility Plan, Comprehensive Airport Land Use Plans, Airspace Plans, and Airport Layout Plans, which are all incorporated by reference. Each of these plans or studies includes implementation goals, objectives, and policies and/or recommendations to lessen noise impacts.

Railroad Operations

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. Locomotive engines and the interaction of steel wheels and rails are one primary source of rail noise. The latter creates rolling noise which is caused by continuous rolling contact, impact noise when a wheel encounters a rail joint, turnout or crossover and squeal generated by wheel/rail friction on tight curves. For very high speed rail vehicles, air turbulence can be a significant source of noise. Air horns and crossing bell gates are another primary source of rail noise.

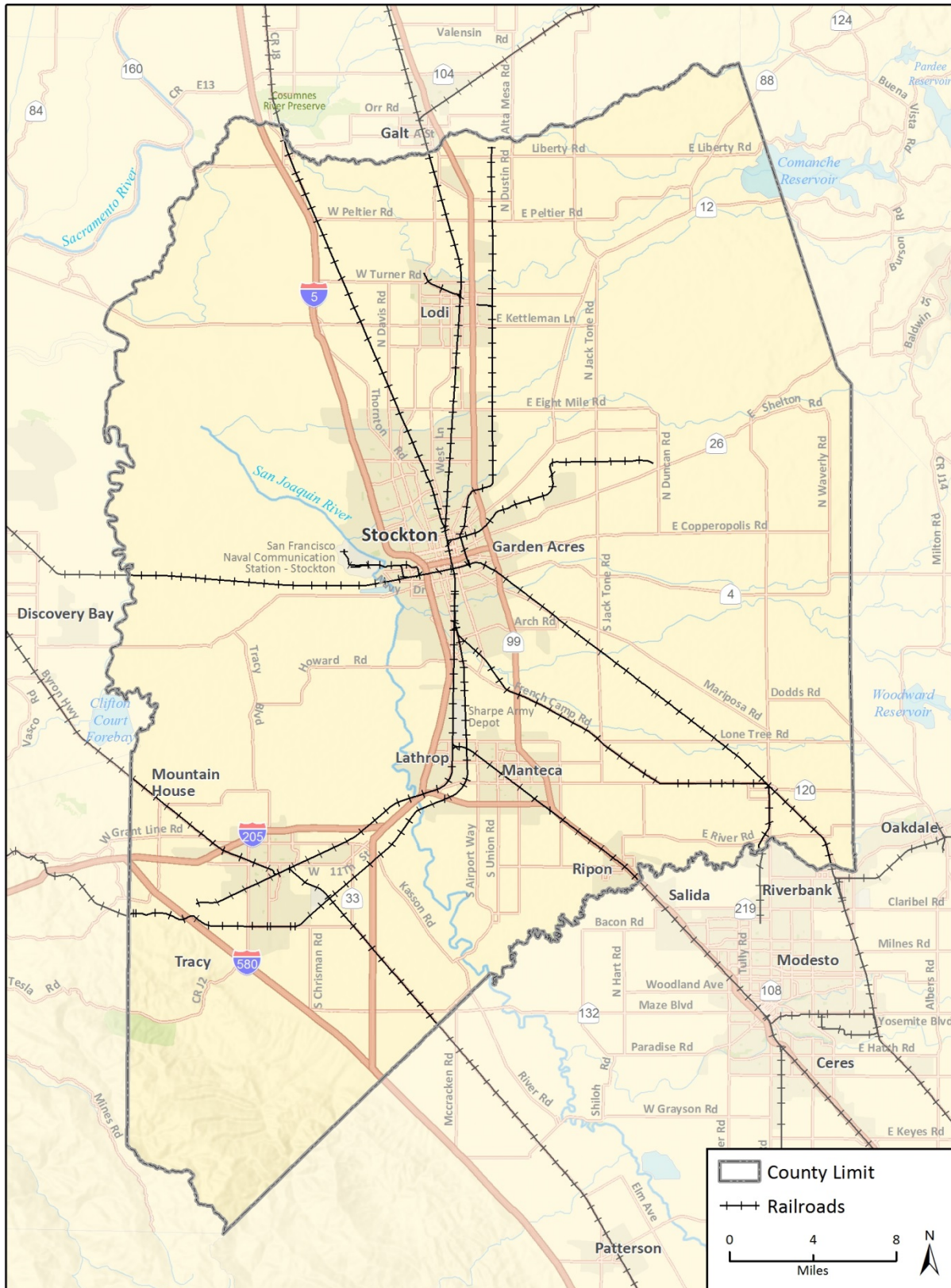
Rail operations generate varying noise levels depending on the type of rail activity. Heavier commuter or freight trains, which are diesel-powered, generate more noise than electrically-powered light-rail vehicles. According to the Federal Transit Administration (FTA), six commuter trains traveling at 50 miles per hour with a horn blowing generate a noise level of 81 dBA Leq at 50 feet. This same activity without a horn generates a noise level of 68 dBA Leq at 50 feet. In comparison, 12 light rail transit trains traveling 40 miles per hour generate a noise level of 65 dBA Leq at 50 feet. These same light rail transit trains generate a noise level of 57 dBA Leq at 20 miles per hour at 50 feet (FTA 2006).

According to the FTA Transit Noise and Vibration Impact Assessment guidance document (2006), 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 lines for goods movement (e.g., agricultural materials) are located throughout the SJCOG region. The Amtrak and Altamont Commuter Express (ACE) provide commuter passenger train service. Amtrak operates trains with destinations to Las Vegas, San Diego, and San Luis Obispo. The San Joaquin Amtrak passenger cars provide passenger service throughout the California's Central Valley with seven northbound and seven southbound trains every day. In addition, the County has an extensive network of railroad lines belonging primarily to two major railroads: Union Pacific (UP) and the BNSF Railway Company (BNSF). Figure 15 shows the location of the UP and BNSF lines, and the specific lines used by the commuter passenger trains. Both railroad main lines parallel the State Route (SR)-99 and Interstate (I)-5 in the northern portion of the County, while in the southern area, the UP main line parallels the SR-99 and the BNSF main line runs along the Mariposa

Figure 15 San Joaquin County Railroad Lines



Road/Santa Fe Road to the east and SR-4 to the west. Table 36 provides the CNEL for several segments of the primary UP and BNSF lines.

Table 36 Exterior Noise Exposure Adjacent to Nearby Rail Lines

Segment	Number of Trains	Noise Contour Distance (feet)		
		Ldn at 100 feet	65 dB Ldn	60 dB Ldn
Inland Rd. at SR 4 East of Holt	33	65	171	368
Woodward Rd. at Moffatt Blvd. South of Manteca	23	75	466	1,003
Lawrence Rd. & Arthur Rd. North of Escalon	47	72	305	657
South Lathrop	11	66	115	55

Source: 2009 San Joaquin County General Plan Update, Table 15.9

The data in Table 36 are examples of train noise exposure at specific locations in San Joaquin County, and do not represent all train noise exposure within the County. These examples illustrate the vast differences in the number of train operations and associated noise exposure at different areas of the County. The examples represent train noise exposure away from grade crossings; that is, they do not include significant contributions from train warning horns and crossing guard warning systems. At grade crossings, warning horns dominate train noise exposure, producing an average SEL as high as 110 dB at 100 feet from the tracks (San Joaquin County 2010).

The data presented in Table 36 illustrates the variability regarding train noise exposure within the County. Variables such as train speed, track construction/condition, grade, number of train locomotives, number of train cars, and location relative to a grade crossing make quantitative assessment of train noise exposure create challenges when trying to determine the impacts on surrounding communities. This information illustrates the importance of site-specific train noise assessment for projects identified as noise sensitive.

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 SJCOG 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. In contrast to industrial and manufacturing facilities, construction sites are located throughout the SJCOG region and often within, or adjacent to, residential areas.

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 week days 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.

Sensitive Receptors

Some land uses are considered more sensitive to ambient noise levels than others due to noise exposure (in terms of both exposure time and “insulation” from noise) and the types of activities typically involved. Residences, motels and hotels, schools, libraries, churches, hospitals, nursing homes, auditoriums, natural areas, parks and outdoor recreation areas are generally more sensitive to noise than are commercial and industrial land uses. Consequently, the noise standards for sensitive land uses are more stringent than those for less sensitive uses, such as commercial and industrial.

To protect various human activities and sensitive land uses (e.g., residences, schools, and hospitals) lower noise levels are needed. A noise level of DNL 55 to 60 dB outdoors is the upper limit for intelligible speech communication inside a typical home. In addition, social surveys and case studies have shown that complaints and community annoyance in residential areas begin to occur at DNL 55 dB. Sporadic complaints associated with the DNL 55 to 60 dB range give way to widespread complaints and individual threats of legal action within the DNL 60 to 70 dB range. At DNL 70 dB and above, residential community reaction typically involves threats of legal action and strong appeals to local officials to stop the noise.

San Joaquin County encompasses a large area with a wide variety of noise sources and noise levels. The ambient noise environment ranges from low levels associated with wilderness areas to high levels associated with airports and heavily trafficked roadways. Given the size of the County and the variation in sources, it is not useful to complete a detailed noise monitoring study for this Program EIR. Rather this Program EIR presents a discussion of noise levels associated with different noise sources and thereby allows the reader to infer the noise level at different locations depending on the proximity of a location to a noise source.

c. Regulatory Setting

Various federal agencies have set standards for transportation-related noise and vibration sources that participate in interstate commerce, such as aircraft, locomotives and trucks. The State sets noise standards for those noise sources that are not preempted from regulation, such as automobiles, light trucks and motorcycles. Noise and vibration sources associated with industrial, commercial and construction activities are generally subject to local control through noise ordinances and general plan policies.

Federal

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

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 Leq 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 Leq 57 and 66 dB, respectively, during the peak hour of traffic noise. Table 37 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.

Table 37 Noise Abatement Criteria

Activity Category	Hourly Leq	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
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 2017

RAILROAD NOISE

Federal regulations for railroad noise are contained in 40 CFR Part 201 and 49 CFR Part 210. The regulations set noise limits for locomotives and are implemented through regulatory controls on locomotive manufacturers. Federal regulations also 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 pass-by 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 must be considered for 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.

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 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 § 772.7, projects are categorized as Type I or Type II 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.

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 2006 FTA *Transit Noise Impact and Vibration Assessment* (FTA 2006). 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

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 clearly requires that 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 Ldn noise levels or less are acceptable for residential land uses and noise levels exceeding 75 dBA Ldn are unacceptable. HUD's regulations do not contain standards for interior noise levels. Rather a goal of 45 decibels is set forth and the attenuation requirements are focused on achieving that goal. It is assumed that with standard construction methods and materials, any building will provide sufficient attenuation so that if the exterior level is 65 dBA Ldn or less, the interior level will be 45 dBA Ldn or less.

State

Relevant state noise regulations include those are discussed below. There are no adopted State policies or standards for groundborne vibration.

Governor's Office of Planning and Research

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.

California Department of Transportation

Caltrans establishes noise limits for vehicles licensed to operate on public roads (Caltrans 2013). For heavy trucks, the State pass-by 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* guidelines for assessing noise levels associated with roadway projects (Caltrans 2011).

California Streets and Highways Code

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 Leq 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 Leq. If the noise levels generated from roadway sources exceed 52 dBA Leq 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.

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 the California Department of Transportation.

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 dB Ldn 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 dB Ldn.

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 airport land use compatibility plans, 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. For example, Monterey Regional Airport encourages noise abatement procedures related to quiet departure techniques.

The Aeronautics Division of the California Department of Transportation 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)."

Regional and Local

San Joaquin County Airport Land Use Compatibility Plan (ALUCP)

The Airport Land Use Compatibility Plan (ALUCP) was adopted by SJCOG in 2009 and to satisfy the state's aviation law requirements. The ALUCP provides for the orderly growth of each public use airport over a 20-year span and minimizes land use conflicts over height and noise with the surrounding area. The ALUCP includes building height restrictions, specify allowable land uses, and determine building standards within all airports within the County are required to be consistent with the measures set forth in the ALUCP.

City and County General Plans

To identify, appraise, and remedy noise problems in local communities, the County and each city in the County is required to adopt a noise element as part of its General Plan. 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. The overlapping DNL ranges indicate that local conditions (existing noise levels and community attitudes toward dominant noise sources) should be considered in evaluating land use compatibility at specific locations.

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).

In terms of airport noise, some of the actions that airport proprietors have been allowed to take to address local community noise concerns include runway use and flight routing changes, aircraft operational procedure changes, and engine run-up restrictions. These actions generally are subject to approval by the FAA, which has the authority and responsibility to control aircraft noise sources, implement and enforce flight operational procedures, and manage the air traffic control system. Airport proprietors may also consider limitations on airport use, but such restrictions can be overridden by the Federal Aviation Administration if it is determined that they unjustly discriminate against any user, impede the federal interest in safety and management of the air navigation system, or unreasonably interfere with interstate commerce.

Local Vibration Regulations

Some local jurisdictions regulate vibration through enforcement of local ordinance standards. These standards generally relate to preventing perceptible vibration from being generated past the property line of the source location.

4.13.2 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*. Long-term traffic-related noise was estimated using a modification of the Federal Highway Traffic Noise Model (TNM).

Appendix G of the State CEQA Guideline identifies the following criteria for determining whether a project's impacts would have a significant impact related to noise:

1. Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies;
2. Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels;
3. A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project;
4. A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project.
5. For a project located in 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, exposure of people residing or working in the project area to excessive noise levels; and/or
6. For a project within the vicinity of a private airstrip, exposure of people residing or working in the project area to excessive noise levels.

Thresholds 5 and 6 are discussed in Section 4.16, *Less than Significant Environmental Factors*. The following analysis of potential impacts includes an assessment of all applicable standards, including those established by local jurisdictions, counties, the State of California and federal agencies, where appropriate.

b. Project Impacts and Mitigation Measures

This section describes generalized impacts associated with some of the projects anticipated in the 2018 RTP/SCS. Due to the programmatic nature of the 2018 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 2018 RTP/SCS could result in noise impacts as described in the following sections.

Threshold 1:	Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies
Threshold 3:	A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project
Threshold 4:	A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project

Impact N-1 CONSTRUCTION AND OPERATIONAL ACTIVITIES FROM THE PROPOSED TRANSPORTATION IMPROVEMENT PROJECTS AND THE LAND USE SCENARIO ENVISIONED IN THE 2018 RTP/SCS WOULD CREATE TEMPORARY AND PERMANENT NOISE LEVEL INCREASES THAT EXCEED APPLICABLE THRESHOLDS IN LOCATIONS THROUGHOUT THE SJCOG REGION. IMPACTS WOULD BE SIGNIFICANT AND UNAVOIDABLE.

Construction

The operation of equipment during the construction of roadway infrastructure, as well as infill development projects near transit and other land use development envisioned in the 2018 RTP/SCS, would result in temporary increases in noise in the immediate vicinity of individual construction sites. As shown in Table 38, average noise levels associated with the use of heavy equipment at construction sites can range from about 76 to 89 dBA at 50 feet from the source, depending upon the types of equipment in operation at any given time and the phase of construction. The highest noise levels generally occur during excavation and foundation development, which involve the use of equipment such as backhoes, bulldozers, shovels, and front-end loaders.

Table 38 Typical Construction Noise Levels (dBA)

Equipment	Typical Level 25 Feet from the Source	Typical Level 50 Feet from the Source	Typical Level 100 Feet from the Source	Typical Level 200 feet from the Source	Typical Level 800 Feet from the Source
Air Compressor	87	81	75	69	57
Backhoe	86	80	74	68	56
Concrete Mixer	91	85	79	73	61
Grader	91	85	79	73	61
Paver	95	89	83	77	65
Saw	82	76	70	64	52
Scraper	95	89	83	77	65
Truck	94	88	82	76	64

Source: Federal Transit Administration, Transit Noise and Vibration Impact Assessment, May 2006.

Noise generated by construction activity would be variable depending on the project and intensity of equipment used. Roadway widening and new roadway projects would likely require the operation of many pieces of heavy-duty equipment that generate high noise levels. Alternatively, pedestrian trail improvements would typically generate less noise, requiring minimal use of heavy equipment. However, there are instances where activities that typically generate lower noise levels could generate relatively high noise levels. For example, a pedestrian trail improvement may include bridge pilings or require heavy equipment to clear vegetation. This conservative analysis assesses construction noise based on the operation of heavy-duty equipment. Noise levels from point

sources such as construction sites typically attenuate at a rate of about six (6) dBA per doubling of distance. Therefore, areas within 800 feet of construction site within heavy-duty equipment may be exposed to noise levels exceeding 67 dBA. Mitigation is required to reduce impacts from construction-related noise to a less-than-significant level.

Operation

Overall traffic levels on highways and roadways in the SJCOG region are projected to increase as a result of regional growth through the year 2042 (refer to Section 4.14, *Transportation*). The 2018 RTP/SCS includes projects that would potentially increase traffic noise by increasing traffic volumes along and in the vicinity of affected facilities. Such projects include: construction of new interchanges, roadway widening, roadway extensions, new roadway construction, and improvements to roads that would allow increased traffic volumes. Roadway improvement projects would not in themselves introduce new traffic, but rather are intended to relieve current or projected future traffic congestion or unacceptable safety conditions. However, widening projects, roadway extensions, and new roadway construction would accommodate additional traffic volumes and/or relocate noise sources closer to receptors. In addition, the anticipated number of annual vehicle miles traveled (VMT) in 2042 would be increased from approximately 6.5 billion under existing conditions (2015) to approximately 8.5 billion VMT in 2042 under the 2018 RTP/SCS, an increase of approximately two billion VMT annually, or approximately 30.3 percent. As compared to the No Project scenario, VMT under the 2018 RTP/SCS would increase by approximately 140 million annually (1.7 percent). Although many areas along freeway and roadway corridors are at least partially shielded from traffic noise by topography, buildings, walls, and other barriers, an increase in VMT and new and extended roadways would result in higher traffic noise levels as compared to existing conditions. Mitigation is required to reduce noise impacts to sensitive receptors to less-than-significant levels.

