Shasta Regional Transportation Agency

2015 Regional Transportation Plan for Shasta County

Draft
Environmental Impact Report
SCH# 2014022018

March 2015

Environmental Scientists Planners Engineers

DRAFT
ENVIRONMENTAL IMPACT REPORT

2015 REGIONAL TRANSPORTATION PLAN FOR SHASTA COUNTY

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March 2015

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SHASTA REGIONAL TRANSPORTATION AGENCY (SRTA)
2015 RTP EIR

Table of Contents

Page

Executive Summary ES-1

1.0 Introduction 1-1
- 1.1 Statement of Purpose 1-1
- 1.2 Project Background 1-1
- 1.3 Type of Environmental Document 1-3
- 1.4 EIR Content and Format 1-4
- 1.5 EIR Baseline and Approach for Impact Analysis 1-5

2.0 Project Description 2-1
- 2.1 Project Applicant 2-1
- 2.2 Project Objectives 2-1
- 2.3 Project Location 2-5
- 2.4 Project Characteristics 2-7
- 2.5 Project Approvals 2-15
- 2.6 Relationship With Other Plans and Programs 2-15

3.0 Environmental Setting
- 3.1 Regional Setting 3-1
- 3.2 Regional Transportation System 3-1
- 3.3 Cumulative Projects Setting 3-3

4.0 Environmental Impact Analysis 4-1
- 4.1 Aesthetics 4.1-1
- 4.2 Air Quality 4.2-1
- 4.3 Biological Resources 4.3-1
- 4.4 Cultural Resources 4.4-1
- 4.5 Energy 4.5-1
- 4.6 Environmental Justice 4.6-1
- 4.7 Geology 4.7-1
- 4.8 Greenhouse Gas Emissions/Climate Change 4.8-1
- 4.9 Hydrology and Water Resources 4.9-1
- 4.10 Land Use 4.10-1
- 4.11 Noise 4.11-1
- 4.12 Transportation and Circulation 4.12-1
- 4.13 Less than Significant Environmental Factors 4.13-1

5.0 Long-Term Effects 5-1
- 5.1 Growth-Inducing Impacts 5-1
- 5.2 Irreversible Effects 5-2

6.0 Alternatives 6-1
6.1 Alternative 1: No Project Alternative 6-2
6.2 Alternative 2: Mobility – Enhanced Transportation Choices 6-6
6.3 Alternative 3: Accessibility – Encourage Transportation Efficient Land Use 6-10
6.4 Environmentally Superior Alternative 6-14

7.0 References and Preparers
7.1 References 7-1
7.2 List of Preparers 7-9

List of Figures

Figure 2-1 RTP Plan Area 2-6
Figure 2-2 RTP Projects (Constrained) 2-9
Figure 4.2-1 Shasta County Ozone Trend Summary 4.2-9
Figure 4.3-1 Wildlife Habitat (WHR) Classifications 4.3-3
Figure 4.3-2 Riverine Systems 4.3-13
Figure 4.3-3 Critical Habitat 4.3-17
Figure 4.7-1 Geomorphic Provinces in Shasta County 4.7-2
Figure 4.7-2 Shasta County Earthquake Faults 4.7-6
Figure 4.7-3 Northern California Volcanic Hazards 4.7-9
Figure 4.9-1 Shasta County Hydrology 4.9-3
Figure 4.9-2 Shasta County Flood Hazards 4.9-7
Figure 4.10-1 FMMP and Williamson Act Lands 4.10-3
Figure 4.11-1 Noise Compatibility Matrix 4.11-8

List of Tables

Table ES-1 Summary of Environmental Impacts, Mitigation Measures, and Significance After Mitigation ES-4
Table 4.1-1 Shasta County General Plan Objectives and Policies 4.1-4
Table 4.1-2 2015 RTP Projects That May Result in Aesthetic Impacts 4.1-11
Table 4.2-1 Description of Selected Air Contaminants 4.2-3
Table 4.2-2 Current Federal and State Ambient Air Quality Standards 4.2-6
Table 4.2-3 Shasta County Air Quality Emission Violation Days 1988-2001 ..... 4.2-7
Table 4.2-4 Shasta County Federal 8-hr Ozone Emission Violation Days 2001-2011 ..... 4.2-7
Table 4.2-5 Shasta County Percent of Days Exceeding Federal Standards 2000-2013 ..... 4.2-8
Table 4.2-6 Ozone Emissions Inventory Data for NSVAB (tons/day) 4.2-9
Table 4.2-7 SCAQMD Air Quality Emission Thresholds (lbs/day) 4.2-10
Table 4.2-8 Regional Emissions Analysis 4.2-15
Table 4.2-9 On-Road Mobile Source Toxics Comparison 4.2-17
Table 4.3-1 Sensitive Communities and Critical Habitats Documented within Shasta County 4.3-16
Table 4.3-2 Special-Status Animal Species Known to Occur or with Potential to Occur within Shasta County 4.3-19

Table 4.3-3 Special-Status Plant Species Known to Occur or with Potential to Occur within Shasta County 4.3-26
Table 4.3-4 Local General Plan Goals, Objectives, Policies and Implementation Measures 4.3-39
Table 4.3-5 2015 RTP Projects that May Result in Biological Resources Impacts 4.3-61
Table 4.4-1 Shasta County Historical Resources 4.4-3
Table 4.4-2 Caltrans Historic Bridge Inventory 4.4-6
Table 4.4-3 2015 RTP/SCS Projects that May Result in Cultural Resources Impacts 4.4-12
Table 4.5-1 Annual Energy and Natural Gas Consumption in Shasta County 4.5-2
Table 4.5-2 Annual Gasoline, Diesel and Energy Consumption in Shasta County 4.5-3
Table 4.5-3 Indirect Energy Consumption Factors 4.5-9
Table 4.5-4 Direct and Indirect Transportation Energy Use 4.5-10
Table 4.6-1 Population, Race, and Ethnicity in the SRTA Region (2012) 4.6-3
Table 4.6-2 Income and Poverty in the SRTA Region (2012) 4.6-4
Table 4.6-3 Transportation Modes to Work in the SRTA Region (2012) 4.6-6
Table 4.7-1 Modified Mercalli Intensity Scale 4.7-4
Table 4.7-2 2015 RTP/SCS Projects that May Result in Geologic and Soil Impacts 4.7-13
Table 4.8-1 Per Capita Carbon Dioxide Emission Comparison: All Vehicle Classes 4.8-14
Table 4.8-2 Per Capita Carbon Dioxide Emission Comparison: Passenger Vehicles 4.8-16
Table 4.9-1 Redding Basin Supply and Demand 4.9-5
Table 4.9-2 Shasta County Water Bodies Listed as Impaired 4.9-6
Table 4.10-1 2015 RTP Projects that May Result in Agriculture Impacts 4.10-17
Table 4.11-1 Noise Abatement Criteria 4.11-6
Table 4.11-2 Local General Plan Noise Policies 4.11-10
Table 4.11-3 Shasta County General Plan Noise Element - Noise Level Performance Standards for New Projects Affected by or Including Non-Transportation Sources 4.11-12
Table 4.11-4 Shasta County General Plan Noise Element - Maximum Allowable Noise Exposure Transportation Noise Sources 4.11-13
Table 4.11-5 Typical Construction Noise Levels (in dBA) 4.11-15
Table 4.11-6 Construction Equipment Vibration Levels 4.11-16
Table 4.12-1 Total Annual VMT 4.12-10
Table 6-1 Regional Emissions Analysis 6-7
Table 6-2 Per Capita Carbon Dioxide Emission Comparison: All Vehicle Classes 6-9
Table 6-3 Regional Emissions Analysis 6-11
Table 6-4 Per Capita Carbon Dioxide Emission Comparison: All Vehicle Classes 6-13
Table 6-5 Impact Comparison and Ranking of Project Alternatives 6-15

Appendices

Appendix A: Notice of Preparation (NOP) and NOP Responses
Appendix B: Draft RTP Projects List

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EXECUTIVE SUMMARY

This section summarizes the characteristics of the proposed project, as well as the project's environmental impacts and recommended mitigation measures.

PROJECT SYNOPSIS

Project Applicant

The project applicant is the Shasta Regional Transportation Agency (SRTA).

Project Description

The Shasta Regional Transportation Agency (SRTA), as both the federally-designated metropolitan planning organization (MPO) and the state-designated regional transportation planning agency (RTPA) for Shasta County, is required by both federal and state law to prepare a long-range (at least 20-years) transportation planning document, known as a Regional Transportation Plan (RTP). The RTP is an action-oriented document used to achieve a coordinated and balanced regional transportation system. California Government Code §65080 et seq. and Title 23 United States Code (USC) §134 require Regional Transportation Planning Agencies (RTPA) and Metropolitan Planning Organizations (MPO) to prepare long-range transportation plans to: 1) establish regional goals, 2) identify present and future needs, deficiencies and constraints, 3) analyze potential solutions, 4) estimate available funding, and 5) propose investments. State statues require that the RTP serve as the foundation for the short-range transportation planning documents: the Regional and Federal Transportation Improvement Programs (RTIP and FTIP).

For the first time, SRTA now has the responsibility to prepare a Sustainable Communities Strategy (SCS) as part of the RTP, pursuant to the requirements of California Senate Bill 375 (SB 375) as adopted in 2008. The SCS sets forth a forecasted development pattern for the region, which, when integrated with the transportation network and other transportation measures and policies, is intended to reduce greenhouse gas (GHG) emissions from passenger vehicles and light trucks to achieve the regional GHG reduction targets set by the California Air Resources Board (CARB).

Under both federal and state law, SRTA must update its RTP every five years, however, beginning in 2018, the RTP will be updated every four years. The 2015 RTP is the long-range planning, policy, action, and financial document for the Shasta County region. The RTP covers a period from 2015 to 2035 and is a revised version of the 2010 RTP. The RTP identifies the region's transportation needs and issues and sets forth actions, programs, and projects to address those needs and issues. The RTP adopts policies, sets goals, and identifies financial resources to encourage and promote the safe and efficient management, operation, and development of a regional intermodal transportation system that would serve the mobility needs of goods and people. In addition, as the MPO for Shasta County, SRTA is required to prepare a SCS that demonstrates how GHG reduction targets will be met through integrated land use, housing, and transportation planning. Thus the RTP will address both the transportation component of the RTP, as well as the land use component of the SCS. The 2015

RTP simultaneously addresses the region's transportation needs and promotes increased development densities and improving commercial and residential access to transit services. It should be noted that SRTA does not propose any land use changes, but rather the land use patterns envisioned by the RTP are based on the General Plan land use and zoning designations of the local agencies (the three incorporated cities and the county). The RTP is consistent with the land use and zoning designations in the incorporated and unincorporated areas.

CARB set GHG reduction targets for the SRTA region from on-road light-duty trucks and passenger vehicles as a 0% reduction from 2005 emissions levels by 2020 and a 0% reduction from 2005 emissions levels by 2035. These targets apply to the SRTA region as a whole for all on-road light-duty trucks and passenger vehicles emissions, and not to individual cities or sub-regions.

SB 375 specifically states that local governments retain their autonomy to plan local General Plan policies and land uses. The RTP rather is intended to provide a regional policy foundation that local governments may build upon, if they so choose. As described above, the RTP does not propose to change any land use and zoning designations; rather, the land use scenario envisioned by the RTP is based on and would be consistent with the existing local General Plan policies and land use designations as specified by the local agencies. As such, the RTP includes and accommodates the quantitative growth projections for the region based on the land use capacity of the local General Plans. SB 375 also requires that the RTP's forecasted development pattern for the region be consistent with the five-year regional housing needs as allocated to member jurisdictions through the Regional Housing Needs Allocation (RHNA) process under State housing law.

ALTERNATIVES

As required by Section 15126(d) of the *State CEQA Guidelines,* this EIR examines a range of reasonable alternatives to the proposed project 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 CARB. The alternative land use and transportation scenarios modeled and analyzed by SRTA are described in Appendix E and the preferred scenario is described in detail within Chapter 2, of the 2015 RTP. Scenarios were based on policies and goals adopted by the SRTA Board of Directors. Performance measures were then developed to measure the effectiveness of each alternative in meeting the goals and objectives for the region. The EIR includes the following alternatives to the proposed 2015 RTP:

Alternative 1: No Project Alternative: The No Project Alternative represents the continued implementation of the 2010 RTP, updated to reflect current conditions and forecasts.

Alternative 2: Mobility - Enhanced Transportation Choices: Alternative 2 focuses on increasing the use of multi-modal transportation options by making aggressive transit and active transportation investments across Shasta County. Additional funding for alternative transportation modes is assumed in the form of increased state grant support for active transportation projects; SRTA's continued support of local agencies in seeking active transportation grants; and an additional funding emphasis on active transportation by SRTA.

Future populations would be more dispersed than in the 2015 RTP; however, active transportation and transit projects would improve mobility options.

Alternative 3: Accessibility - Encourage Transportation Efficient Land Use. Alternative 3 focuses on transportation-efficient land use patterns. This is accomplished by way of targeted transportation investments and the application of regional and local incentives, programs, and policies that encourage infill and redevelopment on vacant and underutilized parcels within strategic growth areas. The level of transportation investments by mode would not change from current practice; however, the location of said investments would favor transportation-efficient urban areas and rural community centers. Residential densities would be higher than the 2015 RTP, resulting in fewer acres of land converted for new development. Funding for development incentives is assumed to come from state grants such as Cap and Trade, Affordable Housing and Sustainable Development programs.

SUMMARY OF IMPACTS AND MITIGATION MEASURES

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 regional assessment of the impacts of the proposed 2015 RTP. 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 2015 RTP 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 infill development projects consistent with the 2015 RTP's SCS chapter.

For the air quality, energy, greenhouse gas, and traffic environmental impacts resulting from the Program, 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.

Class I impacts are defined as significant, unavoidable adverse impacts which require the adoption of a statement of overriding considerations per Section 15093 of the State CEQA Guidelines if the project is approved. Class II impacts are significant adverse impacts that can

be feasibly mitigated to less than significant levels and which require findings to be made under Section 15091 of the State CEQA Guidelines. Class III are considered less than significant impacts, and Class IV are beneficial effects. Where mitigation is called for by the "Project Sponsor," "project sponsor" refers to the lead agency, such as Caltrans, Shasta County, or the cities of Anderson, Redding or Shasta Lake, in charge of approving a transportation or land development project in accordance with the 2015 RTP.

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

Impact	Mitigation Measures	Significance After Mitigation
AESTHETICS		
Impact AES-1 Proposed transportation improvement projects under the 2015 RTP, as well as the land use patterns envisioned by the 2015 RTP, may affect public views along eligible scenic corridors, adjacent landscaping, and other scenic routes considered to have high scenic qualities. This would be a Class II, *significant but mitigable* impact.	**AES-1(a)** Where a particular 2015 RTP transportation improvement project affects adjacent landforms, the project sponsor shall ensure that recontouring provides a smooth and gradual transition between modified landforms and existing grade. **AES-1(b)** The project sponsor shall ensure that landscaping is installed to restore natural features along corridors after widening, interchange modifications, realignment, or construction of ancillary facilities. Associated landscape materials and design shall enhance landform variation, provide erosion control, and blend with the natural setting. To ensure compliance with approved landscape plans, the implementing agency shall provide a performance security equal to the value of the landscaping/irrigation installation. **AES-1(c)** The project sponsor shall ensure that a project in a scenic view corridor will have the minimum possible impact upon foliage, existing landscape architecture and natural scenic views, consistent with project goals. **AES-1(d)** Potential noise impacts arising from increased traffic volumes associated with adjacent land development shall be preferentially mitigated through the use of setbacks and the acoustical design of adjacent proposed structures. The use of sound walls, or any other architectural features that could block views from the scenic highways or other view corridors, shall be discouraged to the extent possible. Where use of sound walls is found to be necessary, walls shall incorporate offsets, accents, and landscaping to prevent monotony. In addition, sound walls should be complementary in color and texture to surrounding natural features.	*Less than significant.*
Impact AES-2 Development of proposed transportation improvement projects under the 2015 RTP, as well as the land use patterns envisioned by the 2015 RTP, would contribute to the alteration of Shasta County's character from primarily rural (or semi-rural) to a somewhat more small urban condition. This would	**AES-2(a)** Roadway extensions and widenings shall avoid the removal of existing mature trees to the extent possible. The loss of trees that are protected by local agencies shall be replaced at a minimum 2:1 basis and incorporated into the landscaping design for the roadway. The project sponsor of a particular 2015 RTP project shall ensure the continued vitality of replaced trees through periodic maintenance (see Mitigation Measure B-1(j) prescribed in Section 4.10 *Biological Resources*.)	*Less than significant.*

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

Impact	Mitigation Measures	Significance After Mitigation
be a Class II, *significant but mitigable impact.*	**AES-2(b)** Roadway lighting shall be minimized to the extent possible, 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 hoods, low intensity lighting, and using as few lights as necessary to achieve the goals of the project. **AES-2(c)** Bus shelters and other ancillary facilities constructed as part of roadway improvements under the 2015 RTP shall be designed in accordance with the architectural review requirements of the local jurisdiction in which the project is proposed. Mitigation measures AES-1(a) through AES-1(c) would also incrementally reduce potential impacts.	
AIR QUALITY		
Impact AQ-1 Construction activities associated with transportation projects under the 2015 RTP, as well as the land use patterns envisioned by the SCS would have the potential to result in temporary adverse impacts on air quality in Shasta County. Impacts would be Class II, *significant but mitigable.*	**AQ-1** The individual project lead agency shall ensure that all feasible and appropriate SCAQMD Standard Mitigation Measures (SMMS) and Best Available Mitigation Measures (BAMMs) are implemented. The measures shall be noted on all construction plans and the lead agency shall perform periodic site inspections. SCAQMD SMMs and BAMMs include, but are not limited to, the following: Fugitive dust emissions: • Implement all adequate dust control measures in a timely and effective manner during all phases of project development and construction; • Water all excavated, stockpiled, or graded material to prevent fugitive dust from leaving property boundaries and causing a public nuisance or a violation of an ambient air standard. Watering shall occur at least twice daily with complete site coverage, preferably in the mid-morning and after work is completed each day; • During initial grading, earth moving, or site preparation, construct a paved (or dust palliative treated) apron, at least 100 feet in length, onto the project site from the adjacent paved road(s); • Sweep adjacent paved streets (recommend water sweeper with reclaimed water) at the end of each day if substantial volumes of soil materials have been carried onto adjacent public paved roads from the project site; • Install sandbags or other erosion control measures to prevent silt runoff to roadways; • Apply Department of Public Works approved non-toxic soil stabilizers (according to manufacturer's	*Less than significant.*

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

Impact	Mitigation Measures	Significance After Mitigation
	specifications) to all inactive construction areas (previously graded areas which remain inactive for 96 hours); • Replant vegetation in disturbed areas as quickly as possible; • Cover all trucks hauling soil, sand, and other loose materials, or require all trucks to maintain at least two feet of freeboard; • Use wheel washers or wash off tires of all trucks exiting the construction site; and • Mitigate fugitive dust emissions from wind erosion of areas disturbed from construction activities (including storage piles) by application of either water or chemical dust suppressant. Exhaust emissions from diesel heavy equipment: • Shut down equipment when not in use to limit engine idling time. Idling time shall be limited to no more than 3 minutes. This idling limit does not apply to circumstances as stated in the California Environmental Protection Agency Air Resources Board Advisory Number 377 (2008); • Provide regular preventive equipment maintenance to prevent emission increases due to engine problems; • Use low sulfur and low aromatic fuels meeting California standards for motor vehicle diesel fuel; and • Use low-emitting gas and diesel engines meeting state and federal emissions standards (Tier I, II, III) for construction equipment. Other emissions: • Use low VOC coatings for the architectural coating phase of construction. All coatings must meet the VOC limits per SCAQMD Rule 3-31; • Use asphalt mixtures appropriate for the time of year of application, while maintaining compliance with the lead agency's road design and construction standards; • Use alternatives to open burning of vegetative material on the project site, unless otherwise deemed infeasible by the SCAQMD. Among suitable alternatives are chipping, mulching, or conversion to biomass fuel; • Provide for temporary traffic control as appropriate during all phases of construction to improve traffic flow as deemed appropriate by the Department	

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

Impact	Mitigation Measures	Significance After Mitigation
	of Public Works and/or Caltrans; and • Schedule construction activities that direct traffic flow to off-peak hours as much as practicable.	
Impact AQ-2 Implementation of the 2015 RTP would result in an overall reduction of on-road vehicle emissions when compared to existing conditions and the future 'No Project' scenario. Therefore, long-term operational impacts would be Class III, *less than significant.*	None required.	*Less than significant.*
Impact AQ-3 The transportation improvement projects included under the 2015 RTP and the land use scenario envisioned by the SCS may facilitate increased exposure of sensitive receptors to hazardous air pollutants that may cause health risks and odors that may be a nuisance. Implementation of the 2015 RTP would not result in a regional increase in toxic air emissions when compared to the future 'No Project' scenario. However, localized increases may occur as a result of development facilitated by the SCS land use scenario. Impacts would be Class II, *significant but mitigable.*	**AQ-3** The lead agency shall retain a qualified air quality consultant to prepare a health risk assessment 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 polluters prior to issuance of a demolition, grading, or building permit. The health risk assessment shall be submitted to the Lead Agency for review and approval. The lead agency shall implement any approved health risk assessment recommendations to a level which would not result in exposure of sensitive receptors to substantial pollutant concentrations. Such measures may include: • Do not locate sensitive receptors in the same building as a perchloroethylene dry cleaning facility. • 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 system or other air take system in the building, or in each individual residential unit, that meets the efficiency standard of the minimum efficiency reporting value 13. The heating and ventilation 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 high efficiency particulate absorption filters or American Society of Heating, Refrigeration, and Air-Conditioning Engineers 85% supply filters should be used. • Retain a qualified heating and ventilation consultant or high efficiency particulate absorption rate during the design phase of the project to locate the heating and ventilation system based on exposure modeling from the mobile and/or stationary pollutant sources.	*Less than significant.*

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

Impact	Mitigation Measures	Significance After Mitigation
	• Maintain positive pressure within the building. • Achieve a performance standard of at least one air exchange per hour of fresh outside filtered air. • Achieve a performance standard of at least 4 air exchanges per hour of recirculation. • Achieve a performance standard of 0.25 air exchanges per hour of in unfiltered infiltration if the building is not positively pressurized.	
Impact AQ-4 Re-entrained dust has the potential to increase airborne particulate matter levels in Shasta County. The increase in growth expected through the 2015 RTP planning horizon would result in additional VMT, which would add to the particulate emissions levels in the area. However, re-entrained dust levels would be lower with the 2015 RTP than the 'No Project' scenario and 2005 and 2013 baselines. Impacts would be Class III, *less than significant*.	None required.	*Less than significant.*
Impact AQ-5 The 2015 RTP reduces emissions of ozone precursors consistent with the goals of the 2012 Triennial Update of the NSVAB AQAP, impacts would be Class III, *less than significant.*	None required.	*Less than significant.*
BIOLOGY		
Impact B-1 Implementation of transportation improvements proposed and the land use scenario envisioned by the 2015 RTP may result in impacts to special status plant and animal species. Impacts would be Class II, *significant but mitigable*.	**B-1(a) Biological Resources Screening and Assessment**. Because of the programmatic nature of the 2015 RTP and specific impacts for a given project are unknown at this time, on a project-by-project basis upon completion of final design, 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 (BRA) or similar type of study to document the existing biological resources within the project footprint plus a buffer and to determine the potential impacts to those resources. The BRA 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, and other resources judged to be sensitive by local, state, and/or federal agencies. Pending the results of the BRA, design alterations, further	*Less than significant.*

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

Impact	Mitigation Measures	Significance After Mitigation
	technical studies (i.e. protocol surveys) and/or consultations with the USFWS, CDFW and/or other local, state, and federal agencies may be required. The following mitigation measures [B-1(b) through B-1(k)] shall be incorporated, only as applicable, into the BRA 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 BRA where suitable habitat is present. **B-1(b) Special Status Plant Species Surveys**. If completion of the project-specific BRA determines that special status plant species may occur on-site, surveys for special status plants shall be completed prior to any vegetation removal, grubbing, or other construction activity of each segment (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 BRA. All plant surveys shall be conducted by a qualified biologist approved by the implementing agency no more than two years before initial ground disturbance. All special status plant species identified on-site shall be mapped onto a site-specific aerial photograph and topographic map. Surveys shall be conducted in accordance with the most current protocols established by the CDFW, USFWS, and the local jurisdictions if said protocols exist. A report of the survey results shall be submitted to the implementing agency, and the CDFW and/or USFWS, as appropriate, for review and approval. **B-1(c) Special Status Plant Species Avoidance, Minimization, and Mitigation**. If state listed or California Rare Plant List 1B species are found during special status plant surveys [pursuant to mitigation measure B-1(b)], then the project shall be re-designed to avoid impacting these plant species, if feasible. Rare plant occurrences 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. **B-1(d) Restoration and Monitoring**. If special status plants species cannot be avoided and will be impacted by a project implemented under the 2015 RTP, all impacts shall be mitigated at a minimum ratio of 2:1 (number of acres/individuals restored to number of acres/individuals impacted) for each species as a component of habitat restoration. A restoration plan shall be prepared and submitted to the jurisdiction overseeing the project for approval. (Note: if a state listed plant species will be impacted, the restoration plan shall be submitted to the CDFW for approval). The restoration plan shall include, at a minimum, the following components:	

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

Impact	Mitigation Measures	Significance After Mitigation
	• 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 be, at a minimum, at least 80 percent survival of container plants and 30 percent relative cover by vegetation type. • An adaptive management program and remedial measures to address any shortcomings in meeting success criteria. • Notification of completion of compensatory mitigation and agency confirmation. • Contingency measures (initiating procedures, alternative locations for contingency compensatory mitigation, funding mechanism). **B-1(e) Endangered/Threatened Species Habitat Assessment and Protocol Surveys**. Specific habitat assessment and survey protocol surveys are established for several federally and state endangered or threatened species. If the results of the BRA determine that suitable habitat may be present any such species, protocol habitat assessments/surveys shall be completed in accordance with CDFW and/or USFWS protocols prior to issuance of any construction permits. If through consultation with the CDFW and/or USFWS it is determined that protocol habitat assessments/surveys are not required, said consultation shall be documented prior to issuance of any construction permits. Each protocol has different survey and timing requirements. The applicants for	

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

Impact	Mitigation Measures	Significance After Mitigation
	each project shall be responsible for ensuring they understand the protocol requirements. **B-1(f) Endangered/Threatened Species Avoidance and Minimization.** The habitat requirements of endangered and threatened species throughout Shasta County are highly variable. The potential impacts from any given project implemented under the 2015 RTP are likewise highly variable. However, there are several avoidance and minimization measures that can be applied for a variety of species to reduce the potential for impact, with the final goal of no net loss of the species. The following measures may be applied to aquatic and/or terrestrial species. Project lead agencies shall select from these measures as appropriate. • 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, if feasible, 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 CDFW and/or USFWS-approved biologist present during all initial ground disturbing/vegetation-clearing activities. Once initial ground disturbing/vegetation clearing activities have been completed, said biologist shall conduct daily pre-activity clearance surveys for endangered/threatened species. Alternatively, and upon approval of the CDFW and/or USFWS, 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 expressed permission from the CDFW and/or USFWS. • 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. A CDFW/USFWS-approved biologist shall document the occurrence and consult with the CDFW and/or USFWS as appropriate.	

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

Impact	Mitigation Measures	Significance After Mitigation
	• For all projects occurring in areas where endangered/ threatened species may be present and are at risk of entering the project site during construction, exclusion fencing shall be placed along the project boundaries prior to start of construction (including staging and mobilization). The placement of the fence shall be at the discretion of the CDFW/USFWS-approved biologist. This fence shall consist of solid silt fencing placed at a minimum of 3 feet above grade and 2 feet below grade and shall be attached to wooden stakes placed at intervals of not more than 5 feet. The fence shall be inspected weekly and following rain events and high wind events and shall be maintained in good working condition until all construction activities are complete. • 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 streams 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. • If water is to be diverted around work sites, a diversion plan shall be submitted (depending upon the species that may be present) to the CDFW, RWQCB, USFWS, and/or NMFS for their review and approval prior to the start of any construction activities (including staging and mobilization). If pumps are used, all intakes shall be completely screened with wire mesh not larger than five millimeters to prevent animals from entering the pump system. • At the end of each workday, excavations shall be secured with cover or a ramp provided to prevent wildlife entrapment. • All trenches, pipes, culverts or similar structures shall be inspected for animals prior to burying, capping, moving, or filling.	

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

Impact	Mitigation Measures	Significance After Mitigation
	• The CDFW/USFWS-approved biologist shall remove invasive aquatic species such as bullfrogs and crayfish from suitable aquatic habitat whenever observed and shall dispatch them in a humane manner and dispose of properly. • If any federally and/or state protected species are harmed, the CDFW/USFWS-approved biologist shall document the circumstances that led to harm and shall determine if project activities should cease or be altered in an effort to avoid additional harm to these species. Dead or injured special status species shall be disposed of at the discretion of the CDFW and USFWS. All incidences of harm shall be reported to the CDFW and USFWS within 48 hours. • Considering the potential for projects to impact federal and state listed species and their habitat, SRTA and lead agencies shall contact the CDFW and USFWS to identify mitigation banks within Shasta County during development of the RTP. Upon implementation of projects included in the RTP, but on a project-by-project basis, if the results of the BRA determines that impacts to federal and state threatened or endangered species habitat are expected, lead agencies shall explore species-appropriate mitigation bank(s) servicing the county for purchase of mitigation credits. **B-1(g) Non-Listed Special Status Animal Species Avoidance and Minimization**. Several State Species of Special Concern may be impacted by projects implemented under the 2015 RTP. The ecological requirements and potential for impacts is highly variable among these species. Depending on the species identified in the BRA, several of the measures identified under B-1(f) shall be applicable to the project. In addition, measures shall be selected from among the following to reduce the potential for impacts to non-listed special status animal species: • For non-listed special-status terrestrial amphibians and reptiles, coverboard surveys shall be completed within three months of the start of construction. The coverboards shall be at least four feet by four feet and constructed of untreated plywood placed flat on the ground. The coverboards shall be checked by a qualified biologist once per week for each week after placement up until the start of vegetation removal. All non-listed special status and common animals found under the coverboards shall be captured and placed in five-gallon buckets for transportation to relocation sites. All	

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

Impact	Mitigation Measures	Significance After Mitigation
	relocation sites shall be reviewed by the project lead agency and shall consist of suitable habitat. Relocation sites shall be as close to the capture site as possible but far enough away to ensure the animal(s) is not harmed by construction of the project. Relocation shall occur on the same day as capture. CNDDB Field Survey Forms shall be submitted to the CFDW for all special-status animal species observed. • Pre-construction clearance surveys shall be conducted within 14 days of the start of construction (including staging and mobilization). The surveys shall cover the entire disturbance footprint plus a minimum 200-foot buffer, if feasible, 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 (e.g., American badger). A report of the pre-construction survey shall be submitted to the lead 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 pre-construction 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, a qualified biologist shall conduct within 30 days of the start of construction 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 roosts are located, exclusion devices such as netting shall be installed to discourage bats from occupying the site. If a roost is determined by a qualified biologist to be used by a large number of bats (large hibernaculum), bat boxes shall be installed near the project site. The number of bat boxes installed will depend on the size of the hibernaculum and shall be determined through consultations with the CDFW. If a maternity colony has become established, all	

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

Impact	Mitigation Measures	Significance After Mitigation
	construction activities shall be postponed within a 500-foot buffer around the maternity colony until it is determined by a qualified biologist that the young have dispersed. Once it has been determined that the roost is clear of bats, the roost shall be removed immediately. **B-1(h) Preconstruction Surveys for Nesting Birds for Construction Occurring within Nesting Season**. For projects that may result in tree felling or removal of trees or vegetation that may contain a nesting bird, if feasible, construction activities should occur generally between September 16 to January 31 (thus outside of the nesting season). However, if construction activities must during the nesting season (generally February 1 to September 15), surveys for nesting birds covered by the California Fish and Game Code and the Migratory Bird Treaty Act shall be conducted by a qualified biologist no more than 14 days prior to vegetation removal. The surveys shall include the entire segment disturbance area plus a 200-foot buffer around the site. If active nests are located, all construction work shall be conducted outside a buffer zone from the nest to be determined by the qualified biologist. The buffer shall be a minimum of 50 feet for non-raptor bird species and at least 150 feet for raptor species. Larger buffers may be required depending upon the status of the nest and the construction activities occurring in the vicinity of the nest. The buffer area(s) shall be closed to all construction personnel and equipment until the adults and young are no longer reliant on the nest site. A qualified biologist shall confirm that breeding/nesting is completed and young have fledged the nest prior to removal of the buffer. A report of these preconstruction nesting bird surveys shall be submitted to the lead agency to document compliance. **B-1(i) Worker Environmental Awareness Program (WEAP)**. Prior to initiation of construction activities for applicable projects (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	

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

Impact	Mitigation Measures	Significance After Mitigation
	provided by the trainer indicating they have attended the WEAP and understand the information presented to them. The form shall be submitted to the lead agency to document compliance. **B-1(j) Tree Protection**. If it is determined that construction may impact trees protected by local agencies, the project lead agency shall procure all necessary tree removal permits. A certified arborist shall develop a tree protection and replacement plan as appropriate. The plan shall include, but would not be limited to, an inventory of trees to within the construction site, setbacks from trees and protective fencing, restrictions regarding grading and paving near trees, direction regarding pruning and digging within root zone of trees, and requirements for replacement and maintenance of trees. If protected trees will be removed, replacement tree plantings of like species in accordance with local agency standards, but at a minimum ratio of 2:1 (trees planted to trees impacted), shall be installed on-site or at an approved off-site location and a restoration and monitoring program shall be developed in accordance with B-1(d) and shall be implemented for a minimum of seven years or until stasis has been determined by certified arborist. If a protected tree shall be encroached upon but not removed, a certified arborist shall be present to oversee all trimming of roots and branches.	
Impact B-2 Implementation of transportation improvements proposed and the land use scenario envisioned by the 2015 RTP may result in impacts to sensitive habitats, including federally protected wetlands. This impact would be Class II, *significant but mitigable.*	**B-2(a) Jurisdictional Delineation**. If projects implemented under the 2015 RTP occur within or adjacent to wetland, drainages, riparian habitats, or other areas that may fall under the jurisdiction of the CDFW, USACE, and/or RWQCB, a qualified biologist shall complete 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 preliminary jurisdictional delineation report that shall be submitted to the implementing agency, USACE, RWQCB, and CDFW, as appropriate, for review and approval. If jurisdictional areas are expected to be impacted, then the RWQCB would require a Waste Discharge Requirements (WDR) permit and/or Section 401 Water Quality Certification (depending upon whether or not the feature falls under federal jurisdiction). If CDFW asserts its jurisdictional authority, then a Streambed Alteration Agreement pursuant to Section 1600 *et seq.* of the California Fish and Game Code would also be required prior to construction within the areas of CDFW jurisdiction. If the USACE asserts its authority, then a permit pursuant to Section 404 of the Clean Water Act would likely be required. **B-2(b) Wetland and Riparian Habitat Restored.** Impacts to jurisdictional wetland and riparian habitat shall be mitigated at a minimum ratio of 2:1 (acres of	*Less than significant.*

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

Impact	Mitigation Measures	Significance After Mitigation
	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 mitigation measure B-1(d) above and shall be implemented for no less than five years after construction of the segment, or until the lead agency and/or the permitting authority (e.g., CDFW or USACE) has determined that restoration has been successful. Alternately, mitigation may occur through the purchase of credits at a USACE approved mitigation bank or contribution to the USACE in-lieu fee program within the USACE Sacramento District. **B-2(c) Landscaping Plan.** If landscaping is proposed for projects occurring within or adjacent to sensitive habitats, 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 Lists 1, 2, and 4 shall not be permitted. Species selected for planting shall be similar to those species found in adjacent native habitats. **B-2(d) Invasive Weed Prevention and Management Program.** Prior to start of construction for projects occurring within or adjacent to sensitive 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. A list of target species shall be included, along with measures for early detection and eradication. 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.	
Impact B-3 Implementation of transportation improvements proposed and the land use scenario envisioned by the 2015 RTP may impact wildlife movement, including fish migration, and/or impede the use of a native wildlife nursery. This impact would be Class I, *significant and unavoidable.*	**B-3(a) Fence and Lighting Design.** All projects including long segments of fencing and lighting shall be designed to minimize impacts to wildlife. Fencing shall not block wildlife movement through riparian or other natural habitat. Where fencing is required for public safety concerns, the fence 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;	*Significant and unavoidable*.

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

Impact	Mitigation Measures	Significance After Mitigation
	• 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. If fencing 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. Similarly, lighting installed as part of any project shall be designed to be minimally disruptive to wildlife. This may be accomplished through the use of hoods to direct light away from natural habitat, using low intensity lighting, and using a as few lights as necessary to achieve the goals of the project. **B-3 (b) Construction Best Management Practices.** The following construction Best Management Practices (BMPs) shall be incorporated into all grading and construction plans: • Designation of a 20-mile-per-hour speed limit in all construction areas. • All vehicles and equipment shall be parked on pavement, existing roads, and previously disturbed areas, and clearing of vegetation for vehicle access shall be avoided to the greatest extent feasible. • The number of access routes, number and size of staging areas, and the total area of the activity shall be limited to the minimum necessary to achieve the goal of the project. • Designation of equipment washout and fueling areas to be located within the limits of grading at a minimum of 100 feet from waters, wetlands, or other sensitive resources as identified by a qualified biologist. Washout areas shall be designed to fully contain polluted water and materials for subsequent removal from the site. • Daily construction work schedules should be limited to daylight hours only, to the extent feasible. • Mufflers shall be used on all construction equipment and vehicles shall be in good operating condition. • Drip pans shall be placed under all stationary vehicles and mechanical equipment. • All trash shall be placed in sealed containers and shall be removed from the project site a minimum of once per week.	

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

Impact	Mitigation Measures	Significance After Mitigation
	• No pets are permitted on project site during construction.	
CULTURAL RESOURCES		
Impact CR-1 Implementation of proposed transportation improvements and the land use scenario envisioned by the 2015 RTP could disturb known and unknown cultural resources. Impacts to archaeological and paleontological resources would be Class II, significant but mitigable and impacts to historical resources would be Class I, significant and unavoidable.	**CR-1(a)** The individual project lead agency of a 2015 RTP project involving earth disturbance, the installation of pole signage or lighting, or construction of permanent above ground structures or roadways shall ensure that the following elements are included in the project's individual environmental review: 1. Prior to construction, a map defining the Area of Potential Effects (APE) shall be prepared on a project by project basis for 2015 RTP improvements which involve earth disturbance, the installation of pole signage or lighting, or construction of permanent above ground structures. This map will indicate the areas of primary and secondary disturbance associated with construction and operation of the facility and will help in determining whether known archaeological, paleontological or historical resources are located within the impact zone. 2. A preliminary study of each project area, as defined in the APE, shall be completed to determine whether or not the project area has been studied under an earlier investigation, and to determine the impacts of the previous project. 3. If the results of the preliminary studies indicate additional studies are necessary; development of field studies and/or other documentary research shall be developed and completed (Phase I studies). Negative results would result in no additional studies for the project area. 4. Based on positive results of the Phase I studies, an evaluation of identified resources shall be completed to determine the potential eligibility/ significance of the resources (Phase II studies). 5. Based on the evaluations of the Phase II studies, if necessary Phase III mitigation studies shall be coordinated with the Office of Historic Preservation, as the research design will require review and approval from the OHP. In the case of prehistoric or Native American related resources, the Native American Heritage Commission and/or local representatives of the Native American population shall be contacted and permitted to respond to the testing/mitigation programs. **CR-1(b)** If development of the proposed improvement requires the presence of an archaeological, Native American, or paleontological monitor, the individual project lead agency shall ensure that a Native	*Significant and unavoidable.*

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

Impact	Mitigation Measures	Significance After Mitigation
	American monitor, certified archaeologist, and/or certified paleontologist, as applicable, monitors the grading and/or other initial ground altering activities. The schedule and extent of the monitoring will depend on the grading schedule and/or extent of the ground alterations. This requirement can be accomplished through placement of conditions on the project by the local jurisdiction during individual environmental review. **CR-1(c)** The individual project lead agency shall ensure that materials recovered over the course of any given improvement are adequately cleaned, labeled, and curated at a recognized repository. This requirement can be accomplished through placement of conditions on the project by the local jurisdiction during individual environmental review. **CR-1(d)** The individual project lead agency shall ensure that mitigation for potential impacts to significant cultural resources includes one or more of the following: • Realign the project right-of-way (avoidance; the most preferable method). • Cap the site and leave it undisturbed. • Address structural remains with respect to NRHP guidelines (Phase III studies). • Relocate structures per NRHP guidelines. • Create interpretative facilities at the site. • Develop measures to prevent vandalism. These measures can be accomplished through placement of conditions on the project by the local jurisdiction during individual environmental review.	
ENERGY		
Impact E-1 Future transportation improvement projects and implementation of the land use scenario envisioned by the 2015 RTP would increase demand for energy beyond existing conditions. However, the 2015 RTP would result in lower VMT and consume less energy than the 'no project' scenario. The project would not increase energy use relative to future 'no project' conditions, would not result in inefficient, wasteful, or unnecessary use of energy, and would be consistent with adopted plans and policies related to energy conservation. As such, this impact would be Class III, *less than significant.*	**E-1(a)** New facilities should be designed with energy-efficient equipment and passive solar design (e.g., orientation of building to maximize natural heating and cooling, solar water heating, use of daylighting, and placement of trees to aid passive cooling, protection from prevailing winds, and maximum year-round solar access), provided that additional capital costs are offset by estimated energy savings during the first 5 years of operation. Additional improvements with longer payback periods, such as photovoltaic solar electric systems, should be considered where applicable. **E-1(b)** All lighting should be energy efficient and designed to use the least amount of energy to serve the purpose of the lighting. Lighting should utilize solar energy wherever feasible. **E-1(c)** New landscaping design and irrigation systems should be water efficient. To the extent possible, reclaimed water should be used for roadside landscape irrigation.	*Less than significant.*

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

Impact	Mitigation Measures	Significance After Mitigation
Impact E-2 2015 RTP projects would not significantly impact the transportation of energy resources within the County. This impact would be Class III, *less than significant.*	None required.	*Less than significant.*
ENVIRONMENTAL JUSTICE		
Impact EJ-1 Implementation of the 2015 RTP may cause adverse effects on a minority or low-income population; however, these potential impacts would not be disproportionately high as per Executive Order 12898 regarding environmental justice. This would be a Class III, *less than significant impact.*	None required in addition to those recommended to address impacts to Air Quality, Noise and Transportation referenced in the EIR.	*Less than significant.*
Impact EJ-2 The mobility benefits derived from the 2015 RTP related to travel times and accessibility by transit, single-occupancy vehicles, bicycling or walking will not be less for minority populations, low-income populations, and populations with low mobility in the SRTA region than for the population as a whole. This impact would be Class III, *less than significant.*	None required.	*Less than significant.*
GEOLOGY		
Impact G-1 Some proposed 2015 RTP projects could be at risk from seismic activity. Although fault rupture and seismically induced liquefaction do not pose a substantial threat in Shasta County, ground-shaking may affect 2015 RTP projects. This is considered a Class II, *significant but mitigable* impact.	**G-1** The lead agency in which a particular 2015 RTP bridge project is located shall ensure that the structure is designed and constructed to the latest geotechnical standards. In most cases, this will necessitate site-specific geologic and soils engineering investigations to exceed the code for high groundshaking zones. This can be accomplished through the placement of conditions on the project by the lead agency during individual environmental review.	*Less than significant.*
Impact G-2 Some projects proposed in the 2015 RTP may be located on unstable soils. This is considered a Class II, *significant but mitigable* impact.	**G-2** If an RTP project involves cut slopes over 15 feet in height, the lead agency in which the project is located shall ensure that specific slope stabilization studies are conducted. Possible stabilization methods include buttresses, retaining walls and soldier piles.	*Less than significant.*
Impact G-3 Implementation of proposed transportation improvements and future projects facilitated by the 2015 RTP could be subject to volcanic hazards. However, impacts are considered Class III, *less than significant.*	None required.	*Less than significant.*

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

Impact	Mitigation Measures	Significance After Mitigation
GREENHOUSE GASES		
Impact GHG-1 Construction of the transportation improvement projects and future land use patterns envisioned by the 2015 RTP would generate temporary short-term GHG emissions. Impacts would be Class II, *significant but mitigable*.	**GHG-1** The individual project lead agency shall ensure that applicable GHG-reducing diesel particulate and NO_X emissions measures for off-road construction vehicles are implemented during construction. The measures shall be noted on all construction plans and the lead agency shall perform periodic site inspections. Applicable GHG-reducing measures include the following. • Use of diesel construction equipment meeting ARB's Tier 2 certified engines or cleaner off-road heavy-duty diesel engines, and comply with the State Off-Road Regulation; • Use of on-road heavy-duty trucks that meet the ARB'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 5 minute idling limit; • Use of electric equipment in place of diesel-powered equipment, where feasible; • Substitute gasoline-powered in place of diesel-powered equipment, where feasible; • Use of alternatively fueled construction equipment on-site where feasible, 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; • Recycling of at least 50 percent of construction waste materials.	*Less than significant.*
Impact GHG-2 Implementation of the 2015 RTP would not result in a significant increase in per capita GHG emissions compared to both 2013 baseline and future 'No Project' scenario. Impacts would be Class III, *less than significant*.	None required.	*Less than significant.*
Impact GHG-3 Implementation of the 2015 RTP would not interfere with the GHG emissions reduction goals of AB 32 or SB 375. Impacts would be Class III, *less than significant.*	None required.	*Less than significant.*
Impact GHG-4 Implementation of the 2015 RTP would not interfere with the goals of applicable GHG reduction plans and policies, as well as AB 32 and SB 375. Impacts would be Class III, *less than significant.*	None required.	*Less than significant.*

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

Impact	Mitigation Measures	Significance After Mitigation
HYDROLOGY AND WATER RESOURCES		
Impact W-1 Implementation of proposed transportation improvements and future projects envisioned in the 2015 RTP would incrementally increase countywide water demand. Such impacts would be Class II, *significant but mitigable*.	**W-1(a)** The individual lead agency of a 2015 RTP project shall ensure that, where economically feasible, reclaimed water is used for dust suppression during construction activities. This measure shall be noted on construction plans and shall be spot checked by the lead agency. **W-1(b)** The individual lead agency of a 2015 RTP project shall ensure that low water use landscaping (i.e., drought tolerant plants and drip irrigation) is installed. When feasible, native plant species shall be used. **W-1(c)** The individual lead agency of a 2015 RTP project shall ensure that, if feasible, landscaping associated with proposed improvements is maintained using reclaimed water. **W-1(d)** The individual lead agency of a 2015 RTP project shall ensure that porous pavement materials are utilized, where feasible, to allow for groundwater percolation. **W-1(e)** The individual lead agency of a 2015 RTP project that requires potable water service should coordinate with water supply system operators to ensure that the existing water supply systems have the capacity to handle the increase. If the current infrastructure servicing the project site is found to be inadequate, infrastructure improvements for the appropriate public service or utility should be provided by the project sponsor. In addition, wherever feasible, reclaimed water should be used for landscaping purposes instead of potable water.	*Less than significant.*
Impact W-2 Implementation of proposed transportation improvements and future projects facilitated by the land use scenario envisioned in the 2015 RTP could result in soil erosion and contaminants in runoff, which could degrade surface and ground water quality. This impact is considered Class II, *significant but mitigable.*	**W-2(a)** The individual lead agency of a 2015 RTP 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-2(b)** The individual lead agency of a 2015 RTP widening or roadway extension project 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. **W-2(c)** For a 2015 RTP project that would disturb at least one acre, a SWPPP shall be developed prior to the initiation of grading and implemented for all construction activity on the project site. The SWPPP shall include specific BMPs to control the discharge of material from the site and into the creeks and local storm drains. BMP methods may include, but would	*Less than significant.*

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

Impact	Mitigation Measures	Significance After Mitigation
	not be limited to, the use of temporary retention basins, straw bales, sand bagging, mulching, erosion control blankets and soil stabilizers.	
Impact W-3 Implementation of proposed transportation improvements and future projects facilitated by the 2015 RTP could be subject to flood hazards due to storm events and/or dam failure. Impacts are considered Class II, *significant but mitigable*	**W-3(a)** If a 2015 RTP project is located in an area with high flooding potential due a storm event or dam inundation, the individual project lead agency 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. **W-3(b)** For 2015 RTP projects within a dam failure inundation hazard zone, the project's lead agency shall ensure that a comprehensive flood risk communication strategy is developed, which would include an evacuation plan and/or an Emergency Action Plan and promote dam failure risk awareness and safety.	*Less than significant.*
LAND USE		
Impact LU-1 Implementation of proposed transportation improvements and the land use scenario envisioned by the 2015 RTP could result in land use conflicts with existing sensitive land uses. This is considered a Class II, *significant but mitigable* impact.	Mitigation measures listed under Impact AQ-1 and AQ-3 in Section 4.2, *Air Quality,* would reduce localized air quality impacts. Mitigation measures listed under Impacts N-1, N-2, and N-3, in Section 4.11, *Noise,* would reduce potential noise impacts. No mitigation is required for impacts related to dividing established communities.	*Less than significant.*
Impact LU-2 Implementation of proposed transportation improvements and the land use scenario envisioned by the 2015 RTP could temporarily and/or permanently displace or disrupt existing residences and businesses. This is considered a Class II, *significant but mitigable* impact.	**LU-2(a)** The individual project lead agency of RTP projects with the potential to displace residences or businesses should assure that project-specific environmental reviews consider alternative alignments and developments that avoid or minimize impacts to nearby residences and businesses. **LU-2(b)** Where project-specific reviews identify displacement or relocation impacts that are unavoidable, the individual project lead agency should ensure that all applicable local, state, and federal relocation programs are used to assist eligible persons to relocate. In addition, the lead agency shall review the proposed construction schedules to ensure that adequate time is provided to allow affected businesses to find and relocate to other sites. **LU-2(c)** For all RTP projects that could result in temporary lane closures or access blockage during construction, a temporary access plan should be implemented by the lead agency to ensure continued access to affected cyclists, businesses, and homes. Appropriate signs and safe access shall be guaranteed during project construction to ensure that businesses remain open.	*Less than significant.*

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

Impact	Mitigation Measures	Significance After Mitigation
Impact LU-3 The 2015 RTP would be consistent with applicable adopted state and local goals, policies and regulations. This is a Class III, *less than significant,* impact.	None required.	*Less than significant.*
Impact LU-4 Implementation of proposed transportation improvements and the land use scenario envisioned by the RTP could redistribute residential and commercial development; however, RTP projects that are included in local General Plans would not significantly induce growth beyond that already anticipated, as the primary purpose of proposed improvements is to accommodate projected growth. This is a Class III, *less than significant,* impact.	No mitigation measures are required.	*Less than significant.*
Impact LU-5 Implementation of proposed transportation improvements and the land use scenario envisioned by the 2015 RTP could result in the conversion of agricultural lands including Prime Farmland and lands under Williamson Act contract to non-agricultural uses. This is considered a Class I, *significant and unavoidable* impact.	**LU-5(a)** When new roadway extensions or widenings are planned, the individual project lead agency should assure that project-specific environmental reviews consider alternative alignments that reduce or avoid impacts to Prime Farmlands. **LU-5(b)** Rural roadway alignments shall follow property lines to the extent feasible, to minimize impacts to the agricultural production value of any specific property. Farmers should be compensated for the loss of agricultural production at the margins of lost property, based on the amount of land deeded as road right-of-way, as a function of the total amount of production on the property. **LU-5(c)** Individual project lead agencies should consider corridor realignment, buffer zones, setbacks, and fencing to reduce conflict between agricultural lands and neighboring uses. **LU-5(d)** Quantify potential for direct conversion of Important Farmland using the Land Evaluation and Site Assessment (LESA) model or a similar quantitative tool. **LU-5(e)** Compensate for conversion impacts to Prime Farmland by purchasing agricultural conservation easements (ACE) or funding the acquisition of agricultural mitigation lands through an appropriate land trust. **LU-5(f)** Individual project lead agencies should conduct an analysis of potential conflicts with Williamson Act contracts at the project level, consistent with the State CEQA Guidelines. If the impacts of the proposed roadway projects on	*Significant and unavoidable.*

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

Impact	Mitigation Measures	Significance After Mitigation
	Williamson Act contract lands are determined to be significant, implement the following measures to reduce the impacts to a less-than-significant level: a. Design the proposed roadway projects to avoid or minimize the displacement of current and reasonably foreseeable agricultural operations from affected Williamson Act contract lands. b. Where it has been determined that cancellation of a Williamson Act contract for a parcel, or a portion of a parcel, may result in impacts to Prime or Important Farmland, Mitigation Measure LU-5(a) shall be implemented.	
NOISE		
Impact N-1 Construction activity associated with transportation improvement projects and development envisioned by the 2015 RTP would create temporary noise level increases in discrete locations throughout the County. Impacts would be Class II, *significant but mitigable.*	**N-1(a)** Individual project lead agencies of 2015 RTP projects shall ensure that, where residences or other noise sensitive uses are located within 800 feet of construction sites, appropriate measures shall be implemented to ensure consistency with local noise ordinance requirements relating to construction. Specific techniques may include, but are not limited to, restrictions on construction timing, use of sound blankets on construction equipment, and the use of temporary walls and noise barriers to block and deflect noise. **N-1(b)** If a particular project within 800 feet of sensitive receptors requires pile driving, the individual project lead agency in which this project is located shall require the use of pile drilling techniques instead, where feasible. This shall be accomplished through the placement of conditions on the project during its individual environmental review. **N-1 (c)** Individual project lead agencies shall ensure that equipment and trucks used for project construction utilize the best available noise control techniques (including mufflers, use of intake silencers, ducts, engine enclosures and acoustically attenuating shields or shrouds). **N-1(d)** Individual project lead agencies shall ensure that impact equipment (e.g., jack hammers, pavement breakers, and rock drills) used for project construction be hydraulically or electrical powered wherever feasible to avoid noise associated with compressed air exhaust from pneumatically powered tools. Where use of pneumatically powered tools is unavoidable, use of an exhaust muffler on the compressed air exhaust can lower noise levels from the exhaust by up to about 10 dBA. When feasible, external jackets on the impact equipment can achieve a reduction of 5 dBA. Whenever feasible, use quieter procedures, such as drilling rather than impact equipment operation.	*Less than significant.*

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

Impact	Mitigation Measures	Significance After Mitigation
	N-1(e) Locate stationary noise sources as far from sensitive receptors as possible. Stationary noise sources that must be located near existing receptors will be adequately muffled.	
Impact N-2 Implementation of the 2015 RTP would increase traffic-generated noise levels on highways and roadways which could expose sensitive receptors to noise in excess of normally acceptable levels. This is a Class II, *significant but mitigable,* impact.	**N-2(a)** Individual project lead agencies of 2015 RTP projects that would result in noise exceeding normally acceptable levels shall complete detailed noise assessments using applicable guidelines (e.g., Federal Transit Administration Transit Noise and Vibration Impact Assessment for rail and bus projects and the California Department of Transportation Traffic Noise Analysis Protocol for roadway projects). The lead agency shall ensure that a noise survey is conducted to determine potential alternate alignments which allow greater distance from, or greater buffering of, noise-sensitive areas. The noise survey shall be sufficient to indicate existing and projected noise levels, to determine the amount of attenuation needed to reduce potential noise impacts to applicable state and local standards. This shall be accomplished during the project's individual environmental review as necessary. **N-2(b)** Where new or expanded roadways or transit are found to expose receptors to noise exceeding normally acceptable levels, the individual project lead agency shall consider various sound attenuation techniques. The preferred methods for mitigating noise impacts will be the use of appropriate setbacks and sound attenuating building design, including retrofit of existing structures with sound attenuating building materials where feasible. In instances where use of these techniques is not feasible, the use of sound barriers (earthen berms, sound walls, or some combination of the two) will be considered. Long expanses of walls or fences should be interrupted with offsets and provided with accents to prevent monotony. Landscape pockets and pedestrian access through walls should be provided. Whenever possible, a combination of elements should be used, including open grade paving, solid fences, walls, and, landscaped berms. Determination of appropriate noise attenuation measures will be assessed on a case-by-case basis during a project's individual environmental review pursuant to the regulations of the applicable lead agency..	*Less than significant.*
Impact N-3 The proposed 2015 RTP land use scenario would encourage infill development, which may place sensitive receptors in areas with unacceptable noise levels. This is a Class II, *significant but mitigable,* impact.	**N-3** If a 2015 RTP project is located in an area with exterior ambient noise levels above local noise standards or in an area with potential cumulative noise levels above local noise standards (based on traffic volumes from regionally adopted travel demand model), the individual project lead agency shall ensure that a noise study is conducted to determine existing and projected noise levels and feasible attenuation measures needed to reduce potential noise impacts to such uses to an exterior and interior noise level below local standards. Such measures may include, but are not limited to: dual-paned windows, solid core exterior	*Less than significant.*

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

Impact	Mitigation Measures	Significance After Mitigation
	doors with perimeter weather stripping, air condition system so that windows and doors may remain closed, and situating exterior doors away from roads. This shall be accomplished during the project's individual environmental review.	
TRANSPORTATION AND CIRCULATION		
Impact T-1 Total vehicle miles traveled on freeways and roadways in 2035 would increase when compared to existing (2013) baseline conditions. However, implementation of the 2015 RTP would reduce overall VMT in 2035 when compared to 2035 baseline conditions without the 2015 RTP. Impacts related to total freeway and roadway vehicle miles traveled would be Class III, *less than significant*.	No mitigation measures are required for overall freeway and roadway VMT impacts.	*Less than significant.*
Impact T-2 The 2015 RTP would generally be consistent with applicable alternative transportation plans and policies. This is a Class III, *less than significant* impact.	No mitigation measures are required.	*Less than significant.*

1.0 INTRODUCTION

1.1 STATEMENT OF PURPOSE

This Environmental Impact Report (EIR) identifies and describes potential environmental impacts associated with implementation of the 2015 Regional Transportation Plan (2015 RTP) proposed by the Shasta Regional Transportation Agency (SRTA).

Section 21000 of the California Government 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 SRTA, other agencies, and the general public in their consideration and evaluation of the environmental consequences of implementing the proposed 2015 RTP.

1.2 PROJECT BACKGROUND

The proposed 'project' is the 2015 RTP. SRTA has prepared an RTP as required by Section 65080 et seq, of Chapter 2.5 of the California Government Code, and federal guidelines pursuant to the federal surface transportation reauthorization, "Moving Ahead for Progress in the 21st Century" (MAP-21), the Transportation Conformity for the Air Quality Attainment Plan per 40 CFR Part 51 and 40 CFR Part 93, and requirements set forth in Assembly Bill 32, The Global Warming Solutions Act of 2006, and Senate Bill 375, The Sustainable Communities and Climate Protection Act of 2008. SRTA's previous RTP was adopted in July 2010.

The 2010 RTP update programmed available transportation funding to 2030 and included lists of programmed transportation projects to improve the transportation system during the 2010-2030 planning period. Among these listed projects were highway, road and street projects; pedestrian and bikeway projects; aviation, rail and transit projects. Although a number of projects from the 2010 RTP have been completed, many have not. Additionally, new projects have been incorporated into the 2015 RTP.

The 2015 RTP is the culmination of a multi-year effort that aims to maintain or enhance the efficient and effective movement of goods, services, and persons. Further, the Sustainable Communities Strategy (SCS) which is a part of the RTP, as described below, seeks to coordinate local land use and transportation systems within the region to reduce emissions from cars and light trucks. SRTA is required by federal law to develop an RTP that determines the needs of the transportation system and prioritizes proposed transportation projects. The RTP is also necessary to obtain and allocate federal and state funding for regional transportation projects.

RTP Framework

The 2015 RTP's unified strategy would include the following key elements:

- A regional vision and goals, supported by a program of short and long-range objectives and course of action;

- An evaluation of regional mobility needs in light of population, housing, and job forecasts; and,
- A list of specific transportation improvements, anticipated construction timeline, and a funding plan.

Sustainable Communities Strategy

The 2015 RTP includes a newly required element called the Sustainable Communities Strategy (SCS) pursuant to the requirements of Senate Bill 375 (SB 375). Under SB 375, the California Air Resources Board (ARB) has established targets for the reduction of greenhouse gas (GHG) emissions from cars and light trucks for the years 2020 and 2035, for each region covered by one of the state's metropolitan planning organizations (MPOs). ARB issued SRTA a regional GHG target of no increase in per capita GHG emissions for the planning year 2020 and no increase in per capita GHG emissions in planning year 2035, as compared to baseline per capita emissions levels in 2005. As the MPO for Shasta County, SRTA is required to prepare an SCS as part of the RTP, showing how the region intends to reduce, to the extent feasible, greenhouse gas emissions to meet these targets.

If SRTA's targets for reducing greenhouse gas emissions cannot be feasibly met, an Alternative Planning Strategy (APS) will be prepared by SRTA to show how the targets could be achieved through alternative development patterns, infrastructure, or additional transportation measures or policies without the limitations of fiscal or other constraints. SRTA's intent is to achieve these targets with the SCS. The GHG reductions are to be derived from fewer and/or shorter per capita automobile and light truck trips resulting from integrated transportation, land use, housing and environmental planning.

Furthermore, SB 375 requires that the SCS shall identify general land uses, residential densities, and building intensities as well as areas to house future residents (see California Government Code Section 65080(b)(2)(B) for the full list of SB 375 requirements).

Specifically, the SCS does the following:

- identifies the general location of uses, residential densities, and building intensities within the region;
- identifies areas within the region sufficient to house the forecast population over the course of the planning period of the RTP;
- identifies areas within the region sufficient to house an eight-year projection of the regional housing need for the region;
- identifies a transportation network to service the transportation needs of the region;
- gathers and considers resource areas and farmland in the region;
- sets forth a forecasted development pattern for the region, which, when integrated with the transportation network, will reduce GHG emissions from automobiles and light trucks; and
- quantifies the reduction in GHG emissions projected to be achieved by the SCS and, if the SCS does not achieve the targeted reductions, sets forth the difference between the amount that the SCS would reduce GHG emissions and the target for the region.

In compliance with the CEQA Guidelines (Section 15063), SRTA, as the Lead Agency responsible for the 2015 RTP, 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 on February 19, 2014, at the Redding Library Community Room at 1100 Parkview Avenue, Redding, CA 96001. SRTA received five comment letters during the NOP comment period. Comments, including any areas of concern or controversy, related to environmental conditions included hydrological conditions and regulations related to water quality, biological resources, transportation facilities, and construction impacts. These comment letters are contained in full in Appendix A, and the environmental impacts associated with each are addressed in this EIR in sections 4.3, *Biological Resources*, 4.9, *Hydrology and Water Quality*, 4.12, *Transportation and Circulation*, and 4.13, *Less Than Significant Environmental Effects*.

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 region-wide assessment of the impacts of the proposed 2015 RTP. 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. 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, mixed use projects, infill, and redevelopment projects consistent with the SCS.

Lead agencies implementing subsequent projects would undertake future environmental review for projects in the proposed 2015 RTP. These agencies would include the cities within Shasta County (Anderson, Redding, and Shasta Lake City) as well as Shasta County, Caltrans, and public transit agencies. These lead 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.*

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 (Class I), significant but mitigable (Class II), adverse but less than significant (Class III), and beneficial (Class IV). It proposes mitigation measures, where feasible, for identified significant environmental impacts.

The CEQA Guidelines also require the analysis of the cumulative effects of a project in combination with other foreseeable development in the area. Section 15130 of the State CEQA Guidelines prescribes two methods for analyzing cumulative impacts: (1) use of a list of past, present, and reasonably anticipated future projects producing related or cumulative impacts; or (2) use of a summary of projections contained in an adopted general plan or related planning document. However, this document is a Program EIR that analyzes the effects of cumulative buildout of the 2015 RTP. The proposed 2015 RTP considers the past, present, and future projects described in method 1 above and proposes a range of specific land use and transportation projects designed to meet the plan goals and current and projected future transportation infrastructure needs. The project also constitutes the cumulative scenario described in method 2. Therefore, the cumulative effects of all circulation system improvements in the region are included in the analysis of the proposed project's impacts. The analysis of project impacts contained in this "first tier" environmental review document will form the basis for the cumulative analysis contained in any subsequent environmental documentation for specific projects proposed under the 2015 RTP. This EIR has been organized into the following seven sections:

1.0 Introduction - Provides the Statement of Purpose, project background, and information about the EIR content and format.

2.0 Project Description - Identifies the project applicant, presents and discusses the project objectives, project location and specific project characteristics.

3.0 Environmental Setting - Provides a description of the existing physical setting of the project area and an overview of the progress in implementing the 2015 RTP.

4.0 Environmental Impact Analysis - Describes existing conditions found in the project area and assesses potential environmental impacts that may be generated by implementing the proposed project and cumulative development in Shasta County. These potential project impacts are compared to "thresholds of significance" 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 Long-Term Effects - 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 three alternatives analyzed in addition to implementation of the proposed 2015 RTP.

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

1.5 EIR BASELINE AND APPROACH FOR IMPACT ANALYSIS

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, it is necessary 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 impacts against existing conditions at the time of the release of the NOP (February, 2014) for issue areas that would not be substantially influenced by future regional growth that would occur with or without implementation of the 2015 RTP. It was determined that for these issues a comparison to existing baseline conditions would provide the most relevant information for the public, responsible agencies, and SRTA decision-makers. These issue areas include:

- Aesthetics
- Air Quality
- Biological Resources
- Cultural Resources
- Energy
- Environmental Justice
- Geology
- Greenhouse Gas/Climate Change
- Hydrology/Water Resources
- Land Use
- Noise
- Transportation and Circulation

For the air quality, energy, greenhouse gas, noise, and traffic environmental impacts resulting from the 2015 RTP implementation, 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 regardless of whether the 2015 RTP is adopted. The 2015 RTP is a long-term, 20-year plan that proposes transportation projects and land use patterns to the year 2035. It is important to emphasize that population growth, urbanization, and volume of average daily traffic generated in Shasta County will increase by 2035, with or without implementation of the 2015 RTP, as a result of a range of demographic and economic factors independent of policy and land use decisions by SRTA and its member agencies.

An analysis that attributed physical environmental impacts solely to the 2015 RTP that are in fact the result of future regional growth that would occur in the absence of the 2015 RTP would overstate the impacts caused by the 2015 RTP. For this reason, certain environmental issues analyzed in the EIR compare future conditions including the 2015 RTP with the expected future conditions without the 2015 RTP (the "future baseline") as well as to the current baseline, controlling for future regional growth that would occur independently of the 2015 RTP. These comparisons isolate environmental effects potentially resulting from the 2015 RTP from those caused by future growth that would occur regardless of the 2015 RTP, as compared to existing 2014 baseline conditions.

Thus, the identification of potential impacts and mitigation measures for these environmental issue areas are based on the increment of physical change resulting from the 2015 RTP, rather than the future regional growth that would occur regardless of whether the plan is adopted and implemented. The environmental issue areas for which this approach is used include the following:

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

Interim Timeframes

The year 2035 is considered to be the horizon year of the proposed 2015 RTP. While the plan will be implemented gradually over the planning period, this EIR does not analyze interim time frames because the update cycle of the RTP already requires short-term adjustments to the plan (beginning in the year 2018, the RTP will be updated every four years). The one exception to this approach is in Section 4.8, *Greenhouse Gas Emissions/Climate Change*, which examines impacts for the year 2020 as well as 2035, and in comparison to a baseline of 2005 to satisfy statutory requirements and state goals related to GHG emissions (Health & Safety Code, § 38551(b)).

2.0 PROJECT DESCRIPTION

2.1 PROJECT APPLICANT

Shasta Regional Transportation Agency (SRTA)
1255 East Street, Suite 202
Redding, CA 96001

2.2 PROJECT OBJECTIVES

The Shasta Regional Transportation Agency (SRTA), as both the federally-designated metropolitan planning organization (MPO) and the state-designated regional transportation planning agency (RTPA) for Shasta County, is required by both federal and state law to prepare a long-range (at least 20-year) transportation planning document known as a Regional Transportation Plan (RTP). The RTP is an action-oriented document used to achieve a coordinated and balanced regional transportation system. This section summarizes the RTP's objectives and responsibilities, as informed by relevant legislation.

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

The California Transportation Commission's (CTC) document *2010 California Regional Transportation Plan Guidelines* serves as the guidance for RTP development. Under both federal and state law, SRTA must update its RTP every five years.[1] However, new provisions of California Senate Bill 375 (SB 375) give SRTA the option to elect to update its RTP every four years instead.[2] SRTA's first RTP was written and adopted in 1975. The last SRTA RTP update was in July 2010. Beginning in the year 2018, SRTA will update the RTP every four years.

SB 375 Requirements

The Sustainable Communities Strategy and Climate Protection Act, SB 375 (codified at CAL.GOVT CODE §§ 14522.1, 14522.2, 65080.01, 65080, 65400, 65583, 65584.01, 65584.02, 65584.04, 65587, 65588; CAL. PUB. RES. CODE §§2161.3, 21155, 21159.28), is a law passed in 2008 by the California legislature that requires each MPO 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 CTC and CARB. Some of the requirements include the following:

[1] *23 C.F.R. §450.322(c); Gov. Code §65080(d).*
[2] *Gov. Code §65080(b)(2)(M).*

- The CTC must maintain guidelines for the travel demand models that MPOs develop for use in the preparation of their RTPs;
- CARB must develop regional GHG emission reduction targets for automobiles and light trucks for 2020 and 2035 by September 30, 2010 (completed);
- 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 (completed);
- 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;
- After adoption, each MPO must submit its SCS to the CARB for review; and
- CARB must review each SCS to determine whether, if implemented, it would meet the GHG targets. CARB must complete its review within 60 days.

For Shasta County, CARB has set a regional target of no increase in per capita GHG emissions for the planning year 2020 and no increase in per capita GHG emissions in planning year 2035, as compared to baseline per capita emissions levels in 2005. These targets apply to the SRTA region as a whole for all on-road light-duty trucks and passenger vehicles emissions, and not to individual cities or sub-regions.

SB 375 specifically states that local governments retain their autonomy to plan local General Plan policies and land uses. The 2015 RTP provides a regional policy foundation that local governments may build upon, if they so choose. The 2015 RTP includes and accommodates the quantitative growth projections for the region. SB 375 also requires that the RTP's forecasted development pattern for the region be consistent with the eight-year regional housing needs as allocated to member jurisdictions through the Regional Housing Needs Allocation (RHNA) process under state housing law.

In addition, this EIR lays the groundwork for the streamlined review of qualifying development projects within Transit Priority Areas.[3] Qualifying projects that meet statutory criteria and are consistent with the 2015 RTP are eligible for streamlined environmental review pursuant to CEQA. Currently there are no qualifying projects that would be considered within a Transit Priority Area in Shasta County; however, there could be projects that qualify by 2035 (the horizon year for the RTP). Further, the SCS chapter of the RTP (as further discussed below in Section 2.4) identifies 'Strategic Growth Areas' (SGAs). Similar to Transit Priority Areas, the SCS's intent is to coordinate multi-modal transportation options and transportation-efficient land use patterns in the SGAs. The strategy is to have targeted transit and active transportation investments combined with targeted incentives, programs, and policies to encourage infill and redevelopment in SGAs.

[3] *A Transit Priority Area is an area within ½-mile of high quality transit. High Quality Transit is a rail stop or a bus corridor that provides or will provide at least 15-minute frequency service during peak hours by the year 2035.*

MAP-21

The most recent federal transportation legislation, the Moving Ahead for Progress in the 21st Century Act (MAP-21), was enacted in 2012. Through the RTP development process, MAP-21 encourages SRTA 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.*[4]

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 freight;*
> - *protect and enhance the environment, promote energy conservation, improve the quality of life, and promote consistency between transportation improvements and State and local planned growth and economic development patterns;*
> - *enhance the integration and connectivity of the transportation system, across and between modes, for people and freight;*
> - *promote efficient system management and operation; and*
> - *emphasize the preservation of the existing transportation system.*[5]

The 2015 RTP discusses in detail how these requirements are met.

Environmental Justice

SRTA is required to address social equity and environmental justice in the RTP. The legal basis for environmental justice stems from the Civil Rights Act of 1964, along with Executive Order 12898 (February 1994), which states that "each federal agency shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations." SRTA must evaluate how the 2015 RTP might impact minority and low-income populations, and must ensure that the 2015 RTP does not have a disproportionate adverse impact on such populations.

[4] *23 U.S.C. §134(g)(3)(A).*
[5] *23 U.S.C. §134(h)(1).*

In addition, per 23 C.F.R. Section 450.316(a)(1)(vii), the participation plan that SRTA must develop and use must describe explicit procedures, strategies, and desired outcomes for "[s]eeking out and considering the needs of those traditionally underserved by existing transportation systems, such as low-income and minority households, who may face challenges accessing employment and other services." SRTA's public participation plan is available online at: http://www.srta.ca.gov/166/Public-Participation.

Regional Transportation Plans

As noted, the procedures for developing RTPs are provided in the CTC's Regional Transportation Plan Guidelines (2010). The guidelines identify the purpose of an RTP to be as follows:

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

RTPs must include long-term horizons (at least 20 years) that reflect regional needs, identify regional transportation issues/problems, and develop and evaluate solutions that incorporate all modes of travel. RTPs must also recommend a comprehensive approach that provides direction for programming decisions to meet the identified regional transportation needs. RTPs must also 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). The objective of the 2015 RTP is to

comply with the current CTC Regional Transportation Plan Guidelines (2010), 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 Shasta County through 2035.

In addition, 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.

Local Objectives

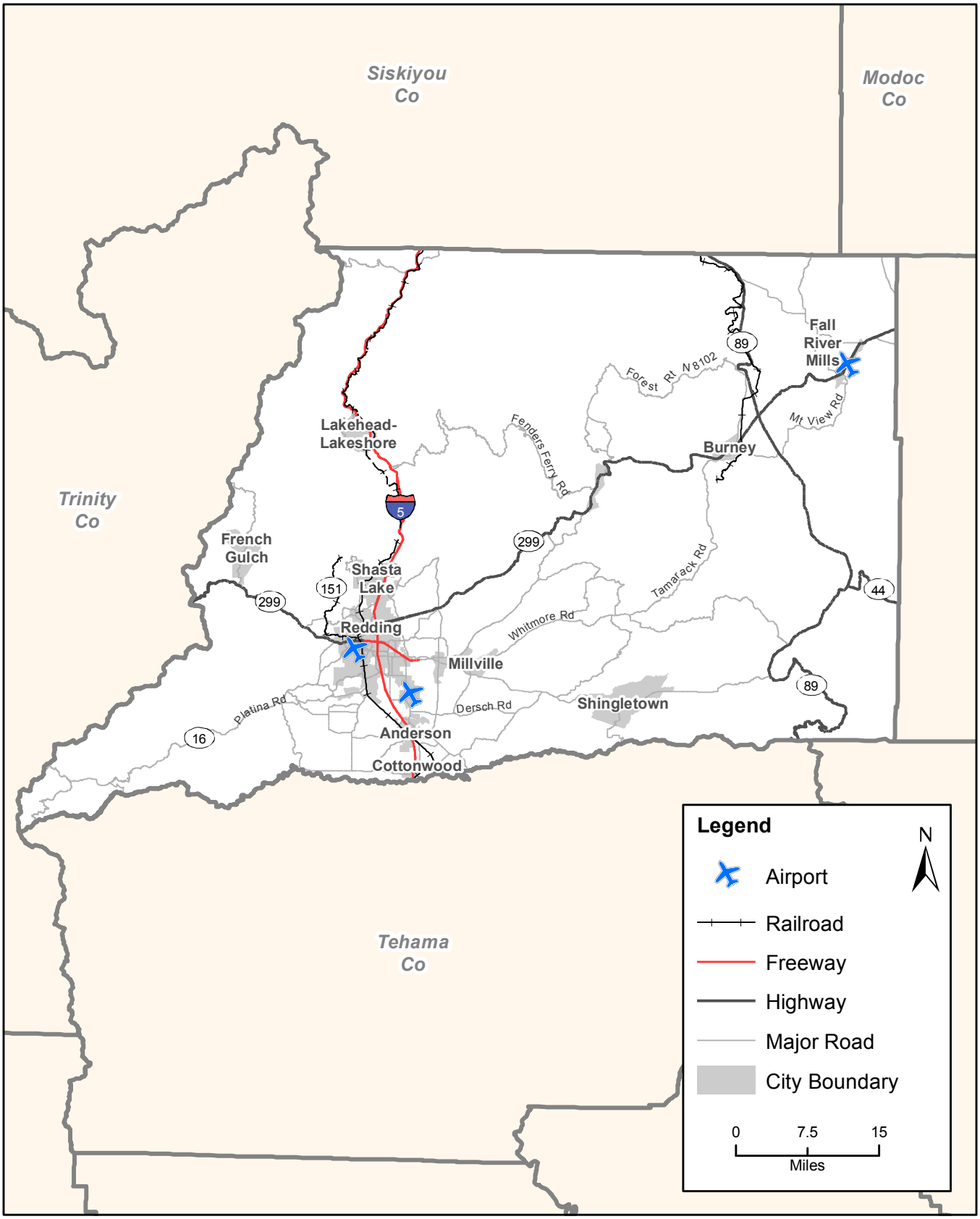
The 2015 RTP establishes planning goals and objectives to guide the development of the plan and establish the guiding principles for decision-making. Regional projects and programs are developed, funded, and implemented based on these goals. For each goal there is a subset of objectives that describe what needs to be accomplished to reach the goals. Each goal area also includes performance measures to assess progress towards accomplishing goals and objectives. These planning goals are listed below under the discussion of the Regional Transportation Policy section of the 2015 RTP.

2.3 PROJECT LOCATION

The proposed 2015 RTP covers the entirety of Shasta County and its incorporated cities, which are located at the geographical center and transportation crossroads of northern California. As shown in the regional location map in Figure 2-1, the County is situated at the north end of the Sacramento Valley, 150 miles north of Sacramento and 110 miles south of the Oregon border. It is bordered by Trinity County to the west, Siskiyou County to the north, Modoc County to the northeast, Lassen County to the east, Plumas County to the southeast, and Tehama County to the south. Interstate 5, one of California's major north-south routes, traverses the western portion of Shasta County to the west of the Sacramento River, while State Route 273 provides north and south connectivity parallel to Interstate 5 but on the eastern side of the Sacramento River before merging back into Interstate 5 north of the River. State Routes 44 and 299 provide connectivity to the east and west. These major transportation corridors converge in the City of Redding, the county seat and the region's socio-economic center.

Shasta County's 3,788 square miles encompass a diverse topography, ranging from 425 feet above mean sea level (msl) in the Sacramento Valley, to 3,300 feet above msl in the Fall River Valley, to more than 10,000 feet above msl at Lassen Peak in Lassen Volcanic National Park. The region is largely rural in character, but the south-central, non-mountainous portion of Shasta County is home to the northernmost urban area in the state. Shasta County's three incorporated cities – Redding, Anderson, and city of Shasta Lake – are clustered into this area, as are the unincorporated town centers of Cottonwood and Palo Cedro. Other town centers are Burney/Johnson Park and Fall River Mills/McArthur, which are both located in the mountains in the northeastern portion of Shasta County Shingletown lies to the southeast of Redding between Interstate 5 and Lassen Volcanic National Park. .

Capital improvement projects identified in the RTP are located on state highways, county roads and locally owned streets, as well as on airport property, railroad corridors, transit district



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RTP Plan Area

Figure 2-1

property, public lands (such as recreation areas or state/federal forests), and public utility lands (such as easement areas). A description of the study area is provided in Section 3.0, *Environmental Setting*.

2.4 PROJECT CHARACTERISTICS

The 2015 RTP reflects changes in legislative requirements, local land use policies, and resource constraints since the most recent RTP was adopted in July 2010. The 2015 RTP shows how SRTA will meet the transportation needs of the region for the period from 2015 to 2035, considering existing and projected future land use patterns as well as forecasted population and job growth. The 2015 RTP plans for and programs approximately $2.18 billion in revenues expected to be available to SRTA from all transportation funding sources over the course of the planning period. It identifies and prioritizes expenditures of anticipated funding for transportation projects that involve all transportation modes: highways, streets and roads, transit, rail, bicycle and pedestrian; aviation, as well as transportation demand management (TDM) and transportation system management (TSM). The list of proposed RTP project is provided in Appendix B and shown on Figure 2-2.

Preferred Growth Scenario. The 2015 RTP is based on a preferred land use and transportation scenario conceptually outlined in the Shasta*Forward*>> Regional Blueprint, which SRTA published in March 2010. During the Shasta*Forward*>> process, SRTA undertook a comprehensive assessment of community values and priorities in Shasta County and identified three growth and development scenarios:

- Scenario A: Rural & Peripheral Growth. 'Scenario A' focuses on the character and aesthetics associated with rural living. Under this scenario, future growth and development is spread throughout the region rather than confined to cities and towns. Lot sizes would grow substantially, but all new growth and development would be accommodated within Shasta County's existing General Plan. A slower pace of life, rural landscapes, and ample elbow room between neighbors would take priority over urban living and a wide range of housing options. Low density, low rise homes and buildings would help new development blend in with Shasta County's natural landscape.

- Scenario B: Urban Core & Corridors. 'Scenario B' focuses on the benefits of urban living without sacrificing the closeness and accessibility of Shasta County's unique natural setting. Conceptually, this scenario resembles a 'hub and spoke' development pattern. Employment, commerce, and regional destinations are focused within an urban 'hub'. Radiating outward along a select number of transportation corridors or 'spokes', are linear communities containing a mix of multifamily housing, townhouses, neighborhood commercial, and traditional neighborhoods. The area of developed land in the regional core would stay about the same size as today, but previously passed over and underutilized land would be filled in over time.

- Scenario C: Distinct Cities & Towns. 'Scenario C' focuses on maintaining individual community identity and a strong sense of place. Rather than have Shasta County's cities and towns grow together into one large metropolitan area, individual communities would focus their energies inward. Each 'micropolitan' area would contain a well-defined, cohesive, and compact city or town built around an appropriately-scaled

downtown and community gathering places. Surrounding open spaces would serve as buffers between cities and towns and help meet the functional needs of the natural environment and nearby agriculture production.

In survey responses, community members overwhelmingly selected either Scenario B (Urban Core & Corridors) or Scenario C (Distinct Cities & Towns): 48.7 percent of respondents choose Scenario B, while 40.5 percent choose Scenario C. Based on a combined analysis of survey responses and open-ended comments from residents of Shasta County, Shasta*Forward*>> recommended a melding of Scenario B and Scenario C as the preferred regional growth vision. The 2015 RTP is based on the preferred scenario in Shasta*Forward*>> for an intensified land use distribution that concentrates the forecasted growth in population and employment in urban areas and corridors while preserving the distinct identity of existing cities and towns. The plan includes additional highway, local street, active transportation, and transit investments to serve a more concentrated urban growth pattern.

2015 RTP Organization. The most recent RTP was adopted by SRTA in 2010. This 2015 RTP reflects changes in legislative requirements, local land use policies, and resource constraints and is organized into six chapters:

1. Introduction – provides background information on SRTA, the purpose of and planning process for an RTP, and new legislative requirements.

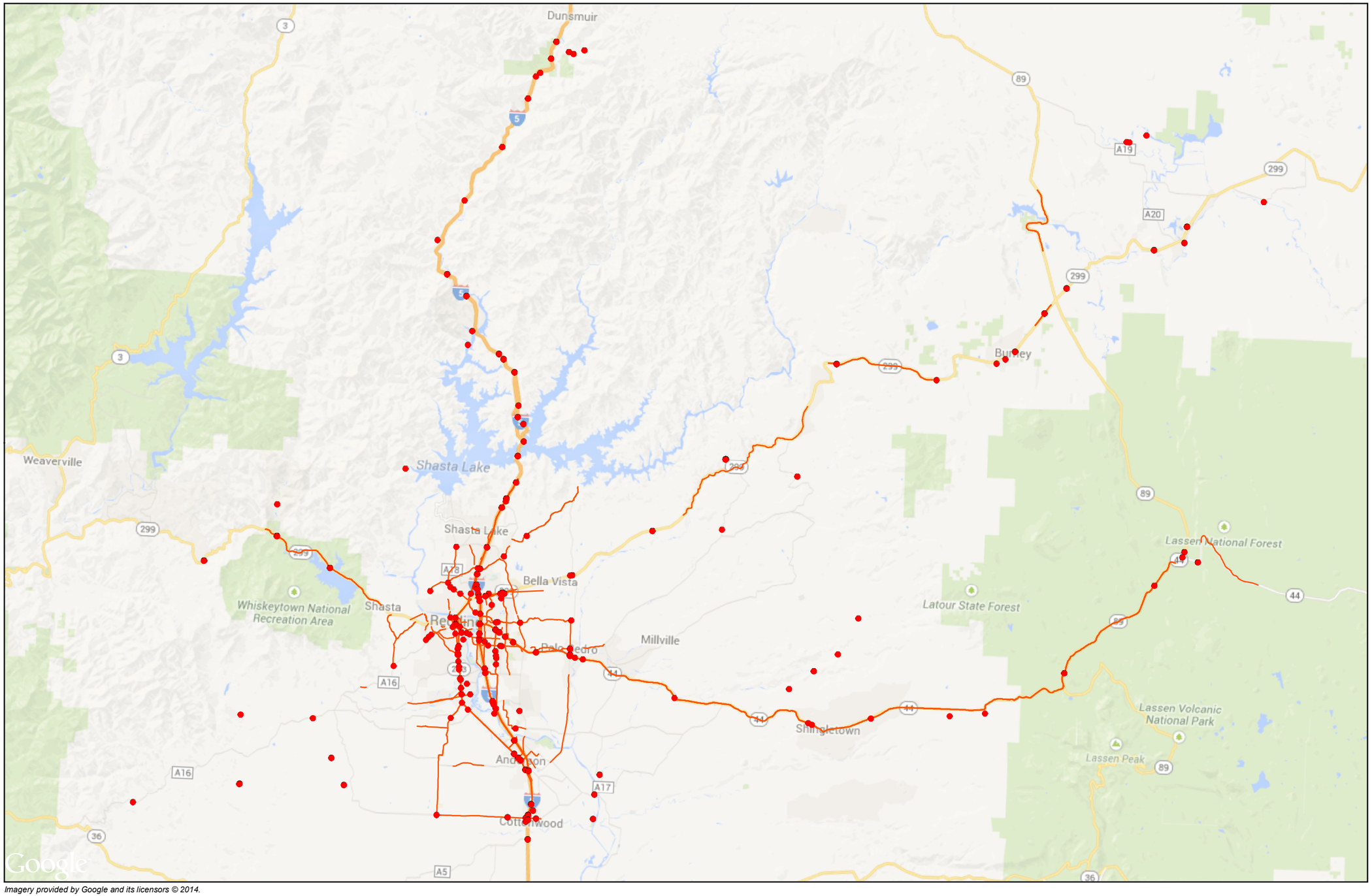
2. State of the Region – provides an overview of the regional geography, demographics, disadvantaged communities, economy, and public health; of travel characteristics; of the performance and utilization of Shasta County's transportation network; of accomplishments since the most recent RTP; and an assessment of different modes of transportation.