The 2018 RTP/SCS includes airport improvements at the Stockton Metro Airport and the Tracy Municipal Airport. Proposed airport projects include runway improvements, pavement maintenance, reconstruction of aviation aprons, and reconstruction of runways and taxiways. Most of the proposed projects serve to improve or repair existing facilities and would not change aircraft activity and flight patterns and associated noise impacts. However, one project included in the 2018 RTP/SCS, the installation of a helicopter pad at the Tracy Municipal Airport, could potentially introduce an increase in helicopter traffic that could increase associated noise levels. Specific project details are not known at this time and thus the potential noise increase associated with increased helicopter traffic cannot be determined. Mitigation is necessary to reduce or minimize noise exposure impacts from aircraft operations.

The 2018 RTP/SCS also includes investments in passenger rail and train service, such as the construction of a double main track between Escalon and Stockton, construction of track connections and a new intercity passenger rail facility in Stockton, extension of existing services at various facilities, and maintenance activities at various facilities. 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 39.

Rail transit projects included in the 2018 RTP/SCS would be located in urban areas to facility ridership. Sensitive land uses would be located within proximity to new and expanded rail corridors, and would potentially be exposed to noise levels that exceed acceptable standards. Mitigation is necessary to reduce or minimize impacts from rail noise by requiring detailed project-specific assessments, and, if necessary, the identification and implementation of local mitigation measures.

The 2018 RTP/SCS also includes new or extended facilities that encourage more efficient intermodal transport using rail. The number of freight trains currently operating each day is dependent upon the demands of the industries using rail services and can vary greatly from day to day. While increases in freight rail transport would increase the number of freight trains, these trains would likely operate as-needed rather than on a fixed schedule. Therefore, noise levels and frequency of pass-by trips would continue to vary daily. Overall, however, an increase in train volumes would cause an increase in noise levels adjacent to rail corridors. Mitigation is required to reduce or minimize impacts from freight rail noise.

Table 39 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
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		100	50
Ventilation Shafts		200	100
Power Substations		250	125

Source: Federal Transit Administration, Transit Noise and Vibration Impact Assessment, May 2006

Furthermore, the 2018 RTP/SCS includes projects to expand transit bus services, such as constructing improvements at existing transit centers, purchasing of replacement buses, fleet maintenance, and constructing bus stop improvements. Transit services along new routes may expose sensitive receptors to bus noise. 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 40.

Table 40 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: Federal Transit Administration, Transit Noise and Vibration Impact Assessment, May 2006

Increase frequency of bus service along existing corridors would also increase noise exposure. However, the addition of local buses and shuttles is unlikely to increase noise by significant levels as bus routes would be in urban areas with high ambient noise levels. Overall, however, sensitive land uses would be located within close proximity to new bus activity, and would potentially be exposed to noise levels that exceed acceptable standards. Mitigation is therefore required to reduce or minimize impacts from bus noise by requiring detailed project-specific assessments, and, if necessary, local mitigation measures.

In addition, the 2018 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 an infill approach near transit and other transportation facilities such as bicycle networks. 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 the 67 dBA standard for residential land uses. 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. Mitigation would be required to reduce impacts to a less-than-significant level. . Even with the inclusion of these measures, noise impacts under N-1 would be potentially significant.

Mitigation Measures

For transportation projects under their jurisdiction, SJCOG shall implement, and transportation project sponsor agencies can and should implement, the following mitigation measure developed for the 2018 RTP/SCS program. Municipalities in the SJCOG region can and should implement this measure, where relevant to projects implementing the 2018 RTP/SCS.

N-1 Noise Reduction Practices

Project sponsors shall assess and mitigate to the extent feasible short- and long-term noise impacts in accordance with applicable regulations and to implement site-specific noise reduction measures. Reduction measures include, but are not limited to, the following:

- Equipment and trucks used for project construction shall utilize the best available noise control techniques (e.g., improved mufflers, equipment redesign, use of intake silencers, ducts, engine enclosures, and acoustically attenuating shields or shrouds, wherever feasible).

- Except as may be exempted by the Lead Agency (or other appropriate government agency), impact tools (e.g., jack hammers, pavement breakers, and rock drills) used for project construction shall be hydraulically or electrically powered to avoid noise associated with compressed air exhaust from pneumatically powered tools. However, where use of pneumatic tools is unavoidable, an exhaust muffler on the compressed air exhaust should be used; this muffler can lower noise levels from the exhaust by up to about 10 dB(A). External jackets on the tools themselves should be used, if such jackets are commercially available and this could achieve a reduction of 5 dB(A). Quieter procedures should be used, such as drills rather than impact equipment, whenever such procedures are available and consistent with construction procedures.
- Stationary noise sources shall be located as far from adjacent sensitive receptors as possible and they should be muffled and enclosed within temporary sheds, incorporate insulation barriers, or use other measures as determined by the Lead Agency (or other appropriate government agency) to provide equivalent noise reduction.
- A procedure and phone numbers for notifying the Lead Agency staff and local Police Department (during regular construction hours and off-hours);
- A sign posted on-site pertaining with permitted construction days and hours and complaint procedures and who to notify in the event of a problem. The sign should also include a listing of both the Lead Agency and construction contractor's telephone numbers (during regular construction hours and off-hours);
- The designation of an on-site construction complaint and enforcement manager for the project;
- Notification of neighbors and occupants within 300 feet of the project construction area at least 30 days in advance of extreme noise generating activities about the estimated duration of the activity.
- A preconstruction meeting can and should be held with the job inspectors and the general contractor/on-site project manager to confirm that noise measures and practices (including construction hours, neighborhood notification, posted signs, etc.) are completed.
- Use of portable barriers in the vicinity of sensitive receptors during construction.
- Projects that require pile driving or other construction noise above 90 dB(A) in proximity to sensitive receptors, should reduce potential pier drilling, pile driving and/or other extreme noise generating construction impacts greater than 90dB(A), a set of site-specific noise attenuation measures should be completed under the supervision of a qualified acoustical consultant.
- Evaluate the feasibility of noise control at the receivers by temporarily improving the noise reduction capability of adjacent buildings by the use of sound blankets for example and implement such measure if such measures are feasible and would noticeably reduce noise impacts.
- Monitor the effectiveness of noise attenuation measures by taking noise measurements.
- Strategically place material stockpiles between the operation and the affected dwelling to minimize noise generated from any rock-crushing or screening operations performed within 3,000 feet of any occupied residence.
- Maximize the distance between noise-sensitive land uses and new roadway lanes, roadways, rail lines, transit centers, park-and-ride lots, and other new noise- generating facilities.

- Construct sound reducing barriers between noise sources and noise-sensitive land uses.
- Implement, to the extent feasible and practicable, speed limits and limits on hours of operation of rail and transit systems, where such limits may reduce noise impacts.
- Maximize the distance of new route alignments from sensitive receptors.
- Locate transit-related passenger stations, central maintenance facilities, decentralized maintenance facilities, and electric substations away from sensitive receptors to the maximum extent feasible.
- Airport projects shall conform and implement all applicable noise reduction strategies as listed in their applicable Airport Land Use Compatibility Plan.

Significance After Mitigation

Implementation of the above mitigation measure could reduce potential impacts to a less than significant level. However, even with implementation of Mitigation Measure N-1, noise impacts from buildout of the 2018 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 2: Expose people or generate excessive groundborne vibration

Impact N-2 CONSTRUCTION AND OPERATIONAL ACTIVITIES, AS WELL AS INCREASED TRANSIT ACTIVITY FROM THE PROPOSED TRANSPORTATION IMPROVEMENT PROJECTS AND THE LAND USE SCENARIO ENVISIONED IN THE 2018 RTP/SCS, WOULD GENERATE SUBSTANTIAL VIBRATION LEVELS THROUGHOUT THE SJCOG REGION. IMPACTS WOULD BE SIGNIFICANT AND UNAVOIDABLE.

Construction and Operation

Noise and vibration impacts from the construction and operation of transportation projects and development of the surrounding area could generate excessive groundborne vibration and noise levels. 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 in close proximity to the source.

Typical project construction activities, such as the use of jackhammers, other high-power or vibratory tools, compactors, and tracked equipment, could also generate substantial vibration (i.e., greater than 0.2 inch per second PPV) in the immediate vicinity, typically within 15 feet of the equipment. However, building construction does not typically have these larger sources of vibration and is, therefore, not anticipated to be a source of substantial vibration. By use of administrative controls, such as scheduling, typical construction activities would be restricted to hours with the least potential to affect nearby properties. Thus, perceptible vibration can be kept to a minimum and not result in human annoyance or structural damage.

Specific construction activities such as pile driving, could 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 when it occurs within 50 feet of structures. Vibration levels generated by pile driving activities would vary depending on project conditions, such as soil conditions, construction methods, and equipment used. Pile driving activities may result in short-term annoyance. Depending on the proximity of existing structures to each construction site, the structural

soundness of the affected buildings, and the methods of construction used, vibration levels 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 could be high enough to be perceptible within 100 feet and may be high enough to damage existing structures within 50 feet.

In addition to pile driving activities, light industrial and commercial operations have, on occasion, been known to utilize equipment or processes in the manufacture and distribution of materials that have a potential to generate vibration. However, vibrations found to be excessive for human exposure that are the result of a manufacturing process or industrial machinery are generally addressed from an occupational health and safety perspective. The residual vibrations from industrial processes or machinery are typically of such low amplitude that they quickly dissipate into the surrounding soil and are rarely perceivable at the surrounding land uses.

Distribution of materials to and from industrial and commercial land uses can have the potential to generate more substantial levels of vibration than that of the mechanical equipment. Heavy trucks used for delivery and distribution of materials to and from industrial and commercial sites generally operate at very low speeds while on the industrial or commercial site. Therefore, the vibration induced by heavy truck traffic at industrial or commercial land uses is not anticipated to be perceptible at distances greater than 25 feet (typical distance from roadway centerline to edge of roadway right-of-way for a single-lane road).

Transit

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 2013). Given that sensitive receptors are located within 150 feet of transportation facilities within the SJCOG region, and that 2018 RTP/SCS transportation projects include roadway expansion and construction of new highways, 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 vibration level reference, vibrations from train activity drop below the threshold of perception at distances greater than 250 feet. The 2018 RTP/SCS includes the development of additional railway facilities along existing tracks, extension of existing railways and construction of new rail lines, as well as the purchasing of new rail cars. This 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 could be generated. Mitigation measures are available to reduce vibration noise to the extent feasible, and are discussed below. Even with the inclusion of these measures, noise impacts under N-2 would be potentially significant.

Mitigation Measures

For transportation projects under their jurisdiction, SJCOG shall implement, and transportation project sponsor agencies, can and should implement the following mitigation measure developed for the 2018 RTP/SCS program. Municipalities in the SJCOG region can and should implement this measure, where relevant to projects implementing the 2018 RTP/SCS.

N-2 Vibration Mitigation for Transportation Projects

Project sponsors of 2018 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 2006) 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 shall 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 flating 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 noise barriers
 - Use noise reducing tires and wheel construction on bus wheels
 - Use vehicle skirts (partial enclosure around each wheel with absorptive treatment) on freight vehicle wheels

Significance After Mitigation

Implementation of the above mitigation measure could reduce potential impacts to a less than significant level. However, even with implementation of Mitigation Measure N-2, vibration from buildout of the 2018 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.

c. Cumulative Impacts

The 2018 RTP/SCS includes transportation projects and land use strategies that would shape the region over the next 25 years. These changes would include the extension of transportation and related infrastructure that would result in additional noise sources. Planned projects would connect with projects outside the region facilitating and potentially inducing construction of transportation infrastructure outside the region. This additional infrastructure outside the County could lead to development outside the region. Although construction noise and vibration impacts are generally

site specific, to the extent that the 2018 RTP/SCS would induce growth outside the region, it could result in construction noise outside the region. The 2018 RTP/SCS could facilitate movement in other regions, which would increase noise levels outside the County. The proposed 2018 RTP/SCS encompasses all development (both transportation and land use changes) that would occur in the region through 2042. The 2018 RTP/SCS could contribute to a cumulatively considerable increase in noise and vibration outside the region as a result of increased activity resulting from the RTP (increased travel outside the region and/or induced growth outside the region). This activity would include aircraft overflights, railroads, as well as freeway, arterial and transit noise. As a result, the 2018 RTP/SCS could result in a cumulatively considerable increase in noise and vibration.

4.14 Transportation

This section describes the current transportation conditions and examines the effects of the changes in projected land use and transportation projects included in the 2018 RTP/SCS on transportation conditions in 2042. This section evaluates the impacts related to transportation such as changes in travel times, accessibility to jobs, traffic congestion, vehicle miles traveled (VMT), and transit utilization that may result from the implementation of the 2018 RTP/SCS.

4.14.1 Setting

The environmental setting is an assessment of existing conditions relevant to transportation. It includes a description of the highway and street system, the public transit system and services as well as “active mode” (walking and biking) facilities. San Joaquin’s airports and goods movement systems (rail, truck, port, and air) are also essential parts of the regional transportation network and the Regional Transportation Plan (RTP). This section also includes baseline data on the use of these transportation networks.

San Joaquin’s existing regional transportation networks and facilities include an intermodal system consisting of a state and interstate highway system, an inland port, bike and bus routes, rail, including passenger and freight, and commercial passenger airline service. Figures highlighting these facilities, locations, and routes are included in the 2018 RTP/SCS in Appendix L Modal Discussion.

a. Physical Setting

San Joaquin County’s transportation system has been designed to meet the multiple needs of both residents and businesses. Geographically near the center of the County, San Joaquin County is strategically positioned and provides key routes and linkages for the movement of goods throughout California and the rest of the United States. The County has one of the few deep-water ports within the State at the Port of Stockton, an airport which serves international markets, key highway corridors, and the hub for a number of major railroads. Given its location, San Joaquin County serves as a major transportation center not only for warehousing and distribution activities, but also as a source of more affordable housing for employees working in the Bay Area.

Several major routes traverse the County and provide important links for employees and goods to other parts of California, such as the Bay Area and Sacramento. These major routes include Interstates I-5, 205, and 580, as well as State Routes 99, 120, 12 and 4. In addition, the I-205/I-580 corridor serves as a major gateway between the Bay Area/Silicon Valley and the County.

The County also has six airports open to the public that offer a variety of aviation services. Stockton Metropolitan Airport offers general aviation services along with commercial passenger service to Las Vegas, Nevada.

A number of rail lines traverse the County and provide services for both passengers and freight. A partnership between the Union Pacific and the Burlington Northern and Santa Fe (BNSF) Corporation operates an intermodal shipping yard providing a key connection for truck-rail freight movement. Amtrak provides passenger service to the County, while Altamont Commuter Express (ACE) provides direct commuter rail service to Silicon Valley (with stops in Stockton, Lathrop, Manteca, and Tracy). Figure 15 in Section 4.13, *Noise* illustrates all rail lines going through the County.

b. Commute Patterns and Travel Characteristics

Primarily due to San Joaquin County's location in California, the Central Valley has made the County a major center for distribution. Economic growth, both within the County and in areas such as Silicon Valley, Stanislaus County, and Sacramento, has led to increased commuter and freight traffic between the County and these regions. Of the 277,798 residents representing the employed workforce, approximately 83,339 commute outside of the region to their employment site.

Many work related daily trips are made in automobiles with origins beginning and ending in San Joaquin County. There are 230,784 jobs in San Joaquin County. Of those, 134,114 are occupied by San Joaquin County residents. The number of employed San Joaquin County residents that commute outside of the region for work is 131,700. 10.8% of external jobs are in Alameda County, 5.9% in Sacramento County, 5.9% in Stanislaus County, 5.7% in Santa Clara County, and 21.3% working in other counties. Of the jobs in San Joaquin County, 96,670 are filled by people residing outside of the region. The largest labor exporters to San Joaquin County are Stanislaus County (8.4%) and Sacramento County (7.2%).

Of the employed San Joaquin County residents, 39,951 car or vanpool to work on a daily basis. Other modes of travel (e.g., bus, fixed rail, motorcycle, and biking) account for 13,396 daily trips to work. 10,906 people work at home. Although carpooling and vanpooling represents 14.4 percent of all daily work related trips, 76.9 percent of all daily work related trips are made by a single occupancy vehicle. While, public transit, such as local and interregional bus lines, accounts for approximately 1.4 percent of commute trips in the County and walking and biking account for 1.9 and 0.5 percent, respectively

While public transit accounts for only a small percentage of daily trips, use of public transit had been growing until the economic recession of 2008. Transit service provision had been increasing since 2004, but the current recession has delayed implementation of continued planned increases. Air travel has continued to be important in the County. Commercial passenger air service was reestablished at Stockton Metropolitan Airport in June of 2006, which also provides air cargo services. Business air travel has increased at the Tracy Airport, and several of the other airports have experienced a strong demand for hangars and other general aviation services and facilities.

County Highways and Roadways

San Joaquin County has an established network of roadways that serve the transportation needs of residents, visitors, and businesses. There are six major freeways and highways in the area: I-5, I-205, State Route (SR)-99, SR-4, SR-12, and SR-120. Interstate (I)-5 and SR-99 are the major north-south routes that lead north to Sacramento and south to Stanislaus County and the rest of the San Joaquin Valley. SR-12, SR-4, and SR-120 are east-west routes connecting between I-5 and SR-99 and beyond. Interstate 205 runs westward from I-5 and connects with I-580, which continues over the Altamont Pass and into the Bay Area.

To evaluate the functioning of the transportation system, the concept of Level of Service (LOS) is used to measure how well traffic flows on roadways. LOS A reflects uncongested vehicle operation and the free flow of traffic. At the other end, LOS F experiences long delays and severe congestion. Table 41 summarizes the LOS definitions for roadways. Performance measures related to LOS are reported later in this chapter.

Table 41 Level of Service Definitions/Characteristics

LOS	Description
A	Free flow conditions; individual users are virtually unaffected by the presence of other vehicles.
B	Stable flow, but the presence of other vehicles in the traffic stream becomes noticeable.
C	Stable flow, but the operation of individual users becomes affected by interaction with other vehicles.
D	Stable flow, but higher density with maneuverability restricted by congestion and reduced travel speed.
E	Operating conditions at or near the capacity level.
F	Represents forced or a breakdown in traffic flow.

Source: Highway Capacity Manual 6th Edition Transportation Research Board, 2016.

Railroads

Rail lines in San Joaquin County are used for both passenger and freight services. Several major railways stretch through large portions of the County, including the Union Pacific and BNSF Railroads. Stockton serves as a hub for many of these railways and acts as a major distribution center for freight shipped to locations throughout California and the United States. Figure 15 in Section 4.13, *Noise*, illustrates all rail lines going through the County.

The Altamont Corridor Express (ACE), formerly the Altamont Commuter Express, is a commuter rail service in California connecting Stockton with San Jose. It is named for the Altamont Pass, an area through which it travels. The service commenced on October 19, 1998, with two trains daily in each direction (weekdays only). The frequency was increased in November 2009 to three trains daily in each direction and then increased to four trains daily in each direction in September 2012. There are 10 stops along its 86 miles route; present travel time is about 2 hours and 10 minutes from end-to-end. The tracks are owned by Union Pacific. The ACE transit service uses Bombardier Bi-Level Coaches and “MPI F40PH-3C” locomotives. It is managed by the San Joaquin Regional Rail Commission. ACE is exploring the possibility of expanding service into the Central Valley between Modesto and Sacramento line as well as Stockton and Pittsburg.

Within the 2018 RTP/Sustainable Communities Strategy (SCS), approximately \$604 million in passenger rail transit operations and \$554.5 million in passenger rail transit capital investments are planned. Over half of these funds are targeted for expanding the current passenger rail system.

Airports

San Joaquin County has six public airports that serve a variety of needs including air cargo, agricultural shipping, crop-dusting, passenger and corporate flights, flight training, and recreation uses. These airports are:

- Kingdon Executive Airport—Lodi
- Lind’s Airport—Lodi
- Lodi (Precissi) Airpark
- New Jerusalem Airport—Vernalis
- Stockton Metropolitan Airport—Stockton
- Tracy Municipal Airport—Tracy

Stockton Metropolitan, Tracy Municipal, and New Jerusalem (outside Tracy) are all public airports while Lind's Airport, the Precissi Airpark, and the Kingdon Airpark are privately owned. Stockton Metropolitan Airport is the largest airport in the County, offering limited passenger service to Las Vegas via Allegiant Air. In addition to Las Vegas, Stockton Municipal Airport has commercial service to Hawaii. The Tracy Municipal Airport is used for general aviation such as business flights, flight training, and recreation uses. While Lind's Airport in Lodi is privately owned, it is one of the most active public access airports in the County. The airport accommodates general aviation aircraft, including business jets. The remaining airports are used for small aircraft including business flights and crop-dusting activities. There exists a great demand for aircraft hangar space at both Lodi and Tracy airports.

Bus Transit

The SJRTD provides bus service throughout the County with the Hopper service. The Hopper provides fixed-route service to the cities of Stockton, Lathrop, and Manteca as well as to the community of French Camp. Additional intercity bus lines provide service to Tracy. SJRTD also offers dial-a-ride services for both the general public and for the elderly/disabled throughout the County. These dial-a-ride services provide transportation seven days a week during nontraditional bus hours in rural areas not served by fixed-route lines. The dial-a-ride programs provide connection services to fixed-route lines and to passenger rail (such as ACE and Amtrak).

SJRTD's Interregional Commuter Service offers bus service to passengers traveling to Alameda, Contra Costa, Santa Clara, and Sacramento counties, including feeder service to BART for employees working in San Francisco and the East Bay. The SJRTD intercity route 91 connects Ripon, Manteca, and Stockton and routes 26 and 90 connect Tracy, Lathrop, French Camp, and Stockton. Routes 93 and 23 link Stockton to Lodi. The interregional service is designed to meet the needs of commuters who travel distances greater than 50 miles one way. Greyhound and Amtrak also provide interregional bus service.

Lodi's Grapeline, the Tracy Tracer, Manteca Transit, and smaller transit services in the cities of Escalon (eTrans) and Ripon (Blossom Express) also provide bus service. The combination of services supports local transit systems, bus rapid transit, intercity and interregional bus transit services, and needed services such as demand response for both those who are in need of transit for medical purposes and those in the rural areas of the County.

Within the 2018 RTP/Sustainable Communities Strategy (SCS), approximately \$1.7 billion in passenger bus transit operations and \$681.5 million in passenger bus transit capital investments are planned. Over half of these funds are targeted for expanding passenger bus service.

Other Transportation Systems

The Port of Stockton is the second largest inland seaport on the West Coast. The port is located on the Stockton Deep Water Ship Channel, 75 nautical miles east from the Golden Gate Bridge. The Port is one mile from I-5, and is near interconnecting major highway systems. Rail service for the Port is provided by two transcontinental railroads: the Union Pacific and the BNSF. The port serves as a major transportation center that encompasses a 600-acre operating area and can handle approximately 70 percent of all container ship types. The Port has berthing space for 10 vessels, 500,000 square feet of dockside transit sheds and shipside rail trackage, and 2.7 million square feet of warehousing for both dry bulk and general cargoes (including steel). Each warehouse is served by rail.

In 2012 SJCOG prepared Regional Bicycle, Pedestrian, and Safe Routes to School Master Plan in coordination with its member agencies. The plan is compliant with the California Bicycle Transportation Act which allows all of SJCOG's member agencies to be eligible for state active transportation funding. All of SJCOG's member local agencies have developed Class I, II, or III bicycle facilities to serve bicycle travel. Most agencies including the County and the City of Stockton have long-range plans defining an envisioned future bicycle system. The total investment in active transportation infrastructure provides for over 800 miles of new Class I, II, or III bicycle lanes throughout San Joaquin County. The total revenues made available to support active transportation and complete streets represent a 13.5 percent increase over the 2014 Plan. This includes education, encouragement, and enforcement programs in support of walking and bicycling as well as planning and transit integration projects.

Local Transportation Systems

The following provides a discussion of the existing transportation services in the cities in San Joaquin County. This includes major roadways, highways, rail service, public transit, and bikeways.

Escalon

Escalon, located toward the southeastern edge of the County, is centered at the intersection of SR-120, which runs east-west, and Escalon-Bellota Road/McHenry Avenue, which runs north-south. Passing through the City in a northwest-southeast direction is the BNSF railroad, which carries both freight and Amtrak passenger trains; these trains do not make regularly scheduled stops in the City.

SR-120 and Escalon-Bellota/McHenry serve as Escalon's main arterials. Escalon is primarily a city with rural character. The City operates eTrans flexible fixed-route and demand responsive services. This service also meets the Modesto Area Express (MAX) and Stanislaus Regional Transit (StaRT) services three times per day. A park-n-ride lot is located in Escalon as part of SJRTD's San Joaquin Commuter service to Livermore Labs and for SJRTD's Hopper deviated fixed route service that goes to Manteca, Lathrop, and French Camp.

Lathrop

Lathrop is located at a regional crossroads of freeway, rail, air, and local street systems in the south central section of San Joaquin County. Passing through or near the City are I-5 and I-205, SR-120 and SR-99, as well as transcontinental lines for both the Southern Pacific and Union Pacific Railroads. All intersections of railroads and public roads in Lathrop are protected by automatic signals.

Urban development in the City lies primarily between I-5 and the Union Pacific Railroads which traverse the City in a north-south direction, but which curve toward the west in an area south of the City. Current east-west arterials include Roth Road, Lathrop Road, and Louise Avenue. Major north-south arterials are Harlan Road (along I-5) and Seventh Street (between Lathrop Road and Louise Avenue). SJRTD buses provide public transit between the City and surrounding communities. The ACE station on Yosemite Avenue provides access to three roundtrip commuter trains to destinations in Silicon Valley.

Lodi

The dominant transportation feature in Lodi is SR-99, which passes through the City's eastern boundary, northward to Sacramento and southward to Stockton (and the rest of the County). Intersecting with SR-99 is SR-12/Kettleman Lane, a major east-west road providing access to

Fairfield in the west, and to eastern San Joaquin County and the Sierra Nevada Mountains in the east. Two rail services operate lines which pass through Lodi, though these do not serve the City directly. Southern Pacific Railroad (SPRR) Company operates a north-south line west of SR-99, as well as two lines which intersect the north-south line at Lockeford and Sacramento Streets. The Central California Traction Company also operates a north-south line along the City's eastern edge that connects with SPRR's north-south line, via a branch along Lodi Avenue.

Lodi's street system follows a grid pattern with major north-south arterials that include Lower Sacramento Road, Ham Lane, Hutchins Street, Church Street, Stockton Street, Central Avenue, and Cherokee Lane. East-west arterials include Turner Road, Lockeford Street, Elm Street, Pine Street, Lodi Avenue, Kettleman Lane (SR-12), and Harney Lane. Public transit is provided through Lodi's Grapeline Fixed Route and Dial-A-Ride service. The bus service is available to the general public and serves Lodi and outlying areas with five routes. Additional service is provided by SJRTD's Intercity Route 23. The SJRTD Hopper route 93 also provides serviced from Lodi to Stockton. The SJRTD Interregional Commuter Services and Greyhound Bus Lines connect Lodi with Sacramento and other areas in and around the County.

Manteca

SR-99, which curves along the City's eastern border, and SR-120, dominates Manteca's circulation system. SR-120 provides access to nearby I-5, approximately 4 miles to the west. Within the Manteca planning area, SR-99 has interchanges at SR-120, East Yosemite Avenue, Lathrop Road, and French Camp Road. Between I-5 and SR-99, SR-120 has interchanges at Airport Way and Manteca Road. Major north-south arterials in the Manteca planning area are Airport Way, Union Road, Manteca Road, Austin Road, and Jack Tone Road. Major east-west arterials include Lathrop Road and Louise Avenue (which also serve as arterials in the City of Lathrop), as well as West Yosemite Avenue, Woodward Avenue, and West Ripon Road.

Manteca Transit began intra-city operations on November 1, 2006. The current fleet consists of five cutaway buses, and includes two fixed routes and Dial-A-Ride services. Within the City of Manteca, SJRTD intercity route 91 and Hopper route 27 connects Manteca with Ripon and Stockton.

Two rail lines run through Manteca. The SPRR line runs diagonally from northwest to southeast, and the Tidewater Southern line parallels the SPRR line through town, but then connects with the main Union Pacific line at French Camp in the north. The passing of trains on these tracks often lead to the obstruction of vehicular traffic on major roads in the City. The City is also served by the ACE commuter rail system with a station just across the border from Manteca on Yosemite Avenue in Lathrop.

Ripon

SR-99 and the SPRR, which pass through the center of town diagonally from northwest to southeast, bisect Ripon's circulation system. Partial interchanges exist at Second Street and Wilma Avenue. Northwest of the City, at the Jack Tone Road overpass, there is a complete interchange, providing access to both the northbound and southbound directions of SR-99. There is a mainline railroad crossing at Jack Tone Road, and one spur track crosses a City street in the industrial area.

The Stanislaus River defines the City's southern edge and the only access across the river in or near the City is via the SR-99 bridge. In addition to SR-99, access to Ripon from the west is provided by West Main Street (West Ripon Road), from the east by Milgeo Avenue, and from the north by Stockton Avenue (North Ripon Road) and Manley Road. Jack Tone Road, north of West Main Street,

is an arterial roadway. Other portions of Jack Tone Road, Main Street, Second Street, and Stockton Avenue serve as minor arterials.

The City of Ripon does not operate a City bus service, but does operate a City van driven by volunteers for local, special, or regional trips (dial-a-ride). However, SJRTD Hopper route 91 connects Manteca and Ripon to Stockton.

Stockton

Stockton's circulation system is the most extensive in the County with the Central Valley's two main north-south routes, I-5 and SR-99, passing through Stockton. In addition, SR-4, SR-26, and SR-88 also pass through the City in an east-west direction. SR-4, known as Charter Way, is Stockton's major east-west link between I-5 and SR-99. Other major east-west arterials in Stockton include Eight Mile Road, Hammer Lane, Benjamin Holt Drive, March Lane, Harding Way, and Oak Street. Major north-south arterials include Thornton Road, Pershing Avenue, El Dorado/Center Street, West Lane, and Airport Way.

Several major railroads converge in Stockton, including the BNSF, Southern Pacific, and Union Pacific Railroads, as well as four local rail companies. Stockton is also served by Amtrak rail passenger trains on a line between Oakland and Bakersfield, and by ACE, which provides service from Stockton to San Jose three times daily.

Public transportation in Stockton is provided by SJRTD, which serves the City and the surrounding unincorporated areas. SJRTD provides 40 fixed bus routes and a dial-a-ride demand response service. The fixed-route service provides connections throughout Stockton and San Joaquin County including links to major employers, colleges, hospitals, and downtown Stockton. SJRTD also provides dial-a-ride service for the elderly and handicapped. The recently completed SJRTD Downtown Transit Center marked the establishment of the Metro Express Service, a form of Bus Rapid Transit (BRT) that operates along the Pacific Avenue Corridor.

Tracy

Tracy is located within a triangle made by three interstate highways: I-205 on the north, I-5 on the east, and I-580 from the west to the southeast. Interstates 205 and 580 merge just west of the Alameda/San Joaquin County line, and comprise a major east-west corridor to the Bay Area. Access to Tracy from I-580 is provided at Corral Hollow Road, Patterson Pass Road, and Chrisman Road. Access to the City from I-205 is provided at Patterson Pass Road, Eleventh Street, Grant Line Road, Tracy Boulevard, and MacArthur Drive. Major north-south arterials in the Tracy planning area include Corral Hollow Road, Tracy Boulevard, and MacArthur Drive. East-west arterials include Grant Line Road and Eleventh Street.

Southern Pacific operates two rail lines which cross in an "X" formation at MacArthur Drive, just south of Eleventh Street. Union Pacific operates a third line that runs parallel to Linne Road, south of Tracy. This line then bends up toward the northeast intersecting with the northwest-southeast SPRR line at the Tracy Army Defense Depot.

Public transit is provided through Tracy's Tracer Fixed Route and Paratransit service. The bus service is available to the general public and services Tracy with two routes. SJRTD Hopper route 90 services the city with connection between Stockton, Lathrop, and Tracy. SJRTD intercity route 26 provides service connecting the cities of Lathrop, Ripon, Stockton, Tracy, and Manteca.

Additional intercity and regional service is provided by SJRTD's General Public Dial-A-Ride, Elderly and Handicapped Dial-A-Ride, the San Joaquin Commuter inter-regional bus service, Greyhound Bus Lines, and Amtrak. Commuter rail transportation to San Jose and the rest of Silicon Valley as well as Lathrop, Manteca, and Stockton is provided by ACE. From the station on Tracy Boulevard, ACE provides service of three roundtrips daily

c. Regulatory Setting

Federal

National Environmental Policy Act

The National Environmental Policy Act (NEPA) is implemented by regulations included in the Code of Federal Regulations (40 CFR § 1500 et seq.), which require careful consideration of the harmful effects of federal actions or plans, including projects that receive federal funds, if they may have a significant adverse effect on the environment. NEPA mandates that all federal agencies carry out their regulations, policies, and programs in accordance with NEPA's policies of environmental protection. NEPA encourages the protection of all aspects of the environment and requires federal agencies to utilize a systematic, interdisciplinary approach to agency decision-making that will ensure the integrated use of natural sciences such as geology. While NEPA compliance is not required for the project, NEPA compliance will be required for transportation improvement projects that will be financed using federal funds. Some development projects (such as low-income housing) also use federal funds and are subject to NEPA. The regulations also require projects requiring NEPA review to seek to avoid or minimize adverse effects of proposed actions, and restore and enhance environmental quality as much as possible.

Fixing America's Surface Transportation Act

Fixing America's Surface Transportation (FAST) Act was signed into law in December 2015 (Public Law 114-94) and builds on the changes in federal legislation governing transportation policy and funding since 1991 (ISTEA, NEXTEA, SAFETEA-LU and MAP-21). 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 AMBAG, 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 (California Transportation Commission, 2010)

Transportation Security Administration

The Transportation Security Administration (TSA) is a component of the DHS and is responsible for security of the nation's transportation systems. With state, local, and regional partners, the TSA oversees security for highways, railroads, buses, mass transit systems, and ports. A vast majority of its resources are dedicated to aviation security and especially screening passengers and baggage.

State

California Environmental Quality Act

The California Environmental Quality Act (CEQA) defines a significant impact on the environment as a substantial, or potentially substantial, adverse change in the physical conditions within the area affected by the project. Land use is a required impact assessment category under CEQA. CEQA documents generally evaluate land use in terms of compatibility with the existing land uses and consistency with local general plans and other local land use controls (zoning, specific plans, etc.).