3. Regional Transportation Policy – includes a regional vision; a summary of planning consistency and coordination; goals, objectives, strategies, and performance measures for the RTP, and performance targets to meet the transportation-related needs of Shasta County. These goals, objectives, and strategies are established to determine specific courses of action to guide Shasta County toward implementation of the 2015 RTP.

4. Sustainable Communities Strategy – discusses regional targets for reducing greenhouse gas emissions, opportunities and challenges, the technical approach, public participation, tools and techniques, and travel demand and emissions modeling outputs.

5. Financial Element - provides projections of the cost and funds available from public and private sources to implement the RTP. This element includes separate lists of candidate projects with available funding and projects which would depend on additional funding for implementation.

6. Alternatives – outlines three alternatives to the proposed RTP: No Project: implementation of 2010 RTP updated to reflect current conditions and forecasts; Alternative 1: Mobility: Enhance Transportation Choices and, Alternative 2: Accessibility: Encourage Transportation Efficient Land Use. These alternatives are described in detail in Section 6.0, *Alternatives*, of this EIR.



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RTP Projects (Constrained)

Figure 2-2

Of these chapters, Regional Transportation Policy, Sustainable Communities Strategy, and the Financial Element include provisions with the potential to create physical changes to the environment. Consequently, these three elements are described in more detail below:

Regional Transportation Policy Chapter. The Regional Transportation Policy section of the 2015 RTP identifies transportation goals, objectives, strategies, and performance measures that will help meet the transportation related needs of the Shasta County region. The following goals and objectives were developed to guide the transportation system decision-making process.

Goal 1 Optimize the usage of existing interregional and regionally significant roadways to prolong functionality and maximize return-on-investment.

Objective 1.1 Proactively maintain interregional and regionally significant roadways in a manner that balances cost and facility life-cycle.

Objective 1.2 Increase the throughput of people and freight on interregional and regionally significant roadways.

Goal 2 Strategically increase capacity on interregional and regionally significant roadways to keep people and freight moving effectively and efficiently.

Objective 2.1 Maximize funding available for transportation and mobility improvements in the region.

Objective 2.2 Maintain adequate traffic capacity on the core interregional network (Interstate 5, State Route 299/44, and associated interchanges)

Goal 3 Provide an integrated, context-appropriate range of practical transportation choices.

Objective 3.1 Develop an integrated, context-appropriate range of local transportation choices.

Objective 3.2 Develop an integrated, context-appropriate range of interregional transportation choices.

Goal 4 Create vibrant, people-centered communities.

Objective 4.1 Support local governments in implementing the Sustainable Communities Strategy.

Objective 4.2 Enhance community health, safety, and well-being.

Goal 5 Strengthen regional economic competitiveness for long-term prosperity.

Objective 5.1 Facilitate sustainable economic development programs and projects.

Objective 5.2 Resolve transportation-related barriers to increased economic activity and productivity.

Goal 6 Promote public access, awareness, and action in planning and decision-making processes.

Objective 6.1 Utilize a broad range of public participation involvement strategies.

Objective 6.2 Provide meaningful opportunities to participate in regional planning and affect decision-making.

Goal 7 Practice and promote environmental and natural resource stewardship.

Objective 7.1 Identify and minimize the direct and indirect adverse impacts from transportation and transportation infrastructure, including but not limited to climate change, air quality, healthy watersheds, and essential wildlife habitat.

Objective 7.2 Lead the development of resilient transportation systems and services in the face of increasing environmental change and societal shifts in mobility.

Financial Element. The Financial Element delineates the current program of highway, streets and roadways, transit, rail, bikeway, pedestrian and aviation projects proposed by the various jurisdictions within the region including each city, Shasta County, and the California Department of Transportation (Caltrans). The 2015 RTP is financially constrained, which means that all projects listed (full list provided in Appendix B and shown on Figure 2-2) have been identified with a funding source(s) to complete the project during the scope of the plan (through 2035). Financially unconstrained projects (e.g., projects that have no funding identified) are provided for informational purposes (see Appendix B). The purpose of the Financial Element is to provide assumptions of the cost and revenues necessary to implement the 2015 RTP over its 20-year planning horizon. The assumptions include revenue estimates for specific governmental funding programs and development fees.

The Financial Element identifies major federal, state, and local funding sources anticipated to be available during the life of the plan. Federal revenue is projected to come from sources including the Highway Safety Improvement Program, the Federal Lands Access Program, the Safe Routes to School program, the Tribal Transportation Program (formerly the Indian Reservation Roads Program), and Federal Transit Administration grants. State revenue sources include the State Highways Operation and Protection Program, State Transportation Improvement Program, Active Transportation Program, Highway Bridge Program, and the Proposition 1B Transportation Bond Program. Local revenue sources include the transportation impact fees, transportation development act, and developer fees. Total revenue is projected to be $2.18 billion. A complete discussion of the 2015 RTP financial element is provided in Chapter 5 of the RTP.

Transportation projects delineated in the Financial Element include highway/roadway, transit, rail, and aviation projects, as discussed in each section below. The 2015 RTP does not provide project designs or a construction schedule and adoption of the 2015 RTP would not represent an approval action for any of the individual transportation programs and projects. Detailed site-specific alignment, location, design, and scheduling of the improvement projects which are included in the 2015 RTP are not fixed by the 2015 RTP. These individual projects may be modified substantially from their initial description at the time they are considered for implementation (which could be over a period of up to 20 years). Many of the programmed and planned transportation improvement projects carry over from the 2010 RTP (the last RTP with an accompanying EIR). However, the 2015 RTP also includes a number of new projects. Appendix B lists the proposed projects grouped by type and jurisdiction.

Highway/Roadway Projects. Continued operation and maintenance of the County's highway, arterial and local street system is a primary policy of the 2015 RTP. Caltrans, the County and local jurisdictions within the study area have proposed projects for the roadway system that address current and future needs based on existing traffic conditions and projected traffic increases. These include a range of road widening and extension projects; interchange/ intersection improvements, and freeway overcrossings. In addition, projects that improve or rehabilitate existing roadway infrastructure are included in the 2015 RTP. These projects include resurfacing, restriping, signal modifications, and related improvements.

Specific highway development projects include several bridge replacements on Interstate 5, seismic upgrades and painting of the Pit River Bridge on Interstate 5, improvements to vertical and horizontal clearance at a railroad underpass on State Route 273, and rehabilitation of the roadway on Interstate 5 and State Routes 44, 89, 151, 273, and 299. Local street and road capital expansion project examples include improvements to the intersection of State Route 273 with North Street and South Street in the city of Anderson, the extension of Pine Grove Avenue in the city of Shasta Lake, and construction on the Manzanita Trail in the city of Redding.

Transit Projects. These projects include improvements designed to enhance express bus service. Improvements include the construction of bus stop amenities, transfer facilities, the provision of additional buses, continuing transit service to rural areas, and investments in para-transit services.

Aviation Projects. The 2015 RTP includes projects intended to improve overall operations at existing public use airports. Projects include taxiway and runway rehabilitation, apron improvements, new systems for airport operations, new runways, security fencing, new hangars, and wildlife hazard management. These include pavement rehabilitation at Fall River Mills Airport, parallel runway and taxiway construction and apron improvements at Redding Municipal Airport, and security fencing at Benton Airpark.

Sustainable Communities Strategy (SCS)

The SCS ultimately consists of the preferred land use and transportation scenario selected by SRTA as best capable of meeting RTP goals which are focused on a preferred growth scenario developed consistent with Shasta*Forward*>>.

The 2015 RTP simultaneously addresses the region's transportation needs and encourages increased development densities by improving commercial and residential access to transit services. Transportation strategies contained in the 2015 RTP, including managing transportation demand and making certain transportation system improvements, 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— influence potential travel demand (even though it is ultimately up to the user to determine how to travel or use the transportation system). 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 and 8-year housing needs;
- considers resource areas and farmland; and
- complies with state and federal law for developing an RTP.

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 choose to build upon and generally includes quantitative growth projections.

SRTA worked alongside local agencies to identify small geographic areas known as 'Strategic Growth Areas' (SGAs). In total, seven SGAs were included in the SCS. The City of Redding, City of Shasta Lake, and City of Anderson each have one SGA. An additional four SGAs are located in unincorporated Shasta County, including Cottonwood, Palo Cedro, Burney, and Fall River Mills. Within SGAs, it is intended that regional and local policies, programs, and investments be jointly focused and that private sector investments be leveraged in order to achieve measurable short-term progress– if not cumulatively across the region, at least within designated focus areas. The SCS seeks to coordinate multi-modal transportation options and transportation-efficient land use patterns in SGAs and also seeks targeted transit and active transportation investments combined with targeted incentives, programs, and policies to encourage infill and redevelopment in SGAs.

2015 RTP Transportation Projects

As noted, the projects that comprise the 2015 RTP focus on highways, local roadways, active transportation (bicycle and pedestrian), rail, transit and airports. The complete list of projects is provided in Appendix B. As described above, the 2015 RTP is financially constrained, which means that all projects listed and included as part of the project for this EIR have been identified with a funding source(s) to complete the project during the scope of the plan (through 2035). Financially unconstrained projects (e.g., projects that have no funding identified) are provided for informational purposes (see Appendix B), but are not considered a part of the proposed project.

2.5 PROJECT APPROVALS

Approval of the RTP is at the discretion of the SRTA Board of Directors. Additional environmental review will be conducted by the responsible lead agency prior to implementation of individual projects contained within the RTP. Lead agencies would include the following:

- California Department of Transportation (Caltrans);
- California Transportation Commission;
- California Public Utilities Commission's Rail Crossings Engineering Section (RCES);
- Cities of: Redding, Anderson, and Shasta Lake;
- County of Shasta; and
- Redding Area Bus Authority (RABA) and local transit providers and airport operators.

The relationship of this EIR to future environmental review of individual transportation projects is further discussed in Section 1.0, *Introduction*.

2.6 RELATIONSHIP WITH OTHER PLANS AND PROGRAMS

The 2015 RTP provides a sound basis for the allocation of state and federal transportation funds for transportation projects over the subsequent 20 years. The 2015 RTP follows guidelines established by the CTC to:

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

The 2015 RTP has been evaluated for consistency with the goals, policies and objectives currently being implemented by municipal and county planning agencies within the county.

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3.0 ENVIRONMENTAL SETTING

3.1 REGIONAL SETTING

Shasta County covers more than 3,850 square miles and is located where the Central Valley of the State of California meets the convergence of the Klamath and Coastal Mountain Ranges to the northwest and west, with the Cascade Mountain Range to the northeast and east. Elevations in the Central Valley area of Shasta County range between 400 and 700 feet above sea level. The Cascade Range divides the Central or Sacramento Valley region of the County from the Modoc Plateau, referred to in this EIR as the Fall River Valley. The approximate elevation of the Fall River Valley is 3,300 feet. Residential, commercial, and industrial development has occurred in the Sacramento, Fall River, and Burney Valleys. Burney Valley lies 20 miles south of Fall River Valley. Shasta County is bordered by Lassen County to the east, Siskiyou County to the north, Tehama County to the south and Trinity County to the west (Shasta County, GIS Department, 2014; Shasta County General Plan, Amended September 2004).

The following three incorporated cities are located in Shasta County: Anderson, Redding, and Shasta Lake. The unincorporated communities include the town centers of Cottonwood, Palo Cedro, Burney/Johnson Park, Fall River Mills/McArthur, and Shingletown. There are 25 unincorporated rural community centers of Shasta County in the following areas or regions: Sacramento Canyon, Big Bend, Northeast Shasta, Lassen, Eastern Forest, Eastern Upland, South Central Region, Western Upland, and French Gulch (Shasta County General Plan, Table CO-6 Living Environments, Amended September 2004). The 2014 estimated population of Shasta County was 179,412 people (CA Dept. of Finance, 2014).

The City of Redding is the largest city within Shasta County with an estimated population of 91,207. Incorporated in 1887, Redding is the Shasta County seat. The City of Anderson is the second largest city with an estimated population of 10,361 followed by the City of Shasta Lake with 10,128 residents (CA Dept. of Finance, 2014).

3.2 REGIONAL TRANSPORTATION SYSTEM

Shasta County's transportation network is served by highway, rail, aviation, public transportation, and facilities that support bicycle and pedestrian circulation modes. The safe and efficient transport of people and goods within the County is of crucial importance to the well-being of residents and the economic viability of the County; and thus, is the primary focus of the 2015 RTP.

Interstate 5, located in the western third of the County running north and south along the entire length, is the only major Federal highway in Shasta County. Shasta County has six state highways that serve as regional highways, State Route 36, 44, 89, 151, 273, and 299. The highway system in the County also includes federal and state interchanges, County and City-maintained arterial and collector roadways, and local streets within each of the three cities and the unincorporated area.

The Redding Area Bus Authority (RABA) provides both a fixed- route and complimentary para-transit public transportation service within a service area that includes most of the cities of Redding, Shasta Lake, and Anderson. The City of Shasta Lake is served by Route 1 and 7, both of which provide service from the Masonic Avenue Transit Center . The City of Redding is serviced by Route 2, 3, 5, 6, 9, and 11, all of which are based out of the Downtown Transit Center (http://www.rabaride.com/stops.html). The City of Anderson is serviced primarily by Route 9, and operates mainly from an Anderson Walmart.

The complimentary paratransit system operated by RABA is designated for individuals who are permanently or temporarily mobility impaired. The service area for the complementary paratransit system runs in a north/south direction from Shasta Lake City to Anderson and in an east/west direction from Shasta College to the west Redding City Limits. Additional demand-response services are provided for the elderly and disabled by public and private social service providers.

The county of Shasta contracts with RABA to provide Burney Express, an express commuter bus service that provides round-trip express bus service from Redding to Burney twice a day.

Connecting service providers linking to public transit providers within Shasta County include: Trinity Transit, Sage Stage (Modoc), Susanville Indian Rancheria Public Transportation Program, Greyhound, and Amtrak (rail and bus service).

The Shasta Senior Nutrition Program (SSNP), a non-profit organization designated as a Consolidated Transportation Services Agency (CTSA) within Shasta County, provides transportation services to the senior population and mobility impaired in the rural areas of the county. CTSA members meet bimonthly to prioritize transportation needs and coordinate service throughout the County (Consolidated Transportation Services Agency, May 2014).

Shasta County is served by freight and passenger rail service. The Union Pacific Railroad (UPRR) parallels Interstate 5 and carries both passengers and freight. The UPRR provides freight loading and unloading opportunities at following rail locations: Cottonwood, Culp, Anderson, Girvan, Redding, Silverthorn, O'Brien, Mead, Lakehead, Delta, Lamoine, Gibson, Sims, Conant, Dirigo, and Castle Crags (SRTA RTP 2010). A lack of freight rail service demand has led to rail track abandonment and removal. The McCloud Railway Company is in the process of abandoning and removing rail lines east of McCloud, which includes a line to Burney in Shasta County. This railroad corridor is currently in the process of being acquired by the Great Shasta Rail Trail Association, which aims to develop the 80-mile corridor to provide year around recreation opportunities for hikers, bicyclists, equestrians, skiers, and other non-motorized uses (The Great Shasta Rail Trail 2014, available online at: http://www.greatshastarailtrail.org/).

Amtrak motorcoaches connect Redding to the Capitol Corridor (Sacramento) and San Joaquin (Stockton) train routes. Amtrak's Coast Starlight Seattle/Portland/Los Angeles rail route services Redding with one northbound stop (arrives at 3:06 AM) and one southbound stop (arrives at 2:21 AM) daily. Greyhound offers north and southbound bus service four times daily in each direction from the Redding Greyhound Station. There is no east or westbound commercial bus connection. Sage Stage, operated by the Modoc County Transportation

Commission, provides daily bus service between Alturas and Redding. Trinity County began service from Weaverville to Redding starting in January 2010.

There are three public use airports in Shasta County. The City of Redding operates two of the publicly owned and operated facilities, Redding Municipal Airport and Benton Field Airport. Shasta County owns the Fall River Mills Airport. There are two privately-owned airports in Shasta County that are no longer in operation: Enterprise Sky Park and Redding Sky Ranch.

3.3 CUMULATIVE PROJECTS SETTING

3.3.1 CEQA Requirements

According to the *State CEQA Guidelines* Section 15130(a)(1), "a cumulative impact consists of an impact which is created as a result of the combination of the project evaluated in the environmental impact report (EIR) together with other projects causing related impacts." In addition, an EIR must discuss cumulative impacts if the incremental effect of a project, combined with the effects of other projects is "cumulatively considerable" [Section 15130(a)]. Such incremental effects are to be "viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects" [Section 15164(b)(1)]. Together, these projects comprise the cumulative scenario which forms the basis of the cumulative impact analysis. A cumulative impact analysis should highlight past actions that are closely related (either in time or location) to the project being considered, catalogue past projects, and discuss how past projects have harmed the environment, and discuss past actions, even if they were undertaken by another agency or another person.

Both the severity of impacts and the likelihood of their occurrence are to be reflected in the discussion, "but the discussion need not provide as great detail as is provided for the effects attributable to the project alone. The discussion of cumulative impacts shall be guided by standards of practicality and reasonableness, and shall focus on the cumulative impact to which the identified other projects contribute rather than the attributes of other projects which do not contribute to the cumulative impact" [Section 15130(b)]. However, the analysis must be in sufficient detail to be useful to decision makers in deciding whether, or how, to alter the program to lessen cumulative impacts.

As discussed in Section 1.4 of this EIR, Section 15130 of the State CEQA Guidelines prescribes two methods for analyzing cumulative impacts: (1) use of a list of past, present, and reasonably anticipated future projects producing related or cumulative impacts; or (2) use of a summary of projections contained in an adopted general plan or related planning document. However, this document is a Program EIR that analyzes the effects of cumulative buildout of the 2015 RTP. The proposed 2015 RTP considers the past, present, and future projects described in method 1 above and proposes transportation projects designed to meet the plan goals and current and projected future transportation infrastructure needs. The project also constitutes the cumulative scenario described in method 2. Therefore, the cumulative effects of all circulation system improvements in the region are included in the analysis of the proposed project's impacts. The analysis of project impacts contained in this "first tier" environmental review document will

form the basis for the cumulative analysis contained in any subsequent environmental documentation for specific projects proposed under the 2015 RTP.

3.3.2 Growth Projections in the Region

The 2015 RTP is based on the preferred land use and transportation scenario defined in Shasta*Forward*>> Regional Blueprint, which SRTA published in March 2010, and which provides direction on regional growth within Shasta County and the basis for the proposed project evaluated herein. Growth projections for the entire Shasta County region were prepared by SRTA in association with the county of Shasta and Redding, City of Shasta Lake, and Anderson. In addition to working with the County and three cities, the 2015 RTP growth projections through the year 2035 utilize data from the 2010 Census, the California Department of Finance, and Caltrans' Economic Forecast. Population forecasts estimate future growth at a rate of 0.8% per year in the Shasta County region, with a population of 214,364 persons for the Shasta County region by year 2035 (Shasta County Forecast Assumptions Memorandum, November 8, 2011). The transportation projects identified in the 2015 RTP (as listed in Appendix B of this EIR), provide the framework for growth within the region and the cumulative impact analysis approach discussed above.

4.0 ENVIRONMENTAL IMPACT ANALYSIS

This section discusses the possible environmental effects of the proposed project for the specific issue areas that were identified as having the potential to experience significant impacts.

"Significant effect" is defined by the *State 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 adopted by SRTA, its member agencies, other agencies, universally recognized, or developed specifically for this analysis to determine whether potential effects are significant. The next subsections describe each impact of the proposed project, mitigation measures for significant impacts, and the level of significance after mitigation. Each 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:

> *Class I. 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 State CEQA Guidelines.*
>
> *Class II. Significant: An impact that can be reduced to below the threshold level given reasonably available and feasible mitigation measures. Such an impact requires findings to be made under §15091 of the State CEQA Guidelines.*
>
> *Class III. Not 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.*
>
> *Class IV. Beneficial: An effect that would reduce existing environmental problems or hazards.*

Following each environmental effect discussion is a listing of recommended mitigation measures (if required) and the residual effects or level of significance remaining after the implementation of the measures. Each section concludes with a screening-level discussion of specific 2015 RTP transportation projects that may result in identified impacts.

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4.1 AESTHETICS/VISUAL RESOURCES

4.1.1 Setting

a. Visual Character of the County. Shasta County encompasses approximately 3,850 square miles of land and can be divided into three general topographic zones: a valley region flanked by two distinct mountain regions on either side. The western part of the county is located in the northern Klamath Mountains, the eastern portion is in the Cascade Mountains and the Modoc Plateau, and the south-central portion is in the Sacramento Valley. The agricultural areas of the county are generally limited to the Sacramento and Fall River Valley areas and the irrigated meadows of the Cascade Range.

Shasta County is located in a predominately agricultural region in the northernmost part of the Central Valley of the State of California. The Sacramento Valley contains the majority of the urban development such as cities, communities, infrastructure rights-of-way, and other urban uses. Outside of these two valleys, development is characterized predominantly by agriculture, grazing, and timber operations with small rural community centers and individual rural homes. The northwest and southeast areas of the county are predominantly public lands within the three major mountain ranges, the Cascade, Klamath, and the Coast.

The open space resources of Shasta County are mainly federally or state owned. Federal and state lands, which include national forest, national park, national recreation area, Bureau of Land Management holdings, state forest, state park and state historic park make up a substantial portion of land found in the County. Shasta County contains portions of Shasta-Trinity National Forest, Whiskeytown-Shasta-Trinity National Recreation Area, Lassen National Forest, and Lassen Volcanic National Park.

Latour State Forest, McArthur-Burney Falls Memorial State Park, Castle Crags State Park, Ahjumawi Lava Springs State Park, and Shasta Historic Park are entirely contained within the County. Agricultural uses, which include field crops, livestock, nursery stock, apiary products, and fruits and nuts, are grown in the Sacramento and Fall River Valley areas and in the irrigated meadows of the Cascade Range. Grazing occurs in the Western and Upland areas located on either side of the Sacramento Valley. Timber harvesting occurs in the mountain areas (Shasta County, General Plan, amended September 2004).

b. Primary Viewing Corridors. Shasta County's General Plan identifies scenic highways designated by the State as eligible for state scenic highway designation and scenic corridors designated by the County. Further, the County identifies special features that define the visual quality of a scenic corridor. These special features 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.

The Scenic Highways Element of the Shasta County General Plan (as amended in September 2004) finds that scenic corridors are valuable to County residents for the benefits they bring to the community and the local economy, including the development community pride,

enhancement of property values, the protection of aesthetically-pleasing open spaces for rural lifestyles, and the strengthening of the County's tourist-industry.

One officially designated state scenic highway is located in Shasta County: a three-mile stretch of State Route 151 (SR 151) from Shasta Dam to near Lake Boulevard (Caltrans, 2014). This scenic highway curves along the slope of a ridge, providing views of the Sacramento River, Shasta Lake, and distant hills. In addition, Shasta County has six highway segments designated as eligible state scenic highways by the state, including:

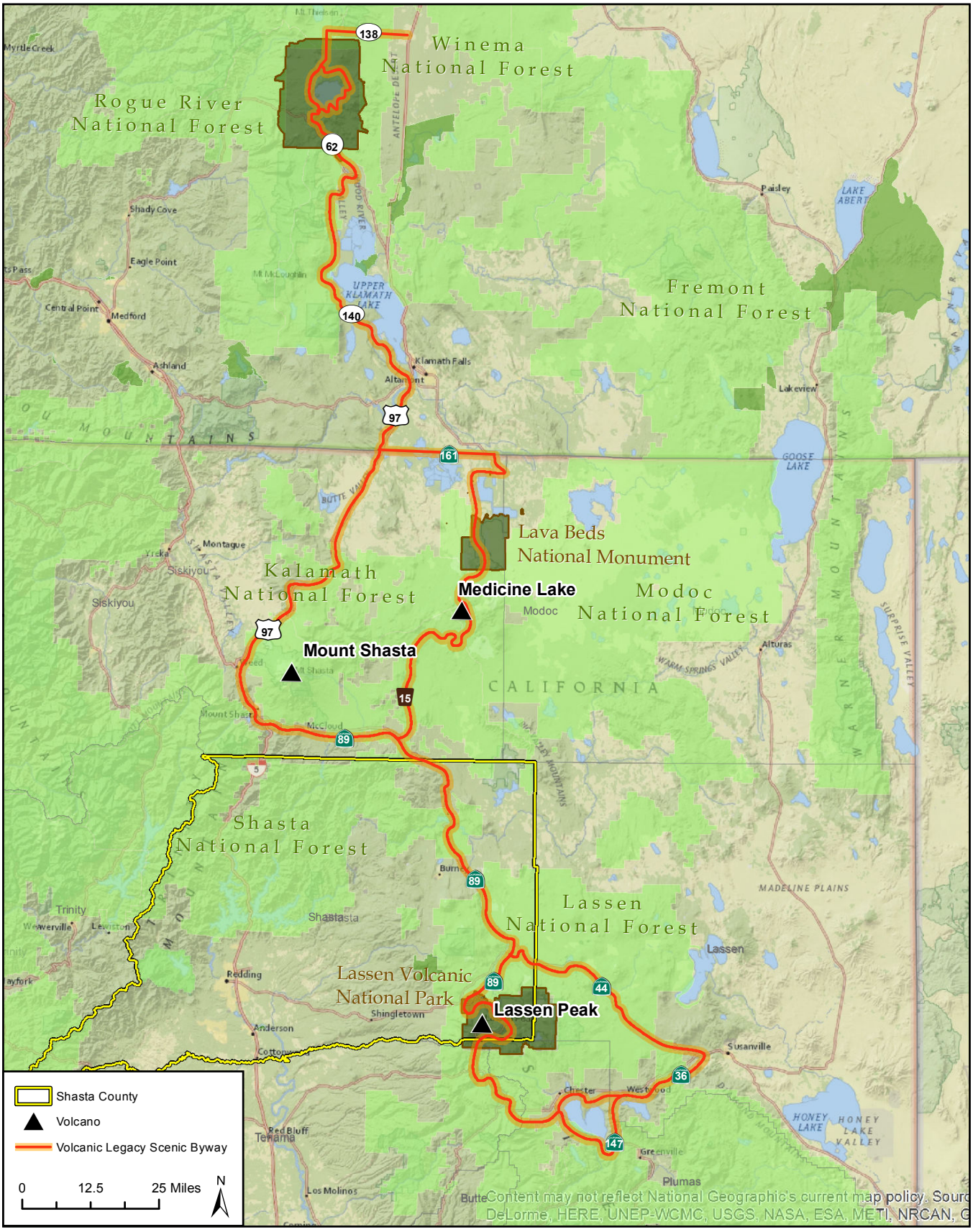
- Volcanic Legacy Scenic Byway: State Route 89 (SR 89) from the northern boundary of Shasta County, passing Lake Britton and Lassen National Forest, partially following Hat Creek to the SR89/SR44 interchange near Old Station;
- SR 44 begins at the SR 89/SR 44 interchange near Old Station in Lassen National Forest and continues west to Redding;
- SR 299 from Redding through Whiskeytown National Recreation Area, and continuing to the western boundary of Shasta County;
- SR 299/SR 89 interchange within the McArthur-Burney Falls Memorial State Park, east to the eastern boundary of Shasta County;
- Interstate 5 at the SR44 interchange in Redding to Shasta Lake;
- SR 151 from near Lake Boulevard to Interstate 5 in the City of Shasta Lake.

Shasta County has identified two scenic corridors in which official scenic highway designation may be pursued in the future. The first potential scenic corridor, Interstate 5 north of Shasta Lake to the Oregon border, has views of Shasta Lake, the Sacramento River Canyon, Castle Crags, and Mount Shasta. The second potential scenic corridor within Shasta County is along Highway 89 from Interstate 5 to Lassen Volcanic National Park. This second potential scenic corridor along Highway 89 is part of what is known as the Volcanic Legacy Scenic Byway. The Volcanic Legacy Scenic Byway is a 500-mile volcano to volcano geology tour that highlights the geology that shaped the land. The Byway starts at Lassen Volcanic National Park in Shasta County and ends at Crater Lake in Oregon. The Volcanic Legacy Scenic Byway traverses the southern section of the great Cascade Range, a chain of active volcanoes that stretch from the Canadian border to northern California (Volcanic Legacy Scenic Byway All American Road, 2014). The Volcanic Legacy Scenic Byway can be seen in Figure 4.1-1.

Lastly, Shasta County has identified scenic corridors with dominant views of the natural environment that presently are not identified as future official scenic highway designation. These include:

- Interstate 5 from the northeast boundary of the City of Shasta Lake, following the meander of the Sacramento River to Castle Crags State Park near Castella;
- State Route 36 from the western boundary of Shasta County, partially following Middle Fork Cottonwood Creek to Platina to just outside of Redding;
- State Route 299 from Bella Vista to west of Burney.

The cities of Anderson and Shasta Lake also have designated local scenic corridors. The City of Anderson General Plan's Open Space and Conservation Element (updated May 2007) identifies



Basemap provided by ESRI, 2014.

Volcanic Legacy Scenic Byway

Figure 4.1-1

as scenic resources the Sacramento River and views of surrounding mountains including Mount Shasta to the north and Mount Lassen to the east. In the City of Shasta Lake's General Plan (updated in June 1999), Policy C-k designates the following road segments as scenic routes:

- Route 151 between North Boulevard and Shasta Dam;
- Shasta Park from Shasta Dam Boulevard to Digger Bay; and
- Cascade Boulevard between Shasta Dam Boulevard and the Mountain Gate Interchange with Interstate 5.

The City of Redding's General Plan does not identify scenic corridors.

c. Regulatory Setting. The general plans and zoning ordinances of the cities within the County regulate design and the built environment within those communities. Shasta County's General Plan and Zoning Ordinance provide 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**.** Additionally, roadway landscaping and lighting are generally reviewed when roadways are part of larger land use development proposals. Chapter 6.8, *Scenic Highways*, of the Shasta County General Plan contains a number of objectives and policies related to the design of transportation infrastructure projects throughout the County. The objectives and policies relevant to the proposed 2015 RTP EIR are described in the table below:

Table 4.1-1
Shasta County General Plan Objectives and Policies

Objective SH-1	To protect the natural scenery along the official scenic highways of Shasta County from new development which would diminish the aesthetic value of the scenic corridor.
Objective SH-2	New development along scenic corridors of the official scenic highway should be designed to relate to the dominant character of the corridor (natural or natural and man-made contrast) or of a particular segment of the corridor. Relationships shall be achieved in part through regulations concerning building form, site location, and density of new development.
Objective SH-2	Recognition that the management practices of agriculture, timber, and other resource-based industries which may cause some degradation of the visual quality of the scenic corridor are inevitable but their impacts are temporary.
Policy SH-a	To protect the value of the natural and scenic character of the official scenic highway corridors and the County gateways dominated by the natural environment, the following provisions, along with the County development standards, shall govern new development: • setback requirements • regulations of building form, material, and color • landscaping with native vegetation, where possible • minimizing grading and cut and fill activities • requiring use of adequate erosion and sediment control programs • siting of new structures to minimize visual impacts from highway • regulation of type, size, and location of advertising signs • utility lines shall be underground wherever possible; where undergrounding is not practical, lines should be sited in a manner which minimizes their visual intrusion.

Table 4.1-1
Shasta County General Plan Objectives and Policies

Policy SH-b	The type, size, design, and placement of signs within an official corridor shall be compatible with the visual character of the immediate surroundings. The County's sign regulations should be drafted for the following locations: • timberlands and forest areas • croplands and grazing lands • rural community centers • urban and town centers • recreational uses
Policy SH-c	Official scenic highways should include vista sites, turnouts, restrooms, picnic grounds, travel information, and other related facilities/services.

4.1.2 Impact Analysis

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

The CEQA Guidelines (Appendix G) identifies the following criteria for determining whether a project's impacts would have a significant impact on the environment. Significant impacts may result if a project would:

- Have a substantial adverse effect on a scenic vista.
- Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway.
- Substantially degrade the existing visual character or quality of the site or its surroundings.
- 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. This section describes generalized impacts associated with proposed transportation improvements and the future land use scenario envisioned under the 2015 RTP. Table 4.1-2 in Section 4.1.2.c. summarizes a number of the specific projects that could result in aesthetic impacts.

Impact AES-1 Proposed transportation improvement projects under the 2015 RTP, as well as the land use patterns envisioned by the 2015 RTP, may affect public views along eligible scenic corridors, adjacent landscaping, and other scenic routes considered to have high scenic qualities. This would be a Class II, *significant but mitigable* impact.

Construction of the proposed transportation improvements along eligible state scenic highways, County designated scenic corridors, and the Volcanic Legacy Scenic Byway could create potentially significant, but short-term, visual impacts. As listed in Table 4.1-2, transportation improvements (constrained RTP projects as listed in Appendix B and shown on Figure 2-2) are proposed on or immediately adjacent to the following eligible state scenic highways and identified by the County as potential scenic corridors:

Eligible state scenic highways potentially impacted:

- Volcanic Legacy Scenic Byway: State Route 89 (SR 89) from the northern boundary of Shasta County, passing Lake Britton and Lassen National Forest, partially following Hat Creek to the SR89/SR44 interchange near Old Station;
- SR 44 begins at the SR 89/SR 44 interchange near Old Station in Lassen National Forest and continues west to Redding; and
- Interstate 5 at the SR 44 interchange in Redding to Shasta Lake.

Identified County scenic corridors potentially impacted:

- Interstate 5 from the northeast boundary of the City of Shasta Lake, following the meander of the Sacramento River to Castle Crags State Park, near Castella.

These scenic highways and routes are primarily located in the vicinity of Redding, Shasta Lake, and in the unincorporated areas to the north. Impacts could block pastoral views by construction equipment and staging areas, disruption of views by temporary signage and exposure of slopes and removal of vegetation. Specific projects that may result in temporary adverse impacts to scenic corridors during the construction phase are discussed below.

With regard to long-term aesthetic impacts, implementation of the 2015 RTP would primarily result in modification to existing transportation facilities within existing roadway rights-of-way (Table 4.1-2 lists a number of projects with the potential to result in adverse aesthetic impacts). Many of the proposed projects are at-grade with the surrounding environment. For example, the proposed northbound auxiliary lane between Hilltop Drive and Lake Boulevard on Interstate 5, which is an eligible state scenic highway, would not result in major obstructions or blockages of views of the Klamath Mountains to the west.

Nevertheless, proposed bridge, interchange, and widening improvements on scenic roadways may result in moderate intrusions on the aesthetics of these roadways. Increases in the dimensions of existing routes and structural rehabilitations could entail the removal of existing vegetation that lines scenic roadways, altering the foreground of scenic views. In particular, several proposed bridge projects on Interstate 5, from the Pit River Bridge to the north, could impair scenic views by removal of trees adjacent to the approaches to bridges. Projects on or near scenic roadways also could result in the introduction of street lighting out of scale with the area. Examples of such potential projects are listed in Table 4.1-2. Such impacts would be potentially significant.

It should be noted that the preferred regional growth scenario envisioned by Shasta *FORWARD*>> Regional Blueprint and incorporated in the 2015 RTP encourages projected

growth to occur in urban cores and along corridors in order to foster the growth of distinct cities and towns. Implementation of these scenarios would help to avoid the loss of scenic resources overall by concentrating development within existing urbanized areas when compared to a future scenario without the 2015 RTP. However, when compared to existing conditions, the preferred growth scenario would intensify the built environment within existing urban areas through planned infill development. In addition, this land use scenario would concentrate development near transportation corridors, which would further increase the visibility of future infill development and potentially impact views of background scenic resources. In visually sensitive areas, local land use agencies would apply development standards and guidelines from their respective general plans, specific plans, master plans, and City and County ordinances to maintain compatibility with surrounding natural areas, including site coverage, building height and massing, building materials and color, landscaping, and site grading

Increased vehicle trips and transit activities within these urban areas would generate additional noise, which may create the needs for sounds walls or barriers. Such noise mitigation features could result in aesthetic impacts.

As discussed in Section 6.8, *Scenic Highways*, the Shasta County General Plan contains goals and policies related to the design of transportation infrastructure projects throughout the County. For example, Policy SH-a directs Shasta County to protect the value of the natural and scenic character of the official scenic highway corridors and the County gateways dominated by the natural environment by following specific provisions to govern new development, including but not limited to minimizing grading and cut and fill activities, and landscaping with native vegetation, where possible.

Although projects under the 2015 RTP would be subject to existing policies and regulations that would help to minimize aesthetic impacts, specific projects identified in the 2015 RTP would still have the potential to adversely impact scenic resources when compared to existing conditions. Impacts would be significant but mitigable.

Mitigation Measures. SRTA recommends that individual project lead agencies implement the following mitigation measures for applicable transportation projects, including but not limited to those projects identified in Table 4.1-2. These measures can and should be implemented for all projects developed pursuant to the 2015 RTP that would adversely affect scenic corridors.

AES-1(a) Where a particular 2015 RTP transportation improvement project affects adjacent landforms, the project sponsor shall ensure that recontouring provides a smooth and gradual transition between modified landforms and existing grade.

AES-1(b) The project sponsor shall ensure that landscaping is installed to restore natural features along corridors after widening, interchange modifications, realignment, or construction of ancillary facilities. Associated landscape materials and design shall enhance landform variation, provide erosion control, and blend with the natural setting. To ensure compliance with approved landscape plans, the implementing agency shall provide

a performance security equal to the value of the landscaping/ irrigation installation.

AES-1(c) The project sponsor shall ensure that a project in a scenic view corridor will have the minimum possible impact upon foliage, existing landscape architecture and natural scenic views, consistent with project goals.

AES-1(d) Potential noise impacts arising from increased traffic volumes associated with adjacent land development shall be preferentially mitigated through the use of setbacks and the acoustical design of adjacent proposed structures. The use of sound walls, or any other architectural features that could block views from the scenic highways or other view corridors, shall be discouraged to the extent possible. Where use of sound walls is found to be necessary, walls shall incorporate offsets, accents, and landscaping to prevent monotony. In addition, sound walls should be complementary in color and texture to surrounding natural features.

Significance After Mitigation. With implementation of the identified mitigation measures, impacts would be less than significant.

Impact AES-2 Development of proposed transportation improvement projects under the 2015 RTP, as well as the land use patterns envisioned by the 2015 RTP, would contribute to the alteration of Shasta County's character from primarily rural (or semi-rural) to a somewhat more small urban condition. This would be a Class II, *significant but mitigable* impact.

Some of the proposed transportation improvements would introduce visual features that would alter the existing rural or semi-rural character of the area in which they are proposed. As listed in Table 4.1-2, new roadways at the outskirts of Redding, Anderson, and Cottonwood, would intrude into agricultural, forested, or undeveloped lands that offer scenic value. In addition, road widenings would change the character of a number of rural country roads to that of a small urban community by increasing pavement and potentially removing roadside native plant species, including protected trees and other species typical of sensitive habitats. Ancillary facilities constructed along new or existing roads (such as lighting, bus shelters, and signs) would further contribute to the trend toward a more small urban visual character.

It should be noted that the majority of the projects included in the 2015 RTP would occur in developed areas or adjacent to urban environments. In addition, the land use scenario envisioned by the 2015 RTP is intended to encourage infill development and development near existing transportation corridors. This type of development would help to avoid impacts to the rural character by concentrating development within existing urbanized areas when compared to a future scenario without the 2015 RTP. However, when compared to existing conditions, this land use scenario would intensify the built environment within existing urban areas through the implementation of infill and development near existing transportation corridors, thereby

resulting in an overall change in the character of existing urbanized areas to a more concentrated development pattern.

The visual effect of roadway projects would be greatest in the more rural areas of Shasta County. Examples of projects with potential to alter the rural character of the county are included in Table 4.1-2.

As discussed in Section 6.8, Scenic Highways, the Shasta County General Plan contains a number of goals and policies to regulate the design of transportation infrastructure projects throughout the County. The general plans for the cities of Anderson and Shasta Lake also have goals and policies for the protection of scenic corridors or resources. Nonetheless, the overall visual effect of planned roadway projects and envisioned land use patterns would contribute to an incremental transformation in visual character from rural to more urban or small urban. This would be a significant but mitigable impact.

Mitigation Measures. SRTA recommends that individual project lead agencies implement the following mitigation measures for applicable transportation projects, including but not limited to those projects identified in Table 4.1-2. These measures can and should be implemented for all projects developed pursuant to the 2015 RTP that would alter the County's rural character.

AES-2(a) Roadway extensions and widenings shall avoid the removal of existing mature trees to the extent possible. The loss of trees that are protected by local agencies shall be replaced at a minimum 2:1 basis and incorporated into the landscaping design for the roadway. The project sponsor of a particular 2015 RTP project shall ensure the continued vitality of replaced trees through periodic maintenance (see Mitigation Measure B-1(j) prescribed in Section 4.10 *Biological Resources*.)

AES-2(b) Roadway lighting shall be minimized to the extent possible, 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 hoods, low intensity lighting, and using as few lights as necessary to achieve the goals of the project.

AES-2(c) Bus shelters and other ancillary facilities constructed as part of roadway improvements under the 2015 RTP shall be designed in accordance with the architectural review requirements of the local jurisdiction in which the project is proposed.

Mitigation measures AES-1(a) through AES-1(c) would also incrementally reduce potential impacts.

Significance After Mitigation. With implementation of the identified mitigation measures, impacts from alteration of Shasta County's visual character would be less than significant.

c. Specific 2015 RTP Projects That May Result in Impacts. Table 4.1-2 identifies those projects that may create impacts as discussed in Section 4.1.2.b above. The individual projects listed could create significant aesthetic impacts but would not necessarily do so. Additional specific analysis will need to be conducted as the individual projects are implemented in order to determine the actual magnitude of impact. Mitigation measures discussed above could apply to these specific projects.

Table 4.1-2
2015 RTP Projects That May Result in Aesthetic Impacts

SRTA Project Name	Project Number	Project Description	Location	Impact	Description of Potential Impact
Caltrans Bridges	2	Interstate 5 – replace bridge at Craig View Drive	Shasta County	AES-1	Scenic corridor
Caltrans Bridges	3	Interstate 5 – replace superstructure or bridge at Sims Road	Shasta County	AES-1	Scenic corridor
Caltrans Operations	17	Interstate 5 – rail upgrade at Turntable Bay Road	Shasta County	AES-1	Scenic corridor
Shasta County Bridges	2	Interstate 5 – seismic retrofit and paint for Pit River Bridge	Shasta County	AES-1	Scenic corridor
Caltrans Operations	22	Interstate 5 – construct northbound auxiliary lane from Hilltop Drive to Lake Boulevard	Redding	AES-1	Scenic corridor
Redding Interchanges	2	Interstate 5 – Hilltop Dr bridge rehabilitation	Redding	AES-1	Scenic corridor
Redding Capacity	4	Hilltop Dr – widening from Lake Boulevard to I-5	Redding	AES-1	Scenic corridor
Caltrans Bridges	1	SR 44 – replace bridge at Hat Creek	Shasta County	AES-1	Scenic corridor
Shasta County Interchanges	1	SR 44 – new Stillwater Road interchange	Shasta County	AES-1	Scenic corridor
Shasta County Bridges	39	SR 44 – Cow Creek bridge seismic retrofit	Palo Cedro	AES-1	Scenic corridor
Caltrans Bridges	5	SR-44 – Clough Creek bridge rehabilitation	Redding	AES-1	Scenic corridor
Caltrans Operations	23	SR 44 – construct ramp auxiliary lane from EB Victor on-ramp to EB Shasta View off-ramp	Redding	AES-1	Scenic corridor
Caltrans Bridges	7	SR 89 – replace Lake Britton bridge and realign roadway (Volcanic Legacy Scenic Byway)	Shasta County	AES-1	Scenic corridor
Caltrans Operations	7	Deschutes Road – widen to 3 lanes from Old 44 Drive to Boyle Road	Shasta County	AES-2	Alteration of rural character
Redding Capacity	6	Old Alturas Road – widening from Victor Avenue to Shasta View Drive	Redding	AES-2	Alteration of rural character
Aviation	12	Redding Municipal Airport – all-weather perimeter road	Redding	AES-2	Alteration of rural character
Anderson	1	Gateway Drive – construct two-lane road Balls Ferry to Deschutes	Anderson	AES-2	Alteration of rural character
Shasta County Capacity	1	Gas Point Road – widen to 4 lanes from New N-S to Rhonda	Cottonwood	AES-2	Alteration of rural character
Shasta County Capacity	7	First Street – widen to 5 lanes from N/S arterial to overcrossing	Cottonwood	AES-2	Alteration of rural character
Redding Capacity	8	Oasis Road – widen from northbound I-5 ramps to Gold Hills Drive	Redding	AES-2	Alteration of rural character
Redding Interchanges	3	Oasis Road and I-5 interchange – reconstruction and widening	Redding	AES-1	Scenic corridor
Redding Capacity	3	Quartz Hill Road – widen from Snow Lane to Top of the Hill	Redding	AES-2	Alteration of rural character

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4.2 AIR QUALITY

This section analyzes the impacts of the 2015 RTP upon local and regional air quality. Both temporary impacts relating to construction activity and long-term impacts associated with population growth and associated growth in vehicle traffic and energy consumption are discussed.

4.2.1 Setting

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

Shasta County is located at the northernmost end of the Northern Sacramento Valley Air Basin (NSVAB). The NSVAB includes the following counties located in the northern portion of the Sacramento Valley: Butte, Colusa, Glenn, Shasta, Sutter, Tehama, and Yuba. The NSVAB is bounded on the north and west by the Coastal Mountain Range and on the east by the southern portion of the Cascade Mountain Range and the northern portion of the Sierra Nevada Mountains. These mountain ranges reach heights in excess of 6,000 feet above mean sea level (MSL), with individual peaks rising much higher. This provides a substantial barrier to both locally created pollution and the pollution that has been transported northward on prevailing winds from the Sacramento Metropolitan area (Sacramento Valley Air Quality Engineering and Enforcement Professionals, 2013).

The climate of the basin is dominated by the strength and location of a semi-permanent, subtropical, high-pressure cell over the northeastern Pacific Ocean, with terrain variations creating various microclimates. The existence of mountains and hills within the basin is responsible, in large part, for the wide variations of rainfall, temperatures, and localized winds that occur throughout the region. Airflow patterns in the basin are predominantly northwesterly in the spring and summer; however, seasonal variations do occur. Calm conditions dominate the winter months. Regional airflow patterns affect air quality by directing pollutants downwind of sources. Localized meteorological conditions, such as light winds and shallow vertical mixing, as well as topographical features, such as surrounding mountain ranges, create areas of high pollutant concentrations by hindering dispersal (Enplan, 2010).

Precipitation is highly variable seasonally. Summer months are often dry, averaging less than one inch in total precipitation per month. Rainfall is most abundant during the winter months and increases with elevation. Annual rainfall is lowest in the valleys, higher in the foothills, and highest in the mountains (Shasta County, 2010).

b. Pollutants. Primary criteria pollutants are emitted directly from a source (e.g., vehicle tailpipe, an exhaust stack of a factory, etc.) into the atmosphere. Primary criteria pollutants include carbon monoxide (CO), reactive organic gases (ROG)/volatile organic compounds (VOC), nitric oxide (NO), fine particulate matter (PM_{10} and $PM_{2.5}$), sulfur dioxide (SO_2), and lead (Pb). Secondary criteria pollutants are created by atmospheric chemical and photochemical

reactions; ROGs/VOCs together with nitrogen oxides form the building blocks for the creation of photochemical (secondary) pollutants. Secondary pollutants include oxidants, ozone (O_3) and sulfate and nitrate particulates (smog). The characteristics, sources and effects of critical air contaminants are provided in Table 4.2-1.

The NSVAB is frequently subjected to inversions that, coupled with geographic barriers and high summer temperatures, create a high potential for air pollution problems. Generally, areas below 1,000 feet in elevation within Shasta County experience a moderate to poor capability to disperse pollutants in both the horizontal and vertical wind fields. This is, in large measure, due to relatively stable atmospheric conditions which act to suppress vertical air movement. Extremely stable atmospheric conditions referred to as "inversions" act as barriers to the dispersal of pollutants. In valley locations, at or below 1,000 feet in elevation, inversions create a "lid" under which pollutants are trapped. Dust and other pollutants trapped within these inversion layers will not disperse until atmospheric conditions become unstable. This situation creates concentrations of pollutants at or near the ground surface, and as a result may pose significant health risks for plants, animals, and people (Shasta County, 2010).

Shasta County's relatively low residential densities found in the County's rural residential and suburban residential designations are major contributors to perpetuating an auto-dependent lifestyle and associated air contaminants. Ozone pollution caused by vehicle and industrial emissions is the major air contamination concern in Shasta County in the summer. A cold-weather inversion layer that traps airborne particles from open-burning practices, fireplaces, and wood stoves is the major problem in winter. Volatile organic compounds (VOC) and oxides of nitrogen (NOx) are important precursor chemicals in forming ozone. According to the Air Resources Board emissions inventory, mobile sources account for 59 percent of VOC and 77 percent of NOx in Shasta County (Shasta County, 2004).

c. Federal/State/Local Regulatory Framework. Air Quality regulations in Shasta County are subject to both federal and state standards. The 1990 Clean Air Act mandated that the federal Environmental Protection Agency (EPA) manage and control air quality by establishing the National Ambient Air Quality Standards (NAAQS)**.** In California, the task of air quality management and regulation has been legislatively granted to the California Air Resources Board (CARB). CARB is responsible for research activities, the establishment of California Ambient Air Quality Standards (CAAQS) guidelines for air quality management, and the regulation of both stationary and mobile emission sources (i.e., motor vehicles). The CAAQS are generally more stringent than corresponding federal standards. Table 4.2-2 illustrates both the federal and state current pollutant regulations.

CARB established fifteen air basins and delegated local pollution control authority to Air Pollution Control Districts (APCD) or Air Quality Management Districts (AQMD). For Shasta County, air pollution control authority is vested with the Shasta County Air Quality Management District (SCAQMD).

Table 4.2-1
Description Of Selected Air Contaminants

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 peroxynitrates. 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 the 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 (NOx)
Characteristics - It primarily consists of nitric oxides (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 (NO_2) (a reddish-brown irritating gas formed by the combination of nitric oxide with oxygen). 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. NO_2 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.

Table 4.2-1
Description Of Selected Air Contaminants

SULFUR DIOXIDE (SO_2)
Characteristics - SO_2 is a colorless, pungent, irritating gas formed primarily by the combustion of sulfur-containing fossil fuels. In humid atmospheres, SO_2 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, SO_2 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, $PM_{2.5}$ and PM_{10})
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 (ozones), particulate concentrations can be higher during summer months because the presence of ozone increases the potential for SO_2 and NO_2 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.

Table 4.2-1
Description Of Selected Air Contaminants

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. 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 maybe 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, 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 have 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, CH_4 NMHC (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. 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.

Table 4.2-2
Current Federal and State Ambient Air Quality Standards

Pollutant	Federal Standard	California Standard
Ozone	0.075 ppm (8-hr avg)	0.09 ppm (1-hr avg) 0.07 ppm (8-hr avg)
Carbon Monoxide	35.0 ppm (1-hr avg) 9.0 ppm (8-hr avg)	20.0 ppm (1-hr avg) 9.0 ppm (8-hr avg)
Nitrogen Dioxide	0.10 ppm (1-hr avg) 0.053 ppm (annual avg)	0.18 ppm (1-hr avg) 0.030 ppm (annual avg)
Sulfur Dioxide	0.075 ppm (1-hr avg) 0.14 ppm (24-hr avg)	0.25 ppm (1-hr avg) 0.04 ppm (24-hr avg)
Lead	1.5 $\mu g/m^3$ (calendar quarter)	0.15 $\mu g/m^3$ (3-month avg)
Particulate Matter (PM_{10})	150 $\mu g/m^3$ (24-hr avg)	50 $\mu g/m^3$ (24-hr avg) 20 $\mu g/m^3$ (annual avg)
Particulate Matter ($PM_{2.5}$)	35 $\mu g/m^3$ (24-hr avg) 12 $\mu g/m^3$ (annual avg)	12 $\mu g/m^3$ (annual avg)

ppm= parts per million
$\mu g/m^3$ = micrograms per cubic meter
Source: CARB, www.arb.ca.gov/research/aaqs/aaqs2.pdf, *June 4, 2013*

Emission Regulations. Mobile emission sources are regulated through the establishment of federal and state vehicle emission requirements with which auto manufacturers must comply. Motor vehicle emissions are also regulated by the state's vehicle inspection and maintenance program (the "Smog Check Program"). Indirectly, increases in motor vehicle emissions can be regulated by agencies other than CARB, through CEQA and determinations of consistency with the Clean Air Plan (CAP) and other city and county General Plans. Shasta County's General Plan (2004) includes SCAQMD thresholds of significance for air pollutants, which are described in Section 4.2.2(a), Methodology and Significance Thresholds, below.

d. Current Air Quality. Monitoring of ambient air pollutant concentrations is conducted by the CARB, SCAQMD, and industry. The SCAQMD currently operates PM_{10} monitoring stations in Redding and Anderson. At these sites, inhalable particulate matter (PM_{10}) samplers are operated, every sixth day, year-round. The highest concentrations of PM_{10} typically occur during the open burning/wood stove use season in Shasta County, which is from October through April each year. Shasta County has four ozone monitors, with one located in Redding, Anderson, Lassen Volcanic National Park, and the City of Shasta Lake. Continuous sampling of ground-level ozone concentration is conducted from May 1st through October 31st on a 24-hr/day basis. When an exceedance of the state standard for ozone is predicted, the SCAQMD issues media announcements which urge the community to reduce or alter driving habits to lessen the predicted impact of this photochemically produced pollutant. Media announcements are issued via a press release to a list of regional media outlets. In addition, residents who have signed up to receive notifications through EnviroFlash receive daily emails with the local Air Quality Index (AQI) for both ozone and PM_{10}. A link to the EnviroFlash signup page is provided on the SCAQMD website (Ross Bell, personal communication, 2015).

Depending on whether the standards are met or exceeded, the local air basin is classified as being in "attainment" or "non-attainment." The NSVAB does not meet the state ambient air

standards for ozone and PM_{10}. Shasta County currently is designated as a non-attainment area with respect to state standards for two pollutants: ozone and PM_{10} (CARB, 2013). The County meets the state standards for all other pollutants. Shasta County is unclassified/attainment for all federal air quality standards (CARB, 2013). Tables 4.2-3, 4.2-4, and 4.2-5 list the air quality emission violations for Shasta County during the period 1988 through 2013. It is important to note that the County has not been designated as a federal non-attainment area even though it has exceeded federal thresholds in one or more isolated cases. This is due to the fact that violations have averaged less than one violation day per year in any three (3) year period as allowed by the federal standard (Shasta County, 2004).

Table 4.2-3
Shasta County Air Quality Emission
Violation Days 1988-2001

Year	Ozone			PM_{10}	
	State	Federal		State	Federal
		One Hour	Eight Hour		
1988	5	0	NA	4	0
1989	0	0	NA	10	0
1990	11	1	NA	3	0
1991	20	0	NA	9	0
1992	10	0	NA	15	0
1993	1	0	NA	2	0
1994	7	0	NA	1	0
1995	1	0	NA	0	0
1996	16	0	NA	0	0
1997	8	0	NA	0	0
1998	40	3	45	13	0
1999	23	0	12	15	0
2000	3	0	1	0	0
2001	1	0	0	6	0

Source: 2003 California Almanac of Emissions and Air Quality, as cited in the Shasta County General Plan Air Quality Element, 2004

Table 4.2-4
Shasta County Federal 8-hr Ozone Emission
Violation Days 2001-2011

Year	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Federal 8-hr Ozone	13	13	11	8	10	6	15	1	2	1

Source: Almanac of Emissions and Air Quality, CARB, 2013

Note: The 2013 Almanac of Emissions and Air Quality does not include data regarding ozone violation days for the state standard and does not include PM_{10} violation days for the state or federal standards.

Table 4.2-5
Shasta County Percent of Days
Exceeding Federal Standards 2000-2013

Year	8-hour Ozone	24-hour $PM_{2.5}$
2000-2002	2	3
2011-2013	0	0

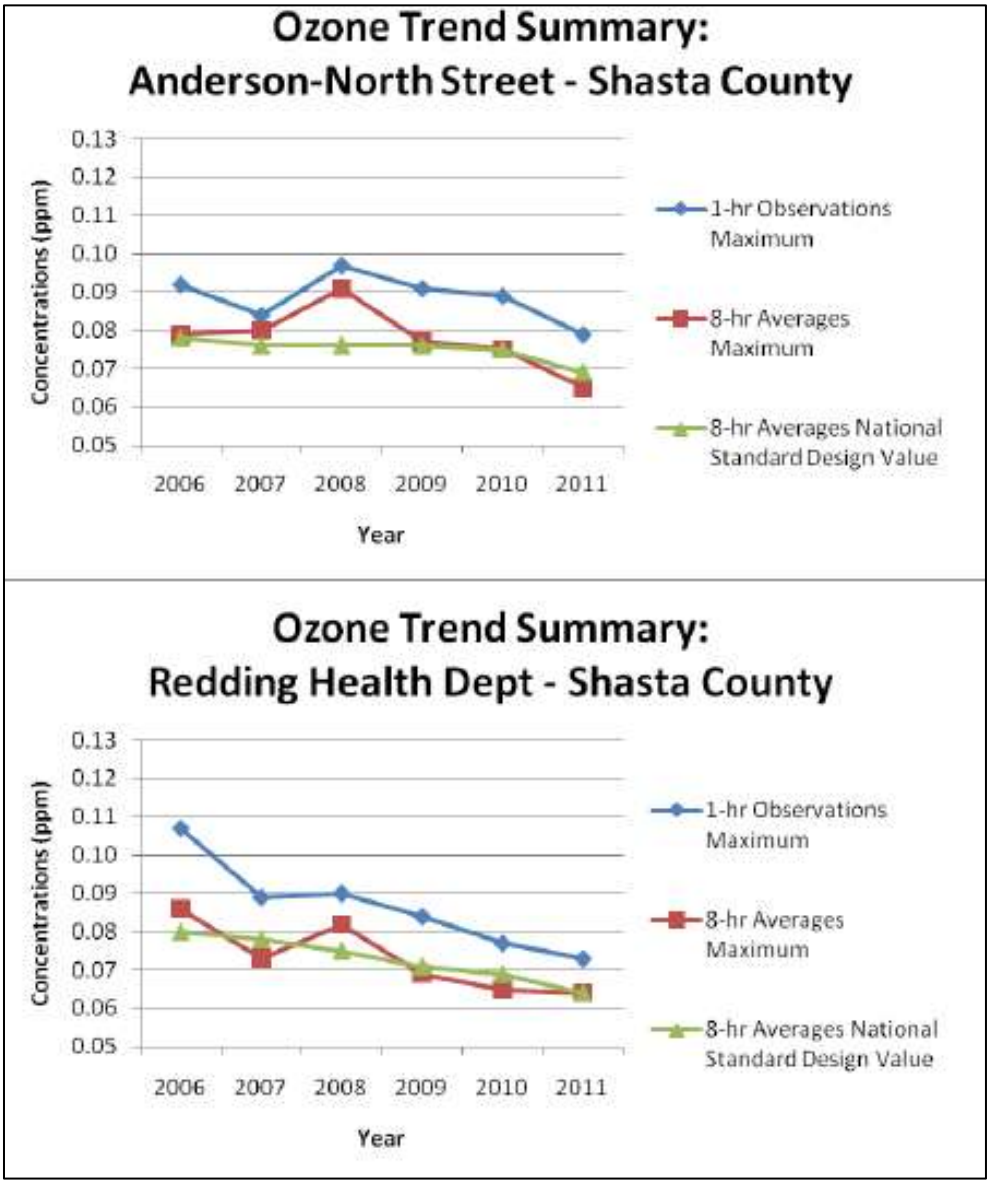
Source: California Air Pollution Control Officers' Association (CAPCOA), 2014

Note: The 2014 CAPCOA report does not include data regarding violation days for the state emissions standards.

Figure 4.2-1 shows the ozone emissions trends for the Anderson and Redding monitoring stations during the period 2006 through 2011. As shown below, with the exception of a spike in 2008, ozone emissions in Shasta County have been exhibiting a downward trend since 2006. This downward trend matches the National Standard.

e. Air Quality Management. The Federal Clean Air Act Amendments (FCAAA) of 1990 set a schedule for the attainment of the NAAQS. States are required to prepare a State Implementation Plan (SIP) to develop strategies to bring about attainment of the standards. In addition, the California Clean Air Act of 1988 requires areas that exceed the California ambient air quality standards to plan for the eventual attainment of the state standards. SCAQMD details the County's progress towards attainment in its Air Quality Attainment Plan (AQAP). The SCAQMD, along with other air districts in the NSVAB, have committed to jointly prepare and adopt a uniform AQAP for the purpose of achieving and maintaining healthful air quality throughout the air basin. The 2012 Triennial Update of the NSVAB AQAP addresses the progress made in implementing the 2009 AQAP and proposes modifications to the strategies necessary to attain the California ambient air quality standard for the 8-hour ozone at the earliest practicable date. The 2012 AQAP identifies those portions of the NSVAB designated as "non-attainment" for the state ambient air quality standards and discusses the health effects related to the various air pollutants. The plan identifies the air pollution problems which are to be cooperatively addressed on as many fronts as possible in order to make the region a healthier place to live now and in the future. Like the 2006 and 2009 plans, the 2012 AQAP focuses on the adoption and implementation of control measures for stationary sources, area wide sources, and indirect sources, and addresses public education and information programs. The 2012 AQAP also addresses the effect that pollutant transport has on the ability of the NSVAB to meet and attain the state standards. Table 4.2-6 presents a summary of the most current emissions inventory for the NSVAB.

Figure 4.2-1 Shasta County Ozone Trend Summary



Source: 2012 Triennial Update of the NSVAB AQAP, 2013

Table 4.2-6
Ozone Emissions Inventory Data for NSVAB (tons/day)

Source Category	2006		2020 (Projected)	
	VOC	NOx	VOC	NOx
Diesel On-Road Motor Vehicles	3.313	51.854	1.626	19.732
Total On-Road Motor Vehicles	23.191	70.787	10.319	28.102

Source: NSVPA 2012 Triennial Air Quality Attainment Plan, 2013

4.2.2 Impact Analysis

a. Methodology and Significance Thresholds. This analysis follows the guidance and methodologies recommended in the air quality emissions thresholds established by the SCAQMD and the CEQA Appendix G thresholds.

Pursuant to the *State CEQA Guidelines*, air quality impacts related to the proposed project would be significant if the project would:

- *Conflict with or obstruct implementation of the applicable air quality plan;*
- *Violate any air quality standard or contribute substantially to an existing or projected air quality violation;*
- *Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative guidelines for ozone precursors);*
- *Expose sensitive receptors to substantial pollutant concentrations; and/or*
- *Create objectionable odors affecting a substantial number of people*

For the purposes of environmental review, Shasta County has defined a "substantial contribution" to an existing or projected air quality violation as generation of air pollutants in excess of the thresholds shown in Table 4.2-7. These thresholds are consistent with the New Source Review Rule 2:1 adopted by the Shasta County Air Pollution Control Board in 1993, as required by the California Clean Air Act. The purpose of this rule is to establish pre-construction review requirements for new and modified stationary sources of air pollution for use of Best Available Control Technology (BACT), analysis of air quality impacts, and to ensure that the operation of such sources does not interfere with the attainment or maintenance of ambient air quality standards. Rule 2:1 applies to all new and modified stationary sources that are subject to District permit requirements, and after construction, emit or may emit any affected pollutants.

Table 4.2-7
SCAQMD Air Quality Emission Thresholds (lbs/day)

Level	NOx	ROG (VOC)	PM10
A	25	25	80
B	137	137	137

Source: SCAQMD, as cited in the Shasta County General Plan Air Quality Element, 2004
Notes:

- *Apply Standard Mitigation Measures (SMM) to all projects based on potential air quality impacts. This effort will help contribute to reducing cumulative impacts.*
- *Apply SMM and appropriate Best Available Mitigation Measures (BAMM) when a project exceeds Level "A" thresholds. The BAMM will be applied to any project which exceeds Level "A" thresholds. The appropriate type and number of BAMM applied to a project will be based on the unique characteristics of the project. BAMM will be selected from a list of measures kept updated by the SCPD and the SCAQMD.*
- *Apply SMM, BAMM, and special BAMM (when project exceeds Level "B" thresholds) based on their emission reduction potential to lower project emissions below Level "B" thresholds. The SCAQMD will advise the SCPD of the efficiency of proposed emission measures as part of the effort to reduce project emissions below Level "B" thresholds.*
- *If application of the above procedures results in reducing project emissions below Level "B" thresholds, the project can proceed with an environmental determination of a Mitigated Negative Declaration assuming other project impacts do not require more extensive environmental review.*
- *If project emissions cannot be reduced to below Level "B" thresholds, emission offsets will be required. The SCPD may seek the assistance of the SCAQMD regarding other efforts and measures that could be used to reduce unmitigated emissions exceeding the 137 lbs. per day. If, after applying the emissions offsets, the project emissions still exceed the Level "B" threshold, an EIR will be required before the project can be considered for action by the reviewing authority.*

As noted in Table 4.2-7 above, projects generating air pollutants in excess of the Level "A" thresholds would be required to apply Standard Mitigation Measures (SMMs) and projects generating air pollutants in excess of the Level "B" thresholds would be required to apply SMMs and Best Available Mitigation Measures (BAMMs) to reduce emissions below threshold levels. If project emissions cannot be reduced to below Level "B" thresholds, emissions offsets would be required. If, after applying the emissions offsets, the project emissions still exceed the Level "B" threshold, an EIR would be required before the project can be considered for action during the lead agency's CEQA review process.

The purpose of Rule 2:1 is to establish pre-construction review requirements for new and modified stationary sources of air pollution for use of Best Available Control Technology (BACT), analysis of air quality impacts, and to ensure that the operation of such sources does not interfere with the attainment or maintenance of ambient air quality standards. Rule 2:1 applies to all new and modified stationary sources that are subject to District permit requirements, and after construction, emit or may emit any affected pollutants. Because this EIR is already being prepared and the 2015 RTP itself does not directly generate the emissions, Shasta County thresholds associated with Rule 2:1do not apply in this case.

Short-Term Emissions Methodology. Emissions from construction activities represent temporary impacts that are typically short in duration, depending on the size, phasing, and type of project. Air quality impacts can nevertheless be acute during construction periods, resulting in significant localized impacts to air quality. To date, neither the SCAQMD nor county of Shasta or the three cities within the county have adopted significance thresholds for construction-related emissions. Construction-related emissions are speculative at the RTP level because such emissions are dependent on the characteristics of individual development projects. However, because construction of the 2015 RTP would generate temporary criteria pollutant emissions, primarily due to the operation of construction equipment and truck trips, a qualitative analysis is provided below.

Long-Term Emissions Methodology. The methodology for determining the significance of air quality impacts is by comparing 2013 existing conditions to the 2015 RTP conditions in the years 2020 and 2035, as required in CEQA Section 15126.2(a). Comparison to 2005 baseline conditions is also provided where data was available. The analysis of air quality also includes a comparison between the expected 2035 future conditions with the proposed 2015 RTP and the expected 2035 future conditions if no plan were adopted ('No Project' scenario). With respect to long term impacts, because the 2015 RTP itself does not directly generate the emissions, Shasta County thresholds associated with Rule 2:1 do not apply in this case. However, state and federal clean air laws require that emissions of pollutants for which federal or state ambient air quality standards are violated be reduced from current levels. Therefore, the project's long term impacts to air quality is considered significant if the project results in mobile source emissions that significantly exceed existing levels. In this case, the pollutants of concern are ozone precursors (NOx and VOC) and fine particulate matter (PM_{10}), as these are the primary pollutants associated with vehicle transportation.

Projected air emissions from mobile sources were calculated using the EMission FACtors (EMFAC) model 2011 emissions factors and multiplied by vehicle miles traveled (VMT). Vehicle trips, VMT and VMT by speed class distributions were extracted from SRTA's Regional

Activity-based Travel Demand Model (ShastaSIM) for the 2035 RTP horizon year, based on the preferred and alternative transportation/land use scenarios. The VMT by speed bin data was then entered into the EMFAC 2011 model for analysis. The EMFAC emissions factors are established by CARB and accommodate certain mobility assumptions (e.g., vehicle speed, delay times, average trip lengths, and total travel time). Projected vehicle emissions for the year 2035 under the 2015 RTP were compared with 2013 existing conditions and with future conditions under the 'No Project' scenario in 2035. If county-wide ROG (VOC), NOx, or PM_{10} emissions caused by the 2015 RTP do not exceed the 2013 baseline, impacts to long-term air quality will not be considered significant.

b. Project Impacts and Mitigation Measures. Implementation of the 2015 RTP could create both short-term and long-term impacts to air quality. Short-term air quality impacts would be generated during construction of the capital improvements listed in the RTP as well as future development facilitated by the RTP. Long term emissions would be generated indirectly by the on-road vehicles which would utilize the capital improvements and land uses proposed.

Impact AQ-1 Construction activities associated with transportation projects under the 2015 RTP, as well as the land use patterns envisioned by the SCS would have the potential to result in temporary adverse impacts on air quality in Shasta County. Impacts would be Class II, *significant but mitigable.*

There are three primary sources of short term emissions which would be generated by construction of future transportation projects under the 2015 RTP, as well as future development envisioned by the SCS land use scenario. These sources include: operation of construction vehicles, (i.e., scrapers, loaders, dump trucks); the creation of fugitive dust during clearing and grading; and the use of asphalt or other oil based substances during the final construction phases. The significance of daily emissions, particularly VOC and NOx emissions, generated by construction equipment utilized to build RTP transportation improvements and future development would depend on the quantity of equipment used and the hours of operation. The significance of fugitive dust ($PM_{2.5}$ and PM_{10}) emissions would depend upon the following factors: 1) the aerial extent of disturbed soils; 2) the length of disturbance time; 3) whether existing structures are demolished; 4) whether excavation is involved (including the potential removal of underground storage tanks); and, 5) whether transport of excavated materials offsite is necessary. The amount of VOC emissions generated by oil-based substances such as asphalt is dependent upon the type and amount of asphalt utilized. Asbestos can also be of concern during demolition activity associated with construction; however, the demolition, renovation, or removal of asbestos-containing materials is subject to the limitations of the National Emissions Standards for Hazardous Air Pollutants (NESHAP) regulations as listed in the Code of Federal Regulations, requiring notification and inspection.

Intersection improvements such as signalization, re-striping or signal coordination are not expected to generate significant short term emissions impacts. However, other RTP projects as well as future development under the RTP may involve grading and paving, or the construction of permanent facilities. The precise quantity of emissions would need to be determined at the time of proposed construction of a given transportation improvement or development project. Although any individual improvement or development project may not generate significant

short-term emissions, it is probable that several projects would be under construction simultaneously, generating cumulative construction emissions which could impact air quality. However, as recommended by SCAQMD, implementation of mitigation measures for individual projects would reduce resulting impacts. Impacts would be significant but mitigable.

Mitigation Measures. SRTA recommends that individual project lead agencies implement the following mitigation measure for applicable transportation projects that result in construction air quality impacts. Project-specific environmental impacts may require these mitigation measures be revised or expanded in response to site-specific conditions.

AQ-1 The individual project lead agency shall ensure that all feasible and appropriate SCAQMD Standard Mitigation Measures (SMMS) and Best Available Mitigation Measures (BAMMs) are implemented. The measures shall be noted on all construction plans and the lead agency shall perform periodic site inspections. SCAQMD SMMs and BAMMs include, but are not limited to, the following:

Fugitive dust emissions:

- Implement all adequate dust control measures in a timely and effective manner during all phases of project development and construction;
- Water all excavated, stockpiled, or graded material to prevent fugitive dust from leaving property boundaries and causing a public nuisance or a violation of an ambient air standard. Watering shall occur at least twice daily with complete site coverage, preferably in the mid-morning and after work is completed each day;
- During initial grading, earth moving, or site preparation, construct a paved (or dust palliative treated) apron, at least 100 feet in length, onto the project site from the adjacent paved road(s);
- Sweep adjacent paved streets (recommend water sweeper with reclaimed water) at the end of each day if substantial volumes of soil materials have been carried onto adjacent public paved roads from the project site;
- Install sandbags or other erosion control measures to prevent silt runoff to roadways;
- Apply Department of Public Works approved non-toxic soil stabilizers (according to manufacturer's specifications) to all inactive construction areas (previously graded areas which remain inactive for 96 hours);
- Replant vegetation in disturbed areas as quickly as possible;
- Cover all trucks hauling soil, sand, and other loose materials, or require all trucks to maintain at least two feet of freeboard;

- Use wheel washers or wash off tires of all trucks exiting the construction site; and
- Mitigate fugitive dust emissions from wind erosion of areas disturbed from construction activities (including storage piles) by application of either water or chemical dust suppressant.

Exhaust emissions from diesel heavy equipment:

- Shut down equipment when not in use to limit engine idling time. Idling time shall be limited to no more than 3 minutes. This idling limit does not apply to circumstances as stated in the California Environmental Protection Agency Air Resources Board Advisory Number 377 (2008);
- Provide regular preventive equipment maintenance to prevent emission increases due to engine problems;
- Use low sulfur and low aromatic fuels meeting California standards for motor vehicle diesel fuel; and
- Use low-emitting gas and diesel engines meeting state and federal emissions standards (Tier I, II, III) for construction equipment.

Other emissions:

- Use low VOC coatings for the architectural coating phase of construction. All coatings must meet the VOC limits per SCAQMD Rule 3-31;
- Use asphalt mixtures appropriate for the time of year of application, while maintaining compliance with the lead agency's road design and construction standards;
- Use alternatives to open burning of vegetative material on the project site, unless otherwise deemed infeasible by the SCAQMD. Among suitable alternatives are chipping, mulching, or conversion to biomass fuel;
- Provide for temporary traffic control as appropriate during all phases of construction to improve traffic flow as deemed appropriate by the Department of Public Works and/or Caltrans; and
- Schedule construction activities that direct traffic flow to off-peak hours as much as practicable.

Significance after Mitigation. With the implementation of the above mitigation, impacts related to short-term construction emissions would be less than significant.

Impact AQ-2 Implementation of the 2015 RTP would result in an overall reduction of on-road vehicle emissions when compared to existing conditions and the future 'No Project' scenario. Therefore, long-term operational impacts would be Class III, *less than significant*.

Projected on-road vehicle emissions for the year 2035 under the 2015 RTP were compared to 2013 baseline conditions and a future 'No Project' scenario. The 'No Project' scenario accounts for future growth, but the transportation improvements identified in the 2015 RTP are not implemented; however it is assumed that the projects as proposed in the 2010 RTP are implemented. The on-road vehicle source emissions estimates for the 2015 RTP were produced with the EPA approved EMFAC2011 emission inventory model developed by CARB for use in California. Table 4.2-8 shows the results of the long-term emissions analysis based on annual VMT which were computed for each scenario using ShastaSIM.

Table 4.2-8
Regional Emissions Analysis‡

Scenario	PM_{10} (tons/day)†	NOx (tons/day)†	VOC (tons/day)†
2005*	0.87	22.76	7.83
2013 EIR Baseline	0.58	11.87	3.60
2020 Project (2015 RTP)	0.48	6.40	3.89
2035 'No Project' Scenario	0.58	4.40	1.72
2035 Project (2015 RTP)	0.58	4.39	1.72

** 2005 and 2020 data are provided for informational purposes only.*
‡The on-road mobile source criteria pollutant emissions estimates for the 2015 RTP were calculated using CARB's EMFAC2011 emission inventory model. VMT data were extracted from ShastaSIM. VMT data includes pass-through trips from vehicles travelling through Shasta County that do not have an origin or destination within the county.
†PM_{10} and NOx emissions are presented above using winter values and VOC emissions are presented above using summer values to provide a worst case estimate based on the seasons in which individual criteria pollutant emissions are highest.

As previously noted, Shasta County is currently classified as being a non-attainment area for the state ozone and PM_{10} standards. As shown in Table 4.2-8, under the 2035 future 'No Project' scenario and future RTP scenario, emissions levels are forecast to decline between 2013 and 2035 despite projected future growth. These estimates are consistent with the state-wide continuing downward trend caused by CARB rules designed to reduce emissions from cars and trucks. NOx emissions are primarily sourced from trucks and are lower due in part to the impact of CARB rules designed to reduce NOx emissions from diesel trucks and buses. VOC emissions are primarily due to gasoline vehicles, and are lower due to improvements in vehicle emission rates (CARB, 2013).

As shown in Table 4.2-8, data indicates that emission levels for NOx would be reduced from 2035 'No Project' scenario levels and emission levels for PM_{10} and VOC would remain the same as 2035 'No Project' scenario levels with the implementation of the 2015 RTP. The decrease in NOx emissions is due to the transportation improvements and future land use scenario envisioned by the SCS, which encourages infill. This strategy is intended to increase residential

and commercial land use capacity within existing developed corridors, shifting a greater share of future growth to these corridors ultimately increasing density, improving circulation and multimodal connections. This would have a beneficial effect on air quality. Since the RTP would reduce emissions of ozone precursors and PM_{10} as compared to the 2013 baseline and would not result in an increase in emissions as compared to the the future 'No Project' scenario, long-term operational impacts would be *less than significant*.

In summary, transportation improvements and land use patterns identified in the 2015 RTP would result in an overall reduction of on-road vehicle emissions when compared to baseline conditions and would not result in an increase in emissions as compared to the 'No Project' scenario. The 2015 RTP also includes several goals and policies that would contribute to a reduction of air pollutant emissions. Therefore, impacts related to criteria pollutants would be less than significant.

Mitigation Measures. None required.

Significance after Mitigation. Impacts are Class III, less than significant.

Impact AQ-3 The transportation improvement projects included under the 2015 RTP and the land use scenario envisioned by the SCS may facilitate increased exposure of sensitive receptors to hazardous air pollutants that may cause health risks and odors that may be a nuisance. Implementation of the 2015 RTP would not result in a regional increase in toxic air emissions when compared to the future 'No Project' scenario. However, localized increases may occur as a result of development facilitated by the SCS land use scenario. Impacts would be Class II, *significant but mitigable.*

Diesel particular matter is classified as the primary airborne carcinogen in the state. CARB reports that diesel particulate matter represents about 70 percent of the potential cancer risk from vehicle travel on a typical urban freeway. As discussed above, the significance threshold for long-term public health risk is set at 10 excess cancer cases in a million for cancer risk. For non-cancer risk, the significance level is set at a Hazard Index of more than one (1.0). The Hazard Index of more than one means that predicted levels of a toxic pollutant are greater than the exposure level, which is generally considered acceptable. If a formal health risk assessment shows that a significant impact results, mitigation measures to reduce the predicted levels of toxic air pollutants from the facility to a level of insignificance may be imposed by the lead agency. In addition, diesel exhaust has a distinct odor, which is primarily a result of hydrocarbons and aldehydes contained in diesel fuel. In addition to the health risks associated with diesel exhaust, the odors associated with diesel exhaust could be a nuisance to nearby receptors.

An analysis of 2035 on-road mobile source diesel $PM_{10,}$ diesel NOx, and diesel VOC emissions is shown in Table 4.2-9. Results indicate that for diesel PM_{10}, diesel NOx, and diesel VOC the 2015 RTP emissions for 2035 would be below or equal to the 'No Project' scenario. In addition, projected 2015 RTP diesel emissions would be reduced below both 2005 and 2013 baseline conditions. Therefore, impacts related to diesel particulate matter exposure at the regional level would be less than significant.

While toxic air contaminant concentration and health risks within any given distance of mobile sources in the region would decrease (see Table 4.2-9), exposure is primarily based on local parameters (e.g., average daily traffic (ADT) on local roadway segment, wind direction in relation to source and receptor) and as such, the health risks adjacent to high volume roadways and transportation facilities would remain higher than regional averages.

Table 4.2-9
On-Road Mobile Source Toxics Comparison‡

Scenario	Diesel PM_{10} (tons/day)†	Diesel NOx (tons/day)†	Diesel VOC (tons/day)†
2005*	0.59	16.39	0.71
2013 EIR Baseline	0.33	8.57	0.38
2020 Project (2015 RTP)*	0.22	4.53	0.29
2035 'No Project' Scenario	0.27	3.40	0.36
2035 Project (2015 RTP)	0.27	3.33	0.35

** 2005 and 2020 data are provided for informational purposes only.*
‡The on-road mobile source criteria pollutant emissions estimates for the 2015 RTP were calculated using CARB's EMFAC2011 emission inventory model. VMT data were extracted from ShastaSIM. VMT data includes pass-through trips from vehicles travelling through Shasta County that do not have an origin or destination within the county.
†Diesel emissions for all three criteria pollutants are presented above using winter values to provide a worst case estimate based on the season in which diesel criteria pollutant emissions are highest.

The population residing close to freeways or busy roadways may experience adverse health effects beyond those typically found in urban areas. CARB, in the *Air Quality and Land Use Handbook: A Community Health Perspective* (June 2005) 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 per day, or rural roads with 50,000 vehicles/day. Additional non-cancer, health risks attributable to proximity to freeways was seen within 1,000 feet and was strongest within 300 feet. California freeway studies show about a 70% drop-off in particulate pollution levels at 500 feet from freeways (CARB, 2005). As discussed above, proximity to freeways increases cancer risk and exposure to particulate matter. Similarly, proximity to heavily travelled transit corridors and intersections would expose residents to higher levels of diesel particulate matter and carbon monoxide.

As discussed in Section 2.0, *Project Description*, a strategy of the RTP and land use scenario is to direct growth adjacent to transit and other transportation facilities in Strategic Growth Areas. This could result in more people being exposed to elevated health risks as compared to areas of the region more distant from such facilities. The location and pattern of the proposed RTP growth would influence travel behavior, and provide a means to determine the impact of future vehicle emissions in the proposed plan area. A compact growth pattern served by an efficient and diverse transportation system facilitates a reduction in automotive travel and increases walking, bicycling, and transit use—all of which reduce individual vehicle trips and associated VMT (refer to Section 4.12, *Transportation and Circulation*).

Reduced VMT and vehicle trips are directly linked to reduced regional criteria air pollutant emissions and toxic air emissions from mobile sources. It is important to note that a variety of

other factors contribute to the decline in contaminant emissions compared to existing conditions, including vehicle technology, cleaner fuels, and fleet turnover. However, in order to achieve the greatest VMT reductions from a compact growth pattern, development must also be 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 RTP may result in new sensitive receptors close to existing and new hazardous air pollutant sources, potentially resulting in the exposure to substantial hazardous air pollutants concentrations. In addition, new sensitive receptors may be exposed to nuisance odors. Therefore, impacts would be significant but mitigable. The siting of new sensitive receptors would be subject to an individual jurisdiction's land use approval processes and would be analyzed on an individual project basis and subject to mitigation measures identified below.

Mitigation Measures. SRTA recommends that individual project lead agencies implement the following mitigation measures for applicable transportation projects near sensitive land uses. Consistent with the provisions contained in the CARB Air Quality and Land Use Handbook (June 2005), lead agencies shall identify appropriate and feasible measures, to be incorporated into project building design for residential, school and other sensitive uses located within 500 feet of freeways, heavily travelled arterials, railways and other sources of diesel particulate matter and other known carcinogens. The appropriate measures shall include one or more of the following methods as applicable:

AQ-3 The lead agency shall retain a qualified air quality consultant to prepare a health risk assessment 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 polluters prior to issuance of a demolition, grading, or building permit. The health risk assessment shall be submitted to the Lead Agency for review and approval. The lead agency shall implement any approved health risk assessment recommendations to a level which would not result in exposure of sensitive receptors to substantial pollutant concentrations. Such measures may include:

- Do not locate sensitive receptors near the entry and exit points of a distribution center.
- Do not locate sensitive receptors in the same building as a perchloroethylene dry cleaning facility.
- 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 system or other air take system in the building, or in each individual residential unit, that meets the efficiency standard of the minimum efficiency reporting value 13. The heating and ventilation 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 high efficiency particulate absorption

filters or American Society of Heating, Refrigeration, and Air-Conditioning Engineers 85% supply filters should be used.
- Retain a qualified heating and ventilation consultant or high efficiency particulate absorption rate during the design phase of the project to locate the heating and ventilation system based on exposure modeling from the mobile and/or stationary pollutant sources.
- Maintain positive pressure within the building.
- Achieve a performance standard of at least one air exchange per hour of fresh outside filtered air.
- Achieve a performance standard of at least 4 air exchanges per hour of recirculation.
- Achieve a performance standard of 0.25 air exchanges per hour of in unfiltered infiltration if the building is not positively pressurized.

Significance after Mitigation. Mitigation measure AQ-3 would assure that that sensitive receptors would not be exposed to substantial pollutant concentrations through a variety of measures that would feasibly avoid or minimize exposure to public health impacts as identified in the CARB Air Quality and Land Use Handbook (June 2005). With the implementation of the above mitigation, impacts related to potential health risks would be less than significant.

Impact AQ-4 Re-entrained dust has the potential to increase airborne particulate matter levels in Shasta County. The increase in growth expected through the 2015 RTP planning horizon would result in additional VMT, which would add to the particulate emissions levels in the area. However, re-entrained dust levels would be lower with the 2015 RTP than the 'No Project' scenario and 2005 and 2013 baselines. Impacts would be Class III, *less than significant*.

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

Re-entrained roadway dust as well as roadway construction dust emissions are included in the estimation of criteria pollutant emissions for PM_{10} discussed in Impacts AQ-1 and AQ-2 above. As discussed, emissions levels for PM_{10} criteria pollutants would be reduced from the 2005 and 2013 baseline and 2035 'No Project' scenario with the implementation of the 2015 RTP. Furthermore, with the implementation of Mitigation Measures AQ-1, the 2015 RTP does not

result in an increase in criteria pollutant emissions over the 'No Project' scenario in 2035. Increased VMT may contribute to an increase in re-entrained roadway dust; however, the 2015 RTP would result in fewer VMT and lower re-entrained dust emissions when compared to the 'No Project' scenario.

Mitigation Measures. None required.

Significance after Mitigation. Impacts are Class III, less than significant.

Impact AQ-5 The 2015 RTP reduces emissions of ozone precursors consistent with the goals of the 2012 Triennial Update of the NSVAB AQAP, impacts would be Class III, *less than significant*.