California Transportation Commission Regional Transportation Plan Guidelines

Under Government Code Section 14522, the CTC is authorized to prepare guidelines to assist in the preparation of RTPs. The CTC's RTP guidelines suggest that projections used in the development of an RTP should be based upon available data (such as from the Bureau of the Census), use acceptable forecasting methodologies, and be consistent with the Department of Finance baseline projections for the region. The guidelines further state that the RTP should identify and discuss any differences between the agency projections and those of the Department of Finance.

The most recent update to the RTP guidelines was published in 2017, and includes new provisions for complying with Senate Bill 375 (see below), as well as new guidelines for regional travel demand

modeling. The regional travel demand model guidelines are “scaled” to different sizes of metropolitan planning organizations (MPOs). SJCOG is included in the “D” grouping of the MPOs that have populations of between 500,000 and 1 million. The guidelines for regional travel demand modeling for the “D” group, and include (among many other things) detailed guidelines and standards for validation and sensitivity testing of the model.

Senate Bill 375

Sen. Bill No. 375 (Stats. 2008, ch. 728) (SB 375) requires MPOs to prepare a Sustainable Communities Strategy (SCS) that demonstrates how the region will meet its greenhouse gas (GHG) reduction targets through integrated land use, housing and transportation planning. Specifically, the SCS must identify a transportation network that is integrated with the forecasted development pattern for the plan area and will reduce GHG emissions from automobiles and light trucks in accordance with targets set by the California Air Resources Board. The targets for SJCOG (along with other San Joaquin Valley MPOs) are a 5 percent reduction in per capita GHG emissions by 2020, and a 10 percent reduction by 2035, in both cases compared with 2005 levels.

Senate Bill 743

SB 743 changes 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 also 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.

Furthermore, under the bill parking impacts are no longer considered significant impacts on the environment for select development projects within infill areas with nearby frequent transit service.

In August 2014, the Governor’s Office of Planning and Research circulated its draft changes to the State CEQA Guidelines implementing SB 743 for public comment. Revised draft guidelines were released on January 20, 2016. In addition to new exemptions for projects that are consistent with specific plans, the draft SB 743 guidelines replace congestion based metrics, such as auto delay and level of service, with Vehicle Miles Traveled as the basis for determining significant impacts, unless the guidelines provide specific exceptions. Following any revisions the Governor’s Office of Planning and Research deems appropriate, it will submit the draft guidelines to the Natural Resources Agency for commencement of a formal rulemaking process.

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.

California Department of Transportation (Caltrans)

Caltrans, in conjunction with the California Highway Patrol (CHP), develops, maintains, and operates the State Highway System within San Joaquin County. San Joaquin lies within District 6, which is headquartered in Fresno.

California Congestion Management Program

The Congestion Management Program (CMP) is the State mandated program (Government Code 65089) aimed at reducing congestion on highways and roads in California. The CMP establishes a designated roadway network of regional significance, roadway service standards, multi-modal performance standards and a land use analysis element to identify and mitigate multijurisdictional transportation impacts resulting from local land use decisions. Federal, State and local transportation funding is contingent upon local agency compliance with the CMP. SJCOG is the designated Congestion Management Agency for San Joaquin County.

Local

2014 Regional Transportation Plan

The 2014 Regional Transportation Plan (2014 RTP) was the most recent regional transportation plan adopted by SJCOG. As a foundation for this RTP, many of the policies and strategies from the 2014 RTP remain relevant and have been carried forward. RTP/SCS changes to the policies and strategies in the 2014 RTP were primarily made to ensure consistency of the 2018 RTP/SCS with SB 375 and to delete strategies that were completed since the 2014 RTP/SCS. Upon approval, the 2018 RTP/SCS will supersede all of the policies and strategies in the 2014 RTP. Therefore, the specific policies and strategies contained in the 2014 RTP are not included in this analysis.

Local Agency General Plans

State law requires cities and counties to adopt general plans, which must incorporate a transportation element. A general plan's transportation element describes the acceptable operating standards, levels of service, roadway classifications, and transportation related goals and policies of the city or county. Transportation elements also typically address public transit, bicycle, and pedestrian facilities; by law, the transportation element must be compatible with the General Plan land element and must not conflict with any plan element. The performance measures used for evaluation of the RTP in this document are intended to supplement local standards by focusing explicitly on regional system performance.

San Joaquin County Traffic Impact Mitigation Fee

The Traffic Impact Mitigation Fee (TIMF) is collected to finance transportation facilities needed to accommodate new or expanded development within the unincorporated areas of San Joaquin County. In January 1989, the Board of Supervisors adopted Ordinance 3452 establishing an infrastructure-financing program for the County TIMF. The Board of Supervisors has adopted changes to the TIF program by adopting resolutions.

4.14.2 Impact Analysis

a. Methodology and Significance Thresholds

Significance Thresholds

For the purposes of this Program EIR, SJCOG has determined that adoption and/or implementation of the 2018 RTP/SCS would result in significant impacts to the transportation system, if any of the following would occur:

1. Conflict with the following measures of effectiveness for the performance of the circulation system:
 - a. Total daily hours of vehicle delay;
 - b. Total peak period Congested Vehicle Miles Travelled (CVMT);
 - c. Increase in active transportation trips
 - d. Increase in transit trips
 - e. Any increase in performance indicators a. and b. compared to future baseline without the project conditions would be considered a significant impact. Any decrease in performance measures c. and d. compared to existing future baseline without the project would be considered a significant impact.
2. Conflict with an applicable congestion management program, including, but not limited to, level of service standards and travel demand measures, or other standards established by the County congestion management agency for designated roads or highways.
3. Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks.
4. Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment).
5. Result in inadequate emergency access.
6. Conflict with adopted policies, plans, or programs regarding public transit, bicycle or pedestrian facilities, or otherwise decrease the performance or safety of such facilities.

Methodology

Regional conditions for a number of key performance indicators form the basis for the transportation impacts analysis presented in this Program EIR. These indicators include VMT, roadway congestion (as measured by Level of Service [LOS]), vehicle hours of congestion, shares of transit and non-motorized trips, transit productivity, and miles of bicycle and pedestrian routes. These indicators have been important performance measures throughout the development of the RTP and the associated SCS, and all relate directly to the performance of the region's transportation system.

One "VMT" is one vehicle traveling on a roadway for one mile. Regardless of how many people are traveling in the vehicle, each vehicle traveling on a roadway within the region produces VMT.

For the purposes of the Program EIR, VMT is estimated and projected for a typical weekday. VMT has been a primary indicator of travel for policy-makers and transportation professionals for decades. Several features collectively make VMT a key performance measure

- First, it is relatively easy to calculate by counting traffic on roadways at different locations. It is one of the few measures of transportation performance consistently and comprehensively estimated and documented in the region.
- Second, VMT bears a strong and direct relationship to vehicle emissions, although the relationship is becoming more complex moving into the future. Electric and hybrid vehicles, along with state and federal policies pertaining to vehicle fuel efficiency and the formulation of vehicle fuels suggest that on a per VMT basis, emissions for most pollutants will decline relative to today. However, even if emissions per VMT improve, lower VMT will still mean lower emissions.
- Third, VMT can be influenced by policy in a number of different ways. By providing more attractive alternatives to driving alone, VMT can be reduced by shifting from vehicle to non-vehicle modes (i.e., from a car trip to a bike or walk trip), or from single-occupancy vehicle (SOV) trips to higher- occupancy vehicle (HOV) trips such as formal or informal carpooling or transit trip). VMT can be influenced by land use patterns as well. A better mix of residential, employment, education, and service uses in an area can allow people to accomplish their daily activities with less driving, and consequently, less VMT. Policies that aim to charge drivers user fees to cover the cost of services they use (such as parking) rather than have taxpayers and other third parties bear these costs also reduced VMT.
- Fourth, VMT correlates with travel time. The more miles driven, the more vehicles on the roadways at any given time and higher numbers of vehicles eventually result in longer travel times.

Transportation data was supplied by SJCOG based on forecasts developed using the Tri-County Valley Model Improvement Program (VMIP2) travel demand model (SJCOG Model). This three-county model (Merced, Stanislaus and San Joaquin Counties) characterizing the transportation environment was developed in accordance with and validated to state/federal standards including the 2017 California Transportation Commission RTP Guidelines.

Model inputs are listed below.

- Socioeconomic Data by Traffic Analysis Zone
- Roadway Network Characteristics by Functional Classification of Roadway
- Land Use and Accessibility for Auto Ownership Model
- Land Use, parking, Travel Demand Model (TDM), Walk and Bike for Mode Choice Model
- Transit Networks
- External Trips (inter-regional trips)

The model includes modules that incorporate household characteristics (size, number of workers, income, single-family or multi-family unit); auto ownership; trip generation; trip distribution; mode choice (e.g., single-occupant vehicle, multi-occupant vehicle, transit and active modes (walking and cycling); and traffic assignment to the transportation network. The RTP/SCS foundation is comprised of recent household and job growth forecasts, market demand and economic studies, and transportation studies including SJCOG's Smart Growth Transit Oriented Development Plan, Goods Movement Study, and Regional Bike/Pedestrian Master Plan.

b. Project Impacts and Mitigation Measures

This section describes generalized impacts associated with some of the projects anticipated in the 2018 RTP/SCS. Due to the programmatic nature of the 2018 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 2018 RTP/SCS could result in transportation related impacts.

Threshold 1: Result in a substantial increase in VMT or Vehicle Hours of Delay (VHD) compared to future baseline without the project

Impact T-1 DAILY HOURS OF VEHICLE DELAY AND TOTAL PEAK PERIOD CONGESTED VMT IN THE SJCOG REGION WOULD INCREASE BETWEEN FUTURE BASELINE 2015 CONDITIONS AND 2042 CONDITIONS WITH IMPLEMENTATION OF THE 2018 RTP/SCS. IMPACTS WOULD BE SIGNIFICANT AND UNAVOIDABLE.

The 2018 RTP/SCS includes a series of individual improvement projects and programs (street and highway, transit, bicycle and trail, pedestrian and other projects) to help expand and enhance San Joaquin's multi-modal transportation system. Table 42 provides expenditures in the 2018 RTP/SCS compared to the 2014 RTP/SCS.

Table 42 Summary of RTP Investments

Project Category	2018 RTP/SCS Expenditure (in millions)	2014 RTP/SCS Expenditure (in millions)	Percent Change
Roadway Operations, Maintenance, and Safety	\$4,448	\$3,875	14.8%
Transit	\$3,572	\$3,520	1.5%
Roadway Capacity (mainline, interchanges, regional roadways)	\$3,121	\$3,273	-4.6%
Active Transportation	\$320	\$282	13.5%
Total	\$11,461	\$10,950	4.7%

Source: SJCOG 2014 RTP

Table 43 shows changes in vehicle activity and system performance characteristics between 2015 and the horizon year of the plan (2042).

Table 43 Vehicle Activity and System Performance

Indicators & Measures	2015 Existing	2042 Plan	2015–2042 Percentage Change with Plan	2042 No Project	2042 Plan vs. No Project % Change
Total Population	726,060	1,050,218	44.65%	1,050,218	0.0%
Total VMT per Weekday (Miles, in Thousands)	17,991,590	23,273,168	29.36%	22,892,656	+1.66%
Congested Lane Miles (Level of Service E and F)	340	611	79.7%	732	-19.80%
Vehicle Hours of Delay	922,252	961,642	4.27%	1,170,789	-21.75%
Other Indicators (Modeled Outcomes)					
Public Transit (Daily Boardings)	22,350	30,277	35.47%	26,263	+15.28%
Bike+Walk (Non-Motorized)	149,103	219,716	47.36%	208,484	+5.39%
Single Occupancy Vehicle (SOV)	943,606	1,241,033	31.52%	1,243,783	-0.22%
High Occupancy Vehicles (HOV) 2+ per vehicle	1,305,270	1,769,721	35.58%	1,730,352	+2.28
Per Capita Vehicle Miles Traveled (VMT) (All Trips)	24.78	22.16	11.82%	21.8	+1.65%
Source: SJCOG, 2018; Caltrans Highway Performance Monitoring System (HPMS) for 2015 Existing VMT, California Public Road Data 2015					

As shown in Table 43, implementation of the 2018 RTP in 2042 would not reduce VMT and levels of congestion relative to existing (2015) conditions. Overall VMT levels would rise by about one-half in 2042, reflecting San Joaquin’s substantial population gains during the 25-year period. However, this increase in absolute VMT would result in only a 4% increase in the number of hours motorists would experience congested conditions (defined by SJCOG’s RCMP Levels of Service (LOS) grades E and F.). Conversely, the number of congested lane miles measure would increase by more than 80 percent under the 2018 RTP/SCS compared to 2015 conditions.

Between 2015 and 2042 public transit boardings are projected to increase by more than one third, even though transit as a total share would remain constant to baseline conditions. The number of trips by bicycle and walking would increase by nearly 50% over baseline conditions increasing the total share of bike and walk trips from 4.87% in 2015 to 5.37% by 2042. Although the number of trips by single occupancy vehicles would increase by one-third between 2015 and 2042, the share of trips by single-occupancy vehicles is projected to decline by nearly a full percentage point. The percentage growth in high-occupancy vehicle (HOV) mode share would exceed the growth in single occupancy vehicle trips resulting in a HOV mode share of 59% - exceeding the 2015 baseline share of 58%. VMT per capita between 2015 and 2042 is projected to decrease by approximately 12 percent.

Thus, impacts on San Joaquin’s overall circulation system resulting from implementation of the proposed 2018 RTP/SCS are considered potentially significant. Measures intended to reduce vehicle travel and improve LOS are part of the 2018 RTP/SCS. These include increasing transit use ridesharing and other measures to reduce demand on the transportation system; investments in non-motorized transportation; seeking to optimize land use/transportation connection; other travel demand measures described in in local agency General Plans; and key roadway investments targeted to reduce congestion levels and improve LOS. Even with the inclusion of these projects and measures, transportation impacts under T-1 would be potentially significant.

Mitigation Measures

For transportation projects under their jurisdiction, SJCOG shall implement, and transportation project sponsor agencies can and should implement, the following mitigation measures. These mitigation measures have been developed for the 2018 RTP/SCS program where applicable for all transportation projects. Cities in the SJCOG region can and should implement these measures, where relevant to land use projects implementing the 2018 RTP/SCS.

T-1(a) Reduced Vehicle Travel

In addition to the current Tier 1 RTP projects, SJCOG shall continue to explore potential measures to reduce vehicular travel. Such measures can include, but are not limited to land-use strategies to reduce VMT, car-sharing programs, additional car and vanpool programs, and additional bicycle programs.

T-1(b) Evaluation of VMT

Implementing and local agencies shall evaluate VMT as part of project specific review and identify and implement measures that reduce VMT including mixed use land uses and inclusion of alternative and active transportation facilities (bike racks, transit stops, and pedestrian amenities).

Significance After Mitigation

If implementing agencies adopt Mitigation Measure T-1, impacts would be reduced although it is not anticipated impacts would be reduced to less than significant. Even with implementation of Mitigation Measures T-1(a) and T-1(b), substantial increases in VMT and congested lane miles would remain. Because this document evaluates impacts at the programmatic level, all project circumstances are not foreseeable. As appropriate, SJCOG will encourage implementing agencies to adopt measure T-1(a) and (b) through its Intergovernmental Review process. However, SJCOG cannot require the implementing agency to adopt these mitigation measures because such agencies are ultimately responsible to determine and adopt mitigation. Therefore, this impact remains significant and unavoidable.

Threshold 2: Conflict with an applicable congestion management program, including, but not limited to, level of service standards and travel demand measures, or other standards established by the County congestion management agency on designated roads or highways

Impact T-2 IMPLEMENTATION OF THE TRANSPORTATION IMPROVEMENT PROJECTS AND THE LAND USE SCENARIO ENVISIONED BY THE 2018 RTP/SCS COULD CONFLICT WITH APPLICABLE CONGESTION MANAGEMENT PLAN PROGRAMS BY DECREASING THE LEVELS OF SERVICE OF ROADWAY OPERATIONS IN THE SJCOG PLANNING AREA. IMPACTS WOULD BE SIGNIFICANT AND UNAVOIDABLE.

The analysis of roadway operations takes the existing and forecasted traffic volumes on the study roadway segments and compares it to established level of service volume thresholds established in SJCOG's Regional Congestion Management Program (RCMP). RCMP roadways consist of the entire state highway system and selected local roadways of regional significance. LOS criteria takes into account variables such as traffic volumes, roadway capacity, and other considerations as appropriate. The RCMP establishes an LOS D standard for RCMP designated roadways. Facilities that exceed the LOS D threshold by operating at LOS E or F are considered deficient. LOS D numbers are

provided in Table 44 to show the percentage of lane miles nearing significance levels. Local agencies throughout San Joaquin County apply their own LOS standards for roadways in their jurisdictions.

Table 44 Congested Lane Miles Summary

LOS	Existing (2015)		Year 2042 No Project		Year 2042 Plan	
	Lane Miles	Percent	Lane Miles	Percent	Lane Miles	Percent
C or better	18,958	96.74%	18,492	92.77%	20,459	94.19%
D	298	1.52%	710	3.56%	651	3.00%
Deficient E - F	340	1.74%	732	3.67%	611	2.81%
Total	19,596	100.00%	19,934	100.00%	21,721	100.00%

Source: SJCOG, 2018

Table 44 provides a summary of roadway lane- miles within San Joaquin County that are estimated to operate at different levels of service in the various scenarios evaluated during peak hours. As shown, the proportion of deficient roadway lane-miles (i.e., operating at LOS E or F) is anticipated to increase, from about 1.74 percent under current conditions to 2.81 percent under future conditions with implementation of the 2018 RTP/SCS. This result reflects the overall increase in vehicular travel and delay discussed above. Compared to the No Project Alternative, the 2018 RTP/SCS would result in 20% less congested lane miles.

Impacts on the region's roadway operations resulting from implementation of the proposed 2018 RTP/SCS are considered potentially significant . Measures intended to reduce vehicle travel and improve LOS are part of the 2018 RTP/SCS. These include increasing transit use ridesharing and other measures to reduce demand on the transportation system; investments in non-motorized transportation; seeking to optimize land use/transportation connection; other travel demand measures described in in local agency General Plans; and key roadway investments targeted to reduce congestion levels and improve LOS. Even with the inclusion of these projects and measures, transportation impacts under T-2 would be potentially significant.

Mitigation Measures

SJCOG shall implement the following mitigation measures. These mitigation measures have been developed for the 2018 RTP/SCS program where applicable for all transportation projects.

T-2 LOS Deficient Roadways - Reduced Congestion and Alternatives

SJCOG shall inform jurisdictions with projected LOS E and F roadway segments under the Plan of the potential need to develop a Deficiency Plan under the San Joaquin Regional Congestion Management Program at some point before 2042. SJCOG shall work with these agencies to identify and encourage changes that would increase use of alternative transportation and other means to reduce congestion.

Significance After Mitigation

Even with implementation of Mitigation Measure T-2, it is anticipated that LOS E and F deficiencies would occur. Therefore, this impact remains significant and unavoidable..

Threshold 3: Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersection)

Impact T-3 IMPLEMENTATION OF THE TRANSPORTATION IMPROVEMENT PROJECTS AND THE LAND USE SCENARIO ENVISIONED BY THE 2018 RTP/SCS COULD GENERATE NEW DESIGN FEATURE HAZARDS IN THE SJCOG PLANNING AREA. IMPACTS WOULD BE SIGNIFICANT BUT MITIGABLE.

While the 2018 RTP/SCS would not in itself result in increased hazards due to design feature (e.g., sharp curves or dangerous intersections) or increase conflicts between incompatible uses (e.g., farm equipment and other vehicular traffic), traffic hazards could result from the design of the individual projects envisioned by the Plan. Moreover, development in urban areas would increase the number of residents in the region proximate to transit and in areas with good opportunities for walking and biking, making it imperative that facilities designed for these non-automobile modes are designed to enhance the safety of transit riders, bicyclists and pedestrians.

Impacts from design features or incompatible uses due to projects included in the proposed 2018 RTP/SCS would be potentially significant.

Mitigation Measures

For transportation projects under their jurisdiction, SJCOG shall implement, and transportation project sponsor agencies can and should implement, the following mitigation measures. This mitigation measure has been developed for the 2018 RTP/SCS program where applicable for all transportation projects. Cities in the SJCOG region can and should implement these measures, where relevant to land use projects implementing the 2018 RTP/SCS.

T-3: Safety Measures

Implementing and local agencies shall make safety a prime objective in the design of RTP projects, and shall plan to avoid, remedy, or mitigate such impacts in the course of project-level development and environmental review, including when incorporating active transportation and transit features into roadway projects.

Significance After Mitigation

It is anticipated that standard design practices will produce safe projects, even when incorporating active transportation and transit features into roadway projects, and with the incorporation of this impacts would be significant but mitigable.

Threshold 4: Result in inadequate emergency access

Impact T-4 IMPLEMENTATION OF THE TRANSPORTATION IMPROVEMENT PROJECTS AND THE LAND USE SCENARIO ENVISIONED BY THE 2018 RTP/SCS COULD RESULT IN CONGESTION WHICH WOULD RESULT IN EMERGENCY ACCESS CONFLICTS. IMPACTS WOULD BE LESS THAN SIGNIFICANT.

While the 2018 RTP/SCS would generally enhance mobility and access to destinations (including access for emergency vehicles) as compared to the future baseline, by 2042 congestion would increase which could adversely impact emergency access. Before 2018 RTP/SCS projects are implemented by local jurisdictions, all projects as applicable would undergo further environmental and technical analysis that would include evaluation of impacts by emergency and public services.

The implementing and local agencies would use these subsequent analyses to ensure adequate access for emergency and public safety vehicles in the design of individual RTP projects. Emergency vehicles are required to be given right of way during emergencies (lights and sirens), which would continue to be true in the future, allowing emergency vehicles to avoid some congestion.

Existing regulations provide that any work within existing Caltrans rights of way would have to comply with Caltrans permitting requirements. This includes a traffic control plan that adheres to the standards set forth in the California Manual of Uniform Traffic Control Devices (MUTCD) (Caltrans 2014).¹⁴ 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. Local and transit agency requirements also provide for construction work during off-peak hours, flaggers, detours, and requiring at least two points of ingress/egress to residential developments for emergency access. For these reasons, impacts associated with inadequate emergency access would be less than significant.

Mitigation Measure

No mitigation required.

Significance After Mitigation

Impacts would be less with significant without mitigation.

Threshold 5: Conflict with adopted policies, plans, or programs regarding public transit, bicycle or pedestrian facilities, or otherwise decrease the performance or safety of such facilities

Impact T-5 IMPLEMENTATION OF THE TRANSPORTATION IMPROVEMENT PROJECTS AND THE LAND USE SCENARIO ENVISIONED BY THE 2018 RTP/SCS WOULD PROVIDE FOR TRANSIT AND ACTIVE TRANSPORTATION PROJECTS IN THE SJCOG PLANNING AREA TO IMPROVE PERFORMANCE AND SAFETY OF SUCH FACILITIES. IMPACTS WOULD BE LESS THAN SIGNIFICANT.

The 2018 RTP/SCS includes a series of individual improvement projects and programs (including a substantial number of public transit, bicycle and trail, and pedestrian projects) to enhance the region's multi-modal transportation system. The transportation improvement projects listed in the 2018 RTP/SCS envisions over 800 additional Class I, II, and III bike lane miles and provides for intercity and interregional bus and rail transit investments that increase travel interaction between the region and the Bay Area, as well as the Sacramento area and San Joaquin Valley communities. These RTP projects are consistent with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities. The lead agency would use subsequent analyses to ensure adequate access for transit and active mode users in the design of projects entailed by the 2018 RTP/SCS.

While the Plan would generally enhance mobility for transit and active modes, it also contains roadway projects that have the potential to create conflicts between motorists and transit riders, pedestrians and cyclists. But as discussed under Impact T-4, standard practices in the development and environmental review of transportation projects, performance and safety factors of the project,

¹⁴ Caltrans Manual on Uniform Traffic Control Devices available online at http://www.dot.ca.gov/hq/traffops/engineering/mutcd/ca_mutcd2014rev1.htm.

including active transportation features, are part of standard procedures and Best Management Practices. Potential impacts resulting from Impact T-5 would be less than significant.

Mitigation Measure

No mitigation required.

Significance After Mitigation

Impacts would be less with significant without mitigation.

c. Cumulative Impacts

The 2018 RTP/SCS is a cumulative plan by design that integrates transportation investments with land use strategies for San Joaquin County that shares, or is connected by, common economic, social and environmental characteristics with its surrounding counties. As such, the analysis of transportation and traffic impacts presented above is a cumulative analysis compliant with the requirements of CEQA. However, the following cumulative impact analysis discussion has been prepared to evaluate whether the 2018 RTP /SCS would contribute additional traffic delays, congestion, or other such transportation impacts to areas beyond the SJCOG region. Movement within, through, and beyond the SJCOG region is necessary for commuters, personal travel and goods movement. Thus, this cumulative analysis focuses on the potential impacts on the transportation network within the adjoining counties to SJCOG; Contra Costa County to the west, Sacramento to the north, Amador and Calaveras Counties to the east, and Stanislaus County to the south.

Implementation of the 2018 RTP/SCS would result in an increase in density and land use development over the next 25 years. The No Project Alternative is expected to accommodate the same increase in total population as the proposed Plan. Under the No Project Alternative land use changes could affect jurisdictions outside the region, by setting a precedent for and/or urbanization; such impacts would be cumulatively considerable. The 2018 RTP/SCS would decrease congestion potentially making it easier for people to live and work outside the region, thereby inducing land uses changes and increasing congestion outside the region, these impacts also could be cumulatively considerable.

While the majority of the VMT would be expected to remain within the SJCOG region, some portion of the VMT would inevitably extend to areas within adjoining counties. The most reasonable assumption is that VMT to adjoining counties would be concentrated to the most heavily travelled roadways in the counties with the highest relative employment, Interstates 5 and 205, and SR 99. The increased VMT in adjoining areas would contribute to traffic delays and congestion given that increases would be on major commuter routes and heavily travelled roadways in the adjoining counties, and that these counties are also expected to experience increased population growth into the future. Thus, cumulative impacts on traffic operations would be significant and the 2018 RTP/SCS contribution to congestion and traffic in adjoining areas would be cumulatively considerable.

4.15 Tribal Cultural Resources

This section evaluates potential effects on tribal cultural resources related to implementation of the 2018 RTP/SCS.

4.15.1 Setting

The prehistoric populations of San Joaquin County included the Miwok in the north and Northern Valley Yokuts in the south.

Miwok populations focused their settlements alongside the waterways of the Sierra Nevada north from the Cosumnes River south to the Calaveras River and in California's central valley as far west as Mount Diablo. Miwok villages were the primary political unit and consisted of as many as two dozen to several hundred individuals. Miwok subsistence relied upon hunting, fishing, and the gathering of acorns (Levy 1978).

Northern Valley Yokuts populations were concentrated along waterways in the San Joaquin River. Settlements were typically composed of single-family dwellings, sweathouses, and ceremonial structures. Subsistence revolved around water resources in the San Joaquin Valley, with a focus on salmon and acorns (Wallace 1978).

a. Regulatory Setting

Assembly Bill 52

California Assembly Bill 52 of 2014 (AB 52) was enacted on July 1, 2015 and expands 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" (PRC Section 21084.2). It further states that the lead agency shall establish measures to avoid impacts that would alter the significant characteristics of a tribal cultural resource, when feasible (PRC Section 21084.3). PRC Section 21074 (a)(1)(A) and (B) defines tribal cultural resources:

1. "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: 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
2. A cultural 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.

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. 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 within the jurisdiction of the lead agency.

Senate Bill 18

California Government Code §65352.3 (adopted pursuant to the requirements of SB 18) requires local governments to contact, refer plans to, and consult with tribal organizations prior to making a decision to adopt or amend a general or specific plan. The tribal organizations eligible to consult have traditional lands in a local government's jurisdiction, and are identified, upon request, by the Native American Heritage Commission (NAHC). As noted in the California Office of Planning and Research's Tribal Consultation Guidelines (2005), "The intent of SB 18 is to provide California Native American tribes an opportunity to participate in local land use decisions at an early planning stage, for the purpose of protecting, or mitigating impacts to, cultural places."

b. Existing Conditions

SJCOG conducted AB 52 consultation for the 2018 RTP/SCS. This consultation included written communication with the Buena Vista Rancheria Band of Me-Wuk Indians and the Lone Band of Miwok Indians to invite them to participate in the RTP/SCS Working Group. Neither tribe opted to participate.

Written communications between SJCOG and the Buena Vista Rancheria and Lone Band is provided in Appendix E.

4.15.2 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 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

This section describes generalized tribal cultural resources impacts associated with the 2018 RTP/SCS. Due to the programmatic nature of the 2018 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. However, all projects under the 2018 RTP/SCS that are subject to CEQA must comply with AB 52. In general, implementation of proposed transportation improvements and future projects under the land use scenario envisioned by the 2018 RTP/SCS could result in tribal cultural resources 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

IMPACT TCR-1 IMPLEMENTATION OF PROPOSED TRANSPORTATION IMPROVEMENTS AND FUTURE PROJECTS FACILITATED BY THE LAND USE SCENARIO ENVISIONED IN THE 2018 RTP/SCS HAVE THE POTENTIAL TO IMPACT TRIBAL CULTURAL RESOURCES. IMPACTS WOULD BE SIGNIFICANT BUT MITIGABLE.

Potential tribal cultural resources are likely to be present throughout the SJCOG region. Therefore, it is possible to encounter tribal cultural resources during implementation of the transportation improvement projects listed in the 2018 RTP/SCS and the land use scenario envisioned by the 2018 RTP/SCS. Effects on tribal cultural resources are highly dependent on the individual project site conditions and the characteristics of the proposed project. Impacts to tribal cultural resources may include damage or destruction of the resources. Adherence to the requirements of AB 52 would ensure consultation with local California Native Americans on a project-by-project basis and the identification of appropriate project-specific mitigation measures. If AB 52 consultation determines 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 potentially significant.

Mitigation Measures

For transportation projects under their jurisdiction, SJCOG shall implement, and transportation project sponsor agencies can and should implement, the following mitigation measure developed for the 2018 RTP/SCS program where applicable for transportation projects that would substantially impact tribal cultural resources. Municipalities in the SJCOG region can and should implement this measure, where relevant to land use projects implementing the 2018 RTP/SCS.

TCR-1 Tribal Cultural Resources Impact Minimization

If the project sponsor determines that a project may cause a substantial adverse change to a tribal cultural resource, identified through project-specific AB 52 consultation, and measures are not otherwise identified in the consultation process required under PRC Section 21080.3.2, project sponsors shall implement the following measures where feasible and necessary to address site-specific impacts to avoid or minimize the significant adverse impacts:

- Avoidance and preservation of the resources in place, including, but not limited to: planning and construction 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.
 - 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.

Significance After Mitigation

Implementation of Mitigation Measure TCR-1 would reduce potential impacts to tribal cultural resources to a less than significant level.

c. Cumulative Impacts

Tribal cultural resources are regionally specific and determined by the local tribes. However, development in the SJCOG area would increase under buildout of the 2018 RTP/SCS by increasing mobility and growth. The increase in growth in previously undisturbed areas contributes to regional impacts on tribal cultural resources. If a tribe determines that there may be tribal cultural resources at the location of a project site, tribal consultation in accordance with AB 52 would occur to ensure protection of tribal cultural resources. However, tribal territory often crosses the boundaries of multiple jurisdictions within and outside of the SJCOG region, therefore there could be several minor impacts to tribal cultural resources that together would result in a significant cumulative impacts. Therefore, the potential for cumulative impacts related to tribal cultural resources is significant and the 2018 RTP/SCS contribution would be cumulatively considerable. The mitigation measure described earlier in this section would reduce these impacts, but not to less-than-cumulatively-considerable levels.

4.16 Less than Significant Environmental Factors

Section 15128 of the California Environmental Quality Act (CEQA) Guidelines requires an EIR briefly describe any possible effects that were determined not to be significant. The environmental factors discussed below are in response to the checklist questions listed in Appendix G of the CEQA Guidelines that were not discussed in the impact sections of the EIR.

4.16.1 Geology and Soils

The 2018 RTP/SCS does not include projects that would require the use of septic tanks or alternative waste water disposal systems. All projects would be anticipated to connect to existing wastewater infrastructure. The expansion and/or improvement of streets, highways, transit facilities, airports, and related transportation infrastructure is not anticipated to include elements that would require wastewater treatment or otherwise necessitate the development of septic systems. Therefore, impacts related to having soils incapable of adequately supporting the use of septic tanks would be less than significant.

4.16.2 Mineral Resources

The 2018 RTP/SCS primarily involves modifications to existing roadways, including improvements related to intersections, roadways, active transportation and addressing safety. In addition, future infill and TOD would be located within existing urbanized areas. The San Joaquin County General Plan DEIR concluded that there are significant amounts of sand and gravel, located in California Geologic Survey (CGS) designated Mineral Resource Zones (MRZ). Projects included in the 2018 RTP/SCS have the potential to be located on sites with known mineral resources or locally important mineral resources. All projects in the 2018 RTP/SCS would be required to adhere to the relevant policies and programs listed in the San Joaquin County General Plan that pertain to mineral resources. Policy NCR-4.1: Mineral Resource Protection states that the County shall require mineral deposits of significant quantity, value, or quality, as identified and updated by the State Division of Mines and Geology reports as MRZ-2 Mineral Resource Zones, to remain in agricultural or open space uses until the extraction of the resources, unless the immediate area has been committed to other uses. The 2018 RTP/SCS would not change land use designations and would adhere to the requirements of Policy NCR-4.1. In addition, the project would be required to adhere to Policy NCR-4.2, Discretionary Permit to Protect Mineral Resources. This Policy states that the County shall require all new development in areas of significant sand and gravel deposits, as identified by the State Division of Mines and Geology, to obtain a discretionary permit, conditioned to protect the resources. If any projects in the 2018 RTP/SCS are located in areas of significant sand and gravel deposits, they would be required to obtain a discretionary permit that adheres to the outlines of Policy NCR-4.2. Any projects located within a MRZ would be identified during the planning review for project-specific impacts pertaining to mineral resources.

There are no projects included in the 2018 RTP/SCS that would directly result in the extraction, exploration, or digging for mineral resources, and therefore would not result in the loss of availability of minerals. Impacts pertaining to mineral resources would be less than significant.

4.16.3 Noise

Any future infill or TOD project under the 2018 RTP/SCS located within an airport land use plan zone and/or applicable noise contour would be subject to the policies of the Airport Land Use

Commission pertaining to noise exposure. This would ensure that noise attenuation features are implemented into each project if required. Therefore, impacts would be less than significant.

4.16.4 Population and Housing

Improvements associated with the 2018 RTP/SCS would not result in direct population growth beyond anticipated growth in the region. Rather, projects under the proposed 2018 RTP/SCS are designed to fully support the transportation needs of the growing population while implementing the infill development approach outlined in *Sustainable Community Strategy Element* of the RTP/SCS. The SCS is designed to accommodate growth by encouraging infill development in already urbanized areas. The transportation improvement projects under the 2018 RTP/SCS are intended and designed to support the land use patterns established in the SCS. Therefore, the 2018 RTP/SCS is consistent with projected and planned growth. Further, all transportation improvement projects and land uses envisioned by the 2018 RTP/SCS are anticipated by the San Joaquin County General Plan, as all improvements have been coordinated with the local jurisdiction. Therefore, population and housing growth impacts would be less than significant.