The 2012 Triennial Update of the NSVAB AQAP was a jointly prepared document with other air districts in the NSVAB, and does not does not contain an inventory of criteria pollutant emissions specific to Shasta County. As such, a direct comparison of emissions cannot be made between the AQAP and the proposed RTP. However, as discussed in Impact AQ-2, policies and land use patterns facilitated by the SCS within the 2015 RTP are projected to reduce emissions of ozone precursors below the 2013 baseline and future 'No Project' scenario, consistent with the goals of the AQAP. This decrease in emissions is due to the proposed transportation improvements and land use patterns envisioned by the 2015 RTP, which, among other strategies, encourages infill development. This strategy selectively increases residential and commercial land use capacity within existing developed corridors (Strategic Growth Areas), shifting a greater share of future growth to these corridors, ultimately increasing density, improving circulation and multi-modal connections, and leading to lower average VMT (refer to Section 4.12, *Transportation and Circulation*). Reduced VMT and vehicle trips would result in reduced regional criteria air pollutant emissions and toxic air contaminant emissions from mobile sources.

Another consideration of consistency is how the 2015 RTP implements and promotes the on-road mobile source emission control strategy in the air quality plans. The air quality plans identify transportation control measures (TCMs) as a way to attain the air quality goals specified in the Clean Air Act. TCMs work by altering the way motor vehicles are used by reducing total VMT at critical times and places, and reducing the use of highly polluting operating modes. TCMs reduce emissions from on-road motor vehicles and trucks by:

1. Improving the existing transportation system to allow motor vehicles to operate more efficiently;
2. Inducing people to change their travel behavior to less polluting modes; or,
3. Ensuring emission control technology improvements in the motor vehicle fleet are fully and expeditiously realized.

The SCAQMD focuses on the following TCMs: encouraging ridesharing, carpooling, alternative modes of travel, and reducing motor vehicle emissions through the Community Education Section of the Department of Resource Management (Shasta County, 2014).

Consistent with the Shasta County TCMs, the transportation projects, land use patterns, and policies identified in the 2015 RTP are designed to reduce transportation congestion and VMT

and promote implementation of the Shasta County TCMs. In addition, as discussed above, implementation of the 2015 RTP would reduce emissions of ozone precursors below baseline and future 'No Project' scenario levels.

Mitigation Measures. None required.

Significance After Mitigation. The 2015 RTP is considered consistent with the NSVAB AQAP and therefore impacts are less than significant.

c. Specific RTP Projects That May Result in Impacts. The proposed projects listed in Appendix B would have the potential to result in air quality impacts. All projects that include a construction component would associate with Impact AQ-1. Projects that include roadway, rail, and transit features and/or expansions would associate with Impacts AQ-2 through AQ-4. Additional specific analysis will need to be conducted as the individual projects are designed and implemented in order to determine the actual magnitude of impact. Mitigation measures discussed above could apply to these specific projects.

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4.3 BIOLOGICAL RESOURCES

4.3.1 Setting

a. Habitats. Shasta County contains a diversity of tree (hardwood, coniferous, and mixed, and riparian forests), shrub (chaparrals, sage), herbaceous (grasslands, pastures) and developed habitat types. Thirty two terrestrial habitat types were mapped using the California Department of Fish and Wildlife (CDFW; formerly referred to as the California Department of fish and Game) California Wildlife Habitat Relationships (CWHR) habitat classification system within Shasta County (CDFW, 2008) (Figure 4.3-1). Because of the scale of this EIR, the habitat categories presented in Figure 4.3-1 depict a broad illustration of the CWHR types found within Shasta County. A description of each of the habitats adapted from *A Guide to Wildlife Habitats of California* (Mayer and Laudenslayer, 1988) is presented below. Three aquatic habitat types are also designated and are discussed in 4.3.1.b below. Note that these habitats are generalized and site-specific variation is present throughout Shasta 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. Shasta County is home to a variety of conifer, hardwood, and mixed woodlands (Figure 4.3-1). 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 Sacramento River and its tributaries, as well as along the many creeks, streams, and ravines 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 Shasta County.

Blue Oak-Foothill Pine Woodland. 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 douglassii*) and foothill pine (*Pinus sabiniana*) typically comprise the overstory of this habitat, with blue oak usually most abundant. In the Coast Range, associated tree species include coast live oak (*Quercus agrifolia*), valley oak (*Quercus lobata*), and California buckeye. In rocky areas, interior live oak sometimes dominates the overstory especially on north-facing slopes at higher elevations. At lower elevations, where blue oaks make up most of the canopy, the understory tends to be primarily annual grasses and forbs. At higher elevations where foothill 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 (*Rhamnus californicus*), poison-oak (*Toxicodendron diversilobum*) and silver lupine (*Lupinus albifrons*).

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.

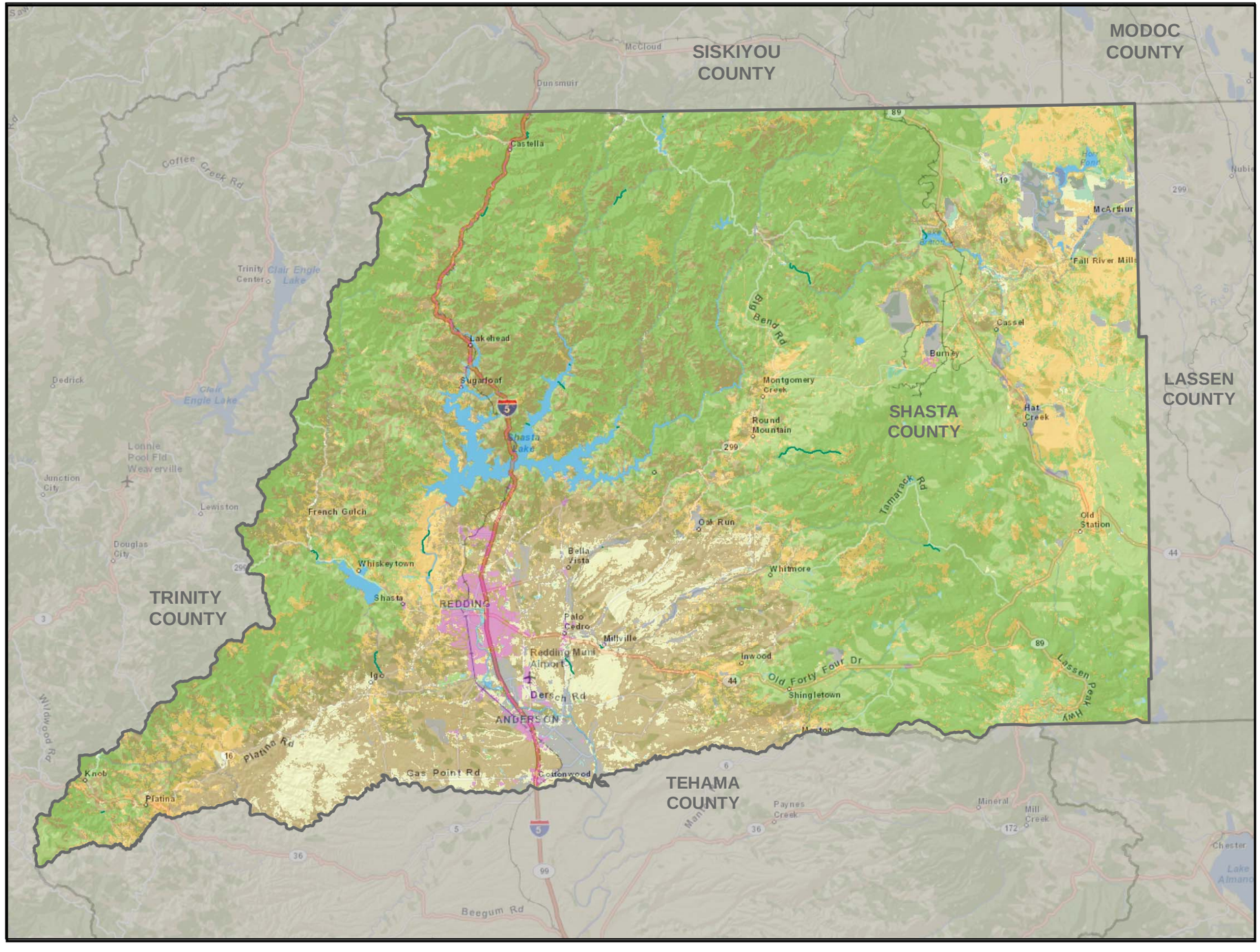
Valley Oak Woodland. This habitat can range in structure from savanna-like to forest-like stands. The canopies tend to be partially closed and comprised mostly of winter deciduous, broad-leaved species such as valley oak. Dense stands typically grow in valley soils along natural drainages and decrease 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 (*Toxicodendron diversilobum*), toyon (*Heteromeles arbutifolia*, and California coffeeberry. Ground cover consists of a well-developed carpet of annual grasses and forbs such as species of wild oat (*Avena* sp.), bromes (*Bromus* sp.), and ryegrass (*Lolium* sp.).

Valley-Foothill Riparian. This habitat type is associated with drainages, particularly those with low velocity flows, flood plains, and gentle topography. In Shasta County, this habitat 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.

Montane Riparian. In Shasta County, where Montane Riparian occurs along streams in the Cascade Range and Sierra Nevada, black cottonwood (*Populus trichocarpa*) is a dominant hardwood along with white alder, Oregon ash, boxelder, bigleaf maple (*Acer macrophyllum*), and dogwood (*Cornus nuttallii*). At high elevations black cottonwood is often replaced by quaking aspen. In northeastern Shasta County, black cottonwood, white alder and thinleaf alder (*Alnus incana*) dominate the montane riparian zone.

Aspen. Aspen stands are typically composed of clones representing one or more genetic lines. Associated subdominant tree species may include willows, alders, black cottonwood, various pines, and Engelmann spruce. In mature communities, aspen is the dominant species in the canopy. Important understory shrubs include sagebrush (*Artemisia tridentate*), snowberry (*Symphoricarpos albus*), and western serviceberry (*Amelanchier alnifolia*). Forbs are usually more abundant than grasses and sedges, and the herbaceous component is typically rich.

Montane Hardwood. In the southern Cascade and Sierra Nevada ranges of Shasta County, steep, rocky south slopes of major river canyons often are clothed extensively by canyon live oak (*Quercus chrysolepis*) and scattered Douglas-fir (*Pseudotsuga menziesii*). Elsewhere, higher elevation overstory associates are typically mixed conifer and California black oak (*Quercus kelloggii*); lower elevation associates are foothill pine, knobcone pine (*Pinus attenuata*), tanoak (*Notholithocarpus densiflorus*), and Pacific madrone (*Arbutus menziesii*). Associated understory vegetation includes currant (*Ribes* spp.), wood rose (*Rosa gymnocarpa)*, snowberry, manzanita, poison-oak, and a few forbs and grasses.



- Shasta County Boundary

WHR Classifications

- Agriculture
- Barren/Other
- Conifer
- Desert
- Hardwood
- Herbaceous
- Shrub
- Urban
- Water
- Wetland

0 3 6 12
Miles

11 November 2014

Wildlife Habitat (WHR) Classifications

Source: Department of Forestry and Fire Protection, November, 2014. Basemap by ESRI and its licensors, 2014.

Figure 4.3-1

Montane Hardwood-Conifer. In the lower and middle elevation forests of Shasta County, Montane Hardwood-Conifer habitat is often dominated by hardwoods including California black oak, bigleaf maple, Pacific madrone, and tanoak, along with conifers including ponderosa pine (*Pinus ponderosa*), white fir (*Abies concolor*), incense-cedar (*Calocedrus decurrens*), sugar pine (*Pinus lambertiana*) and Douglas-fir forming the overstory. The sparse understory includes shrubs such as manzanita and currants, and various grasses and forbs.

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 Shasta 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)*.

Subalpine Conifer. Several species dominate canopies of Subalpine Conifer in high elevation Shasta County, either singly or in mixtures of two or more species. These include Engelmann spruce (*Picea engelmannii*), mountain hemlock (*Tsuga mertensiana*), western white pine (*Pinus monticola*) and lodgepole pine (*Pinus contorta*). A typically sparse shrub understory may include squaw currant (*Ribes cereum)*, purple mountain heather (*Phyllodoce breweri*), and oceanspray (*Holodiscus discolor*). Willows, western huckleberry (*Vaccinium membranaceum*), and alpine laurel (*Kalmia microphylla*) occur on moist sites. Bromes, several species of lupines (*Lupinus* spp.), and a variety of flowering annuals are common in the sparse ground cover.

Douglas Fir. In Shasta County, moister soils support an overstory of Douglas-fir with a tanoak-dominated understory in lower and middle elevations of Shasta County's mountains. On drier and ultrabasic derived soils, Douglas-fir attains less dominance and occurs in open stands that include Ponderosa or Jeffrey pine, incense cedar, sugar pine, knobcone pine, and western white pine. Wetter sites also support maple species. The shrub layer is typically composed of species such as canyon live oak, blackberry, rose, and poison-oak. The forbs and grass layer often includes broad-leaf starflower (*Trientalis borealis* ssp. *latifolia*), western rattlesnake plantain (*Goodyera oblongifolia*), and western swordfern (*Polystichum munitum*), and various montane grass species.

Red Fir. Mature red fir stands in Shasta County occur at higher elevations, and are normally monotypic, with very few other plant species in any layer. Heavy shade and a thick layer of downed woody debris tend to inhibit understory vegetation, especially in dense stands. In some areas in the extreme northwestern portions of the county, red fir is replaced by noble fir.

White Fir. Mature white fir stands in Shasta County are normally monotypic, with white fir comprising more than 80 percent of trees. Jeffrey pine is sometimes an associate in the Cascades, as are ponderosa pine and lodgepole pine in the Sierra Nevada. As with Red Fir habitat, shade and downed woody material tend to inhibit understory species. Shrub layer

associates include sparse greenleaf Manzanita (*Arctostaphylos patula*) and currants. Dense stands, however, have herbaceous species such as western trillium (*Trillium ovatum*), vetch (*Vicia* spp.), and pipsissewa (*Chimaphila umbellate*).

Eastside Pine. Ponderosa pine is the dominant tree, with lesser representation by Jeffrey pine, lodgepole pine, white fir, incense-cedar, Douglas-fir, California black oak and western juniper (*Juniperus occidentalis*). Undergrowth varies depending on site conditions, but typically may include one or more of the following shrubs: sagebrush, manzanita, ceanothus, snowberry, antelope bitterbrush (*Purshia tridentate*), and rubber rabbitbrush (*Ericameria nauseosa)*. Prominent herbaceous plants include mule's ears (*Wyethia* spp.), arrowleaf balsamroot (*Balsamorhiza sagittata*), and Idaho fescue (*Festuca idahoensis*).

Ponderosa Pine. Ponderosa pine habitat includes pure stands of ponderosa pine, as well as stands of mixed species in which at least 50 percent of the canopy area is ponderosa pine, and is widespread in Shasta County. Tree associates include white fir, incense-cedar, Jeffrey pine, sugar pine, Douglas-fir, canyon live oak, California black oak, Oregon white oak, Pacific madrone and tanoak. Associated shrubs include manzanita, ceanothus, mountain-misery, Pacific dogwood, California buckthorn (*Rhamnus californica*), poison-oak, gooseberry. The grass and forb layer includes swordleaf fern, lupines, Idahoe fescue, bromes, and a variety of other forbs and grasses.

Juniper. Juniper habitat occurs in the eastern border of Shasta County. Associated species include Jeffrey, ponderosa, and whitebark pines, and white fir. Shrub species typically associated with juniper habitats include antelope bitterbrush, and big sagebrush, and other shrubs more typical of northeastern Califorina and the Great Basin. Typical forbs and grasses include Idaho fescue, bottlebrush squirreltail (*Elymus elymoides*), and big-head clover (*Trifolium macrocephalum*).

Shrub Dominated Habitats. Shrub-dominated habitats, such as various chaparral communities, are comprised primarily of woody, evergreen shrubs and occur predominantly in the southern portion of Shasta County. Small isolated remnant patches of shrublands also occur dispersed throughout the county. The following are descriptions of shrub-dominated habitats that occur within Shasta County.

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.

Chamise-Redshank Chaparral. This habitat type can range from nearly pure stands of chamise (*Adenostoma fasciculatum*) or redshank (*A. sparsifolium*) to a mixture of both. 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. Redshank stands tend to be slightly taller and

more open than chamise dominated stands. Fire occurs regularly in Chamise-Redshank Chaparral and influences habitat structure.

Montane Chaparral. Montane chaparral varies markedly throughout California and within Shasta County. Species composition changes with elevational and geographical range, soil type, and aspect. One or more of the following species usually characterize montane chaparral communities: whitethorn ceanothus (*Ceanothus cordulatus*), snowbrush ceanothus (*C. velutinus*), greenleaf manzanita, pinemat manzanita, hoary manzanita (*Arctostaphylos canescens*), bitter cherry (*Prunus emarginata*), huckleberry oak (*Quercus vacciniifolia*), chinquapin, Fremont silktassel (*Garrya fremontii*), mountain mahogany (*Cercocarpus montanus*), toyon, and California buckthorn.

Bitterbrush. Bitterbrush is only occasionally found in pure stands. Antelope bitterbrush often occurs as a codominant with big sagebrush or rubber rabbitbrush. It is also found with gray horsebrush (*Tetradymia argyraea*), rabbitbrush, Mormon-tea, and mountain mahogany. Overstory species found in Bitterbrush habitats are ponderosa or Jeffrey pine, lodgepole pine, or western juniper. Understory herbaceous plants vary greatly in composition and density; examples include Idaho fescue, bottlebrush squirreltail, purple needlegrass (*Nassella pulchra*), buckwheat (*Eriogonum* spp.), and *Phlox* spp. The total understory usually makes up less than 10 percent cover. Sparse overstory species commonly found associated with Bitterbrush habitat in northwestern California are juniper and, at higher elevations, Jeffrey pine.

Sagebrush. Often Sagebrush habitat is composed of pure stands of big sagebrush, but many stands include other species of sagebrush, rabbitbrush, horsebrush, gooseberry, western chokecherry (*Prunus virginiana* var. *demissa*), mountain mahogany, and bitterbrush. As topography, soil composition, and moisture change through the Sagebrush habitat type, the dominant species of sagebrush changes. On low flats with shallow soils and restricted drainage, low sagebrush is dominant. Where the soil remains saturated through the spring, silver sagebrush (*Artemisia cana*) dominates. Black sagebrush (*A. nova*) dominates sites with soils high in gravel and carbonates. In communities not fully occupied by sagebrush, various amounts of herbaceous understory are found. Idaho fescue, bluebunch wheatgrass (*Pseudoroegneria spicata*), several species of needlegrass, and squirreltail are among the more common grasses found in the habitat.

Low Sage. The habitat may be dominated by either low sagebrush (*Artemisia arbuscula*) or black sagebrush, often in association with rabbitbrush (*Ericameria* spp.), antelope bitterbrush, or big sagebrush; black sagebrush is also commonly associated with winterfat (*Krascheninnikovia lanata*) and Mormon-tea (*Ephedra* spp). Western juniper may be sparsely scattered in stands dominated by low sagebrush. Common grass species include wheatgrass (*Pseudoroegneria* spp.), bottlebrush squirreltail, and Idaho fescue. A rich variety of forbs is typically also present.

Herbaceous Dominated Habitats. These habitats are generally comprised of areas dominated by grasses and other non-woody species. Large areas of herbaceous dominated habitats occur in Shasta County in the form of non-native grasslands. Native perennial grasslands that are dominated by perennial bunch grasses such as purple needlegrass (*Nassella pulchra*) were historically abundant within much of California but are now currently patchy in

distribution. The following are descriptions of the herbaceous dominated habitats that occur within Shasta County.

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 (*Avena* sp.), soft chess brome (*Bromus hordeaceous*), ripgut brome (*Bromus diandrus*), and red brome (*Bromus madritensis*). Common forb species can include species of filaree (*Erodium* sp.), and bur clover (*Medicago* sp.). California poppy can also be quite common in this habitat type.

Perennial Grassland. Perennial grassland habitats occur in two forms in California: coastal prairie, found in areas of northern California under maritime influence, and relics in habitats now dominated by annual grasses and forbs. Perennial grassland habitats are dominated by perennial grass species such as California oatgrass (*Danthonia californica*), Pacific hairgrass (*Deschampsia holciformis*), and sweet vernalgrass (*Anthoxanthum odoratum*). Perennial grassland habitat typically occurs on ridges and south-facing slopes, alternating with forest and scrub in the valleys and on north-facing slopes. Perennial grassland habitat of the coastal prairie form occurs along the California coast from Monterey County northward. It is found below 3,280 feet in elevation and seldom more than 62 miles from the coast. Relic perennial grasses within annual grassland habitat occur in patches throughout the state.

Wet Meadow. Wet Meadows occur with a great variety of plant species; therefore, it is not possible to generalize species composition. Species may differ, but several genera are common to Wet Meadows throughout the state. They include *Carex*, *Danthonia*, *Juncus*, *Salix*, and *Scirpus* species. Associated plants include an abundance of grasses, rushes, sedges and forbs that tolerate saturated and semi-saturated soils for extended periods during the growing season. In Shasta County, willows and Himalaya blackberry (*Rubus armeniacus*) are the shrubs found in greatest abundance. Fewer species occur as surface water depth increases during spring runoff.

Pasture. Pasture vegetation is a mix of perennial grasses and legumes with typically complete canopy closure. Structually this habitat type resembles annual grassland habitats. Height of vegetation varies, according to season and livestock stocking levels. Old or poorly drained pastures may have patches of weeds in excess of two feet in height. The mix of grasses and legumes varies according to management practices such as seed mixture, fertilization, soil type, irrigation, weed control, and the type of livestock on the pasture.

Developed and Sparsely/Non-Vegetated Habitats. Developed and sparsely/non-vegetated habitats are abundant in Shasta County. 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 Shasta County.

Rice. Rice fields are a flood-irrigated crop comprised of densely grown annual grasses of the genus *Oryza*. Rice crops generally range in height from a couple of feet to as high as six feet. Rice is usually grown in leveed fields that are flooded much of the growing period, and dried

out to mature and to facilitate harvesting. Although rice paddies are a human developed habitat type, they are similar to seasonally flooded wetlands in hydrology. Rice production occurs predominantly in the eastern portion of the county.

Cropland. This habitat type is characterized by areas in active agriculture 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. Typical crops consist of grasses and forbs. Currently four subcategories of cropland habitat classifications that are recognized occur Shasta County: *Dryland Grain Crop*, *Irrigated Hayfield Crop, Irrigated Row and Field Crop,* and *Irrigated Grain and Seed Crop*.

- *Dryland Grain Crop.* Vegetation in dryland (nonirrigated) grain and seed crops habitat includes seed-producing grasses, primarily barley, rye, oats, triticale, and wheat. These seed and grain crops are low-growing annuals.

- *Irrigated Hayfield Crop.* Vegetation in this habitat includes a variety of sizes, shapes and growing patterns. Some may exhibit complete canopy enclosure while others may have significant bare areas between rows. All hayfield crops are annuals, and include grasses and legumes. They are usually planted in spring and harvested in summer or fall. However, they may be planted in rotation with other irrigated crops and sometimes winter wheat or barley may be planted after harvest of a previous crop in the fall, dry farmed (during the wet winter and early spring months) or they may be irrigated, and then harvested in the late spring.

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

- *Irrigated Grain and Seed Crop.* Irrigated grain and seed crops include corn and beans. Corn can reach ten feet tall while dry beans are only several inches tall. Most irrigated grain and seed crops are grown in rows. Some may form 100 percent canopy while others may have significant bare areas between rows. All grain and seed crops are annuals. Irrigated grain and seed crops are located on flat to gently rolling terrain. When flat terrain is put into production, it is usually leveled to facilitate irrigation. Rolling terrain is either dry-farmed or irrigated by sprinklers.

Orchard-Vineyard. This habitat type is characterized by typically open single species tree dominated habitats. Depending on the tree type and pruning methods they are usually low, bushy trees with an open understory to facilitate harvest. Trees such as citrus and olives are evergreen; others such as pit fruit are deciduous. The understory is usually composed of

lowgrowing 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 charactereistics. Currently three subcategories of Orchard-Vineyard habitat classifications that are recognized occur within Shasta County: *Deciduous Orchard, Evergreen Orchard* and *Vineyard*.

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

- *Evergreen Orchard*. Evergreen orchards include trees such as olives, lemons, oranges, and tangerines. Trees range in height at maturity for many species from 15 to 30 feet, but may be 10 feet or less in some dwarf varieties, 60 feet or more in date palms. Crowns often do not touch, and are usually in a linear pattern. Spacing between trees is uniform depending on desired spread of mature trees. The understory in evergreen orchards usually consists of bare soil due to active managements such as tillage and/or herbicides.

- *Vineyard.* Vineyards are composed of single species planted in rows, usually supported on wood and wire trellises. Vines are normally intertwined in the rows but open between rows. Rows under the vines are usually sprayed with herbicides to prevent growth of herbaceous plants. Between rows of vines, grasses and other herbaceous plants may be planted or allowed to grow as a cover crop to control erosion. Vineyards can be found on flat alluvial soils in the valley floors, in rolling foothill areas, or on relatively steep slopes. Most vineyards are in valley or foothill areas. Increasingly, olives are being cultivated on vineyard-like trellises in Northern California, and functionally should be treated as Vinyard in the CWHR habitat-classification system.

Urban. This habitat type is a completely human-made habitat comprising residential, commercial, and industrial developed areas. Plant species within urban habitats typically comprise a mixture of lawns, ornamental and other non-native invasive plant species, and native plants, with extensive developed areas lacking vegetation.

Barren. This habitat type is defined by the absence of vegetation. Any habitat with less than two percent total vegetation cover and less than ten percent cover by tree or shrub species is defined as barren. Structure and composition of the substrate are largely determined by the region of the state as well as surrounding environment. Examples of barren habitats include areas of exposed parent rock and talus slopes.

b. Drainages and Wetlands.

Drainages. Shasta County contains a major river, the Sacramento River, which drains an area of the southern Cascade Range, the northwestern Sierra Nevada, and the Central Valley. Major tributaries in the county include the Pit and McCloud rivers and numerous streams (Figure 4.3-2). The westernmost portions of the county are drained by the Trinity River. The drainages within these watersheds are of high biological importance as they provide valuable foraging habitat, breeding habitat, and movement habitat for a wide variety of species, including sensitive species such as winter-run chinook salmon (*Onchorhynchus tshawytscha*), Shasta crayfish (*Pacifastacus fortis*), foothill yellow-legged frog (*Rana boylii*) and northwestern pond turtle (*Actinemys marmorata* [=*Emys marmorata*]).

Canals. Shasta County also contains a network of waterways that transport water through the western portions of the county for use in irrigation. The Anderson-Cottonwood Irrigation District (ACID) canal is the most prominent canal in Shasta County, accounting for much of flooded pasture and other agricuturlal acreage in the western portion of the county.

Wetlands. Wetlands are regarded as important biological resources both because of their rarity and because they serve a variety of functional values. Several types of wetlands exist in Shasta County, including freshwater marshes, vernal pools, and riparian habitats.

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 comprises plant species that begin their growth as aquatic or semi-aquatic plants and transition to a dryland environment as the pool dries. Most vernal pool plants are annual herbs. Special status species supported by vernal pools include vernal pool fairy shrimp (*Branchinecta lynchi*) and slender Orcutt grass (*Orcuttia tenuis*).

In addition to vernal pools, several areas within Shasta County contain wetlands mapped by the U.S. Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI)(USFWS, 2014c). A general description of each of the classifications is provided below. Of those wetland types mapped by the NWI, freshwater emergent wetland, riverine and lacustrine habitats are also mapped by the CWHR.

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

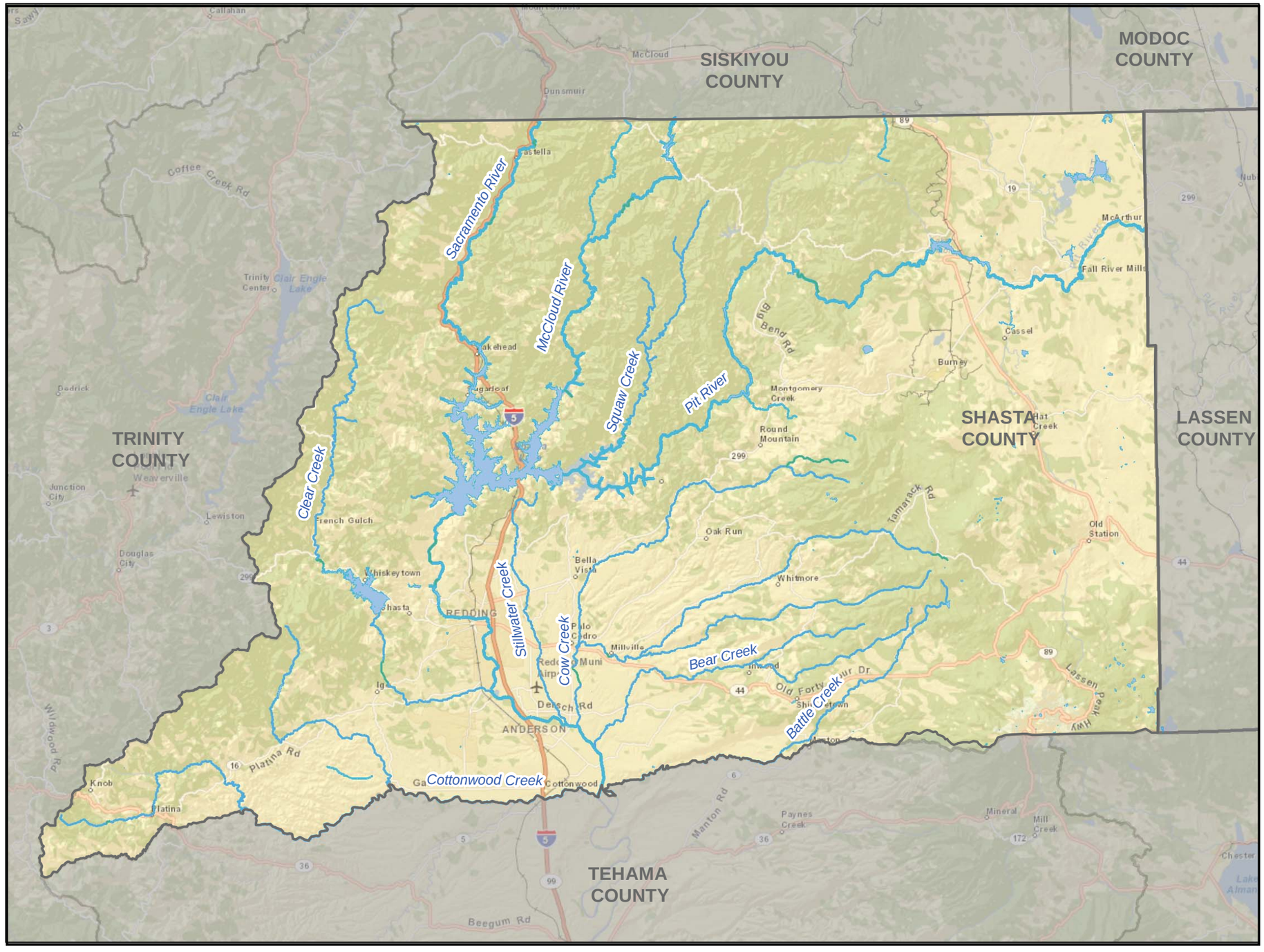
Freshwater Forested/Shrub Wetlands. These wetlands include non-tidal waters that are dominated by trees and shrubs, with emergent herbaceous plants, mosses and/or lichens. Wetlands that lack vegetation can be included in this classification if they also exhibit the same criteria as described for freshwater emergent wetlands. The vegetation found in freshwater forested/shrub wetlands is generally dominated by woody vegetation such as shrubs and trees.

Freshwater Ponds. Freshwater ponds include non-tidal waters 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 deepwater 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 that includes vernal pools. Freshwater ponds (stock ponds and landscaping ponds) are abundant in Shasta County. Vernal pools predominate in the alluvial valleys and flat volcanic deposits in the western portions of the county, principally on soils underlain by hardpan.

Lakes. Lakes are a lacustrine system that includes wetlands and deepwater 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. This wetland type is also mapped by the CWHR and categorized as lacustrine habitat that also includes vernal pool complexes. The largest natural lakes in Shasta County comprise the Big Lake/Horr Pond complex located in Fall River Valley. Prominent reservoirs include Shasta Lake, Whiskeytown Lake, Lake Britton, McCloud Lake, and Iron Canyon Reservoir.

Riverine. Riverine habitats are a riverine system that includes all wetlands and deepwater 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. The Sacramento River and its primary tributaries—the Pit and McCloud rivers as well as Squaw, Clear, Cow, Stillwater, Battle Bear, Ash, and Cottonwood creeks—are the major riverine systems in Shasta County. The Trinity River system drains the westernmost portions of the county.

c. Special Status Species and Sensitive Communities. 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 (FESA); 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; and plants with a California Rare Plant Rank (CRPR) of 1, 2, 3, and 4, and are defined as:



Riverine Systems

Source: U.S. Fish and Wildlife Service, November, 2014. Basemap by ESRI and its licensors, 2014.

Figure 4.3-2

- *List 1A = Plants presumed extinct in California*
- *List 1B.1 = Rare or endangered in California and elsewhere; seriously endangered in California (over 80 percent of occurrences threatened/high degree and immediacy of threat)*
- *List 1B.2 = Rare or endangered in California and elsewhere; fairly endangered in California (20-80 percent occurrences threatened)*
- *List 1B.3 = Rare or endangered in California and elsewhere, not very endangered in California (<20 percent of occurrences threatened or no current threats known)*
- *List 2 = Rare, threatened or endangered in California, but more common elsewhere*
- *List 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)*
- *List 4.1 = Plants of limited distribution (watch list), seriously endangered in California*
- *List 4.2 = Plants of limited distribution (watch list), fairly endangered in California (20-80 percent occurrences threatened)*
- *List 4.3= Plants of limited distribution (watch list), not very endangered in California*

Queries of the USFWS Environmental Conservation Online System (ECOS): Information, Planning and Conservation System (IPaC) (USFWS, 2014b), USFWS Critical Habitat Portal (USFWS, 2014a), California Natural Diversity Database (CNDDB) (California Department of Fish and Wildlife, 2014), and California Native Plant Society (CNPS) *Online Inventory of Rare, Threatened and Endangered Plants of California* (CNPS, 2014) were conducted. The queries were conducted to obtain comprehensive information regarding state and federally listed species, sensitive communities and federally designated Critical Habitat known to or considered to have potential to occur within Shasta County.

Sensitive Communities and Critical Habitat. Several natural communities considered sensitive by the CDFW occur within Shasta County. The CNDDB lists eight sensitive natural communities that occur within Shasta County. Federally designated critical habitat for eight species also occurs in Shasta County (Figure 4.3-3). These sensitive communities and critical habitats are listed in Table 4.3-1.

Special Status Plants and Animals. Shasta County is home to several species protected by federal and state agencies. Special-status animal species can be found in a variety of habitat types the county provides. The CNDDB (CDFW, 2014), CNPS (2014), and USFWS ECOS IPaC (2014) together list special status plant (104 species) and animal (73 species) species that are known to or with potential to occur within Shasta County. The status and habitat requirements for each of these species are presented in Tables 4.3-2 and 4.3-3 respectively.

Table 4.3-1
Sensitive Communities and Critical Habitats Documented within Shasta County

Communities Considered Sensitive by the CDFW
Alkali Seep
Darlingtonia Seep
Great Valley Cottonwood Riparian Forest
Great Valley Mixed Riparian Forest
Great Valley Valley Oak Riparian Forest
Great Valley Willow Scrub
Northern Basalt Flow Vernal Pool
Northern Interior Cypress Forest
Critical Habitat
Northern spotted owl (*Strix occidentalis caurina*)
Central Valley spring-run Chinook (*Oncorhynchus tshawytscha*)
Central Valley winter-run Chinook (*Oncorhynchus tshawytscha*)
Central Valley steelhead (*Oncorhynchus mykiss*)
Vernal pool fairy shrimp (*Branchinecta lynchi*)
Vernal pool tadpole shrimp (*Lepidurus packardi*)
Slender Orcutt grass (*Orcuttia tenuis*)
Greene's tuctoria (*Tuctoria greenei*)

Sources: CNDDB (CDFW, 2014); USFWS, Critical Habitat Portal (2014)

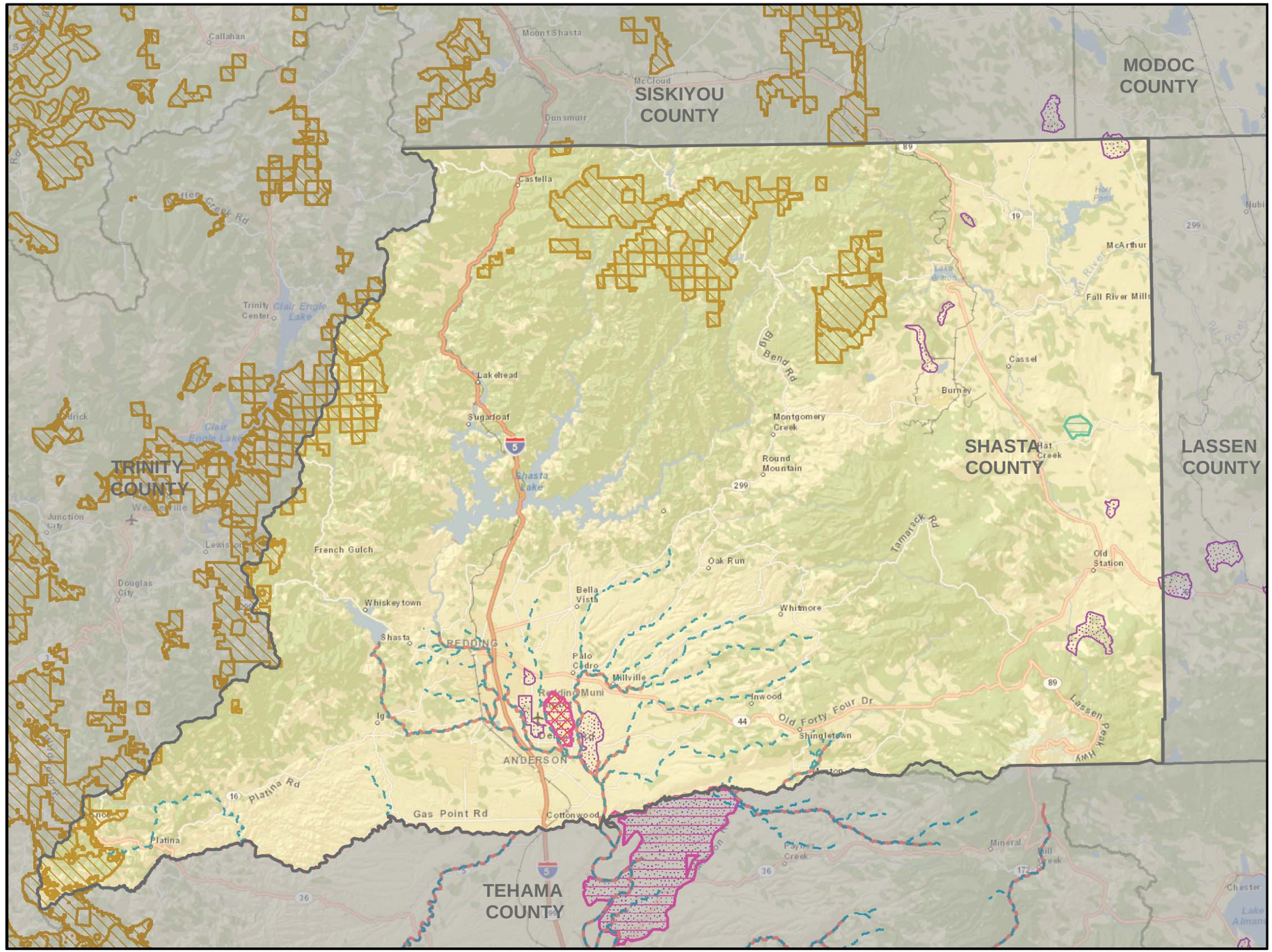

SISKIYOU COUNTY
MODOC COUNTY
TRINITY COUNTY
SHASTA COUNTY
LASSEN COUNTY
TEHAMA COUNTY
ANDERSON
REDDING
Callahan
Mount Shasta
McCloud
Dunsmuir
Castella
Trinity Center
Clair Engle Lake
Lakehead
Sugarloaf
Shasta Lake
Montgomery Creek
Round Mountain
Burney
Cassel
McArthur
Fall River Mills
Hat Creek
Big Bend Rd
Tamarack Rd
Old Station
Oak Run
Bella Vista
Whitmore
Whiskeytown
Shasta
Palo Cedro
Millville
Redding Muni
Inwood
Old Forty Four Dr
Shingletown
Lassen Park Hwy
Platina Rd
Gas Point Rd
Cottonwood
Platina
French Gulch
Douglas City
Junction City
Weaverville
Lewiston
Mineral
Chester
Lake Almanor
Old Station
Tamarack Rd
Fall River Mills
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McCloud
Mount Shasta
Callahan
Douglas City
Junction City
Weaverville
Lewiston
French Gulch
Platina
Cottonwood
Gas Point Rd
Platina Rd
Mineral
Chester
Lake Almanor
Shasta Lake
Fall River
Pit River
Hay Fork
Trinity River
Clear Creek Rd
Ides Creek

Table 4.3-2
Special-Status Animal Species Known to Occur or with Potential to Occur within Shasta County

Scientific Name Common Name	Status Fed/State Global Rank/ State Rank CDFW	Habitat Requirements
Mammals		
Antrozous pallidus Pallid bat	FS/— G5/S3 SSC	Deserts, grasslands, shrublands, woodlands, and forest. Most common in open, dry, habitats with rocky area for roosting. Roost must protect bats from high temperatures. Very sensitive to disturbance of roosting sites.
Bassariscus astutus Ring-tail	—/— G4/S3 FP	Riparian habitats and in brush stands of most forest and shrub habitats. Nests in rock recesses, hollow trees, logs, snags, abandoned burrows or woodrat nests.
Canis lupis Gray wolf	FE/SE G4/S1	Extremely wide-ranging across hardwood and coniferous forests, sagebrush, grasslands, and other habitats. Generally prefers areas with abundant prey and relatively low levels of human disturbance.
Corynorhinus townsendii Townsend's big-eared bat	FS/SC G3G4/S2S3 SSC	Throughout California in a wide variety of habitats. Most common in mesic sites. Roosts in the open, hanging from walls & ceilings. Roosting sites limiting. Extremely sensitive to human disturbance.
Euderma maculatum Spotted bat	FS/— G4/S2S3 SSC	Occupies a wide variety of habitats from arid deserts and grasslands through mixed conifer forests. Feeds over water and along washes. Feeds almost entirely on moths. Needs rock crevices in cliffs or caves for roosting.
Eumops perotis Western mastiff bat	—/— G5/S2 SSC	Many open habitats, including conifer and deciduous woodlands, grassland, and chaparral. Roosts in crevices in cliff faces and high buildings.
Gulo gulo California wolverine	FS/CT G4/S1 FP	Wide-ranging in alpine and subalpine regions of Cascades and Rockies. In 2008 and 2009, wolverines were sighted in the Sierra Nevada, near Lake Tahoe, for the first time since 1922.
Lasiurus blossevillii Western red bat	FS/— G4/S1 SSC	Occupies cismontane woodland, lower montane coniferous forest, riparian forests and riparian woodlands. Roosts primarily in broadleafed trees.
Lepus americanus klamathensis Oregon snowshoe hare	—/— G5T3T4Q/S2 SSC	Occurs in mature montane riparian forests in brush patches of vine maple, willows, rhododendrons, and other shrubs.
Martes americana sierrae Sierra marten	FS/— G5T3T4/S2S3 SSC	Occurs in mature, dense conifer forests or mixed conifer-hardwood forests with a high percentage canopy cover and large amounts of coarse woody debris on the forest floor.
Martes pennanti Fisher – West Coast DPS	SC/FC,FS G5T2T3Q/S2S3 SSC	Intermediate to large-tree stages of coniferous forests & deciduous-riparian areas with high percent canopy closure. Uses cavities, snags, logs & rocky areas for cover & denning. Needs large areas of mature, dense forest.
Myotis evotis Long-eared myotis	FS/— G5/S4? —	Found in all brush, woodland & forest habitats from sea level to about 9000 feet. Prefers coniferous woodlands & forests. Nursery colonies in buildings, crevices, spaces under bark, & snags. Caves used primarily as night roosts.