4.16.5 Public Services

Transportation projects under 2018 RTP/SCS would not generate demand for police or fire services, schools, parks, or other public facilities. The majority of projects are maintenance, or pedestrian improvement projects that do not involve the construction of new infrastructure. Future infill and TOD projects may increase demand on public services such as fire and police protection, schools, parks, or other public facilities. However, this demand would not exceed that already anticipated by the respective areas in which these projects would be located. This is primarily because 2018 RTP/SCS would not result in new population growth; rather it would improve the existing network of transportation facilities. In addition, local member agencies would address any public service demand issues as development is proposed, which may require the reallocation of resources and/or augmentation of service areas. It should be noted that infill and TOD may have a beneficial impact to police and fire protection services because the travel distance would be shorter thereby improving emergency response times. Impacts would be less than significant.

4.16.6 Recreation

Transportation projects identified within the 2018 RTP/SCS would not generate demand for parks or recreation resources. Future infill and TOD projects occurring as a result of the RTP/SCS may increase localized demand on parkland. This is primarily because the 2018 RTP/SCS would not directly result in new population growth; rather it would concentrate future population within existing urban cores. Development of the individual projects in the 2018 RTP/SCS would be required on a project-by-project basis to pay development fees towards to the applicable jurisdiction. In addition, the TOD and Infill projects included in the 2018 RTP/SCS would not directly degrade the existing recreational facilities, nor indirectly by introducing new residences and housing that have the potential to demand recreational facilities. In addition, some of the active transportation projects included in the 2018 RTP/SCS would provide new recreational opportunities such as new Class I-III bike lanes and improve access to recreational facilities.

Demand for parkland would be evaluated on a project-specific basis for consistency with General Plans and other applicable planning documents, including consistency with identified parkland-to-population ratio goals. Sponsoring agencies would address any parkland demand issues as new

development is proposed, and subsequent fees and mitigation of impacts would be required as part of the projects implementation. Impacts would be less than significant.

4.16.7 Utilities and Service Systems

The 2018 RTP/SCS transportation improvements would generally not lead to the construction of projects that include habitable residences, commercial buildings or other facilities that would generate permanent sources of new wastewater that requires treatment. The potential for public restrooms, or other similar facilities may be proposed, however, these minor projects would have a negligible increase in wastewater generation. Thus, transportation projects within the 2018 RTP/SCS would not exceed wastewater treatment requirements, require construction or expansion of wastewater treatment facilities, require a determination by a wastewater treatment provider, or conflict with regulations pertaining to solid waste. Projects included in the 2018 RTP/SCS include future infill and TOD projects occurring within urbanized areas. Although some projects include the addition of restrooms, or upgrading or improving transit stations and facilities, all development would occur at sites that are currently served by existing wastewater treatment facilities and connected to the local sewer services. Any introduction of new sources generating wastewater would be analyzed under planning review regarding adequate capacity. In addition, sewer connections may need to be upgraded and resized to accommodate additional flow, but impacts would be determined prior to or during project inception. A full discussion of stormwater, wastewater facilities and water supply can be found in Section 4.11, *Hydrology and Water Quality*.

Construction activities may generate solid waste that would need to be disposed at local landfills, and individual contributions on a project-by-project basis would be analyzed under planning review prior to project implementation. Impacts would be temporary and reduced by compliance with the California Green Building Code and Senate Bill 1016, which requires that construction operations recycle a minimum of 50 percent of waste generated. There are three active operating solid waste facilities in San Joaquin County, two of which are owned and operated by the San Joaquin County Public Works Department (Foothill Landfill and North County Landfill) . Based on the San Joaquin General Plan EIR, the County's existing solid waste facilities adequately serve the county through 2020 and possibly through 2054 (ESA 2014). Project-by-project demand for solid waste facilities would be conducted during the planning review process, to ensure that the solid waste generated by individual projects would be adequately disposed.

The transportation improvement projects from the 2018 RTP/SCS do not include direct population growth or increase that would generate impacts beyond what has been anticipated prior to project conception. Impacts would be less than significant.

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5 Other Statutory Considerations

This section discusses growth-inducing impacts, irreversible environmental impacts, and significant and unavoidable impacts that would be caused by the proposed project.

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 economic or population growth. Included in this category are projects that would remove 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 must not 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 cause significant 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 therefore considered significant if growth generated by the project could result in significant effects in one or more environmental issue areas.

5.1.1 Employment, Household, and Population Growth

According to the San Joaquin County Forecast Summary, population in the SJCOG region is expected to grow from 728,644 in 2015 to 1,020,862 by 2040; an increase of approximately 29% percent. Employment within the region is expected to grow by approximately 79,685 jobs over the same period, an increase of approximately 25 percent (University of the Pacific 2016). As discussed in Section 4.12, *Land Use*, the proposed projects under the 2018 RTP/SCS are designed and intended to accommodate anticipated growth up to the year 2042. The projects under the 2018 RTP/SCS would be phased to respond to growth as it occurs under adopted local general plans. As a result, the 2018 RTP/SCS would not induce growth beyond that anticipated by 2042; rather, it is intended to accommodate growth in a way that will help meet objectives of the proposed Plan. Employment, population and household growth would occur within the SJCOG region regardless of whether the 2018 RTP/SCS is implemented. The land use scenario envisioned by the 2018 RTP/SCS would facilitate the development of infill and transit oriented development (TOD) projects within existing urbanized areas; and therefore, may redistribute growth patterns. The location of infill and TOD projects would generally be on properties that have been identified as vacant or underutilized within applicable local jurisdictions. Infill and TOD projects would not necessarily result in significant new population growth within these jurisdictions; rather the 2018 RTP/SCS would accommodate anticipated growth and concentrate it within existing urban cores instead of on the periphery of urban areas or within rural or semi-rural areas. Therefore, growth-inducing population growth impacts would be less than significant.

Implementation of the 2018 RTP/SCS would create short-term economic growth in the region as a result of construction-related job opportunities. Implementation of the 2018 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 2018 RTP/SCS.

5.1.2 Removal of Obstacles to Growth

The majority of 2018 RTP/SCS transportation improvements are located in existing urbanized areas such as Lathrop, Stockton, and Tracy; 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.

However, these improvements would not necessarily remove obstacles to growth. Rather, the 2018 RTP/SCS transportation improvements are designed to fully support compact development approach outlined in the 2018 RTP/SCS and fully support the complementary transportation needs of the growing population. The SCS is designed to accommodate growth by encouraging infill and TOD development. The 2018 RTP/SCS transportation improvement projects are intended and designed to support the land use patterns established in the SCS. Therefore, the 2018 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, 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.

The 2018 RTP/SCS update 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. The 2018 RTP/SCS would provide a foundation for local, regional, and State officials in making decisions aimed at achieving a coordinated and balanced transportation system.

In the absence of the programmed and planned capital improvements under the 2018 RTP/SCS, traffic conditions throughout the study area would worsen as the population grows; see Section 4.14, *Transportation and Circulation*. The increasing traffic may also worsen safety problems on some roads. However, implementation of the 2018 RTP/SCS would involve certain trade-offs as it would create impacts in other issue areas that would not occur without the planned improvements.

Many of the potential adverse impacts that could occur from implementation of the 2018 RTP/SCS are short-term in nature resulting primarily from construction of the proposed transportation projects, urban infill, and TOD 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 SJCOG region.

Long-term irreversible environmental impacts are associated with increased asphalt or concrete paving and related direct and cumulative impacts to geology/soils, biological and cultural resources (historic resources), traffic circulation, and hydrology/water quality, as discussed in their respective sections of this EIR. In addition, the 2018 RTP/SCS would result in an overall increase in the urbanized character of the region. This would increase demand for potable water, electricity, and other resources. The supply versus demand for these resources is evaluated by service/utility providers; thus, potential impacts would be determined during project specific review and as part of the overall planning process addressing regional growth. Mitigation measures have been prescribed to minimize these impacts. However, in certain instances, as discussed in Section 5.3 below, impacts could remain potentially significant with the implementation of mitigation measures.

5.3 List of Significant and Unavoidable Impacts

The proposed 2018 RTP/SCS would result in the following significant and unavoidable impacts.

- Impact AES-1: public views of scenic vistas and designated scenic corridors
- Impact AES-2: degradation of existing visual character
- Impact AG-1: conversion of Important Farmland to nonagricultural use
- Impact AG-2: conflicts with existing zoning or land use designations of agricultural use
- Impact AG-3: conflict with or loss of forest or timberland
- Impact Bio-1: may result in impacts to special-status plant and animal species
- Impact Bio-2: may result in impacts to sensitive habitats, including federally protected wetlands
- Impact Bio-3: may impact wildlife movement, including fish migration, and/or impede the use of a native wildlife nursery
- Impact CR-1: disturbance of known or unknown historical resources
- Impact CR-2: disturbance of known or unknown archeological resources
- Impact W-2: increased water demand impacting groundwater supplies and recharge, and potentially requiring new or expanded water supplies, entitlements, or facilities
- Impact W-4: increased water demand requiring new or expanded water supplies
- Impact N-1: temporary and permanent noise level increases above applicable thresholds and placement of sensitive receptors in areas with unacceptable noise levels
- Impact N-2: generation of substantial vibration above applicable thresholds
- Impact T-1: daily hours of vehicle delay and total peak period congested VMT in the SJCOG region would increase
- Impact T-2: conflict with applicable congestion management plan programs by decreasing the levels of service

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6 Alternatives

As required by Section 15126(d) of the State CEQA Guidelines, this EIR examines a reasonable range of alternatives to the 2018 RTP/SCS that could feasibly achieve similar objectives. A primary objective is to achieve a coordinated and balanced regional transportation system while reducing GHG emissions from passenger vehicles and light trucks to meet the regional GHG reduction targets set by the California Air Resources Board (CARB). The analysis of alternatives focuses on the various land use and transportation scenarios that incorporate different assumptions regarding the combinations of future land uses and transportation system improvements, as well as the practicality of each alternative given economic and financial feasibility. The 2018 RTP/SCS is specifically intended for the SJCOG region; therefore, an alternative location for the 2018 RTP/SCS as a whole is not possible. However, within the SJCOG region, the 2018 RTP/SCS considers different patterns of land use and transportation investments to accommodate forecast future growth and regional housing needs.

6.1 Alternatives Development and Screening Process

During the development of the 2018 RTP/SCS, SJCOG developed and evaluated scenarios that included various land use assumptions and transportation system improvements and investments to see how each scenario could achieve the GHG targets established by CARB for the tri-county region as well as the effectiveness of other performance measures. Extensive outreach with partner agencies, local jurisdictions, key stakeholders and the public was ongoing throughout the 2018 RTP/SCS planning process through workshops and meetings, surveys and interactive tools.

Beginning in 2015, SJCOG began the technical update to the 2014 RTP/SCS. This planning effort began by gathering and updating critical data as well as working with local jurisdictions on growth forecasts for 2020, 2035 and 2042. The regional growth forecast was then used as the growth parameter for the updating the various transportation and land use scenarios for the 2018 RTP/SCS.

Utilizing input from the public and stakeholders, SJCOG updated the land use and transportation scenarios through 2042. SJCOG evaluated these scenarios using a set of transportation, environmental and equity performance measures approved by the Board of Directors. These RTP/SCS scenarios were refined with continued extensive input from partner agencies and key stakeholders as well as from community workshops held in 2017 and 2018. Ultimately, the SJCOG Board selected a single preferred scenario. The preferred scenario, or the 2018 RTP/SCS, is summarized in Section 2.0, *Project Description*, of this EIR and the environmental effects of this scenario are addressed in Sections 4.1 through 4.16.

This alternatives analysis herein includes the following alternatives to the proposed 2018 RTP/SCS:

- **Alternative 1: No Project.** The No Project Alternative is comprised of a land use pattern that reflects existing land use trends and a transportation network comprised of transportation projects that are currently in construction or are funded in the short range Regional Transportation Improvement Program (RTIP). No new projects under the 2018 RTP would be constructed.

- **Alternative 2: Business As Usual.** The Business As Usual Alternative has focused funding in roadway expansion and maintaining and rehabilitating existing roads and streets. This Alternative places investments that support land use patterns along highway corridors and less in urban core areas. This Alternative has a future growth pattern that is reflective of growth and development trends over the last two decades in San Joaquin County.
- **Alternative 3: Compact Development.** The Compact Development Alternative places investments in transportation systems that support high level of compact growth and infill. It increases density and transit beyond what is included in the SCS. It includes a higher percentage of new growth as infill/redevelopment, additional transit and active transportation investments, and a larger percentage of new housing on small lots or as multi-family.

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 2018 RTP/SCS. As required by CEQA, this section also includes a discussion of the “environmentally superior alternative” among those studied.

6.2 Alternatives Eliminated from Detailed Consideration

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. 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).)

For this EIR, there were no alternatives that were considered by the lead agency and rejected as infeasible during the scoping process.

6.3 Alternative 1: No Project Alternative

6.3.1 Description

The No Project Alternative is required by Section 15126.6(e)(2) of the State CEQA Guidelines and assumes that the proposed 2018 RTP/SCS would not be implemented. The No Project Alternative allows decision-makers to compare the impacts of approving the proposed project with the impacts of not approving the proposed project. However, “no project” does not necessarily mean that development would be prohibited. The No Project Alternative includes “what would be reasonably expected to occur in the future if the project were not approved, based on current plans and consistent with available infrastructure and community services.” For purposes of this document, the No Project Alternative includes a land use pattern comprised of existing land use trends. In other words, it assumes that current sub-regional growth trends would continue. Rather than focusing on coordinating transportation projects that serve infill and transit oriented development, the transportation network would be comprised of transportation projects that are currently in construction or are funded in the short range Regional Transportation Improvement Program (RTIP).

6.3.2 Impact Analysis

a. Aesthetics/Visual Resources

Implementation of this alternative would result in fewer visual impacts as compared to the 2018 RTP/SCS, because many of the proposed interchanges, bridges and roadway extensions, as well as transit and rail facilities would not be constructed. Nevertheless, many capital improvements 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 SJCOG region. In fact, because this alternative would continue current sub-regional growth trends and existing land 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 SJCOG region. Thus, impacts related to visual character would be significant and unavoidable as with the 2018 RTP/SCS. The overall level of impact resulting from combined transportation improvement and land use projects would be similar when compared to the 2018 RTP/SCS with some impacts greater while other impacts less, but would remain significant and unavoidable.

b. Agricultural Resources

This alternative would result in fewer transportation infrastructure 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 sub-regional growth trends and existing land use 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 the extent of Important Farmland in San Joaquin County, 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 2018 RTP/SCS. Under this Alternative, approximately 43,000 acres of important farmland would be consumed due to new development, whereas the proposed 2018 RTP/SCS would result in approximately 23,000 acres would be converted. Mitigation would not be available to reduce impacts to a less than significant level. Therefore, this impact would be significant and unavoidable for the No Project Alternative, and the overall impact to agricultural resources resulting from the No Project Alternative would be greater than under the 2018 RTP/SCS.

c. Air Quality and Health Impacts/Risks

This Alternative would involve the construction of fewer transportation improvement projects. Therefore, this alternative would result in reduced short-term air quality impacts from construction activity. Long-term emissions of ROG, NO_x, and PM₁₀ would be the same as the project for all criteria pollutants, except for PM_{2.5} emissions, which would be 0.01 tons per day higher under this alternative than emissions anticipated with implementation of the 2018 RTP/SCS. Overall, this Alternative would result in lower short-term pollutant emissions and higher long-term pollutant emissions when compared to the 2018 RTP/SCS, overall similar impacts compared to the project.

d. Biological Resources

Implementation of this Alternative may result in less impact to biological resources resulting from transportation improvement projects, as fewer roadway extensions, widening projects, and creek

crossings would occur. However, because this alternative would continue current sub-regional growth trends and existing land use 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 2018 RTP/SCS.

e. Cultural and Historic Resources

As described in Section 4.5, *Cultural and Historic Resources*, some of the 2042 RTP/SCS projects may be located in proximity to historical resources or include repair or replacement of potentially historical structures (e.g. bridges). Because these projects would not be developed under the No Project Alternative, these impacts would be eliminated unless determined to be required due to safety or seismic issues. 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 historical resources would therefore be reduced when compared to the 2018 RTP/SCS. However, project-specific impacts may still be significant.

Implementation of this alternative would involve less ground disturbance associated with transportation improvements than would occur under the 2018 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 or paleontological deposits 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 2018 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 2018 RTP/SCS. However, this alternative would not include many of the capital improvements envisioned under the proposed 2018 RTP/SCS that would improve transportation efficiency and reduce regional energy demand. Energy use will increase over time as the result of regional socioeconomic (population and employment) growth, regardless of implementation of the 2018 RTP/SCS. The No Project Alternative would result in lower total and per capita energy use as compared to the 2018 RTP/SCS. As discussed in Section 4.6, *Energy*, the 2018 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 slightly reduce both total and per capita energy use, impacts would be reduced when compared to the 2018 RTP/SCS and impacts related to inefficient, unnecessary, or wasteful direct or indirect energy consumption would be less than significant.

The 2018 RTP/SCS would generate energy demand that may require construction of new energy facilities; however, this impact, as discussed in Section 4.6, *Energy*, would be less than significant. The No Project Alternative would reduce the amount of energy consumed overall, and the overall impact would be similar to or less than the 2018 RTP/SCS.

g. Environmental Justice

The No Project Alternative would be generally have less improved access but less exposure conditions for environmental justice communities as compared to existing conditions. Specifically, the No Project Alternative, when compared to existing conditions, would lessen the percentage of environmental justice households within one-half mile of high quality transit stops and centers. Meanwhile, the proposed Plan would decrease the percentage of jobs within one-half mile of high quality transit from 41 percent to 35 percent.. Overall, Alternative 1 would decrease the percentage of environmental justice households and employment located within one-half mile of high quality transit when compared to existing conditions. However, compared to the proposed Plan, environmental justice households have a lesser potential of being located within 500 feet of a highway, which would increase their exposure to certain air pollutants. Overall, due to the reduced transit access for environmental justice communities, the No Project Alternative would have a greater impact compared to the project.

h. Geology and Soils

Impacts related to erosion and loss of topsoil would be less than significant pursuant to compliance with existing regulations, similar to the 2018 RTP/SCS. Because this alternative does not include as many new interchanges, bridges, roads and fixed facilities, there would be less exposure of new structures to hazardous geologic conditions, including liquefaction, 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 2018 RTP/SCS than under the Project Alternative. As seismic hazards and unstable soil related impacts under the proposed project would be significant but mitigable, impacts would be similar to or slightly less under the Project Alternative.

i. Greenhouse Gas Emissions/Climate Change

The No Project Alternative would result in fewer impacts associated with GHG emissions during construction activities as fewer transportation infrastructure projects would be constructed, but the fewer projects could lead to additional congestion and cars idling for longer periods. Therefore, short-term GHG emissions would potentially be lower under this alternative due to less construction but offset by increased congestion. Construction emissions associated with land use development cannot be compared at this time as emissions for either scenario could vary greatly depending on individual project characteristics. In addition, total VMT is expected to be lower (8.35 billion) in 2042 under this Alternative relative to the project (8.49 billion). Therefore, long-term GHG emissions could be reduced relative to the project making this alternative better than the project.

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 amount of hazardous materials being transported to support land use development in the region would remain the same. Because the No Project Alternative 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 2018 RTP/SCS. Because this alternative would allow more housing near wildlands, it would increase the vulnerability of people and structures to wildland fire. This impact

would be greater under the No Project Alternative and could be considered significant and unavoidable. Due to the increased severity of this significant impact, overall hazards and hazardous materials impacts would be greater under this alternative than under the 2018 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. These impacts would remain less than significant pursuant to compliance with existing regulations, similar to the 2018 RTP/SCS.

Because this alternative would continue current sub-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. 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 2018 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 urban 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 be anticipated to result in impacts to water quality that are overall comparable to the 2018 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.

Increases to water demand are primarily associated with increased population levels. The No Project Alternative would result in the same population increases as the 2018 RTP/SCS. However, this alternative would result in wider spread land use development, which would result in a less efficient water supply system (e.g., greater areas of irrigated landscaping). As such, future water demand associated with this alternative would be greater than water demand for the 2018 RTP/SCS. This impact, which is significant and unavoidable for the 2018 RTP/SCS, would be greater under the No Project Alternative, particularly because mitigation would not apply to this alternative. Impacts would remain significant and unavoidable.

Overall hydrology and water quality impacts would be greater under the No Project Alternative than the 2018 RTP/SCS.

l. Land Use

The No Project Alternative includes fewer transportation projects than the RTP/SCS and does not include any land use strategies to encourage a compact growth pattern. It would have a lesser potential for conflicting with general plans as the only growth strategies that would occur would be local land use controls. It would have less of an influence on the patterns of urbanization in the region. Nonetheless, urbanization with significant potential for land use incompatibility would occur. The No Project Alternative would result in a more dispersed land use pattern. The No Project Alternative is expected to accommodate the same increase in total population, housing, and employment as the 2018 RTP/SCS.

The No Project Alternative is expected to accommodate the same increase in total population, housing, and employment as the 2018 RTP/SCS. It is anticipated that more development would occur in urban areas under the 2018 RTP/SCS; therefore more displacement could occur under the proposed project than this Alternative, as well as potentially increase the level of incompatibility with surrounding land uses. The 2018 RTP/SCS includes additional transportation improvements that would facilitate access to currently vacant lands that would be less accessible with the No Project Alternative. Although the Plan and the No Project Alternative would result in a different distribution of consumed land, they would result in the same total number of population, households, and employment. As discussed in Agricultural Resources, the No Project Alternative would have greater impacts related to conversion of farmland and agricultural lands. The No Project Alternative would likely have similar or possibly greater impact to land use incompatibility because redevelopment in existing communities would still occur and more land in general would be impacted.

m. Noise

Because noise is a site-specific issue, noise studies would be prepared for each project to determine whether impacts would occur. 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 SJCOG 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.

Although the number of transportation projects would be reduced as compared to the 2018 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 2018 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 2018 RTP/SCS is not enough to noticeably change overall noise levels in the region. Mobile source noise levels resulting from traffic would therefore be similar under the No Project Alternative when compared to the 2018 RTP/SCS.

Because most rail and transit improvements planned under the 2018 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.

Overall, noise-related impacts across the region would be similar to the 2018 RTP/SCS, and would continue to be significant and unavoidable.

n. Transportation and Circulation

This alternative would not include many of the projects envisioned under the proposed 2018 RTP/SCS, 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 related projects. Many of these projects are intended to address traffic congestion, and in many cases would serve as mitigation measures to reduce potential impacts associated with planned long-term development.

The last two columns of Table 43 in the Transportation section compare the 2018 RTP/SCS against the No Project alternative in which new transportation investments cease after 2015 while population and development continue to grow to forecast levels, and development follows a more

dispersed pattern than called for in the 2018 RTP/SCS. The 2018 RTP/SCS compared to the No Project Alternative would result in slightly more VMT (+1.66%) and VMT per capita (1.65%) but approximately 20% less congested lane miles and vehicle hours of delay. The 2018 RTP/SCS would result in an increase in transit boardings and active transportation trips compared to the No Project alternative.

Overall, VMT within the SJCOG region would increase as a result of regional population growth. Under the No Project Alternative overall total VMT and VMT per capita would be increased, as compared to the proposed project. CVMT, as it is used in this EIR, is equivalent to the VMT on facilities that operate unacceptably during peak traffic hours. This is because the 2018 RTP/SCS projects increase capacity of roadways and transit services in the SJCOG region, as well as improve circulation at facilities that operate unacceptably during peak hours. Without these projects, the No Project Alternative would result in more miles travelled on congested facilities during the most congested periods of the day.

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 2018 RTP/SCS projects that are intended to ensure a reliable bus fleet and purchase new stock 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 applicable public transit entities. Thus, compared to the 2018 RTP/SCS, the No Project Alternative would have a greater adverse impact on transit service in the SJCOG region.

Overall, the No Project Alternative would result in increased daily VMT in the SJCOG region compared to the 2018 RTP/SCS, it would also increase CVMT and adverse impacts to public transit. Thus, overall, impacts to transportation and circulation would be greater under the No Project Alternative.

o. Tribal Cultural Resources

Implementation of this alternative would involve less ground disturbance associated with transportation improvements than would occur under the 2018 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. Although mitigation would not apply to 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 2018 RTP/SCS. The overall impact of the No Project Alternative would be similar to or slightly greater than under the 2018 RTP/SCS.

6.4 Alternative 2: Business As Usual

6.4.1 Description

The Business As Usual Alternative has focused funding in roadway expansion and maintaining and rehabilitating existing roads and streets. This Alternative places investments that support land use patterns along highway corridors and less in urban core areas. This Alternative has a future growth pattern that is reflective of growth and development trends over the last two decades in San Joaquin County. This Alternative places less focus on investments in public transit with emphasis on

maintaining existing service over service expansion. As a result, this Alternative assumes ACE expansion for Modesto/Merced and does not include expansion of ACE service on existing routes. The growth network associated with the Business As Usual Alternative limits multifamily developments as a percentage of new growth to approximately 20 percent, as opposed to 39 percent under the 2018 RTP/SCS.

6.4.2 Impact Analysis

a. Aesthetics/Visual Resources

Under Alternative 2, there would be a similar but slightly reduced number of transportation projects but development patterns would extend over a greater area of land resulting in similar impacts to scenic views and the alteration of existing visual character. However, Alternative 2 would not include some the compact growth form strategies, which intend to focus more growth in walkable, mixed-use communities and existing and planned urban areas. This Alternative promotes more spread out growth and development along regional highways, rather than compact infill development, which has the potential to increase impacts of views from existing roadways. As shade/shadow and glare impacts typically occur in urban areas, these impacts would be reduced under Alternative 2 as growth would be more distributed and less dense, however new lighting sources would still be generated. Nighttime lighting impacts would be greater as more development would be prioritized in areas where existing lighting may not currently exist, as lighting impacts are most pronounced in rural areas. Overall, this Alternative would result in similar impacts to scenic vistas and shade/shadow and glare but would result in greater lighting impacts than the propose 2018 RTP/SCS.

b. Agricultural Resources

Under Alternative 2, there would be a similar but slightly reduced number of transportation projects but development patterns would extend over a greater area of land., Therefore the amount of agricultural land consumed would increase compared to the proposed project. Similar to the No Project Alternative, this Alternative would not encourage a compact growth pattern and Alternative 2 would consume a total of 42,315 acres of farmland, compared to the 23,404 acres in the proposed project. Alternative 2 would not include the urban form strategies that would focus growth within urban areas and as a result, would result in the consumption of a greater amount of farmland compared to the 2018 RTP/SCS. Impacts to forest lands would also be greater as the more dispersed land use pattern of this Alternative would result in development in areas that currently contain forest land. Therefore, the Business As Usual Alternative would result in greater impacts than the proposed project.

c. Air Quality and Health Impacts/Risks

The Business As Usual Alternative would not include construction of transit projects included in the 2018 RTP/SCS. Therefore, short-term pollutant emissions would potentially be lower under this alternative; construction emissions associated with land use development cannot be compared at this time as emissions for either scenario could vary greatly depending on individual project characteristics. The Business As Usual Alternative would allow for lower-density, sprawling growth relative to the project, which would result in greater annual VMT (8.496 billion) relative to the project (8.493 billion), and thus, would result in greater criteria pollutant emissions associated with vehicle travel, which comprise the majority of operational emissions. In addition, the Business As

Usual Alternative would not include roadway improvement projects included in the 2018 RTP/SCS that would help alleviate congestion and reduce pollutant emissions associated with vehicle traffic.

Business As Usual Alternative would result in higher VMT and potentially result in greater exposure of sensitive receptors to DPM, long-term air quality impacts from this Alternative would be greater than the proposed 2018 RTP/SCS. This Alternative would introduce a potentially significant impact due to higher long-term pollutant emissions.

d. Biological Resources

Under the Business as Usual Alternative, similar areas would be impacted by excavation and construction activities as compared to the proposed project. This Alternative would not include the compact development and infill growth strategies, which intend to focus more growth in walkable, mixed-use communities and existing and planned urban centers. Therefore, this Alternative would result in transportation projects and development taking place over a greater area of land. This would result in greater vacant land consumption, including sensitive species habitat and natural lands, that would, in turn, increase the impacts to biological resources and open space, such as habitat loss and fragmentation. Therefore, this Alternative would result in increased impacts to biological resources and open space than from the proposed 2018 RTP/SCS.

e. Cultural and Historic Resources

Under the Business As Usual Alternative, there would be a similar but slightly reduced number of transportation projects but development patterns would extend over a greater area of land. This Alternative would not include the urban growth form strategies, intended to focus more growth in walkable, mixed-use communities and existing and planned urban centers. This Alternative would result in approximately 21,000 more acres of land consumption, as compared to the proposed 2018 RTP/SCS. This would increase the chance to uncover a greater number of previously undisturbed resources. Therefore, this Alternative would result in greater impacts to cultural resources than compared to the proposed 2018 RTP/SCS. In addition, this Alternative would not focus growth in urban areas to the extent of the proposed project and therefore could have fewer impacts to historic buildings.

f. Energy

Unlike the Business As Usual Alternative, the 2018 RTP/SCS includes strategies to focus growth such as infill and mixed-use developments, in urban areas, which would help reduce the number of new energy facilities or expansion of existing facilities that need to be constructed. Infill and mixed-use developments are generally higher efficiency dwellings accounting for the reduction in total energy consumption. Lower density development would sprawl throughout San Joaquin County under the Business As Usual Alternative to satisfy the same population growth. Under this Alternative, these land use strategies may not occur, although individual jurisdictions may still seek to reduce the urban footprint through their general plans. Energy use under the Business As Usual Alternative would be less efficient per capita compared to the proposed 2018 RTP/SCS. Similarly to the proposed project however, this Alternative would add to cumulative demand for energy in California and in the world in general.

g. Environmental Justice

The Business As Usual Alternative compared to the proposed project, the amount of households located within a half mile of transit centers would be decreased, as development would be more

spread out. This Alternative does not promote compact infill approaches to land use as well as not focusing development near existing transit infrastructure. Therefore this Alternative would result in reduced transit efficiency for all communities. As such, impacts to communities of concern would increase, however these impacts would not be disproportionately impacted. Overall, impacts would be similar to slightly less than the proposed 2018 RTP/SCS.

h. Geology and Soils

Compared to the proposed project, there would be a similar but slightly reduced number of transportation projects but development patterns would extend over a greater area of land increasing the land area where transportation infrastructure could be subject to risk as a result of surface rupture, ground-shaking liquefaction, and landsliding and other risks associated with seismic events.. Impacts related to geologic and seismic resources would be similar to the proposed project under this Alternative because the population would remain the same and entire region is subject to seismic risk. Impacts would be similar to or slightly less than the proposed 2018 RTP/SCS

i. Greenhouse Gas Emissions/Climate Change

This Alternative would result in fewer impacts associated with GHG emissions during construction activities as fewer transit projects would be constructed. Therefore, short-term GHG emissions would potentially be lower under this alternative; however, construction emissions associated with land use development cannot be compared at this time as emissions for either scenario could vary greatly depending on individual project characteristics. Total VMT is expected to be higher (8.496 billion) in 2042 under this Alternative relative to the project (8.494 billion). In addition, this Alternative would not include implementation of policies and initiatives to support GHG reductions contained in the 2018 RTP/SCS. Therefore, long-term GHG emissions would be increased relative to the project and this Alternative would have a greater cumulative impact.

j. Hazards and Hazardous Materials

Alternative 2 would have similar impacts related to the accidental release of hazardous materials as compared to the Plan. The Business As Usual Alternative would not include the compact urban growth strategies which are intended to focus development and growth in walkable, mixed-use communities and existing and planned urban centers. This Alternative may not include as much redevelopment of urban infill properties as the proposed 2018 RTP/SCS, and, therefore, could result in fewer potential impacts related to disturbance of contaminated sites. However it would disturb more undeveloped and open space uses, some of which might be farmland or former oil uses and may be contaminated with pesticides or chemicals from past operations and thus can result in impacts when ground is disturbed.

With similar but slight reduced VMT compared to the proposed 2018 RTP/SCS, increased mobility would increase the possibility of hazardous materials transport throughout the region, as well as through areas outside of the region. As the population in Central California increases through 2042, the amount of hazardous materials that pass through San Joaquin County (trucks, trains, and pipelines) is expected to increase regardless of RTP/SCS scenario implemented. In regards to wildfire risks, less projects would be focused in the dense urban cores where fire hazards are reduced but would increase the amount of projects in more rural areas wherein wildland fire risks are higher. Therefore, the transportation improvements and land use scenario under this Alternative would likely result in an increased impact to wildfire risks. Some development would still occur in areas of

moderate or even high wildfire risk, therefore impacts could be significant and unavoidable under this alternative.

k. Hydrology and Water Quality

Under the Business As Usual Alternative, similar areas would be impacted by excavation and construction activities related to transportation projects as compared to the Plan. However, this Alternative would not include the same type of urban growth strategies which promote denser compact development, intended to focus more growth in walkable, mixed-use communities and existing and planned high-quality transit areas. Therefore, this Alternative would result in development patterns consuming a greater amount of land. Due to the greater consumption of land, this Alternative would result in increased amounts of impervious surfaces and increased impacts to water resources. Further, the development pattern of this Alternative would not focus development in urban areas, as the proposed 2018 RTP/SCS would. As urban development is generally more water efficient (due to lack of large lawns, etc.) the Business As Usual Alternative's development pattern would be less efficient and result in more water use overall. Under this Alternative, water consumption would be 358 gallons per day per household, compared to 308 gallons per day under the proposed 2018 RTP/SCS. Therefore, this Alternative would result in greater impacts to water resources than the proposed project.

l. Land Use

The Business As Usual Alternative includes similar transportation projects compared to the project but does not include land use strategies to focus growth in urban areas. It would have a lesser potential for conflicting with general plans as the only growth strategies that would occur would be local land use controls. It also would have less of an influence on the patterns of urbanization in the region. Nonetheless, urbanization with significant potential for land use incompatibility would continue to occur. The Business As Usual Alternative would result in a more dispersed land use pattern. The 2014 RTP Alternative would consume an estimated 35,184 acres of vacant land, while the Plan would consume only 18,123 acres of vacant land. The 2014 RTP Alternative would likely have similar or possibly greater impact on land use incompatibility because redevelopment in existing communities would still occur and more land in general would be impacted.

This Alternative contains similar transportation projects as compared to the Plan, and promotes growth in a more spread out growth pattern. Consequently, there would be fewer places where businesses and homes would be displaced by transportation projects and fewer places where communities could be disrupted. Due to the more dispersed pattern of this Alternative, fewer impacts on existing uses and residential land uses (rural, low, and medium to high-density housing land uses) would occur than under the proposed project. Under this Alternative, land uses would change to a greater extent in undeveloped areas.