Table 4.3-2
Special-Status Animal Species Known to Occur or with Potential to Occur within Shasta County

Scientific Name Common Name	Status Fed/State Global Rank/ State Rank CDFW	Habitat Requirements
Myotis thysanodes Fringed myotis	FS/— G4/S4 —	In a wide variety of habitats, optimal habitats are pinyon-juniper, valley foothill hardwood & hardwood-conifer. Uses caves, mines, buildings or crevices for maternity colonies and roosts.
Myotis yumanensis Yuma myotis	FS/— G5/S4? —	Optimal habitats are open forests and woodlands with sources of water over which to feed. Distribution is closely tied to bodies of water. Maternity colonies in caves, mines, buildings or crevices.
Taxidea taxus American badger	—/— G5/S4 SSC	Most abundant in drier open stages of most shrub, forest, and herbaceous habitats, with friable soils. Needs sufficient food, friable soils & open, uncultivated ground. Preys on burrowing rodents.
Vulpes vulpes necator Sierra Nevada red fox	FS/ST G4/S4 —	Restricted to alpine and subalpine habitats of the Sierra Nevada, above 4500 feet elevation. Lassen Volcanic National Park is the major population center for the subspecies.
Birds		
Accipiter cooperii Cooper's hawk	—/— G5/S3 WL	Woodland, chiefly of open, interrupted or marginal type. Nest sites mainly in riparian growths of deciduous trees, as in canyon bottoms on river floodplains; also, live oaks.
Accipiter gentilis Northern goshawk	FS/SS G5/S3 SSC	Within, and in vicinity of, coniferous forest. Uses old nests, and maintains alternate sites. Usually nests on north slopes, near water. Red fir, lodgepole pine, Jeffrey pine, and aspens are typical nest trees.
Accipiter striatus Sharp-shinned hawk	—/— G5/S3 WL	Ponderosa pine, black oak, riparian deciduous, mixed conifer & Jeffrey pine habitats. Prefers riparian areas. North-facing slopes, with plucking perches are critical requirements. Usually nests within 275 feet of water.
Agelaius tricolor Tricolored blackbird	FS/— G2G3/S2 SSC	Highly colonial species, most numerous in Central Valley & vicinity. Largely endemic to California. Requires open water, protected nesting substrate, and foraging area with insect prey within a few miles of the colony.
Aquila chrysaetos Golden eagle	FS/SS G5/S3 FP,WL	Rolling foothills, mountain areas, sage-juniper flats, & desert. Cliff-walled canyons provide nesting habitat in most parts of range; also, large trees in open areas.
Asio flammeus Short-eared owl	—/— G5/S3 SSC	Open, treeless areas with elevated sites for perches and dense vegetation for roosting and nesting.
Asio otus Long-eared owl	—/— G5/S3 SSC	Dense riparian and live oak thickets near meadow edges, and nearby woodland and forest habitats; also found in dense conifer stands at higher elevations.
Athene cunicularia hypugaea Western burrowing owl	—/— G5/S3 SSC	Grasslands and ruderal habitats where ground squirrel burrows are available for nesting.

Table 4.3-2
Special-Status Animal Species Known to Occur or with Potential to Occur within Shasta County

Scientific Name Common Name	Status Fed/State Global Rank/ State Rank CDFW	Habitat Requirements
Buteo swainsoni Swainson's hawk	FS/ST G5/S3 —	Agricultural fields, annual grasslands, sage-juniper flats, & desert. The bird is attracted to haying, mowing, and plowing operations, which provide opportunistic foraging on small mammals and grasshoppers.
Chaetura vauxi Vaux's swift	—/— G5/S3 SSC	Prefers redwood and Douglas-fir habitats, nests in hollow trees and snags or, occasionally, in chimneys; forages aerially.
Circus cyaneus Northern harrier	—/— G5/S3 SSC	Forages in marshes, grasslands, and ruderal habitats; nests in extensive marshes and wet fields.
Coccyzus americanus occidentalis Western yellow-billed cuckoo	FS,FT/SE G5T3Q/S1 —	Riparian forest nester along the broad, lower flood-bottoms of larger river systems. Nests in riparian forests of willow, often mixed with cottonwoods, with lower story of blackberry, nettles, or wild grape.
Cypseloides niger Black swift	—/— G4/S2 SSC	Breeding habitat is associated with water. Most often nests on high cliff faces, either above the ocean surf or behind or next to waterfalls.
Dendroica petechia Yellow warbler	—/— G5/S3 SSC	Breeds in riparian woodlands, particularly those dominated by willows and cottonwoods.
Empidonax traillii brewsteri Little willow flycatcher	FS/SE G5T3T4/S1S2 —	Mountain meadows and riparian habitats in the Sierra Nevada and Cascades. Nests near the edges of vegetation clumps and near streams.
Falco peregrinus anatum American peregrine falcon	DL/DL,SS G4T4/S2 FP	Near wetlands, lakes, rivers, or other water; on cliffs, banks, dunes, mounds; also, human-made structures. Nest consists of a scrape or a depression or ledge in an open site.
Grus Canadensis tabida Greater sandhill crane	FS/ST G5T4/S2 FP	Found in fresh emergent wetlands and wet meadows. Nests in wetland habitats in northeastern California; winters in the Central Valley. Prefers grain fields within 4 miles of a shallow body of water used as a communal roost site; irrigated pasture used as loafing sites.
Haliaeetus leucocephalus Bald eagle	DL,FS/SE,SS G5/S2 FP	Ocean shore, lake margins, & rivers for both nesting & wintering. Most nests within 1 mile of water. Nests in large, old growth, or dominant live tree with open branches, especially ponderosa pine. Roosts communally in winter.
Icteria virens Yellow-breasted chat	—/— G5/S3 SSC	Breeds in riparian habitats having dense understory vegetation, such as willow and blackberry.
Lanius ludovicianus Loggerhead shrike	—/— G5/S3 SSC	Forages in open grassland habitats throughout the Central Valley of California. Nests in shrubs and trees.

Table 4.3-2
Special-Status Animal Species Known to Occur or with Potential to Occur within Shasta County

Scientific Name Common Name	Status Fed/State Global Rank/ State Rank CDFW	Habitat Requirements
Pandion haliaetus Osprey	FS/SS G5/S3 WL	Ocean shore, bays, fresh-water lakes, and larger streams. Large nests built in treetops within 15 miles of a good fish-producing body of water.
Phalacrocorax auritus Double-crested cormorant	—/— G5/S3 WL	Colonial nester on coastal cliffs, offshore islands, & along lake margins in the interior of the state. Nests along coast on sequestered islets, usually on ground with sloping surface, or in tall trees along lake margins.
Progne subis Purple martin	—/— G5T1/S1 SCS	Inhabits woodlands, low elevation coniferous forest of Douglas-fir, ponderosa pine, & Monterey pine. Nests in old woodpecker cavities; also in human-made structures, including bridges. Nest often located in tall, isolated tree/snag.
Riparia riparia Bank swallow	FS/ST G5/S2S3 —	Colonial nester; nests primarily in riparian and other lowland habitats west of the desert. Requires vertical banks/cliffs with fine-textured/sandy soils near streams, rivers, lakes, ocean to dig nesting hole.
Strix occidentalis caurina Northern spotted owl	FT/— G5/S2S3 —	In northern California, resides in large stands of old growth and late mature, multi-layered mixed conifer, hardwood-conifer, tanoak, redwood and Douglas-fir habitats.
Reptiles		
Emys marmorata Western pond turtle	FS/— G3G4/S3 SSC	A thoroughly aquatic turtle of ponds, marshes, rivers, streams & irrigation ditches, usually with aquatic vegetation, below 6000 feet elevation. Needs basking sites and suitable (sandy banks or grassy open fields) upland habitat up to 0.5 kilometers from water for egg laying.
Amphibians		
Ascaphus truei Pacific tailed frog	—/— G4/S2S3 SSC	Occurs in montane hardwood-conifer, redwood, Douglas-fir & ponderosa pine habitats. Restricted to perennial montane streams. Tadpoles require water below 15 degrees Celcius.
Hydromantes shastae Shasta Salamander	FS/ST G1G2/S1S2 SSC	Found in montane hardwood, hardwood-conifer, and mixed-conifer forests, usually in close association with limestone outcrops or limestone-derived soils.
Rana aurora draytonii California red-legged frog	FT/— G4T2T3/S2S3 SSC	Semi-permanent or permanent water at least 2 feet deep, bordered by emergent or riparian vegetation, and upland grassland, forest or scrub habitats for refugia and dispersal.
Rana boylii Foothill yellow-legged frog	FS/— G3/S2S3 SSC	Partly shaded, shallow streams & riffles with a rocky substrate in a variety of habitats. Need at least some cobble-sized substrate for egg laying. Need at least 15 weeks to attain metamorphosis.
Rana cascadae Cascades frog	FS/— G3G4/S3 SSC	Found throughout the Cascade Range in streams, lakes, and associated riparian habitat between 2,250 and 8,000 feet elevation.
Spea hammondii Western spadefoot toad	—/— G3/S3 SSC	Grasslands and, occasionally, valley-foothill hardwood woodlands; vernal pools or similar ephemeral pools required for breeding.

Table 4.3-2
Special-Status Animal Species Known to Occur or with Potential to Occur within Shasta County

Scientific Name Common Name	Status Fed/State Global Rank/ State Rank CDFW	Habitat Requirements
Fish		
Acipenser medirostris Green sturgeon – Southern DPS	FT/— G3/S1S2 SSC	This DPS includes green sturgeon that spawn in rivers south of the Eel River, including the Sacramento River. Preferred spawning substrate is large cobble, but can range from clean sand to bedrock.
Cottus asperrimus Rough sculpin	FS/ST G2/S2 FP	Restricted to the Pit River above and below the falls near Burney and the Hat Creek & Fall River subdrainages. Found mostly on the muddy bottoms of large streams.
Cottus klamathensis macrops Bigeye marbled sculpin	—/— G4T3/S3 SSC	Found in the Pit River system and three tributaries - Hat Creek, Burney Creek & the Fall River system. Large, clear, cool spring-fed streams, but sometimes found in reservoirs. Prefers abundant vegetation & coarse substrates
Hypomesus transpacificus Delta smelt	FT/SE G5/S1 —	Estuarine systems in the Sacramento-San Joaquin Delta.
Lampetra ayresi River lamprey	—/— G3/S3 SSC	An anadromous fish found in rivers from San Francisco Bay watershed north to Alaska. Suitable habitat in the Sacramento River below Keswick dam.
Lavinia symmetricus mitrulus Pit roach	—/— G4T2/S2 SSC	Mainly found in the Pit River drainage and Goose Lake. Spawning occurs in shallow, flowing water, over bottoms covered with small rocks.
Mylopharodon conocephalus Hardhead	FS/— G3/S3 SSC	Found in both small to large streams in low to mid-elevations in the Sacramento, San Joaquin, and Klamath rivers and their tributaries.
Oncorhynchus kisutch Coho salmon -– southern Oregon / northern California ESU	FT/ST G4T2Q/S2 —	Coastal rivers, including the Klamath/Trinity river drainages. Federal listing refers to populations between Cape Blanco, Oregon & Punta Gorda, Humboldt County, California. State listing refers to populations between the Oregon border & Punta Gorda, California.
Oncorhynchus mykiss irideus Steelhead – Central Valley DPS	FT/— G5/S1 —	Spawn and rear in Sacramento River and its tributaries. Requires cool, swift, shallow water; clean, loose gravel for spawning; and runs and suitable large pools in which to rear and over-summer.
Oncorhynchus mykiss ssp. 2 McCloud River redband trout	FS/— G5T1T2Q/S1S2 SSC	Resides in small spring-fed tributaries of the McCloud River where water temperatures are cold (<15 C) and flow is 1-40 CFS.
Oncorhynchus tshawytscha Chinook salmon – Sacramento River winter-run ESU	FE/SE G5/S1 —	Spawn and rear in main-stem Sacramento River. Require cool year-round water temperatures, since spawning occurs during the summer. Requires deep pools and riffles, and clean gravel and cobble substrate to spawn.

Table 4.3-2
Special-Status Animal Species Known to Occur or with Potential to Occur within Shasta County

Scientific Name Common Name	Status Fed/State Global Rank/ State Rank CDFW	Habitat Requirements
Oncorhynchus tshawytscha Chinook salmon – Central Valley spring-run ESU	FT/ST G5/S1 —	Spawn and rear in main-stem Sacramento River and suitable perennial tributaries. Require cool year-round water temperatures and deep pools for over-summering habitat. Spawn in riffles with gravel and cobble substrate.
Oncorhynchus tshawytscha Chinook salmon – Central Valley fall/late fall-run ESU	FC/— G5/S1 SSC	Spawn and rear in main-stem Sacramento River and suitable perennial tributaries. Requires cool water temperatures for spawning, egg-incubation and juvenile rearing. Spawn in riffles with gravel and cobble.
Pogonichthys macrolepidotus Sacramento splittail	—/— G3/S3 SSC	Shallow, dead-end sloughs with submerged vegetation.
Invertebrates		
Branchinecta lynchi Vernal pool fairy shrimp	FT/— G3/S2S3 —	Lives in vernal pools, swales, and ephemeral freshwater habitats.
Desmocerus californicus dimorphus Valley elderberry longhorn beetle	FT/— G3T2/S2S3 —	Elderberry shrubs associated with riparian forests that occur along rivers and streams in the Sacramento Valley and foothills.
Fluminicola seminalis Nugget pebblesnail	FS/— G2/S1S2 —	Aquatic. This species is only known from the Sacramento River system. It is considered extirpated from the mainstem, but still exists in small tributaries.
Juga acutifilosa Topaz juga	FS/— G2/S2 —	Aquatic.
Juga acutifilosa Scalloped juga	FS/— G1/S1 —	Aquatic.
Helisoma newberryi Great Basin rams-horn	FS/— G1Q/S1 —	Occurs in larger lakes & slow rivers, including larger spring sources & spring-fed creeks.
Helminthoglypta hertleini Oregon shoulderband	FS/— G1/S1 —	Terrestrial. Found on basaltic talus slopes; partial riparian associate. Found wherever permanent ground cover/moisture is available. Somewhat adapted to dry conditions during a portion of the year.
Helminthoglypta talmadgei Trinity shoulderband snail	FS/— G1G3/S1S3 —	Terrestrial Limestone rockslides, litter in coniferous forests, old mine tailings, and along shaded streams in the Klamath Mountains.
Lanx patelloides kneecap lanx	—/— G2/S2 —	Endemic to upper Sacramento River system. Breathes entirely through mantle, & are very sensitive to polluted water. Prefers fast, cold, well-oxygenated water and cobble-boulder substrate.

Table 4.3-2
Special-Status Animal Species Known to Occur or with Potential to Occur within Shasta County

Scientific Name Common Name	Status Fed/State Global Rank/ State Rank CDFW	Habitat Requirements
Lepidurus packardi Vernal pool tadpole shrimp	FE/— G3/S2S3 —	Lives in vernal pools, swales, and ephemeral freshwater habitats.
Monadenia troglodytes troglodytes Shasta sideband snail	FS/— G1G2T1T2/S1S2 —	Terrestrial. Chaparral and lower-elevation montane hardwood-coniferous forest, associated with limestone outcropings.
Pacifastacus fortis Shasta Crayfish	FE/SE G1/S1 —	Aquatic. Cold, spring-fed refugia in the Fall and Pit rivers and associated waters.
Pisidium ultramontanum Fingernail clam	FS/— G1/S1 —	Aquatic. Occurs in southwest Oregon and northeast California, in the Klamath, Shasta, and Pit river drainages. Also in Tule and Eagle lakes.
Vespericola shasta Shasta Hesperian snail	FS/— G1/S1 —	Terrestrial. Riparian forest along Flume Creek near its confluence with Sacramento River, and along Slate Creek and Little Slate Creek near their confluences with the Shasta River.

Sources: CNDDB (CDFW, 2014; USFWS ECOS IPaC (2014), CDFW Special Animals List (2011).

FT = Federally Threatened
FC = Federal Candidate Species
FE = Federally Endangered
FS = Federally Sensitive
DL = Delisted
SC = State Candidate Species
SE = State Endangered
ST = State Threatened
SR = State Rare
SS = State Sensitive
WL = State Watch List

G-Rank/S-Rank = Global Rank and State Rank as per NatureServe and CDFW's CNDDB RareFind 5.
SSC = CDFW Species of Special Concern FP = Fully Protected

Table 4.3-3
Special-Status Plant Species Known to Occur or with Potential to Occur within Shasta County

Scientific Name Common Name	Status Fed/State ESA Global Rank/ State Rank CRPR	Habitat Requirements
Ageratina shastensis Shasta ageratina	—/— G2/S2 1B.2	Bloom period: June-October. Occurs in chaparral and lower montane coniferous forest; associated with limestone. Elevations: 400-1,800 meters.
Agrostis hendersonii Henderson's bent grass	—/— G3G4/S2 3.2	Bloom period: April-June. Occurs in valley & foothill grassland in vernal pools and swales. Elevations: 70-305 meters.
Anisocarpus scabridus Scabrid alpine tarplant	FS/— G2G3/S2S2 2B.3	Bloom period: July-September. Occurs in upper montane coniferous forest. Elevations: 1,650-2,300 meters.
Anomobryum julaceum Slender silver moss	—/— G4G5/S2 2B.2	Bloom period: N/A. Occurs in broadleaved upland forest, lower montane coniferous forest and North Coast coniferous forest. Elevations: 100-1,000 meters.
Anthoxanthum nitens ssp. *nitens* Nodding vanilla-grass	—/— G5/S2 2B.3	Bloom period: April-July. Occurs in wet meadows & seep wetlands. Elevations: 1,500-1,895 meters.
Arctostaphylos klamathensis Klamath manzanita	FS/— G2/S2 1B.3	Bloom period: May-August. Occurs in chaparral, subalpine coniferous forest, and upper montane coniferous forest. Elevations: Elevations: 1,570-2,250 meters.
Asarum marmoratum Marbled wild-ginger	—/— G3G4/S2 2B.3	Bloom period: April-August. Occurs in lower montane coniferous forest in understory of coniferous forests. Elevations: 200-1,800 meters.
Asplenium septentrionale Northern spleenwort	—/— G4/S3 2B.3	Bloom period: July-August. Occurs in chaparral, lower montane coniferous forest, subalpine coniferous forest, upper montane coniferous forest. Forms grass-like tufts in granitic rock crevices. Elevations: 1,615-3,350 meters.
Astragalus lemmonii Lemmon's milk-vetch	FS/— G2/S2 1B.2	Bloom period: May-September. Occurs in Great Basin scrub, meadows and seeps, marshes and swamps. Lakeshores, meadows and seeps. Elevations: 1,280-2,200 meters.
Astragalus pulsiferae var. *suksdorfii* Suksdorf's milk-vetch	FS/— G4T2/S2 1B.2	Bloom period: May-August. Occurs in Great Basin scrub, lower montane coniferous forest, and pinon & juniper woodlands. Elevations: 1,300-2,000 meters.
Balsamorhiza macrolepis Big-scale balsamroot	FS/— G2/S2 1B.2	Bloom period: March-June. Occurs in chaparral, cismontane woodland, and valley & foothill grassland; often on ultramafic soil. Elevations: 90-1,555 meters.
Boechera serpenticola Serpentine rockcress	FS/— G1/S1 1B.2	Bloom period: March-June. Occurs on lower montane coniferous forest and upper montane coniferous forest on ultramafic soil. Elevations: 790-2,100 meters.

Table 4.3-3
Special-Status Plant Species Known to Occur or with Potential to Occur within Shasta County

Scientific Name Common Name	Status Fed/State ESA Global Rank/ State Rank CRPR	Habitat Requirements
Botrychium ascendens Upswept moonwort	FS/— G3/S2 2B.3	Bloom period: July-August. Occurs in lower montane coniferous forest. Grassy fields, coniferous woods near springs and creeks. Elevations: 1,500-2,095 meters.
Botrychium crenulatum Scalloped moonwort	FS/— G3/S2 2B.2	Bloom period: June-September. Occurs in bogs & fens, lower and upper montane coniferous forest, wet meadow, seeps, fresh emergent wetlands. Elevations: 1,268-3,280 meters.
Botrychium monatum Western goblin	FS/— G3/S2 2B.1	Bloom period: July-September. Occurs in lower montane coniferous forest, oldgrowth. Elevations: 1,465-2,180 meters.
Botrychium pinnatum Northwestern moonwort	FS/— G4/S2 2B.3	Bloom period: July-October. Occurs in lower and upper montane coniferous forest in meadows & seep. Elevations: 1,770-2,040 meters.
Botrypus virginianus Rattlesnake fern	FS/— G5/S2 2B.2	Bloom period: July-September. Occurs in bogs and fens, lower montane coniferous forest, meadows and seeps, riparian forest. Elevations: 715-1,355 meters.
Brasenia schreberi Watershied	—/— G5/S2 2B.3	Bloom period: June-September. Occurs in fresh emergent wetlands. Elevations: 30-2,200 meters.
Brodiaea matsonii Sulphur Creek brodiaea	—/— G1/S1 1B.1	Bloom period: May-June. Occurs in cismontane woodland wet meadows and seeps. Elevations: 195-215 meters.
Calochortus longebarbatus var. *longebarbatus* Long-haired star-tulip	FS/— G4T3/S3 1B.2	Bloom period: June-August. Occurs in meadows, lower montane coniferous forest. In wet meadows or grassy areas along drainages within forest. Clay soils. Elevations: 965-1,900 meters.
Calochortus syntrophus Callahan's mariposa-lily	FE/— G1/S1 1B.1	Bloom period: May-June. Occurs in cismontane woodland, valley and foothill grassland. In vernally mesic areas. Elevations: 525-1,145 meters.
Calystegia atriplicifolia ssp. *buttensis* Butte County morning-glory	—/— G5T3/S3 4.2	Bloom period: May-July. Occurs in lower montane coniferous forest. Dry, mostly open slopes. Elevations: 600-1,200 meters.
Campanula shetleri Castle Crags harebell	FS/— G2/S2.3 1B.3	Bloom period: June-September. Occurs in lower montane coniferous forest. In protected rock crevices in granite. Elevations: 1,210-1,830 meters.

Table 4.3-3
Special-Status Plant Species Known to Occur or with Potential to Occur within Shasta County

Scientific Name Common Name	Status Fed/State ESA Global Rank/ State Rank CRPR	Habitat Requirements
Carex comosa bristly sedge	—/— G2/S2 2B.1	Bloom period: May-September. Occurs in sphagnum bogs, freshwater marsh, lake margins. Elevations: 1,700-2,100 meters.
Carex lasiocarpa Woolly-fruited sedge	—/— G5/S2 2B.3	Bloom period: June-July. Occurs in bogs and fens, marshes and swamps. Sphagnum bogs, freshwater marsh, lake margins. Elevations: 1,700-2,100 meters.
Carex petasata Liddon's sedge	—/— G5/S2 2B.3	Bloom period: May-July. Occurs in broadleafed upland forest, lower montane coniferous forest, meadows and seeps, pinyon and juniper woodland. Elevations: Elevations: 600-3,320 meters.
Carex scoparia var. scoparia Pointed broom sedge	—/— G5/S2 2B.3	Bloom period: May. Great Basin scrub, wet open places. Elevations: 130-1,000 meters.
Castilleja rubicundula var. *rubicundula* Pink creamsacs	FS/— G5T2/S2 1B.2	Bloom period: April-June. Occursn in chaparral, meadows and seeps, valley and foothill grassland. Openings on serpentine soils. Elevations: 20-900 meters.
Clarkia borealis ssp. arida Shasta clarkia	FS/— G3T2/S2 1B.1	Bloom period: June-August. Occurs in cismontane woodland, lower montane coniferous forest openings. Elevations: 490-595 meters.
Clarkia borealis ssp. borealis Northern clarkia	FS/— G3T3/S3 1B.3	Bloom period: June-September. Occurs in chaparral, cismontane woodland, lower montane coniferous forest. Often seen in roadcuts. Elevations: 400-1,390 meters.
Collomia larsenii Talus collomia	FS/— G4/S2 2B.2	Bloom period: Juy-October. Alpine boulder and rock field, closed-cone coniferous forest, subalpine coniferous forest, upper montane coniferous forest. Elevations: 2,210-3,500 meters.
Cryptantha crinita Silky cryptantha	FS/— G2/S2 1B.2	Bloom period: April-May. Occurs in cismontane woodland, valley foothill grassland, lower montane coniferous forest, riparian forest, riparian woodland. In gravelly stream beds. Elevations: 85-220 meters.
Didymodon norrisii Norris' beard moss	—/— G3G4/S3S4 2B.2	Bloom period: N/A. Occurs in cismontane woodland, lower montane coniferous forest. Moss from seasonally wet sheet drainages on exposed rock slabs or terraces that completely dry in summer. Less frequently seen in intermittent streams. Not rock specific. Elevations: 260-1,780 meters.
Draba aureola Golden alpine draba	—/— G4/S2 1B.3	Bloom period: July-August. Occurs in alpine boulder and rock field, subalpine coniferous forest. On serpentine or volcanic outcrops. Elevations: 2,000-3,355 meters.

Table 4.3-3
Special-Status Plant Species Known to Occur or with Potential to Occur within Shasta County

Scientific Name Common Name	Status Fed/State ESA Global Rank/ State Rank CRPR	Habitat Requirements
Drosera anglica English sundew	—/— G5/S2 2B.3	Bloom period: June-September. Occurs in bogs and fens, meadows. Elevations: 1,300-2,000 meters.
Epilobium oreganum Oregon fireweed	FS/— G2/S2 1B.2	Bloom period: June-September. Occurs in bogs and fens, meadows, lower montane coniferous forest, upper montane coniferous forest. In and near springs and bogs; at least sometimes on serpentine. Elevations: 500-2,240 meters.
Epilobium siskiyouense Siskiyou fireweed	FS/— G3/S2.2 1B.3	Bloom period: July-September. Occurs in subalpine coniferous forest, upper montane coniferous forest. On slopes in gravelly, serpentine soils. Elevations: 1,700-2,500 meters.
Eriastrum tracyi Tracy's erastrum	FS/— G3Q/S3 1B.3	Bloom period: May-July. Occurs in chaparral and cismontane woodland. Gravelly shale or clay; often in open areas. Elevations: 315-760 meters.
Erigeron nivalis Snow fleabane daisy	—/— G4G5/S2S3 2B.3	Bloom period: July-August. Occurs in alpine boulder & rock field, meadows & seeps, subalpine coniferous forest. Elevations: 1,735-2,900 meters.
Eriogonum pyrolifolium var. *pyrolifolium* Pyrola-leaved buckwheat	—/— G4G5/S2.3 1B.3	Boom period: July-September. Occurs in chaparral and lower montane coniferous forest. Rocky sites including scree and talus. Elevations: 1,600-1,900 meters.
Eriogonum ursinum var. *erubescens* Blushing wild buckwheat	FS/— G3G4T2/S3.3 4.3	Bloom period: June-September. Occurs in chaparral, lower montane coniferous forests, meadows and seeps, and upper montane coniferous forests. Sometimes serpentinite. Elevations: 1,500-2,700 meters.
Erythranthe taylori Shasta limestone monkeyflower	—/— G1G2/S1S2 4.3	Bloom period: February-May. Cismontane woodland | Lower montane coniferous forest. Openings carbonate crevices and rocky outcrops. Elevations: 355-980 meters.
Erythronium citrinum var. roderickii Scott Mountains fawn lily	FS/— G4T3/S3 1B.3	Bloom period: March-June. Occurs in lower montane coniferous forest. Serpentine. Elevations: 815-1,220 meters.
Erythronium klamathense Klamath fawn lily	—/— G4/S2 2B.2	Bloom period: April-July. Occurs in upper montane coniferous forest, meadows and seeps. Elevations: 1,200-1,850 meters.
Fritillaria eastwoodiae Butte County fritillary	FS/— G3Q/S3 3.2	Bloom period: March-June. Occus in chaparral, cismontane woodland, lower montane coniferous forest. Usually on dry slopes but also found in wet places; soils can be serpentine, red clay, or sandy loam. Elevations: 50-1,500 meters.

Table 4.3-3
Special-Status Plant Species Known to Occur or with Potential to Occur within Shasta County

Scientific Name Common Name	Status Fed/State ESA Global Rank/ State Rank CRPR	Habitat Requirements
Gratiola heterosepala Boggs Lake hedge-hyssop	—/SE G2/S2 1B.2	Bloom period: April-August. Occurs in fresh emergent wetlands, vernal pools. Clay soils; usually in vernal pools, sometimes on lake margins. Elevations: 10-2,375 meters.
Harmonia doris-nilesiae Niles' harmonia	FS/— G2/S2.1 1B.1	Bloom period: May-July. Occurs in lower montane coniferous forest, chaparral, cismontane woodland. Serpentine barrens. Elevations: 650-1,660 meters.
Harmonia stebbinsii Stebbins' harmoinia	FS/— G2/S2.2 1B.2	Bloom period: May-June. Occurs in chaparral, lower montane coniferous forest. Ultramafic soils, often along roads. Elevations: 400-1,580 meters.
Heteranthera dubia Water star-grass	—/— G5/S1 2B.2	Bloom period: July-October. Occurs in fresh emergent wetland. Alkaline, still or slow-moving water. Requires a pH of 7 or higher, usually in slightly eutrophic waters. Elevations: 30-1,495 meters.
Horkelia daucifolia var. *indicta* Jepson's horkelia	—/— G4T1/S1 1B.1	Bloom period: April-June. Occurs in cismontane woodland. Quaternary pyroclastic flows, volcanic or clay soils. Vernally mesic, openings. Elevations: 240-670 meters.
Howellanthus dalesianus Scott Mountain howellanthus	—/— G3/S3.3 4.3	Bloom period: May-August. Occurs in lower montane coniferous forest, meadows, upper montane coniferous forest, subalpine coniferous forest. Dry meadows or openings in coniferous forest community on serpentine soil. Elevations: 1,015-2,105 meters.
Hulsea nana Little hulsea	—/— G4/S2.3 2B.3	Bloom period: July-August. Occurs in alpine boulder and rock fields, subalpine coniferous forest. Rocky or gravelly sites; on volcanic substrates. Elevations: 1,920-3,355 meters.
Iliamna bakeri Baker's globe mallow	—/— G4/S3.2 4.2	Bloom period: June-September. Occurs in chaparral, pinyon-juniper woodland. Rocky loam or volcanic soils. Elevations: 1,000-2,500 meters.
Ivesia longibracteata Castle Crags ivesia	FS/— G1/S31 41B.3	Bloom period: June. Occurs in lower montane coniferous forest. Crevices in granitic cliffs. Elevations: 1,200-1,400 meters.
Juncus digitatus Finger rush	—/— G1/S1 1B.1	Bloom period: April-June. Cismontane woodland (openings), lower montane coniferous forest (openings), vernal pools. In full sun, in the vernally damp ground of seeps, vernal pools and swales on gentle slopes over volcanic bedrock. 600-800 meters.
Juncus leiospermus var. *leiospermus* Red Bluff dwarf rush	FS/— G2T2/S2 1B.1	Bloom period: March-June. Chaparral, valley and foothill grassland, cismontane woodland, vernal pools, meadows and seeps. Vernally mesic sites. Sometimes on edges of vernal pools. Elevations: 35-1,250 meters.

Table 4.3-3
Special-Status Plant Species Known to Occur or with Potential to Occur within Shasta County

Scientific Name Common Name	Status Fed/State ESA Global Rank/ State Rank CRPR	Habitat Requirements
Juncus luciensis Santa Lucia dwarf rush	FS/— G2G32/S2S3 1B.2	Bloom period: April-July. Vernal pools, meadows, lower montane coniferous forest, chaparral, Great Basin scrub. Vernal pools, ephemeral drainages, wet meadow habitats and streamsides. Elevations: 300-2,040 meters.
Lathyrus sulphureus var. *argillaceus* Dubious pea	—/— G5T1T2/S1S2 3	Bloom Period: April- May. Cismontane woodland, lower montane coniferous forest, upper montane coniferous forest. Elevations: 150-305 meters.
Legenere limosa Legenere	FS/— G2/S2.2 1B.1	Bloom period: April-June. Vernal pools. Many historical occurrences are extirpated. In beds of vernal pools. Elevations: 1-880 meters.
Lewisia cantelovii Cantelow's lewisia	FS/— G3/S3 1B.2	Bloom period: May-October. Broadfleafed upland forest, lower montane coniferous forest, cismontane woodland, chaparral. Mesic rock outcrops and wet cliffs, usually in moss or clubmoss; on granitics or sometimes on serpentine. Elevations: 330-1,340 meters.
Limnanthes floccosa ssp. *bellingeriana* Bellinger's meadowfoam	FS/— G4T3/S1 1B.2	Bloom period: April-June. Meadows and seeps, cismontane woodland. Vernally wet sites including wet edges of meadows, and damp, stony flats. Elevations: 290-1,100 meters.
Limnanthes floccosa ssp. *floccosa* Wooly meadowfoam	—/— G443/S3.2 4.2	Bloom period: March-June. Chapparal, cismontane woodland, valley and foothill grassland, vernal pools. Vernally wet areas, ditches, and ponds. Elevations: 60-1,275 meters.
Lysimachia thyrsiflora Tufted loosestrife	—/— G5/S4 2B.3	Bloom period: May-August. Meadows (mesic), marshes, upper montane coniferous forest. Mesic sites; known from lake margins, along streams and in wet meadows. Elevations: 975-1,675 meters.
Meesia triquetra Three-ranked hump moss	—/— G5/S4 4.2	Bloom period: July. Bogs and fens, meadows and seeps, upper montane coniferous forest, subalpine coniferous forest. Moss growing on mesic soil. Saturated bogs, fens, seeps and meadows in coniferous to subalpine forests. Elevations: 1300-2,500 meters.
Meesia uliginosa Broad-nerved hump moss	FS/— G4/S3 2B.2	Bloom period: October. Meadows and seeps, bogs and fens, upper montane coniferous forest, subalpine coniferous forest. Moss on damp soil. Often found on the edge of fens or raised above the fen on hummocks/shrub bases. Elevations: 1,210-2,805 meters.
Mielichhoferia tehamensis Lassen Peak coppr moss	—/— G2/S2 1B.3	Bloom period: N/A. Alpine boulder and rock field. Moss on volcanic Breccia rock walls; mesic sites. Elevations: 2,500-2,800 meters.
Mimulus evanescens Ephemeral monkeyflower	FS/— G3/S2 1B.2	Bloom period: May-August. Great Basin scrub, lower montane coniferous forest, pinyon-juniper woodland. Gravelly or rocky sites; vernally mesic. Elevations: 1,250-1,740 meters.

Table 4.3-3
Special-Status Plant Species Known to Occur or with Potential to Occur within Shasta County

Scientific Name Common Name	Status Fed/State ESA Global Rank/ State Rank CRPR	Habitat Requirements
Mimulus pygmaeus Egg Lake monkeyflower	—/— G4/S3.2 4.2	Bloom period: May-August. Great Basin scrub, lower montane coniferous forest, meadows and seeps, pinyon-juniper woodland. Damp sites in meadows, along streams and on muddy soil of dessicating pools. Volcanic, clay soils. Elevations: 500-1,840 meters.
Neviusia cliftonii Shasta snow-wreath	FS/— G2/S2.2 1B.2	Bloom period: April-June. Lower montane coniferous forest, riparian woodland. Shaded, north-facing, or sheltered canyons. Sometimes on limestone. Mesic areas. Elevations: 300-500 meters.
Orcuttia tenuis Slender Orcutt grass	FT/SE G2/S2 1B.1	Bloom period: May-October. Occurs in vernal pools. Often in gravelly pools. Elevations: 35-1,760 meters.
Packera indecora Rayless Mountain ragwort	—/— G5/S2 2B.2	Bloom period: July-August. Meadows and seeps. Mesic sites. Elevations: 1,600-2,000 meters.
Panicum acuminatum var. *thermal* Geysers panicum	FE/— G5T2Q/S3 1B.2	Bloom period: June-August. Closed-cone coniferous forest, riparian forest, valley and foothill grassland. Usually around moist, warm soil in the vicinity of hot springs. Elevations: 305-2,470 meters.
Parnassia cirrata var. *intermedia* Cascade grass-of-Parnassus	FS/— G2/S2.2 1B.2	Bloom period: August-September. Occurs in meadows and seeps, bogs and fens. Rocky serpentine soil. Elevations: 780-1,980 meters.
Paronychia ahartii Ahart's paronychia	FS/— G2/S2 1B.1	Bloom period: February-June. Valley and foothill grassland, vernal pools, cismontane woodland.Stony, nearly barren clay of swales and higher ground around vernal pools. Elevations: 30-510 meters.
Penstemon filiformis Thread-leaved beardtongue	FS/— G3/S2 1B.3	Bloom period: May-September. Cismontane woodland, lower montane coniferous forest, meadows and seeps. Dry stony sites, grassy openings, and meadows, often along trails & logging roads; sometimes on serpentine. Elevations: 450-2,125 meters.
Phlox muscoides Squarestem phlox	FS/— G5/S2S3 2B.3	Bloom period: May-August. Alpine boulder and rock field, subalpine coniferous forest, Great Basin scrub. Open rocky slopes. Elevations: 1270-2,700meters.
Picea engelmannii Engelmann spruce	—/— G5/S2.2 2B.2	Bloom period: N/A. Upper montane coniferous forest. Slopes and hillsides, often on alluvial terrace. Elevations: 1,060-2,135 meters.
Poa sierrae Sierra blue grass	FS/— G2G3/S2S3 1B.3	Bloom period: April-June. Lower montane coniferous forest. Shady, moist, rocky slopes. Often in canyons. Elevations: 365-1,160 meters.

Table 4.3-3
Special-Status Plant Species Known to Occur or with Potential to Occur within Shasta County

Scientific Name Common Name	Status Fed/State ESA Global Rank/ State Rank CRPR	Habitat Requirements
Pogogyne floribunda Profuse-flowered pogogyne	—/— G4/S4 4.2	Bloom period: May-October. Vernal pools. Heavy clay soil; surrounding community often pine/juniper or sagebrush scrub. Elevations: 940-1,745 meters.
Polygonum polygaloides ssp. *esotericum* Modoc County knotweed	FS/— G4G5T3/S3 1B.1	Bloom period: May-September. Great Basin scrub, vernal pools, lower montane coniferous forest, meadows and seeps. Edges of seasonal lakes and ponds with *Deschampsia*, *Navarretia*, etc. Elevations: 885-1,690 meters.
Potamogeton epihydrus Nuttall's ribbon-leaved pondweed	—/— G5/S2S3 2B.2	Bloom period: June-September. Fresh emergent wetlands. Shallow water, ponds, lakes, streams, irrigation ditches. Elevations: 370-2,170 meters.
Potamogeton praelongus White-stemmed pondweed	—/— G5/S1S2 2B.3	Bloom period: July-August. Fresh emergent wetlands. Deep water, lakes. Elevations: 1,645-3,000 meters.
Potamogeton zosteriformis Eel-grass pondweed	—/— G5/S2.2 2B.2	Bloom period: June-July. Fresh emergent wetlands. Ponds, lakes, streams. Elevations: 0-1,860 meters.
Potentilla newberryi Newberry's cinquefoil	—/— G3G4/S2S3 2B.3	Bloom period: May-August. Fresh emergent wetlands. Receding shorelines; drying wetland margins. Elevations: 1,300-2,200 meters.
Ptilidium californicum Pacific fuzz wort	FS/-— G3G4/S3 4.3	Bloom period: May-August. Occurs in lower montane coniferous forest, Upper montane coniferous forest. Epiphytic on fallen and decaying logs and stumps. Rarely on boulders over humus. Elevations: 0-1,800 meters.
Puccinellia howellii Howell's alkali grass	FS/— G1/S3 1B.1	Bloom period: April-June. Meadows and seeps. Mineralized soils around mineral springs and seeps. One site known: Elevations: 485 meters.
Sagittaria sanfordii Sanford's arrowhead	FS/— G3/S1 1B.2	Bloom period: May-November. Fresh emergent wetlands. In standing or slow-moving freshwater ponds, marshes, and ditches. Elevations: 0-650 meters.
Scutellaria galericulata Marsh skullcap	—/— G5/S2 2B.2	Bloom period: June-September. Fresh emergent wetland, lower montane coniferous forest, meadows and seeps. Elevations: 0-2,100 meters.
Sedum laxum ssp. *flavidum* Pale yellow stonecrop	—/— G5T3Q/S3.3 4.3	Bloom period: May-July. Occurs in broad-leafed upland forest, chaparral, cismontane woodland, lower montane coniferous forest. Serpentine or basalt outcrops. Elevations: 755-2,000 meters.

Table 4.3-3
Special-Status Plant Species Known to Occur or with Potential to Occur within Shasta County

Scientific Name Common Name	Status Fed/State ESA Global Rank/ State Rank CRPR	Habitat Requirements
Sedum obtusatum ssp. *paradisum* Canyon Creek stonecrop	FS/— G4G5T2/S2 1B.3	Bloom period: May-June. Chaparral, lower montane coniferous forest, subalpine coniferous forest, broadleafed upland forest. Rock faces, in crevices of exposed granite. Elevations: 300-1,900 meters.
Silene occidentalis ssp. *longistipitata* Long-stiped campion	FS/— G4T2Q/S2 2B.3	Bloom period: June-August. Chaparral, lower montane coniferous forest, upper montane coniferous forest. Elevations: 1,000-2,000 meters.
Silene suksdorfii Cascade alpine campion	—/— G4/S2.3 2B.3	Bloom period: July-September. Alpine boulder and rock field, subalpine coniferous forest. Rocky, volcanic soils. Elevations: 2,400-3,100meters.
Smelowskia ovalis Alpine smelowskia	—/— G5/S1 1B.2	Bloom period: July-August. Alpine boulder and rock field, subalpine coniferous forest. Steep loose talus slopes. Elevations: 2,440-3,100 meters.
Smilax jamesii English Peak greenbrier	FS/— G2/S2 1B.3	Bloom period: May-September. Coniferous forest, broadleafed upland forest, lower montane coniferous forest, upper montane coniferous forest, marshes and swamps. Along streams and lake margins. Elevations: 580-2,500 meters.
Stachys pilosa Hairy marsh hedge-nettle	FS/— G5/S2.3 2B.3	Bloom period: June-August. Great Basin scrub. Mesic sites. Elevations: 1,200-1,525 meters.
Stellaria longifolia Long-leaved starwort	—/— G5/S2 2B.2	Bloom period: May-August. Bogs and fens, meadows and seeps, riparian woodland, upper montane coniferous forest. Mesic sites. Elevations: 1,200-1,525 meters.
Stellaria obtusa Obtuse starwort	—/— G5/S3.3 4.3	Bloom period: May-October. Occurs in upper montane coniferous forest, lower montane coniferous forest, riparian woodland. Stream- or seep-side in conifer forest. Elevations: 270-2,365 meters.
Stuckenia filiformis ssp. *alpine* Slender-leaved pondweed	—/— G5T5/S3 2B.2	Bloom period: May-July. Fresh emergent wetland. Shallow, clear water of lakes and drainage channels. Elevations: 300-2,150 meters.
Thelypodium howellii ssp. *howellii* Howell's thelypodium	FS/— G2T2/S2 1B.2	Bloom period: May-July. Great Basin scrub, meadows and seeps. Moist alkaline meadows. Elevations: 1,200-1,830 meters.
Tuctoria greenei Greene's tuctoria	FE/SR G1/S1 1B.1	Bloom period: May-September. Vernal pools. Dry bottoms of vernal pools in open grasslands. Elevations: 30-1,070 meters.

Table 4.3-3
Special-Status Plant Species Known to Occur or with Potential to Occur within Shasta County

Scientific Name Common Name	Status Fed/State ESA Global Rank/ State Rank CRPR	Habitat Requirements
Viburnum ellipticum Oval-leaved viburnum	—/— G5/S2.3 2B.3	Bloom period: May-June. Occurs in chaparral, cismontane woodland, lower montane coniferous forest. Elevations: 215-1,400 meters.

Source: CNDDB (2014); CNPS (2014); USFWS IPaC (2014)

FT = Federally Threatened
FC = Federal Candidate Species
FE = Federally Endangered
FS = Federally Sensitive
DL = Delisted
SC = State Candidate Species
SE = State Endangered
ST = State Threatened
SR = State Rare
SS = State Sensitive
WL = State Watch List

G-Rank/S-Rank = Global Rank and State Rank as per NatureServe and CDFW's CNDDB RareFind5.
CRPR (California Rare Plant Rank):
1A = Presumed Extinct in California
1B = Rare, Threatened, or Endangered in California and elsewhere
2 = Rare, Threatened, or Endangered in California, but more common elsewhere
3 = Need more information (a Review List)
4 = Plants of Limited Distribution (a Watch List)

c. 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. The mountainous regions of Shasta County may support wildlife movement on a regional scale while riparian corridors, waterways, flood control channels, canals, contiguous habitat and upland habitat on levees may

provide more local scale opportunities for wildlife movement throughout the county. The CDFW BIOS (2014) mapped several essential connectivity areas within Shasta County. One corridor extends from the border with Siskiyou County southward past Shasta Lake and then between Redding and Whiskeytonwn National Recration Area, southward to Tehama County. A second corridor exends from Lassen Volcanic National Park westward on the Battle Creek watershed to the Sacramento River. A third corridor links the Shasta Lake area, extending westward to the south of Fall River Valley. The Fall River Valley is associated with two additional corridors—one extending northwesterly onto the Modoc Plateau, and one extending southwesterly to Lassen Volcanic National Park.

d. 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 the County of Shasta and local municipalities. The CDFW is a trustee agency for biological resources throughout the state under the California Environmental Quality Act (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 the California Endangered Species Act (CESA).

Federal and State Jurisdictions.

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.

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.

California Department of Fish and Wildlife (formerly the California Department of Fish and Game). The CDFW derives its authority from the Fish and Game Code of California. The California Endangered Species Act (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. Projects that would result in take of any state listed threatened or endangered species are required to obtain an incidental take permit (ITP) pursuant to Fish and Game Code Section 2081. The issuance of an ITP is dependent upon the following: 1) the authorized take is incidental to an otherwise lawful activity; 2) the impacts of the authorized take are minimized and fully mitigated; 3) the measures required to minimize and fully mitigate the impacts of the authorized take are roughly proportional in extent to the impact of the taking on the species, maintain the applicant's objectives to the greatest extent possible, and are capable of successful implementation; 4) adequate funding is provided to implement the required minimization and mitigation measures and to monitor compliance with and the effectiveness of the measures; and 5) issuance of the permit will not jeopardize the continued existence of a state-listed species.

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 (CFGC Section 3511) may not be taken or possessed except under specific permit. Section 3503.5 of the Code protects all birds-of-prey and their eggs and nests against take, possession, or destruction of nests or eggs. Species of Special Concern (SSC) is a category used by the CDFW for those species that are considered to be 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 those afforded by the Fish and Game Code as noted above. 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. The CDFW also has authority to administer the Native Plant Protection Act (NPPA) (CFGC Section 1900 *et seq*.). The NPPA requires the CDFW to establish criteria for determining if a species, subspecies, or variety of native plant is endangered or rare. Under Section 1913(c) of the NPPA, the owner of land where a rare or endangered native plant is growing is required to notify the department at least 10 days in advance of changing the land use to allow for salvage of the plant(s).

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 stream zone (which could extend to the 100-year flood plain) 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.

Regional Water Quality Control 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.

Local Jurisdictions General Plans. A discussion of the various General Plans adopted within Shasta County and how they pertain to the protection of biological resources is presented below.

Shasta County. The Fish and Wildlife Habitat Element of the Shasta County General Plan includes objectives to protect biological resources. Various policies are also included that pertain to, but are not limited to, protection of rare and endangered species, development in environmentally sensitive areas, and protection of riverine and riparian areas. Objectives and policies regarding biological resources that are applicable to the project in Shasta County pursuant to the 2015 RTP are listed in Table 4.3-4.

City of Redding. The Natural Resources Element of the City of Redding General Plan includes goals and policies to protect the natural resources found within the city. Goals and policies that are applicable to projects in Redding pursuant to the 2015 RTP are listed in Table 4.3-4.

City of Anderson. The Open Space and Conservation Element of the City of Andersson General Plan includes Biological Resources Policies (BRPs) and Biological Resource Implementation (BMI) measures to protect the biological resources found within the city. The policies and implementation measures that are applicable to projects in Anderson pursuant to the 2015 RTP are listed in Table 4.3-4.

City of Shasta Lake. The Natural Resources Element of the City of Shasta Lake General Plan includes objectives, policies, and implementation measures to protect the biological resources found within the city. The objectives, policies and implementation measures that are applicable to projects in the City of Shasta Lake pursuant to the 2015 RTP are listed in Table 4.3-4.

Table 4.3-4
Local General Plan Goals, Objectives, Policies and Implementation Measures

Shasta County	
Objective FW-1	**Protection of significant fish, wildlife and vegetation resources.**
Objective FW-2	**Provide for a balance between wildlife habitat protection and enhancement and the need to manage and use agricultural, mineral extraction, and timberland resources.**
Policy FW-a	Significant wildlife habitat resources, as discussed in the Plan text, when not otherwise classified as Timberland (T), Cropland (A-C), or Grazing (A-G) shall be classified on the General Plan maps as Natural Resources Protection-Habitat (N-H). In all areas designated N-H, except the Day Bench area, residential units may be permitted at a density of one dwelling unit per the acreage indicated on the land use map. If a project proponent agrees to cluster residential units, up to a 100 percent density bonus may be permitted if the parcels are clustered to the degree necessary to reduce the negative impacts on wildlife habitat to a level that does not exceed the level that would be created by the non- clustering option discussed above. When the clustering option is utilized, the clustered parcels shall be sited to reduce the impacts on critical habitat elements such as wildlife watering sites, mineral springs, key thermal cover areas, roost sites, and nest concentrations. The balance of the land shall remain in open space. Modifications to the open space areas shall only be allowed for habitat enhancement and forest management. In the Day Bench area, designated NH-RB-C, the wildlife habitat is the primary designation, but the RB combining designation also recognizes that rural residential development may be permitted at a maximum density of one dwelling per five acres, as long as the residences are clustered. The Clustering (C) designation requires clustering. The residential clustering, along with other habitat protection criteria, is required to the degree necessary to mitigate the impacts that development may have on the habitat to below a level of significance. Recreation uses may also be conditionally permitted when identified significant adverse impacts on the habitat resource are mitigated.
Policy FW-b	Recognition that classification of some fish, wildlife, and vegetation resources designated and used as Timberlands, Mineral Resource, Croplands, or Grazing lands does, in most cases, protect habitat resources. However, if there is a conflict, the timber, mineral extraction, or agricultural land use classifications mentioned above shall prevail in a manner consistent with State and Federal laws.
Policy FW-c	Projects that contain or may impact endangered and/or threatened plant or animal species, as officially designated by the California Fish and Game Commission and/or the U. S. Fish and Wildlife Service, shall be designed or conditioned to avoid any net adverse project impacts on those species.
Policy FW-d	The significant river and creekside corridors of Shasta County shall be designated on the General Plan maps. The primary purpose of this designation is to protect the riparian habitats from development and from adverse impacts from conflicting resources uses. The purpose is also to encourage open space and recreation (policy OSR-e). Mapping of significant waterway corridors in areas designated as resource protection lands is not required since it is assumed that resource land uses will also act to protect such waterway corridors. Riparian habitat protection along the significant river and creekside corridors, as designated on the plan maps shall be achieved, where appropriate, by the following measures: • Regulation of vegetation removal • Design of grading and road construction to restrict sediment input to all streams • Establishment of a development set-back • The siting of structures, including clustering • Recreation plans for the Sacramento River, Clear Creek, and other feasible waterway resources

Table 4.3-4
Local General Plan Goals, Objectives, Policies and Implementation Measures

Policy FW-e	Salmon spawning gravel in the following rivers and creeks shall be protected: • Sacramento River: Keswick Dam to Shasta-Tehama County line • Battle Creek: Mouth to the mouth of South Fork Battle Creek • Cow Creek: Mouth to: Powerhouse on South Cow Creek; the mouth of Coal Gulch on Old Cow Creek; the mouth of Dry Clover Creek on Clover Creek; the mouth of Tracy Creek on Oak Run Creek; the mouth of Salt Creek on Little Cow Creek • Cottonwood Creek: Mouth to west line of Section 6, T.29N., R.5W., M.D.B.& M • Bear Creek: Mouth to the Highway 44 bridge • Clear Creek: Mouth to Whiskeytown Dam • Churn Creek: Mouth to Redding City limits • Stillwater Creek: Mouth to the Highway 299E bridge • Olney Creek: Mouth to mouth of Tadpole Creek • Anderson Creek: Mouth to Interstate 5
Policy FW-f	The County should encourage and support efforts by State and Federal agencies that implement the Upper Sacramento River Fisheries and Riparian Habitat Management Plan.
Policy FW-g	The County shall encourage the Department of Fish and Game to prepare periodic biological assessments regarding the overall effectiveness of waterway protection efforts under the Stream Corridor Protection Program.
Policy FW-h	The County shall encourage efforts to develop tree protection standards which focus on the County's differing land use types, namely; lowland urban, upland urban, rural residential and resource lands. Urban tree protection standards shall focus on landscaping that promotes energy conservation and design aesthetics, as opposed to preserving native vegetation.
Policy FW-i	An interagency plan should be encouraged for developing a parkway and wildlife habitat corridor along Clear Creek. The County should support and encourage planning and non-County funding sources which implement this parkway corridor.
Policy FW-j	Efforts to restore the Middle Creek drainage basin, Clear Creek watershed basin, Battle Creek, Cow Creek, and other Sacramento River tributary watersheds shall be supported by the County.
Policy FW-k	The County should support efforts to develop a Stream Corridor Protection Plan along the Sacramento River from the south Redding City limits to the Tehama County line.
City of Redding	
Goal NR-1	**Minimize Soil Erosion and Sedimentation Problems Resulting from Development Activities; Improve the Quality of Storm-water Runoff**
Policy NR1A	Establish a process for the development, review, and approval of erosion- and sedimentation-control plans of single-family residential construction and similar small projects.
Policy NR1B	Require development applicants to submit and receive Public Works Department approval for erosion- and sediment-control plans prior to undertaking grading activities
Policy NR1C	Minimize soil erosion and sedimentation created during and after construction activities to the fullest extent practicable, using Best Management Practices (BMPs).
Policy NR1D	Make project monitoring and enforcement activities a priority to ensure that erosion- control measures are in place prior to the start of the rainy season and function properly and effectively: • Installed properly • In place prior to the start of the rainy season • Functional and effective
Policy NR1E	Agressively pursue immediate remediation when erosion damage is discovered and/or initial control measures fail.
Policy NR1F	Establish and levy fines for failure to comply with the requirements of the Grading Ordinance and/or an approved erosion- and sediment-control plan.

Table 4.3-4
Local General Plan Goals, Objectives, Policies and Implementation Measures

Policy NR1G	Support and/or jointly sponsor erosion- and sedimentation-control training and education activities in conjunction with the development community.
Policy NR1H	Ensure that employees responsible for monitoring and enforcing the City's Grading Ordinance receive adequate training regarding erosion- and sediment-control practices.
Policy NR1I	Work with Shasta County and other regional, State, and Federal agencies to reduce the amount of toxic chemicals and other agents or pollutants entering the surface water system from agriculture, golf course, and urban runoff.
Policy NR1J	Encourage neighboring jurisdictions to adopt and enforce consistent erosion- and sediment-control measures.
Goal NR2	**Maintain Adequate Water Supplies for Domestic and Fire-Suppression Purposes. Policies to achieve this goal are to:**
Policy NR2A	Continue to evaluate options for increasing the City's and other water providers' water supplies, including, but not limited to, acquiring additional allocations from the Sacramento River, development of additional wells, and enhancement of water-storage and treatment facilities.
Policy NR2B	Encourage water-conservation practices including, but not limited to, use of: • A tiered pricing system for water which is tied to the amount consumed by a household or business • Native plants or other plants with low water requirements in public and private development projects • Drip irrigation systems • Gray water" for landscape irrigation if approved by Shasta County
Policy NR2C	Utilize water reclamation projects in landscape and agricultural uses if approved by the California Regional Water Quality Control Board and State Department of Health Services.
Policy NR2D	*Support efforts to limit exportation of surface water to other areas of the State and to protect local water rights.*
Goal NR3	**Preserve and Protect the Quantity and Quality of Groundwater Resources in the Planning Area**
Policy NR3A	Provide maximum groundwater-recharge opportunities by maintaining the natural condition of waterways and floodplains to the extent feasible given flood-control requirements.
Policy NR3B	Comply with the Regional Water Quality Control Board’s regulations and standards to maintain and improve groundwater quality in the Planning Area.
Policy NR3C	Support the preparation of a groundwater management plan for the Redding Groundwater Basin that will address long- term sustainability of the resource.
Policy NR3D	Support efforts to prevent exportation of groundwater to other areas of the State and to retain local control over the resource.
Policy NR3E	Work with appropriate State, Federal, and local agencies to protect, improve, and enhance groundwater quality in the region.
Goal NR4	**Prevent and Remedy surface water, groundwater, and soil contamination.**
Policy NR4A	Discourage the establishment of any new septic systems, except in areas where residential densities are low (1–5 units per acre and larger) and soils are suitable for septic system use.
Policy NR4B	Continue to accept, recycle, and/or properly dispose of household hazardous wastes through ongoing operation of the City's Household Hazardous Waste Collection Program.
Policy NR4C	Work with appropriate local, State, and Federal agencies to ensure that those responsible for soil, surface-water, and/or groundwater contamination are required to initiate, monitor, and complete full remediation activities.
Policy NR4D	Work with Shasta County and other appropriate agencies to educate the public and business owners regarding proper handling and disposal of hazardous materials and household hazardous wastes.

Table 4.3-4
Local General Plan Goals, Objectives, Policies and Implementation Measures

Policy NR4E	Establish and enforce penalties for illegal dumping of both hazardous and nonhazardous materials.
Goal NR5	**Preserve and Protect the Significant Habitats, Plants, and Wildlife that Exist in the Planning Area.**
Policy NR5A	Minimize the disruption of sensitive habitat caused by new development by encouraging innovative design and site planning and establishing performance standards for habitat protection.
Policy NR5B	Work to preserve and enhance fisheries in the Sacramento River and those streams or stream segments identified on Figure 3-2 (of the General Plan).
Policy NR5C	Maintain and update data and information regarding areas of significant biological value within the Planning Area to: • Provide critical information to the community • Facilitate resource conservation • Facilitate appropriate management of development activities
Goal NR6	**Protect "Special Status" Plant and Animal Species; Preserve and Protect Creek Corridors, Riparian Areas, Vernal Pools, and Wetlands**
Policy NR6A	Preserve watercourses, vernal pools, riparian habitat, and wetlands in their natural state unless preservation is determined to be infeasible. Fully mitigate unavoidable adverse impacts such as wetland filling or disturbance.
Policy NR6B	Provide adequate buffering of sensitive habitats whenever necessary. Buffer size should be based upon the type of habitat as well as its size and habitat value.
Policy NR6C	Ensure that uses allowed within riparian corridors: • Minimize the creation of erosion, sedimentation, and increased runoff. • Emphasize retention and enhancement of natural riparian vegetation • Provide for unimpaired passage of fish and wildlife • Avoid activities or development of new features that result in disturbance or dispersal of wildlife • Avoid channelization • Avoid substantial interference with surface and subsurface flows • Incorporate natural vegetation buffers
Policy NR6D	Amend the Municipal Code to implement minimum river and creek corridor development setbacks (buffer areas) in accordance with Figure 3-3 (of the General Plan). These setbacks may be modified based on project/resource-specific circumstances and appropriate mitigation. These buffer areas should be dedicated or a permanent conservation easement granted to the City as a condition of development approval.
Policy NR6E	Strive to conserve all "special status species" within the Planning Area. Ensure implementation of statutory protection for these species.
Policy NR6F	Support public and private efforts to establish habitat mitigation banks, habitat conservation plans, conservation easements, and other mechanisms that serve to protect sensitive habitats and species.
Policy NR6G	Ensure implementation of policies and regulations for protection of those wildlife species having statutory protection under local, State, and/or Federal laws.
Goal NR7	**Recognize the Aesthetic and Biological Values of Oak Woodlands and Other Natural Vegetation.**
Policy NR7A	Promote existing native oaks, especially valley oaks, by establishing standards for the design of development projects. The preservation of stands of trees within developments is preferred over preservation of individual trees, with the exception of special-status species and heritage trees.
Policy NR7B	Identify and establish appropriate "tree mitigation areas" to be used for the planting of native trees in concert with development project mitigation.
Goal NR8	**Recognize and Protect Habitat Linkages and Migratory Corridors.**

Table 4.3-4
Local General Plan Goals, Objectives, Policies and Implementation Measures

Policy NR8A	Maintain, where possible, the habitat linkages/wildlife corridors and sensitive habitats that are created by the open-space ("Greenway") network established by this General Plan. Require development in areas depicted as "Greenway" on the General Plan Diagram to consider corridor impacts and, where necessary, provide alternate usable links between habitat types or areas and/or provide alternate development plans that avoid the open-space network and sensitive habitats.
Policy NR8B	Maintain and preserve other natural habitat linkages and wildlife corridors in the City where feasible. Discourage development impacts to these linkages and corridors and fully mitigate associated unavoidable adverse impacts.
Goal NR9	**Promote and Facilitate Habitat Preservation, Restoration, and Enhancement.**
Policy NR9A	Encourage the acquisition, preservation, restoration, and enhancement of native vegetation with a focus on wetlands and riparian habitat that will improve the biological value and integrity of the City's natural resources. Encourage native landscape in unvegetated, manmade areas such as along streets and in abandoned lots.
Policy NR9B	Encourage education and community involvement in the protection and enhancement of local biological resources.
Goal NR10	**Preserve Areas Containing Excessive Slopes or 100-Year Floodplains as Open Space to Prevent Loss Of Life and Property Damage and to Provide Valuable Habitat and Recreational Opportunities.**
Policy NR10A	Require as a condition of development approval public dedication (in fee)of flood- prone lands adjacent to the Sacramento River and those tributary streams identified on Figure 3-3 (of the General Plan). Exceptions to this policy may be made based on: (1) the provisions of any adopted specific plan or (2) approval by the City in consideration of special circumstances unique to a flood-prone area where the extent of flooding is largely dictated by inadequate drainage improvements, where an entire parcel is constrained by floodplain, and/or where the flooding occurs within a developed area.
Policy NR10B	Preserve land publicly dedicated under Policy NR10A as open space. Development in these areas will be restricted to passive, low-impact uses that minimize removal of existing vegetation and maintain or increase the existing habitat value.
Policy NR10C	Require, as a condition of development approval, that private open-space easements be established for significant areas of non-developed lands that exceed a slope of 20 percent. Use public dedications and/or trail easements when necessary to connect these areas to existing or proposed public open space.
Goal NR11	**Promote the Preservation and Appropriate Public Use of Key Open-Space Lands within the Community.**
Policy NR11A	Develop a Comprehensive Open Space Plan that addresses the following items: • Framework for open-space lands • Role of public and private open-space lands • Agricultural land preservation • Important ecological areas • Acquisitions and management of public open-space land
City of Anderson	
Policy BRP-1	Retain the riparian vegetation along the main waterways in the City.
Policy BRP-2	Protect areas that have significant wildlife habitat resources or, if impacts cannot be avoided, require appropriate mitigation.
Policy BRP-3	Avoid soil erosion from flooding.
Policy BRP-4	Address development of sloping land with the Planned Development Combining District and the Hillside Slopes Combining District.
Policy BRP-5	Maintain high levels of water quality and quantity in rivers, streams and groundwater basins. (Health and Safety Element)

Table 4.3-4
Local General Plan Goals, Objectives, Policies and Implementation Measures

Policy BRP-6	Preserve water rights of all sources; rivers, streams, groundwater and ACID water for the benefit of the City.
Policy BRP-7	Preserve trees where possible and mitigate for the loss of trees to be removed.
Policy BRP-8	Minimize impacts to special-status species and sensitive habitats to the maximum extent feasible.
Implementation BRI-1	Treat areas adjoining Anderson Creek, Spring Gulch, Tormey Drain, Sacramento Gulch, Olinda Creek and the Sacramento River as high value resource areas providing an amenity to the City where feasible.
Implementation BRI-2	Maintain the flood damage prevention requirements while retaining biological resource values.
Implementation BRI-3	Continue application of the Hillside Slopes Combining Zone or the Planned Development Combining Zone where development is planned in areas with steep slopes.
Implementation BRI-4	Develop and implement a grading ordinance to addresses the issues of site grading, mass grading, tree removal and storm water run-off.
Implementation BRI-5	Prohibit significant reduction of water quality or quantity through implementation of erosion prevention programs. (Health and Safety Element)
Implementation BRI-6	Develop storm drain facilities that enhance biological resources.
Implementation BRI-7	Tree removal shall be compensated by the planting of street, parkland, recreational area or other urban area trees or other appropriate means of conservation.
Implementation BRI-8	Provide an educational program including signs and maps to inform the public of biological resources within the City.
Implementation BRI-9	Cooperate with Shasta County and State agencies on water related issues.
Implementation BRI-10l	If, during CEQA review of a proposed project, the Initial Study indicates that a project has the potential for significant impacts on biological resources, the City may require a biological resource assessment to evaluate the impacts and recommend appropriate mitigation measures to avoid or lessen impacts to those resources.
Implementation BRI-11	The City will develop guidelines for protection of special-status species and sensitive habitats that exist in the vicinity. The guidelines will recommend species-specific and habitat-specific mitigation measures that can be used by project developers, and by the City in approving particular projects, to avoid or lessen the impacts to biological resources.
City of Shasta Lake	
Objective FW-1	**Conserve and manage significant fish, wildlife and vegetation resources.**
Objective FW-2	**Recognize that wildlife habitat and development practices may on occasion conflict and shall need to be resolved according to policies specified in the General Plan.**
Policy FW-a	Significant wildlife habitat resources, to be determined through a comprehensive study or on a project-by-project basis, shall be classified on the General Plan Maps as Natural Resources Protection-Habitat (NH). In areas designated NH, residential units may be permitted at the density indicated on the land use map. If a project proponent agrees to cluster residential units, up to a 100 percent density bonus may be permitted if the parcels are clustered to the degree necessary to reduce the negative impacts on wildlife habitat. When the clustering option is utilized, the clustered parcels shall be sited to reduce the impacts on critical habitat elements such as wildlife watering sites, roost sites and nest concentrations. The balance of the land shall remain in open space. Recreation uses may also be conditionally permitted when identified significant adverse impacts on the habitat resource are mitigated.
Policy FW-b	Projects that may impact rare, threatened or endangered plant or animal species, as officially designated by federal and state resource agencies, shall be designed or conditioned to avoid significant adverse impacts on those species.

Table 4.3-4
Local General Plan Goals, Objectives, Policies and Implementation Measures

Policy FW-c	The significant creekside corridors in the City shall be designated on General Plan Maps.
Implementation Measure FW-(1)	Prepare a Best Practices Manual, including general development standards and resources management guidelines for all sensitive habitats found in the City. Standards and Guidelines should be developed for the following habitat types: oak woodlands, riparian woodlands, vernal pools, emergent wetlands, riverine habitats, and open water.
Implementation Measure FW-(2)	Ensure that open space corridors along creeks include protective buffers (non-development setbacks), preserve existing riparian vegetation through the environmental review process and require minimum setbacks from the top-of-bank along creeks. Specific setbacks and widths will be determined on a case by case basis. Input from resource agencies, including the Department of Fish and Game will be considered in determining the setback distance.
Implementation Measure FW-(3)	Evaluate and implement, where feasible, means to minimize or avoid interference with sensitive wildlife on the urban fringe by domestic pets.
Implementation Measure FW-(4)	Ensure that all new developments restrict the use of fencing in locations essential for wildlife movement and place structures so as to minimize interference with wildlife movement.
Implementation Measure FW-(5)	Evaluate the establishment of regulations and development standards for NH lands and lands located adjacent to NH lands, including provisions for clustering of development, waiver of minimum-lot-width requirements, narrower local streets widths, and other techniques where these would enhance protection of sensitive habitats and resources.
Implementation Measure FW-(6)	Evaluate the establishment of procedures for reviewing development applications in, or adjacent to, NH areas and for approving off-site mitigation to replace resources affected by development.
Implementation Measure FW-(7)	Protect and preserve areas identified for Natural Resources Protection- Habitat (NH). Evaluate amending the zoning ordinance to include habitat protection standards, particularly buffering, for sites abutting Natural Resources Protection-Habitat.
Implementation Measure FW-(8)	Evaluate and implement, where feasible, linking NH areas with interconnecting open space corridors, particularly those which provide access to water sources and enhance overall biological diversity of the area.
Implementation Measure FW-(9)	Evaluate the establishment of a fund for acquisition and/or maintenance of Natural Resource Protection-Habitat areas to ensure permanent protection, if tax revenues not otherwise committed can be allocated for the purpose. Also, explore the feasibility of establishing maintenance districts for ongoing management activities.
Implementation Measure FW-(10)	Coordinate with the Shasta County Mosquito Abatement District to ensure that acceptable disease vector control measures are coordinated with preservation of resources such as wetlands, recognizing the community's interest in meeting federal and state wetlands protection policies.
Implementation Measure FW-(11)	Coordinate with the Department of Fish and Game to ensure the preservation and enhancement of species of resident and anadromous fish in creeks within the City.

Local Ordinances. Some resources are afforded protection via local ordinances such as those that impacts to trees. Some local juruisdiction's municipal codes also address compliance with environmental regulations.

4.3.2 Impact Analysis

a. Methodology and Significance Thresholds. It should be noted that the following analysis is programmatic, and encompasses the broader 2015 RTP region because final designs (which also includes project components such as potential staging areas, project access, etc.) are not developed for projects included in the 2015 RTP. Thus specific impacts to biological resources are unknown. Data used for this analysis include aerial photographs, topographic

maps, the CNDDB, 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 CNDDB and CNPS online inventory. 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, CNDDB (2014), CDFW BIOS (CDFW, 2014), the California Wildlife Habitat Relationships (CWHR) (CDFW, 2008), the California Native Plant Society (CNPS) online *Inventory of Rare, Threatened, and Endangered Plants of California* (2014), and the U.S. Fish and Wildlife Service (USFWS) ECOS IPaC (2014b). The USFWS Critical Habitat Mapper (2014a) and National Wetlands Inventory (NWI; 2014c) were also queried.

Evaluation Criteria. The following thresholds are based on Appendix G of the *State CEQA Guidelines*. Impacts would be significant if the 2015 RTP would result in any of the following:

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.*

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.*

The following section presents a programmatic-level discussion of the potential for impacts to sensitive biological resources from implementation of the 2015 RTP. Impacts related to conflicts with an adopted Habitat Conservation Plan are discussed in Section 4.13, *Less than Significant Environmental Factors*.

b. Project Impacts and Mitigation Measures.

Impact B-1 Implementation of transportation improvements proposed and the land use scenario envisioned by the 2015 RTP may result in impacts to special status plant and animal species. Impacts would be Class II, *significant but mitigable*.

For the purposes of this analysis, special status plant and animal species include those described under 4.3.1.c above, as well as locally important species including protected trees. Most of the capital improvements proposed under the 2015 RTP consist of minor expansions of existing facilities that would likely not involve construction in environmentally sensitive habitat areas. As mentioned above and presented in Tables 4.3-2 and 4.3-3, there are 177 special-status species known to occur or with potential to occur within Shasta County. Thirty-one of these species (26 animal species and 5 plant species) are given high levels of protection by the federal government through listing under FESA and/or by the state government through listing under CESA or Fully Protected. The remaining species shown in Tables 4.3-2 and 4.3-3 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. Special-status species may also tend to be associated with sensitive habitats, such as riparian habitats and drainages.

Because of the broad-scale nature of the 2015 RTP, a precise, project-level analysis of the specific impacts of individual transportation projects on special status species is not possible at this time and the level of analysis is maintained at the county level. That said some special status species likely will be encountered at the locations where projects administered under the 2015 RTP would occur. Thus, it is assumed that some resources will not be avoided and that potentially significant impacts would occur.

Projects such as those that occur over or in the vicinity of rivers, creeks, and other aquatic habtiats are within suitable habitat for species such as California red-legged frog (*Rana draytonii*) (Federally Threatened and State Species of Special Concern), Shasta crayfish (*Pacifastaus fortis*) (Federally Endangered), and anadromous fishes such as the winter-run chinook salmon (*Oncorrhynchus tshawytcha*) (State and Federally Endangered).

In addition to the rivers and creeks that may be impacted, future transportation projects under the 2015 RTP could impact upland habitats and the sensitive plant and animal species that may occupy them. For example, Pacific fisher (*Martes penanti*) (Federal Candidate for listing as Threatened) may be present in forested habitats near roads where projects could occur. Several special status bat species may be affected by proposed projects where they occur under bridges, buildings or similar structures, or in native habitat adjacent to construction areas. The wide variety of habitats within the 2015 RTP area supports many species of nesting birds, including sensitive species such as the northern spotted owl (*Strix occidentalis caurina*) (Federally Threatened) and the California Species of Special Concern burrowing owl (*Athene cunicularia*). Shasta County has extensive areas with vernal pools and swales. Disturbance of these features could adversely affect vernal pool/swale obligate species such as the vernal pool tadpole shrimp (*Lepidurus packardi*) (Federallly Endangered) and slender Orcutt grass (*Orcuttia tenuis*) (Federally Threatened).

Direct impacts to special status species include injury or mortality occurring during implementation and/or operation of projects under the 2015 RTP. Direct impacts also include habitat modification and loss such that it results in the mortality or otherwise alters the foraging and breeding behavior substantially enough to cause injury. Indirect impacts could be caused by the spread of invasive non-native species that out-compete native species and/or alter habitat towards a state that is unsuitable for special status species. For example, the spread of certain weed species can reduce the biodiversity of native habitats, potentially eliminating special status plant species and reducing the availability of suitable forage and breeding sites for special status animal species. Indirect impacts could also result from increased access by humans and domestic animals, particularly in areas where trails may be planned. Increased human and domestic animal (especially dogs) presence foster the spread of non-native invasive plant species and disrupt the normal behaviors of animal species.

In addition to direct and indirect impacts that may result from transportation improvement projects, the 2015 RTP also contains a future land use scenario that envisions infill development. This land use scenario focuses future development within existing urbanized areas. As a result, encroachment into undisturbed habitat would be reduced when compared to a land use scenario that did not focus future development with existing urbanized areas. This would limit impacts to sensitive plant and animal species. However, it is possible that sensitive plant and animal species could be located on future infill project sites. As a result, infill development could impact plant and animal species that may be present on or in proximity to undeveloped infill parcels. Many special status animal species are associated with creeks even in the most densely developed urban areas. Both native and non-native trees and shrubs throughout urban areas may support nesting birds and other sensitive species. Impacts would be potentially significant.

Mitigation Measures. SRTA recommends that individual project lead agencies implement the following mitigation measures for applicable transportation projects, including but not limited to those projects identified in Table 4.3-5. These measures can and should be implemented for future land development pursuant to the 2015 RTP that would result in impacts to special status animal and plant species.

B-1(a) **Biological Resources Screening and Assessment.** Because of the programmatic nature of the 2015 RTP and specific impacts for a given project are unknown at this time, on a project-by-project basis upon completion of final design, 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 (BRA) or similar type of study to document the existing biological resources within the project footprint plus a buffer and to determine the potential impacts to those resources. The BRA 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, and other resources judged to be sensitive by local, state, and/or federal agencies. Pending the results of the BRA, 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. The following mitigation measures [B-1(b) through B-1(k)] shall be incorporated, only as applicable, into the BRA 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 BRA where suitable habitat is present.

B-1(b) **Special-Status Plant Species Surveys.** If completion of the project-specific BRA determines that special status plant species may occur on-site, surveys for special status plants shall be completed prior to any vegetation removal, grubbing, or other construction activity of each segment (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 BRA. All plant surveys shall be conducted by a qualified biologist approved by the implementing agency no more than two years before initial ground disturbance. All special status plant species identified on-site shall be mapped onto a site-specific aerial photograph and topographic map. Surveys shall be conducted in accordance with the most current protocols established by the CDFW, USFWS, and the local jurisdictions if said protocols exist. A report of the survey results shall be submitted to the implementing agency, and the CDFW and/or USFWS, as appropriate, for review and approval.

B-1(c) **Special-Status Plant Species Avoidance, Minimization, and Mitigation.** If state listed or California Rare Plant List 1B species are found during special status plant surveys [pursuant to mitigation measure B-1(b)], then the project shall be re-designed to avoid impacting these plant species, if feasible. Rare plant occurrences 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.

B-1(d) **Restoration and Monitoring.** If special status plants species cannot be avoided and will be impacted by a project implemented under the 2015 RTP, all impacts shall be mitigated at a minimum ratio of 2:1 (number of acres/individuals restored to number of acres/individuals impacted) for each species as a component of habitat restoration. A restoration plan shall be prepared and

submitted to the jurisdiction overseeing the project for approval. (Note: if a state listed plant species will be impacted, the restoration plan shall be submitted to the CDFW 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 be, at a minimum, at least 80 percent survival of container plants and 30 percent relative cover by vegetation type.
- An adaptive management program and remedial measures to address any shortcomings in meeting success criteria.
- Notification of completion of compensatory mitigation and agency confirmation.
- Contingency measures (initiating procedures, alternative locations for contingency compensatory mitigation, funding mechanism).

B-1(e) **Endangered/Threatened Species Habitat Assessment and Protocol Surveys**. Specific habitat assessment and survey protocol surveys are established for several federally and state endangered or threatened species. If the results of the BRA determine that suitable habitat may be present any such species, protocol habitat assessments/surveys shall be completed in accordance with CDFW and/or USFWS protocols prior to issuance of any construction permits. If through consultation with the CDFW and/or USFWS it is determined that protocol habitat assessments/surveys are not required, said consultation shall be

documented prior to issuance of any construction permits. Each protocol has different survey and timing requirements. The applicants for each project shall be responsible for ensuring they understand the protocol requirements.

B-1(f) **Endangered/Threatened Species Avoidance and Minimization.** The habitat requirements of endangered and threatened species throughout Shasta County are highly variable. The potential impacts from any given project implemented under the 2015 RTP are likewise highly variable. However, there are several avoidance and minimization measures that can be applied for a variety of species to reduce the potential for impact, with the final goal of no net loss of the species. The following measures may be applied to aquatic and/or terrestrial species. Project lead agencies shall select from these measures as appropriate.

- 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, if feasible, 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 CDFW and/or USFWS-approved biologist present during all initial ground disturbing/vegetation-clearing activities. Once initial ground disturbing/vegetation clearing activities have been completed, said biologist shall conduct daily pre-activity clearance surveys for endangered/threatened species. Alternatively, and upon approval of the CDFW and/or USFWS, 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 expressed permission from the CDFW and/or USFWS.
- 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. A CDFW/USFWS-approved biologist shall document the occurrence and consult with the CDFW and/or USFWS as appropriate.

- For all projects occurring in areas where endangered/ threatened species may be present and are at risk of entering the project site during construction, exclusion fencing shall be placed along the project boundaries prior to start of construction (including staging and mobilization). The placement of the fence shall be at the discretion of the CDFW/USFWS-approved biologist. This fence shall consist of solid silt fencing placed at a minimum of 3 feet above grade and 2 feet below grade and shall be attached to wooden stakes placed at intervals of not more than 5 feet. The fence shall be inspected weekly and following rain events and high wind events and shall be maintained in good working condition until all construction activities are complete.
- 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 streams 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.
- If water is to be diverted around work sites, a diversion plan shall be submitted (depending upon the species that may be present) to the CDFW, RWQCB, USFWS, and/or NMFS for their review and approval prior to the start of any construction activities (including staging and mobilization). If pumps are used, all intakes shall be completely screened with wire mesh not larger than five millimeters to prevent animals from entering the pump system.
- At the end of each workday, excavations shall be secured with cover or a ramp provided to prevent wildlife entrapment.
- All trenches, pipes, culverts or similar structures shall be inspected for animals prior to burying, capping, moving, or filling.
- The CDFW/USFWS-approved biologist shall remove invasive aquatic species such as bullfrogs and crayfish from suitable aquatic habitat whenever observed and shall dispatch them in a humane manner and dispose of properly.

- If any federally and/or state protected species are harmed, the CDFW/USFWS-approved biologist shall document the circumstances that led to harm and shall determine if project activities should cease or be altered in an effort to avoid additional harm to these species. Dead or injured special status species shall be disposed of at the discretion of the CDFW and USFWS. All incidences of harm shall be reported to the CDFW and USFWS within 48 hours.
- Considering the potential for projects to impact federal and state listed species and their habitat, SRTA and lead agencies shall contact the CDFW and USFWS to identify mitigation banks within Shasta County during development of the RTP. Upon implementation of projects included in the RTP, but on a project-by-project basis, if the results of the BRA determines that impacts to federal and state threatened or endangered species habitat are expected, lead agencies shall explore species-appropriate mitigation bank(s) servicing the county for purchase of mitigation credits.

B-1(g) **Non-Listed Special Status Animal Species Avoidance and Minimization**. Several State Species of Special Concern may be impacted by projects implemented under the 2015 RTP. The ecological requirements and potential for impacts is highly variable among these species. Depending on the species identified in the BRA, several of the measures identified under B-1(f) shall be applicable to the project. In addition, measures shall be selected from among the following to reduce the potential for impacts to non-listed special status animal species:

- For non-listed special-status terrestrial amphibians and reptiles, coverboard surveys shall be completed within three months of the start of construction. The coverboards shall be at least four feet by four feet and constructed of untreated plywood placed flat on the ground. The coverboards shall be checked by a qualified biologist once per week for each week after placement up until the start of vegetation removal. All non-listed special status and common animals found under the coverboards shall be captured and placed in five-gallon buckets for transportation to relocation sites. All relocation sites shall be reviewed by the project lead agency and shall consist of suitable habitat. Relocation sites shall be as close to the capture site as possible but far enough away to ensure the animal(s) is not harmed by construction of the project. Relocation shall occur on the same day as capture. CNDDB Field Survey Forms shall be submitted to the CFDW for all special-status animal species observed.
- Pre-construction clearance surveys shall be conducted within 14 days of the start of construction (including staging and

mobilization). The surveys shall cover the entire disturbance footprint plus a minimum 200-foot buffer, if feasible, 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 (e.g., American badger). A report of the pre-construction survey shall be submitted to the lead 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 pre-construction 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, a qualified biologist shall conduct within 30 days of the start of construction 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 roosts are located, exclusion devices such as netting shall be installed to discourage bats from occupying the site. If a roost is determined by a qualified biologist to be used by a large number of bats (large hibernaculum), bat boxes shall be installed near the project site. The number of bat boxes installed will depend on the size of the hibernaculum and shall be determined through consultations with the CDFW. If a maternity colony has become established, all construction activities shall be postponed within a 500-foot buffer around the maternity colony until it is determined by a qualified biologist that the young have dispersed. Once it has been determined that the roost is clear of bats, the roost shall be removed immediately.

B-1(h) **Preconstruction Surveys for Nesting Birds for Construction Occurring within Nesting Season.** For projects that may result in tree felling or removal of trees or vegetation that may contain a nesting bird, if feasible, construction activities should occur generally between September 16 to January 31 (thus outside of the nesting season). However, if construction activities must during the nesting season (generally February 1 to September 15), surveys for nesting birds covered by the California Fish and Game Code and the Migratory Bird Treaty Act shall be conducted by a

qualified biologist no more than 14 days prior to vegetation removal. The surveys shall include the entire segment disturbance area plus a 200-foot buffer around the site. If active nests are located, all construction work shall be conducted outside a buffer zone from the nest to be determined by the qualified biologist. The buffer shall be a minimum of 50 feet for non-raptor bird species and at least 150 feet for raptor species. Larger buffers may be required depending upon the status of the nest and the construction activities occurring in the vicinity of the nest. The buffer area(s) shall be closed to all construction personnel and equipment until the adults and young are no longer reliant on the nest site. A qualified biologist shall confirm that breeding/nesting is completed and young have fledged the nest prior to removal of the buffer. A report of these preconstruction nesting bird surveys shall be submitted to the lead agency to document compliance.

B-1(i) **Worker Environmental Awareness Program (WEAP)**. Prior to initiation of construction activities for applicable projects (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 provided by the trainer indicating they have attended the WEAP and understand the information presented to them. The form shall be submitted to the lead agency to document compliance.

B-1(j) **Tree Protection.** If it is determined that construction may impact trees protected by local agencies, the project lead agency shall procure all necessary tree removal permits. A certified arborist shall develop a tree protection and replacement plan as appropriate. The plan shall include, but would not be limited to, an inventory of trees to within the construction site, setbacks from trees and protective fencing, restrictions regarding grading and paving near trees, direction regarding pruning and digging within root zone of trees, and requirements for replacement and maintenance of trees. If protected trees will be removed, replacement tree plantings of like species in accordance with local agency standards, but at a minimum ratio of 2:1 (trees planted to

trees impacted), shall be installed on-site or at an approved off-site location and a restoration and monitoring program shall be developed in accordance with B-1(d) and shall be implemented for a minimum of seven years or until stasis has been determined by certified arborist. If a protected tree shall be encroached upon but not removed, a certified arborist shall be present to oversee all trimming of roots and branches.

Significance After Mitigation. Mitigation measures B-1(a) through (j) would assure that impacts to special status species would be less than significant because the measures require that specific analyses and studies are performed to identify and evaluate project impacts to special status species potentially affected by projects implemented under the 2015 RTP. Compliance with the above mitigation measures and all existing state, local and/or federal regulations would reduce impacts to a less than significant level.