The Business as Usual Alternative has the same population, household, and employment growth as the Plan. Given that the population, household, and employment growth would be the same; this alternative would result in similar impacts to those associated with the proposed 2018 RTP/SCS. Overall, impacts would be similar to or slightly less than the proposed project.

m. Noise

The Business As Usual Alternative would result in some transportation improvements and some concentration of growth, but not to the same extent with transit projects as the proposed project. Therefore impacts would be similar to, but not as severe as the proposed project. Similar to the No

Project Alternative the Business As Usual Alternative would not make some of the improvements in urban areas, potentially leading to greater congestion on the outskirts of Stockton and towards the Sierra Nevada mountain range. Construction and operational noise sources would continue to generate noise levels that could exceed local thresholds, but overall, with growth that is more spread out, sensitive receptors may not be exposed to the same noise levels as with compact infill growth. Impacts would be similar to or slightly less than the proposed 2018 RTP/SCS.

n. Transportation and Circulation

This transportation planning scenario assumes an updated list of financially constrained projects, which reflect modest improvements to transit, bike, and walk infrastructure, and a continuation of the growth pattern occurring in San Joaquin County over the past several decades. Transportation investments are focused on freeways and roads to accommodate a peripheral development pattern, and improved truck flows and safety. Transit investments consist of operations and maintenance of existing bus and passenger rail services with expansion of key services. This alternative would slightly increase VMT in 2042 as compared to the Plan, as well as result in a drop in transit and active mode shares. Congested lane miles overall would be increased compared to the effectiveness of the proposed 2018 RTP/SCS, reflecting relatively less roadway investments compared to the Plan. Overall, impacts would be increased as compared to the proposed project.

o. Tribal Cultural Resources

Under the Business As Usual Alternative, there would be a similar but slightly reduced number of transportation projects but development patterns would extend over a greater area of land. This Alternative would not include the urban growth form strategies, intended to focus more growth in walkable, mixed-use communities and existing and planned urban centers. This Alternative would result in approximately 21,000 more acres of land consumption, as compared to the proposed 2018 RTP/SCS. This would increase the chance to uncover a greater number of previously undisturbed resources. Therefore, this Alternative would result in greater impacts to tribal cultural resources than compared to the proposed 2018 RTP/SCS, however all project sponsors would still be required to undergo AB 52 consultation with identified tribes. Overall, impacts would be similar to or slightly greater than the proposed 2018 RTP/SCS.

6.5 Alternative 3: Compact Development

6.5.1 Description

The Compact Development Alternative builds on the enhanced density and ideas of the SCS as described in the 2018 RTP/SCS and further supports the highest level of compact growth and infill. It includes more aggressive densities than the proposed 2018 RTP/SCS, increases mobility through additional transportation investments, and limits the development of single-family housing that would be built in the region. The Compact Development transportation network in this scenario is focused on utilizing flexible funds on bicycle and pedestrian facilities and public transit. In addition, this Alternative focuses on the highest level of ACE expansion and Bus Rapid Transit Corridors in urbanized areas. The growth network associated with the Compact Development Alternative limits single-family housing as a percentage of new growth to 51 percent (as opposed to 61 percent under the 2018 RTP/SCS).

6.5.2 Impact Analysis

a. Aesthetics/Visual Resources

Under the Compact Development Alternative more aggressive growth strategies would be applied to the region. This would potentially result in greater impacts related to light and glare, shade and shadow, and visual character of neighborhoods as more intense development occurs within urban centers. Taller buildings could be incongruous with existing surroundings and could overwhelm historic buildings and/or existing neighborhoods. Further, glare impacts and shade and shadow impacts could be increased due to increased density. However, as more development is focused in urban areas, fewer nighttime lighting impacts would occur in undeveloped areas. Lastly, impacts related to scenic highways and vistas would generally be the same as both alternatives include similar transportation networks.

b. Agricultural Resources

Under Alternative 3, more development would be targeted in urban areas. Approximately 14,000 acres of land would be consumed for new development, as opposed to over 17,000 acres for the proposed Plan, which would result in fewer acres of farmland consumed. Alternative 3 would consume approximately 4,000 acres of prime farmland, or approximately 28 percent of the total land that would be consumed would be prime farmland. Alternative 3 would also include urban form strategies that would further focus growth within urban areas and as a result, would result in the consumption of fewer acres of farmland compared to the Plan. Impacts to forest lands would also be lesser as the more efficient land use pattern of the Compact Development Alternative would reduce the potential for development in areas that currently contain forest land. Therefore, the Compact Development Alternative would result in fewer impacts to agricultural resources than the Plan.

c. Air Quality and Health Impacts/Risks

This Alternative would increase the number of transportation improvement projects constructed relative to the project. Therefore, short-term emissions would potentially increase; construction emissions associated with land use development cannot be compared at this time as emissions for either scenario could vary greatly depending on individual project characteristics. This Alternative would result in a lower VMT of 8.38 billion relative to the project's VMT of 8.49 billion, resulting in lower long-term emissions. More compact development under this Alternative may also bring more sensitive receptors closer to major roadways and other sources of DPM. Air Quality impacts would be less under this alternative.

Toxic Air Contaminants

Diesel particulate matter (DPM) generated from diesel-fueled engines and found in diesel exhaust, has been determined by CARB to be a toxic air contaminant as defined under Section 39655 of the Health and Safety Code. The long-term health effects of DPM are described in Section 4.3, *Air Quality*.

As discussed therein, PM_{2.5} emissions is used as an indicator for DPM emissions in this analysis. While the precise difference between emissions resulting from the proposed Plan as opposed to Alternative 3 cannot be determined at this time, it is important to note that emissions of PM_{2.5} from mobile sources would be reduced under the Compact Development Alternative to a similar degree

as the proposed Plan when compared to existing conditions. CARB additionally has several programs and regulations in place to reduce DPM emissions statewide, as described further in Section 4.3, *Air Quality*. These programs and regulations would reduce DPM emissions over the lifetime of the 2018 RTP/SCS. Consequently, it can be assumed that the reductions in PM_{2.5} emissions include reductions in DPM emissions region-wide.

However, improvements under Alternative 3 may also bring sources of DPM closer to sensitive receptors through construction of new facilities or widened roadways, which could increase exposure of sensitive receptors. In addition, another substantial source of TACs is stationary sources, such as diesel generators, industrial processes, and dry cleaners. However, there is no available data on possible new stationary sources that would be in operation in 2042 under the Compact Development Alternative. Therefore, it is unknown what impacts on health risks in San Joaquin County would be related to TACs from stationary sources. Consequently, this impact must be considered potentially significant. Furthermore, the Compact Development Alternative would result in 4.4 percent of all households being located within 500 feet of a freeway, as opposed to 4.3 percent under the proposed Plan. Overall, impacts related to TACs from the Compact Development Alternative would be greater than those under the Plan. As a result, Mitigation Measures AQ-1 through AQ-3 would be required to reduce air quality impacts to a less-than-significant level. Overall, impacts from Alternative 3 would be the same as the 2018 RTP/SCS.

d. Biological Resources

Under the Compact Development Alternative, fewer areas would be impacted by excavation and construction activities as compared to the Plan. The Compact Development Alternative would include a greater amount of infill development compared to the Plan. Therefore, the Compact Development Alternative would result in transportation projects and development taking place over a smaller amount of land. Specifically, new transportation projects and development included in the Compact Development Alternative would result in approximately 14,000 acres of new land consumption, as compared to over 17,000 acres under the Plan. Although the difference would be relatively small (a decrease of 3,429 acres), this would result in fewer acres of vacant land consumed, including sensitive species habitat and natural lands, that would, in turn, decrease the impacts to biological resources and open space, including habitat loss and fragmentation. Therefore, the Compact Development Alternative impacts to biological resources and open space would be less than the impacts from the Plan.

e. Cultural and Historic Resources

Under the Compact Development Alternative, fewer undeveloped areas would be impacted by excavation and construction activities related to transportation projects as compared to the Plan. The Compact Development Alternative focuses on more development in infill areas and further expansion of non-motorized transportation. Under the Compact Development Alternative, anticipated development would result in approximately 14,000 acres of new land consumption as compared to over 17,000 acres under the Plan, thereby exposing fewer previously undisturbed cultural resources. As with the Plan, increased focus on redevelopment of existing communities could result in increased impacts to historic buildings.

f. Energy

Similarly to the Compact Development Alternative, the 2018 RTP/SCS includes strategies to focus growth such as infill and mixed-use developments in urban areas. However, the Compact

Development Alternative would promote higher densities in urban areas which would help reduce the need for new energy facilities or expansion of existing facilities that could result in adverse environmental effects. Infill and mixed-use developments are generally higher efficiency dwellings accounting for the reduction in total energy consumption. The Compact Development Alternative would result in a 2042 annual per capita energy use of 80.6 Btu compared to 89 Btu under the proposed Plan, representing an approximately nine percent reduction from the proposed Plan. Similarly to the Plan, the Compact Development Alternative would add to cumulative demand for energy in California and in the western region of North America in general.

g. Environmental Justice

The Compact Development Alternative would be generally similar to the proposed Plan by improving access and exposure conditions for environmental justice communities as compared to existing conditions. Specifically, both the proposed Plan and the Compact Development Alternative, when compared to existing conditions, would improve the percentage of environmental justice households within one-half mile of high quality transit stops and centers from 16 percent to 19 percent. Meanwhile, the proposed Plan would decrease the percentage of jobs within one-half mile of high quality transit from 41 percent to 35 percent, as opposed to the Compact Development Alternative which would result in 36 percent of jobs located within one-half mile of high quality transit. Furthermore, the Compact Development Alternative would result in a higher percentage (4.4 percent) of total households within 500 feet of a highway when compared to the proposed Plan (4.3 percent). This could result in a greater number of environmental justice households being located within 500 feet of a highway under the Compact Development Alternative as opposed to the proposed Plan. Overall, Alternative 3 would improve the percentage of environmental justice households and employment located within one-half mile of high quality transit when compared to existing conditions. However, compared to the proposed Plan, environmental justice households have a greater potential of being located within 500 feet of a highway, which increases their exposure to certain air pollutants.

h. Geology and Soils

The Compact Development Alternative transportation network is similar to the Plan network with minor changes to transit projects. Construction and excavation impacts would therefore be generally the same as for the Plan. The Plan and the Compact Development Alternative would have similar construction related impacts. The Compact Development Alternative focuses residential and employment growth in urban areas; development is anticipated to be more compact (more multi-family as compared to large lot and conventional single-family housing). Some urban centers are located near known faults and other geologic hazards which could increase the number of people and structures exposed to potential surface rupture, ground-shaking liquefaction, and landsliding due to seismic events. Impacts related to geologic and seismic resources would be similar to the Plan under the Compact Development Alternative because the population would be the same and entire region is subject to seismic risk.

i. Greenhouse Gas Emissions/Climate Change

This Alternative would result in greater impacts associated with GHG emissions during construction activities as more transportation projects would be constructed. Therefore, short-term GHG emissions would potentially be higher under this alternative; however, construction emissions associated with land use development cannot be compared at this time as emissions for either

scenario could vary greatly depending on individual project characteristics. Total VMT is expected to be lower (8.38 billion) relative to the project (8.49 billion), resulting in lower long-term GHG emissions. This Alternative would retain policies and initiatives to reduce GHGs contained in the 2018 RTP/SCS. Overall, this Alternative would lower GHG emissions and, like the project, would be consistent with state and local policies, plans, and recommended targets for GHG reductions. By decreasing long-term GHG emissions, this Alternative would have a lower cumulative impact. Impacts would remain less than significant with mitigation.

j. Hazards and Hazardous Materials

The Compact Development Alternative would result in similar impacts related to the accidental release of hazardous materials as compared to the Plan. The Compact Development Alternative focuses on more development in infill areas and further expansion of non-motorized transportation. Under the Compact Development Alternative approximately 14,000 acres of land would be consumed (as compared to over 17,000 acres under the Plan). The Compact Development Alternative could result in greater impacts related to disturbance of contaminated sites as compared with the Plan because of the increased focus on urban redevelopment and infill. The land use patterns associated with the Compact Development Alternative would maximize urban centers and focus on urban infill. This would increase the potential for disturbance of contaminated sites, as there is a greater likelihood for urban redevelopment sites to be previously exposed to hazardous materials. Furthermore, as the population in California increases through 2042, the amount of hazardous materials that pass through San Joaquin County (trucks, trains, and pipelines) is expected to increase regardless of the RTP/SCS scenario implemented. Impacts would be greater under this alternative.

k. Hydrology and Water Quality

Under the Compact Development Alternative, fewer undeveloped areas would be impacted by excavation and construction activities related to transportation projects as compared to the Plan. The Compact Development Alternative focuses on infill development and further expansion of non-motorized transportation. Under the Compact Development Alternative, anticipated development would result in approximately 14,000 acres of open space land consumption as compared to over 17,000 under the plan, thereby reducing the amount of impervious surfaces and decreasing impacts to water resources as compared to the Plan.

l. Land Use

Current land use practices may have to change to address the Compact Development Alternative because the Compact Development Alternative focuses growth into the existing urban area around transit stations and existing activity centers, possibly beyond what communities are ready to accept. The Compact Development Alternative would reduce the amount of land used for large lot and conventional single-family homes compared to the Plan. To achieve the densities of the Compact Development Alternative, there would be a greater chance of conflicting with market forces and community-desired growth patterns. The Compact Development Alternative would focus development in urban areas and existing communities and would have a greater emphasis on infill development. As a result, the Compact Development Alternative could result in increased division of existing communities as a result of aggressive redevelopment.

The Compact Development Alternative has the same population, household, and employment growth as the Plan. Given that the population, household, and employment growth would be the

same, the Plan impacts would be the same as those associated with the Compact Development Alternative.

m. Noise

The Compact Development Alternative would result in much more focused growth patterns concentrating growth and trips in urban areas, which would lead to greater noise levels in urban areas.

n. Transportation and Circulation

The Compact Development Alternative builds on the Plan alternative, but intensifies land uses in urban areas. The Compact Development Alternative assumes an increase in demand for multi-family housing in the region. Highway investments would be made to alleviate the most critical roadway bottlenecks and to achieve operational improvements, improved truck flows, safety and demand management strategies. Additional improvements would require the identification of new funding sources, as Alternative 3 constitutes a lower investment than the proposed Plan in maintenance of roadway systems and expansion of state highways and local roads and streets. Additional bike and pedestrian improvements would enhance transportation in infill areas. The Compact Development Alternative would result in a reduction in VMT by approximately 1.3 percent compared to the Plan and would increase transit and active mode shares compared to the Plan.

o. Tribal Cultural Resources

Under the Compact Development Alternative, fewer undeveloped areas would be impacted by excavation and construction activities related to transportation projects as compared to the Plan. The Compact Development Alternative focuses on more development in infill areas and further expansion of non-motorized transportation. Under the Compact Development Alternative, anticipated development would result in approximately 14,000 acres of new land consumption as compared to over 17,000 acres under the Plan, thereby exposing fewer previously undisturbed tribal cultural resources.

6.6 Environmentally Superior Alternative

CEQA Section 15126.6 requires the selection of an environmentally superior alternative to the proposed project. This section compares the impacts of the three alternatives under consideration to those of the proposed project (2018 RTP/SCS). Table 45 shows whether each alternative is environmentally superior to, similar to, or inferior to the proposed project for each of the issue areas studied in this EIR.

The environmental analysis contained in this EIR determined that the proposed project would result in 16 significant and unavoidable impacts and several potentially significant but mitigable environmental impacts. The No Project Alternative (Alternative 1) could be considered environmentally superior overall, as it would entail the fewest projects and therefore result in the fewest construction-related impacts and ground disturbance-related impacts. However, as identified in Table 45, the No Project Alternative has greater impacts overall, including several categories compared to the proposed project; agriculture, biology, environmental justice, hazards, hydrology, and land use. The No Project alternative would also not result in several transportation improvements and the infill and TOD projects envisioned in 2018 RTP/SCS, thereby not meeting the goals set by SJCOG for this project.

The environmentally superior project is Alternative 3: Compact Development. This alternative has been evaluated to result in fewer impacts in seven categories and greater impacts in two categories compared to the proposed project as shown in Table 45. Although this project has been determined to be environmentally superior, this alternative would require limiting single-family housing as a percentage of new growth to 51 percent (as opposed to 61 percent under the 2018 RTP/SCS) and the highest level of ACE expansion and Bus Rapid Transit Corridors in urbanized areas. These more aggressive densities and transit focus were not selected as the preferred scenario by the SJCOG Board.

Table 45 Impact Comparison of Alternatives

Issue	Alternative 1: No Project	Alternative 2: Business As Usual	Alternative 3: Compact Development
Aesthetics/Visual Resources	=	-	=
Agriculture and Forestry Resources	-	-	+
Air Quality	=	-	+
Biological Resources	-	-	+
Cultural and Historic Resources	=	=	=
Energy	+	-	+
Environmental Justice	-	=	-
Geology and Soils	=	=	=
Greenhouse Gas Emissions /Climate Change	+	-	+
Hazards and Hazardous Materials	-	-	-
Hydrology and Water Quality	-	-	+
Land Use	-	=	=
Noise	=	=	-
Transportation	-	-	-
Tribal Cultural Resources	=	=	+
Total	-	-	+

+ Alternative would result in fewer impacts than the 2018 RTP/SCS

= Alternative would result in impacts similar to the 2018 RTP/SCS

- Alternative would result in worsened or additional impacts than the 2018 RTP/SCS

+/- Alternative would result in impacts both better and worse than the 2018 RTP/SCS

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