Impact B-2 Implementation of transportation improvements proposed and the land use scenario envisioned by the 2015 RTP may result in impacts to sensitive habitats, including federally protected wetlands. This impact would be Class II, *significant but mitigable*.

Because of the programmatic nature of the 2015 RTP, a precise, project-level analysis of the specific impacts associated with individual transportation projects on sensitive habitats is not possible at this time. However, projects implemented under the 2015 RTP may have the potential to impact sensitive habitats. The extent and severity of the impacts is not known at this time, but some examples of potential impacts include, but are not limited to, construction and reconstruction/maintenance of bridges. These types of projects would have potential to impact riparian areas, as well as water bodies including canals.

In addition, projects in the vicinity of rivers and creeks may involve development along riparian corridors. Riparian areas provide wildlife habitat, and movement corridors, enabling both terrestrial and aquatic organisms to move along river systems between areas of suitable habitat. Construction of the proposed facilities could have both direct impacts associated with the disturbance of riparian flora and fauna and indirect impacts caused by increased erosion and sedimentation. This could adversely affect downstream water quality.

Direct impacts to sensitive habitats include loss of habitat during construction of the project. Indirect impacts include habitat degradation caused by the introduction of invasive plant species incidentally from construction equipment and through selection of invasive landscape plants, as well as erosion of disturbed areas.

The future land use scenario envisioned by the 2015 RTP would encourage infill development. This land use scenario focuses future development within existing urbanized areas. As a result, future development would likely result in only limited impacts to riparian habitat, drainages or other sensitive habitats, though some parcels that have been relatively free of ground disturbance may contain remnants of sensitive native habitats such as valley sink scrub. Furthermore, some areas of disturbed habitats, such as annual grasslands, may be considered

sensitive due to the unique assemblage of native plants, such as areas dominated by native wildflowers. Impacts would be potentially significant.

Mitigation Measures. SRTA recommends that individual project lead agencies implement the following mitigation measures for applicable transportation projects, including but not limited to those projects identified in Table 4.3-5. These measures can and should be implemented for future development pursuant to the 2015 RTP that would result in impacts to sensitive habitats. Mitigation measures B-2(c) and B-2(d) also address the potential for impacts due to invasive plant species.

B-2(a) **Jurisdictional Delineation**. If projects implemented under the 2015 RTP occur within or adjacent to wetland, drainages, riparian habitats, or other areas that may fall under the jurisdiction of the CDFW, USACE, and/or RWQCB, a qualified biologist shall complete 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 preliminary jurisdictional delineation report that shall be submitted to the implementing agency, USACE, RWQCB, and CDFW, as appropriate, for review and approval. If jurisdictional areas are expected to be impacted, then the RWQCB would require a Waste Discharge Requirements (WDR) permit and/or Section 401 Water Quality Certification (depending upon whether or not the feature falls under federal jurisdiction). If CDFW asserts its jurisdictional authority, then a Streambed Alteration Agreement pursuant to Section 1600 *et seq.* of the California Fish and Game Code would also be required prior to construction within the areas of CDFW jurisdiction. If the USACE asserts its authority, then a permit pursuant to Section 404 of the Clean Water Act would likely be required.

B-2(b) **Wetland and Riparian Habitat Restored.** Impacts to jurisdictional wetland and riparian habitat shall be mitigated at a minimum ratio of 2:1 (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 mitigation measure B-1(d) above and shall be implemented for no less than five years after construction of the segment, or until the lead agency and/or the permitting authority (e.g., CDFW or USACE) has determined that restoration has been successful. Alternately, mitigation may occur through the purchase of credits at a USACE approved mitigation bank or contribution to the USACE in-lieu fee program within the USACE Sacramento District.

B-2(c) **Landscaping Plan.** If landscaping is proposed for projects occurring within or adjacent to sensitive habitats, 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 Lists 1, 2, and 4 shall not be permitted. Species selected for planting shall be similar to those species found in adjacent native habitats.

B-2(d) **Invasive Weed Prevention and Management Program.** Prior to start of construction for projects occurring within or adjacent to sensitive 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. A list of target species shall be included, along with measures for early detection and eradication. 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.

Significance After Mitigation. Mitigation measures B-2(a) through (d) would assure that substantial adverse changes to wetland resources would be less than significant because measures would be taken to either avoid the impacts or minimize the impacts. Compliance with the above mitigation measures and existing state, local and/or federal regulations would reduce impacts to a less than significant level.

Impact B-3 **Implementation of transportation improvements proposed and the land use scenario envisioned by the 2015 RTP may impact wildlife movement, including fish migration, and/or impede the use of a native wildlife nursery. This impact would be Class I, *significant and unavoidable*.**

Because of the programmatic nature of the 2015 RTP, a precise, project-level analysis of the specific impacts of individual transportation projects on wildlife movement and nurseries is not possible at this time. In general, the capital improvement projects envisioned in the 2015 RTP 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. Several individual projects would; however, increase human activity in areas where sensitive biological resources could occur. In particular, new road construction projects could increase human activity in the vicinity of riparian areas, wildlife nurseries or corridors, and potentially sensitive habitats, if present.

Direct impacts to wildlife include increased noise and human presence during construction, as well as increased trash that may attract predators to the project site and discourage wildlife use of surrounding natural habitat. Indirect impacts include invasion of natural habitats by non-native species and increased presence of humans and domestic animals over the long-term. In addition, transportation improvement projects could include new segments of fencing or walls that could hinder wildlife movement.

The future land use scenario envisioned by the 2015 RTP would encourage infill development. This land use scenario focuses future development within existing urbanized areas. The majority of the future development projects would be on parcels that provide limited or no wildlife movement. However, even the elimination of limited wildlife movement could further isolate areas of native habitat occupied by both sensitive and common native wildlife species. Impacts related to transportation projects and impacts related to the future land use scenario envisioned by the 2015 RTP would be potentially significant.

Mitigation Measures. SRTA recommends that individual project lead agencies implement the following mitigation measures for applicable transportation projects, including but not limited to those projects identified in Table 4.3-5. These measures can and should be implemented for future development pursuant to the 2015 RTP that would impact wildlife movement, including fish migration, and/or impede the use of native wildlife nursery.

B-3(a) **Fence and Lighting Design.** All projects including long segments of fencing and lighting shall be designed to minimize impacts to wildlife. Fencing shall not block wildlife movement through riparian or other natural habitat. Where fencing is required for public safety concerns, the fence 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.

If fencing 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.

Similarly, lighting installed as part of any project shall be designed to be minimally disruptive to wildlife. This may be accomplished through the use of hoods to direct light away from natural habitat, using low intensity lighting, and using as few lights as necessary to achieve the goals of the project.

B-3 (b) **Construction Best Management Practices.** The following construction Best Management Practices (BMPs) shall be incorporated into all grading and construction plans:

- Designation of a 20-mile-per-hour speed limit in all construction areas.
- All vehicles and equipment shall be parked on pavement, existing roads, and previously disturbed areas, and clearing of vegetation for vehicle access shall be avoided to the greatest extent feasible.
- The number of access routes, number and size of staging areas, and the total area of the activity shall be limited to the minimum necessary to achieve the goal of the project.
- Designation of equipment washout and fueling areas to be located within the limits of grading at a minimum of 100 feet from waters, wetlands, or other sensitive resources as identified by a qualified biologist. Washout areas shall be designed to fully contain polluted water and materials for subsequent removal from the site.
- Daily construction work schedules should be limited to daylight hours only, to the extent feasible.
- Mufflers shall be used on all construction equipment and vehicles shall be in good operating condition.
- Drip pans shall be placed under all stationary vehicles and mechanical equipment.
- 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. With implementation of the above mitigation measures, potential impacts to wildlife movement and nursery sites would be reduced, but disruption to wildlife movement is still anticipated. Thus, this impact would remain Class I, *significant and unavoidable*.

c. Specific RTP Projects That May Result in Impacts. Table 4.3-5 identifies those projects that may create biological resource impacts, as discussed in Section 4.3.2.b. Because of the programmatic nature of the 2015 RTP specific impacts to biological resources are not known at this time. The impacts for the individual projects listed below are those that have potential to occur given this level of analysis. Additional specific analyses will need to be conducted as the individual projects are implemented and final designs completed in order to determine the actual magnitude of impact, if any. Implementation of Mitigation Measure B-1(a) would confirm the impacts listed below for each individual project based on final design and conditions on site at the time of project implementation. Upon implementation of mitigation measure B-1(a), a given project may be determined to not necessarily have impacts on biological resources. As such, mitigation measures discussed above could apply to these specific projects.

Table 4.3-5
2015 RTP Projects that May Result in Biological Resources Impacts

SRTA Project Name	Project Number	Project	Location	Impact	Description of Impact
Caltrans Operations	6	Interstate 5 - upgrade MBGR and possibly flatten some slopes	Shasta County	B-1, B-2, B-3	Direct and indirect impacts to special-status species, sensitive habitats including wetlands, and breeding/nursery habitat or migratory/dispersal corridors
Caltrans Bridges	3	Interstate 5 - replace superstructure (or bridge) at Sims Road UC	Shasta County	B-1, B-2, B-3	Direct and indirect impacts to special-status species, sensitive habitats including wetlands, and breeding/nursery habitat or migratory/dispersal corridors
Caltrans Bridges	2	Interstate 5 - replace bridge at Craig View Drive	Shasta County	B-1, B-2, B-3	Direct and indirect impacts to special-status species, sensitive habitats including wetlands, and breeding/nursery habitat or migratory/dispersal corridors
Shasta County Bridges	2	Interstate 5 - replace Pit River bridge	Shasta County	B-1, B-2, B-3	Direct and indirect impacts to special-status species, sensitive habitats including wetlands, and breeding/nursery habitat or migratory/dispersal corridors
Regional Capacity	2	Interstate 5 - Redding to Anderson 6-lane Phase I (0.2 mil south of North Street to Knighton Road Overcrossing)	Shasta County, Anderson	B-1, B-2, B-3	Direct and indirect impacts to special-status species, sensitive habitats including wetlands, and breeding/nursery habitat or migratory/dispersal corridors
Caltrans Operations	13	SR 299 – rehabilitate roadway	Burney	B-1, B-2, B-3	Direct and indirect impacts to special-status species, sensitive habitats including wetlands, and breeding/nursery habitat or migratory/dispersal corridors
Shasta County Bridges	2	Cassel Fall River Road – replace bridge	Fall River Mills	B-1, B-2, B-3	Direct and indirect impacts to special-status species, sensitive habitats including wetlands, and breeding/nursery habitat or migratory/dispersal corridors
Shasta County Bridges	21	Main Street – replace bridge	Castella	B-1, B-2, B-3	Direct and indirect impacts to special-status species, sensitive habitats including wetlands, and breeding/nursery habitat or migratory/dispersal corridors

Table 4.3-5
2015 RTP Projects that May Result in Biological Resources Impacts

SRTA Project Name	Project Number	Project	Location	Impact	Description of Impact
Redding AT	2	Multi-use trail, pedestrian/bike improvements: Riverside Trail, From Sacramento River Trail, To Center St	Redding	B-1, B-2, B-3	Direct and indirect impacts to special-status species, sensitive habitats including wetlands, and breeding/nursery habitat or migratory/dispersal corridors
Caltrans Bridges	4	SR 44 – seismic retrofit at Cow Creek	Palo Cedro	B-1, B-2, B-3	Direct and indirect impacts to special-status species, sensitive habitats including wetlands, and breeding/nursery habitat or migratory/dispersal corridors

4.4 CULTURAL RESOURCES

4.4.1 Setting

a. Prehistoric Background. Shasta County is located in the northern Sacramento Valley with the mountains of the North Coast Range to the west, the Klamath Mountains to the north, the volcanic deposits of the Cascade Range grading into the Sierra Nevada in the east. Canyons of the Sacramento River and its tributaries are also prevalent, as are intermountain valleys, especially in the northeast portion of the county. At the time of Euroamerican contact less than 200 years ago, five tribal groups resided in the county, each in its own territory, with territories shifting periodically. They were the Achomawi (a group of the Pit River Indians), the Atsugewi (a group of the Hat Creek Indians), the Okwanuchu (a group of the Shasta Nation), the Wintu, and the Yana. The Yana and Okwanuchu spoke Hokan, while the Achomawi, Atsugewi and Wintu spoke Penutian.

All of these tribes were hunter-gatherers, subsisting on acorns, salmon and other fish, game animals, bulbs, tubers, berries, nuts, waterfowl, bird eggs, and other locally available foods. So crucial was salmon as a food resource to the Wintu and other groups of Northern California natives that the availability of this food source has been used as an important variable in assessing prehistoric population levels, and is considered a major determinant of site distribution among various other California Indian groups. Deer also constituted a major dietary staple, a source of protein that was both abundant and available year-round. Acorns constituted the third major staple as a food resource seasonally abundant and storable.

b. Historic Background. Some of the Spanish and Mexican expeditions to California may have visited and made brief stays in Northern California. John Work's fur trapping expedition through central California in 1832–33, the best documented of the initial forays into the Redding area, introduced Eurasian communicable diseases to the Native inhabitants, which turned out to be devastating to Wintu culture and society. It is believed this epidemic was so severe and deadly it greatly reduced tribal populations and made the Gold Rush and subsequent white settlement easier to accomplish.

The period between the first incursions of Euroamerican people into Shasta County and the Gold Rush was characterized by the establishments of large land grants from Mexico. In 1844, Pierson B. Reading, Lansford B. Hastings, and William Bennitz had arrived and had all applied for land grants. Of the three, Reading's and Bennitz' requests were granted. Hasting's request for all the upper Sacramento River Canyon area was denied because he refused to give up his United States citizenship to become a Mexican citizen (one of the stipulations required in order to receive a land grant). Bennitz' land grant was never confirmed because he never claimed it. Pierson B. Reading's request was granted and he became the recipient of the 26,632-acre Rancho Buena Ventura land grant, which extended from Cottonwood Creek on the south to Salt Creek on the north, and extended approximately three miles west of the Sacramento River the length of the grant. Reading settled on his grant in 1847, and when he did, became the second known white resident in what was to become Shasta County.

The next major incursion by people of Euroamerican descent occurred during the Gold Rush period, which in Shasta County began with Reading's 1848 discovery of gold south of current-

day Redding along Clear Creek. Mineral deposits along many of the streams in north Redding and streams located both to the east and west of the Sacramento River were intensively mined on a fairly small scale through the end of the nineteenth century. Just at the turn of the century, however, Shasta County began to experience accelerated population and economic growth as the mineral resources were increasingly mined with mechanized equipment. Hundreds of "wildcat" operations emerged to exploit low-grade copper, gold, and silver deposits.

As the Gold Rush diminished, many turned their attention to farming, ranching and lumbering on the eastern side of the Sacramento River, gradually spreading further east. Parkville and Shingletown were founded in the early 1850s; Shingletown was first called Shingle Camp and named for the many shake-making shingle camps in the area. Millville was settled in 1853 while Clarkville was established in 1856. Fall City (later Fall River Mills) was first settled in the late 1850s, but because of ongoing Indian hostilities, many left and serious immigration didn't begin again until nearly 1870.

Mining stimulated the growth of other industries as well, and soon led to a burgeoning Shasta County population. Subsequently, during the 1930s, a number of dragline and bucket-line dredges were active in the Redding District, particularly along Clear Creek and Olney Creek south of Redding and the present project area. Extensive drift mining was undertaken at various locales in the vicinity of Boulder and Sulphur creeks, however, and within exposed areas above and on the east side of the Sacramento River in the general vicinity.

c. Paleontological Resources Background. 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.

Paleontologists examine invertebrate fossil sites differently than vertebrate fossil sites. 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 northern California. The most plentiful invertebrate fossil sites in Shasta County are found in the county's lower-elevation foothills on uplifted upper Triassic limestone formations in the vicinity of Shasta Lake, and contain extensive marine fossils. Vertebrate fossil sites are usually found in non-marine, continental deposits. Vertebrate fossils of continental material are usually rare, sporadic, and localized. The most significant vertebrate fossil sites in Shasta County are Pleistocene collections found in Samwell Cave (a limestone cave) on the Shasta-Trinity National Forest; and in lava tubes with collapsed roofs, which acted as pit traps, in the volcanic eastern portions of the county.

d. Existing Cultural and Historic Resources. Information was obtained from the State Office of Historic Preservation and the Shasta County General Plan (Shasta County 2004) to compile a listing of recognized significant resources. 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 Effects under project-level analysis of RTP transportation projects.

Table 4.4-1 presents sites of federal-, state-, and county-designated historical resources in Shasta County. Included in the table are sites listed on the National Register of Historic Places, sites designated as California State Historic Landmarks, and those that are considered historic sites of local importance by Shasta County. Due to the sensitivity of many prehistoric, ethnohistoric, and historic archaeological sites, the resources listed in the following table include primarily those whose locations are available to the general public. In Shasta County, there are 30 National Register listings, 19 California Historical Landmarks, and 16 locally significant resources designated by Shasta County.

Table 4.4-1
Shasta County Historical Resources

Resource Name	Location	National Register	State Landmark	City/County Historical Site
Afterthought Mine	SR-299 16 mi E of Redding			X
Archaeological sites (multiple)	Lassen National Forest – locations restricted	X		
Archaeological sites (multiple)	Shasta-Trinity National Forest – locations restricted	X		
Balls Ferry	Sacramento River Bridge and Ash Creek Rd., 5.4 mi SE of Anderson			X
Bass Hill	Bridge Bay Resort parking lot, 6 mi N of Central Valley		X	
Battle Creek Bridge	Battle Creek on Gover Road, 7.5 mi SE of Anderson.			X
Battle Rock	Castle Crags State Park, 1 mi W of I-5 (PM 63.6) near Castella		X	
Bell's Bridge	SW corner of old Hwy 99 (SR-273) and Clear Creek Rd, Redding		X	
Benton Tract Site	Redding (location restricted)	X		
Briggsville Township	Approximately 1 mi E of Horsetown-Clear Creek Preserve on Clear Cr Rd			X
Cascade Theater	1731 Market Street, Redding	X		
Clear Creek District	Clear Creek from SR-273 upstream to Clear Creek Road Bridge		X	
Cottonwood Historic District	Adjacent to old Hwy 99, Cottonwood	X		
Cow Creek Petroglyphs	Location restricted	X		
Dersch Homestead	Dersch Rd at Bear Creek, 10 mi E of Anderson		X	
Dersch-Taylor Petroglyphs	Location restricted	X		
Diestelhorst Bridge	Sacramento River next to Lake Redding Br (Benton Dr), Redding			X

Table 4.4-1
Shasta County Historical Resources

Resource Name	Location	National Register	State Landmark	City/County Historical Site
Dog Creek Bridge (Harlan D. Miller Memorial Bridge)	Fender's Ferry Rd 0.5 mi SE of I-5 Delta/Vollmers Exit		X	
Edward Frisbie House	1246 East Street, Redding	X		
Fall River Valley's First School Site	On SR-299 (PM 99.0), 0.4 mi W of Lassen Co line, 3.6 mi E of McArthur		X	
Father Rinaldi's Foundation of Catholic Basilica of 1856	NW corner of intersection of Red Bluff Rd and Crocker Alley, Old Shasta		X	
Fort Crook	SE corner of McArthur Rd (Co. A-19) and Soldier Mtn Dr, 2 mi NW of Glenburn		X	
Fort Reading	0.6 mi E of intersection of Deschutes and Dersch Rds, 6 mi NE of Anderson		X	
French Gulch Historic District	3 mi E of SR-299 (PM 8.6) on Trinity Hill Rd, French Gulch	X	X	
Gladstone Houses	12962-12964 Cline Gulch Rd, French Gulch	X		
Horseshoe Lake Ranger Station	N of Chester in Lassen Volcanic National Park	X		
Horsetown	Horsetown-Clear Creek Preserve on Clear Creek Road 6.8 mi E of SR-273			X
Igo	Placer Rd 8 mi W of Redding			X
Iron Mountain Mine, Keswick Smelter	NW of Redding on Iron Mountain Rd			X
Lake Britton Archaeological District	Location restricted	X		
Lassen NP Entrance Station/Residence	SR-89, NPS-1	X		
Lassen Volcanic NP Historic District	Lassen Volcanic National Park	X		
Lockhart Ferry	On SR-299 (PM 91.3), NW of Long St, 0.3 mi W of Fall River Mills		X	
Loomis Visitor Center, Building 43	Lassen Volcanic National Park	X		
Lorenz Hotel	1509 Yuba Street, Redding	X		
Manzanita Lake Naturalist's Services Historic District	Lassen Volcanic National Park	X		
McEllroy Military Road Crossing	SR-299 E of Redding			X
Millville	Old Hwy 44 17 mi E of Redding			X
Nobles' Pass Route	Lassen Volcanic National Park, 3.7 mi E of NW entrance on SR 44	X	X	

Table 4.4-1
Shasta County Historical Resources

Resource Name	Location	National Register	State Landmark	City/County Historical Site
Nobles' Trail Twin Bridges	Near intersection of Dersch Rd and Millville Plains Rd, 5 mi E of Anderson			X
Old California-Oregon Road	NW corner of SR-99 (PM 7.12) and Spring Gulch Rd, 1.7 mi N of Anderson		X	X
Old City Hall	1313 Market St, Redding	X		
Olsen Petroglyphs	Location restricted	X		
Phillips Brothers Mill	Approx. 30 mi NE of Redding near Oak Run	X		
Piety Hill	Approx. 0.25 mi E of Igo			X
Pine Street School	1135 Pine Street, Redding	X		
Pioneer Baby's Grave	0.75 mi W of Old Shasta on SR-299		X	
Prospect Peak Fire Lookout	NE of Mineral in Lassen Volcanic National Park	X		
Reading Adobe	213 Adobe Road, 5.8 mi E of Cottonwood	X	X	
Reading's Bar	Clear Creek Road at Clear Creek Bridge 6.9 miles E of SR 273		X	
Reid Mine/Old Diggins	Summit City			X
Shasta 47	Redding, Sacramento River			X
Shasta State Historic Park	SR 299, Old Shasta	X	X	
Shingletown	SR 44, 30 mi E of Redding			X
Southern's Hotel & Stage Station	Old SR 99, 6.9 mi S of Castella, 0.7 mi SW of I5 Sims exit		X	
Squaw Creek Archaeological Site	Location restricted	X		
Summit Lake Ranger Station	NE of Mineral in Lassen Volcanic National Park	X		
Swasey Discontiguous Archaeological District	Location restricted	X		
Texas Springs	Texas Springs Road			X
Tower House – Soo-Yeh-Choo-Pus	Location restricted	X		
Tower House District	SR 299, Whiskeytown NRA	X		
Volta Powerhouse	Between Shingletown and Manton			X

Table 4.4-1
Shasta County Historical Resources

Resource Name	Location	National Register	State Landmark	City/County Historical Site
Warner Valley Ranger Station	NW of Chester in Lassen Volcanic National Park	X		
Whiskeytown	Near intersection of Whiskey Creek Rd and SR-299, 11.3 mi W of Redding (inundated)		X	

Sources: California Office of Historic Preservation, website, 2014; National Park Service - National Register of Historic Places Program: Research, website, 2014, Shasta County Historical Society, website, 2014, Shasta County General Plan 2004

Locations restricted: Information regarding the locations of these resources is on file with the Cultural Resources Section of the California Department of Parks and Recreation

Table 4.4-2 lists in-service bridges in the Caltrans Bridge Inventory that may have historical significance and might be eligible for inclusion in the NRHP, pending further evaluation.

Table 4.4-2
Caltrans Historic Bridge Inventory

LOCAL AGENCY BRIDGES				
Bridge Number	**Bridge Name**	**Location**	**Historical Significance**	**Year Built**
06C0081	Cottonwood Creek Bridge	Shasta-Tehama Co. Line	3. Possibly eligible for NRHP	2003
06C0063	Fall River Bridge	Fall River Mills	4. Significance not determined	1993
06C0082	Main Street UP	0.3 mi N Tehama Co. Line	4. Significance not determined	1931
06C0143	Quartz Hill Road UP	0.5 mi W of SR-273	4. Significance not determined	1939
06C0165	ACID Flume OC	0.6 MI W of SR-273	4. Significance not determined	1918
06C0166	ACID Flume OC	0.4 MI W of SR-273	4. Significance not determined	1900
06C0200	Willow Creek Bridge	on SR-299	4. Significance not determined	1992
06C0205	Fall River Bridge	1/2 mi N of McArthur Rd	4. Significance not determined	1994
STATE AGENCY BRIDGES				
Bridge Number	**Bridge Name**	**Location**	**Historical Significance**	**Year Built**
060021	Shasta Lake - Pit River BOH	02-SHA-005-R28.14	2. Bridge is eligible for NRHP	1941
060096	Whiskey Creek Bridge	02-SHA-299-14.17	2. Bridge is eligible for NRHP	1961
060195Y	Shotgun Creek Bridge	02-SHA-005-R55.59	2. Bridge is eligible for NRHP	1915
060013	South Redding UP	02-SHA-273-14.77-RDG	4. Significance not determined	1938
060056	Lake Britton UP	02-SHA-089-29.34	4. Significance not determined	1955
060090	Clear Creek Overflow	02-SHA-273-11.24-RDG	4. Significance not determined	1920
060094	Coram UP	02-SHA-151-5.51	4. Significance not determined	1938
060176	Polard Flat OC	02-SHA-005-R50.81	4. Significance not determined	1991

Source: Caltrans Historic Bridge Inventory website, 2014.
Historic significance designations:
1 – Listed on the National Register of Historic Places.
2 – Eligible for National Register listing.
3 – May be eligible for National Register listing.
4 – Unevaluated. (Generally, Category 4 bridges constructed before 1960 are associated with properties that have not yet been evaluated, such as railroads, canals, or potentially eligible historic roads.)
5 – Ineligible for National Register listing

e. 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 National Register of Historic Places (NHRP) or the California Register of Historical Resources (CRHR), it must meet one or more identified criteria of significance. Resources may qualify for NRHP listing if one or more of the following criteria are met:

1) *The resource is associated with events that have made a significant contribution to the broad patterns of our history.*
2) *The resource is associated with the lives of persons important in our past.*
3) *The resource 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.*
4) *The resource has yielded, or may be likely to yield, information important in prehistory or history.*

4.4.2 Impact Analysis

a. Methodology and Significance Thresholds. Listings of historical resources in Shasta County were obtained from State Office of Historic Preservation and the Shasta County General Plan. Potential areas of disturbance associated with the 2015 RTP were then compared to the identified historical sites on these lists to determine whether an impact may occur.

The significance of a cultural resource, and subsequently the significance of any impacts, is determined by whether or not that resource can increase our knowledge of the past. The determining factors are site content and degree of preservation. Where the significance of a site is unknown, it is presumed to be significant for the purposes of this EIR. A finding of archaeological significance follows the criteria established in the *State CEQA Guidelines*.

According to Appendix G of the CEQA Guidelines, a proposed project would have significant impacts on cultural resources if the project would have one or more of the following effects:

a) *The project will cause a substantial adverse change in the significance of a historical resource as defined in § 15064.5.*
b) *The project will cause a substantial adverse change in the significant of an archaeological resource pursuant to § 15064.5.*
c) *The project will directly or indirectly destroy a unique paleontological resource or site or unique geologic feature.*
d) *The project will 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 impacts associated with the projects anticipated under the 2015 RTP. Table 4.4-3 in Section 4.4.2.c. summarizes specific 2015 RTP projects that could result in the types of impacts discussed below.

Impact CR-1 Implementation of proposed transportation improvements and the land use scenario envisioned by the 2015 RTP could disturb known and unknown cultural resources. Impacts to archaeological and paleontological resources would be Class II, *significant but mitigable* and impacts to historical resources would be Class I, *significant and unavoidable.*

Archaeological and Paleontological Resources. It is known that paleontological resources and archaeological resources are present throughout Shasta County. Therefore, it is possible to encounter known and unknown archaeological and paleontological resources or unique geologic features as a result of implementation of transportation improvement projects pursuant to the 2015 RTP. Many of the improvements proposed under the 2015 RTP consist of minor expansions of existing facilities that would not involve construction in previously undisturbed areas. However, depending on the location and extent of the proposed improvement and ground disturbance, known and/or unknown cultural resources could be impacted. Representative projects that may disrupt previously undisturbed areas are listed in Table 4.4-3. The projects listed in this table were chosen based on potential to include new infrastructure. It is possible that some of the proposed roadway or bridge widening or extension projects, beyond those listed in Table 4.4-3, would adversely impact archaeological and paleontological resources. In particular, construction activities may disturb the resources, thereby exposing them to potential vandalism, or causing them to be displaced from the original context and integrity. Specific analysis will be required as individual projects are implemented.

Historic Resources. With regard to known significant historic resources, the location and nature of the proposed 2015 RTP projects listed in Section 2.0 *Project Description* were evaluated relative to the location of the historic properties listed in tables 4.4-1 and 4.4-2. It has been determined that none of the proposed improvement projects would affect any Nationally registered resources, California Historical Landmarks, or Shasta County Landmarks. In each case, the proposed improvements are not located adjacent to a designated historic resource.

In addition, the 2015 RTP also contains a future land use scenario that envisions infill development and focuses future development within existing urbanized areas consistent with local General Plan land use designations. There are no specific development projects pursuant to the land use scenario envisioned by the 2015 RTP identified at this time, so a site specific evaluation is not possible.

However, because future infill development 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 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 Shasta County 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, 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.

The nature of potential impacts to archaeological and paleontological resources cannot be fully evaluated at this point since the specific "Area of Potential Effects" for each improvement project has not yet been defined. However, many of the projects included in the 2015 RTP will require an independent review at which time the significance of the impact can be precisely determined. As discussed above, the proposed transportation improvements envisioned by the 2015 RTP might impact known and/or unknown cultural resources. Impacts to archaeological and paleontological resources would be potentially significant.

As discussed above, impacts to historic resources would be potentially significant because future transportation improvements could directly or indirectly impact historic structures. The nature of potential impacts cannot be fully evaluated at this point because the precise characteristics of future improvements are not known. Nonetheless, the potential for historic structures to be impacted remains.

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.

In order to provide protection of cultural resources, SRTA recommends that individual project lead agencies implement the following mitigation measures for applicable transportation projects, including but not limited to those projects identified in Table 4.4-3:

CR-1(a) The individual project lead agency of a 2015 RTP project involving earth disturbance, the installation of pole signage or lighting, or construction of permanent above ground structures or roadways shall ensure that the following elements are included in the project's individual environmental review:

1. Prior to construction, a map defining the Area of Potential Effects (APE) shall be prepared on a project by project basis for 2015 RTP improvements which involve earth disturbance, the installation of pole signage or lighting, or construction of permanent above ground structures. This map will indicate the areas of primary and secondary disturbance associated with construction and operation of the facility and will help in determining whether known archaeological, paleontological or historical resources are located within the impact zone.
2. A preliminary study of each project area, as defined in the APE, shall be completed to determine whether or not the project area has been studied under an earlier investigation, and to determine the impacts of the previous project.
3. If the results of the preliminary studies indicate additional studies are necessary; development of field studies and/or other documentary research shall be developed and completed (Phase I studies). Negative results would result in no additional studies for the project area.
4. Based on positive results of the Phase I studies, an evaluation of identified resources shall be completed to determine the potential eligibility/ significance of the resources (Phase II studies).
5. Based on the evaluations of the Phase II studies, if necessary Phase II mitigation studies shall be coordinated with the Office of Historic Preservation, as the research design will require review and approval from the OHP. In the case of prehistoric or Native American related resources, the Native American Heritage Commission and/or local representatives of the Native American population shall be contacted and permitted to respond to the testing/mitigation programs.

CR-1(b) If development of the proposed improvement requires the presence of an archaeological, Native American, or paleontological monitor, the individual project lead agency shall ensure that a Native American monitor, certified archaeologist, and/or certified paleontologist, as applicable, monitors the grading and/or other initial ground altering activities. The

schedule and extent of the monitoring will depend on the grading schedule and/or extent of the ground alterations. This requirement can be accomplished through placement of conditions on the project by the local jurisdiction during individual environmental review.

CR-1(c) The individual project lead agency shall ensure that materials recovered over the course of any given improvement are adequately cleaned, labeled, and curated at a recognized repository. This requirement can be accomplished through placement of conditions on the project by the local jurisdiction during individual environmental review.

CR-1(d) The individual project lead agency shall ensure that mitigation for potential impacts to significant cultural resources includes one or more of the following:

- Realign the project right-of-way (avoidance; the most preferable method).
- Cap the site and leave it undisturbed.
- Address structural remains with respect to NRHP guidelines (Phase III studies).
- Relocate structures per NRHP guidelines.
- Create interpretative facilities at the site.
- Develop measures to prevent vandalism.

These measures can be accomplished through placement of conditions on the project by the local jurisdiction during individual environmental review.

Significance After Mitigation. Implementation of the above measures would reduce potential impacts to archaeological and paleontological resources to a less than significant level. Impacts related to historic structures would remain significant and unavoidable because redevelopment or demolition that may be required to implement transportation improvements may result in the permanent loss of historic structures.

c. Specific 2015 RTP Projects That May Result in Impacts. Table 4.4-3 identifies representative projects with the potential to cause or contribute to direct or indirect impacts to cultural resources such as those discussed in Section 4.4.2.b above. These projects were chosen based on their scope and potential to include the development of new transportation infrastructure. While many projects have the potential to impact cultural resources, those requiring substantial ground disturbance in undisturbed areas have greater potential to impact prehistoric archaeological resources. Projects located in urban infill or previously disturbed areas have a greater potential to impact historic built environment resources, as well as historic archaeological resources in older developed areas. Additional specific analysis will be required as individual projects are implemented to determine the actual magnitude of impact. Mitigation measures discussed above would apply to these specific projects.

Table 4.4-3
2015 RTP/SCS Projects that May Result in Cultural Resources Impacts

SRTA Project Name	Project Number	Project	Location	Impact	Description of Impact
Catrans Bridges	1	Route 44, Begin PM 59.62, 06-0084 Hat Creek, Bridge Replacement	Shasta County	CR-1	Potential earth disturbance
Catrans Bridges	2	Route 5, Begin PM 66.8, 06-0095 Craig View Drive, Bridge Replacement	Shasta County	CR-1	Potential earth disturbance
Catrans Bridges	3	Route 5, Begin PM 57.41, 06-0111 Sims Road UC, Superstructure or bridge replacement	Shasta County	CR-1	Potential earth disturbance
Catrans Bridges	4	SR 44, Start/End PM 7.4, 06-0152 Cow Creek,Seismic retrofit	Shasta County	CR-1	Potential earth disturbance
Catrans Bridges	5	SR 44, Start/End PM 4.55, 06-0151 Clough Creek, bridge rehabilitation	Shasta County	CR-1	Potential earth disturbance
Catrans Bridges	6	Route 5, Begin PM 28.14, Pit River Bridge, Seismic and Paint	Shasta County	CR-1	Potential earth disturbance
Catrans Bridges	7	Route 89, Begin PM 25.3, End PM 31.7, Lake Britton, Replace Bridge and realign roadway	Shasta County	CR-1	Potential earth disturbance
Catrans Bridges	8	SR 44, Start PM 0/ End PM 60, Bridges at various locations, Deck rehab, paint, joints, etc.	Shasta County	CR-1	Potential earth disturbance
Catrans Bridges	9	SR 299, various locations in Shasta County, Deck rehab, paint and joint repair/replacement	Shasta County	CR-1	Potential earth disturbance
Caltrans AT	1	151, Begin PM 5.4, End PM 5.9, Shasta Lake City from 0.5 mile west to 0.4 mile east of Poplar Lane, Construct curb ramps, reconstruct sidewalks and possibly add sidewalks and adjust traffic signal pedestrian buttons.	Shasta County	CR-1	Potential earth disturbance
Caltrans Operations 1	1	I-5, Start PM/End PM 15.43, 06-0126G N5-W44 Connector, Increase VC	Shasta County	CR-1	Potential earth disturbance
Caltrans Operations 2	2	I-5, Start PM/End PM 15.43, 06-0126L East Redding Separation, Increase VC	Shasta County	CR-1	Potential earth disturbance
Caltrans Operations	3	I-5, Start PM/End PM 15.43, 06-0126R East Redding Separation, Increase VC	Shasta County	CR-1	Potential earth disturbance
Caltrans Operations	4	SR 44, At various locations, Rumble strips	Shasta County	CR-1	Potential earth disturbance
Caltrans Operations	5	I-5, Start/End PM 31.1, North of Shasta Lake City - O'Brien SRRA, Upgrade sewage system	Shasta County	CR-1	Potential earth disturbance

Table 4.4-3
2015 RTP/SCS Projects that May Result in Cultural Resources Impacts

SRTA Project Name	Project Number	Project	Location	Impact	Description of Impact
Caltrans Operations	6	Route 5, Begin PM Var, End PM Var, In Shasta County at various locations on Interstate 5, Upgrade MBGR and possibly flatten some slopes	Shasta County	CR-1	Potential earth disturbance
Caltrans Operations	7	Route 299, Begin PM 7.6, End PM 18.3, 1.5 miles west of Crystal Creek Road to Buell Alley, Rehabilitate Roadway	Shasta County	CR-1	Potential earth disturbance
Caltrans Operations	8	Route 299, Begin PM 77.8, End PM 79.6, Near Burney, Rehabilitate Roadway	Shasta County	CR-1	Potential earth disturbance
Caltrans Operations	9	SR 299, Start PM 60/End PM 67.9, In Shasta County, Hatchet Mtn CAP M	Shasta County	CR-1	Potential earth disturbance
Caltrans Operations	10	Route 273 GAPS - SR 273, Start PM 3.8/End PM7.1; Start PM 11.0/End PM12.7, CAPM	Shasta County	CR-1	Potential earth disturbance
Caltrans Operations	11	Route 5, In Shasta County at various locations on Interstate 5, Relocate roadside facilities and install hardscaping in high exposure areas, Relocate roadside facilities and install hardscaping in high exposure areas.	Shasta County	CR-1	Potential earth disturbance
Caltrans Operations	12	Route 299, Begin PM 41.5, End PM 55.2, Safety Device Paving and Pullouts, Safety Device Paving and Pullouts	Shasta County	CR-1	Potential earth disturbance
Caltrans Operations	13	SR 44, Start/End PM 34.7, Near the town of Shingletown - Shingletown SRRA, Upgrade sewage system	Shasta County	CR-1	Potential earth disturbance
Caltrans Operations	14	SR 299, Start/End PM 60.6, Hillcrest, Upgrade sewage system	Shasta County	CR-1	Potential earth disturbance
Caltrans Operations	15	I-5, Start/End PM 43.2, Lakehead, Upgrade sewage system	Shasta County	CR-1	Potential earth disturbance
Caltrans Operations	16	SR 273, Start/End PM 14.77, RR U/P, Vertical Clearance / Horizontal Clearance	Shasta County	CR-1	Potential earth disturbance
Caltrans Operations	17	I-5, Start/End PM 29.32, 06-0130R Turntable Bay Road OC, Rail Upgrade	Shasta County	CR-1	Potential earth disturbance
Caltrans Operations	18	SR 44, Start PM 65.4/End PM 71.4, Plum Valley Rehab	Shasta County	CR-1	Potential earth disturbance

Table 4.4-3
2015 RTP/SCS Projects that May Result in Cultural Resources Impacts

SRTA Project Name	Project Number	Project	Location	Impact	Description of Impact
Caltrans Operations	19	Route 5, Begin PM R 5.1, End PM R 5.9, Anderson, Upgrade Landscaping - Highway Planting Restoration	Shasta County	CR-1	Potential earth disturbance
Caltrans Operations	20	Route 5, Begin PM R 18, End PM R 22.5, North Redding/Shasta Lake City, Freeway Maintenance Access Roads and Pullouts	Shasta County	CR-1	Potential earth disturbance
Caltrans Operations	21	Route 5, Begin PM R 12.3, End PM R 12.6, I-5 in Redding, Extend NB South Bonneyview on ramp and SB off ramp	Shasta County	CR-1	Potential earth disturbance
Caltrans Operations	22	Routte 5, Begin PM R 16.1, End PM R 17.1, I-5 in Redding, Construct auxiliary lane on NB I-5 from Hilltop Drive OC to Lake Blvd.	Shasta County	CR-1	Potential earth disturbance
Caltrans Operations	23	Route 44, Begin PM 1.4, End PM 1.9, Redding, Construct ramp auxiliary lane from EB Victor on-ramp to EB Shasta View off-ramp	Shasta County	CR-1	Potential earth disturbance
Shasta County Bridge	1	Spring Creek Road @ Fall River - Replace Bridge	Shasta County	CR-1	Potential earth disturbance
Shasta County Bridge	2	Cassel Fall River Road @ Pit River - Replace Bridge	Shasta County	CR-1	Potential earth disturbance
Shasta County Bridge	3	Soda Creek Road @ Soda Creek - Replace Bridge	Shasta County	CR-1	Potential earth disturbance
Shasta County Bridge	4	Gas Point Road at No Name Ditch - Replace Bridge	Shasta County	CR-1	Potential earth disturbance
Shasta County Bridge	5	Lower Gas Pt Road @ NFk Cottonwood Creek - Replace Bridge	Shasta County	CR-1	Potential earth disturbance
Shasta County Bridge	6	Ash Creek Road @ Sacramento River overflow - Replace Bridge	Shasta County	CR-1	Potential earth disturbance
Shasta County Bridge	7	Parkville Road @ Ash Creek - Replace Bridge	Shasta County	CR-1	Potential earth disturbance
Shasta County Bridge	8	Inwood Road @ South Fork Bear Creek - Replace Bridge	Shasta County	CR-1	Potential earth disturbance
Shasta County Bridge	9	Island Road @ Little Tule River - Replace Bridge	Shasta County	CR-1	Potential earth disturbance
Shasta County Bridge	10	Ponderosa Way @ NFk Bear Creek - Replace Bridge	Shasta County	CR-1	Potential earth disturbance

Table 4.4-3
2015 RTP/SCS Projects that May Result in Cultural Resources Impacts

SRTA Project Name	Project Number	Project	Location	Impact	Description of Impact
Shasta County Bridge	11	White House Road @ ACID Canal - Replace Bridge	Shasta County	CR-1	Potential earth disturbance
Shasta County Bridge	12	Soda Creek Road @ SFk Soda Creek - Replace Bridge	Shasta County	CR-1	Potential earth disturbance
Shasta County Bridge	13	Ponderosa Way @ Snow Creek - Replace Bridge	Shasta County	CR-1	Potential earth disturbance
Shasta County Bridge	14	Bear Mtn. Road @ Deep Hole Creek - Replace Bridge	Shasta County	CR-1	Potential earth disturbance
Shasta County Bridge	15	Holiday Rd @ Spr. Branch Stillwater Crk - Replace Bridge	Shasta County	CR-1	Potential earth disturbance
Shasta County Bridge	16	Adobe Road @ Anderson Creek - Replace Bridge	Shasta County	CR-1	Potential earth disturbance
Shasta County Bridge	17	Oak Run Road @ Oak Run Crk - 6C-188 - Replace Bridge	Shasta County	CR-1	Potential earth disturbance
Shasta County Bridge	18	Lakeshore Road @ Doney Crk - Replace Bridge	Shasta County	CR-1	Potential earth disturbance
Shasta County Bridge	19	Lakeshore Road @ Charley Crk - Replace Bridge	Shasta County	CR-1	Potential earth disturbance
Shasta County Bridge	20	Ponderosa Way @ Snow Creek - Replace Bridge	Shasta County	CR-1	Potential earth disturbance
Shasta County Bridge	21	Spring Creek Road @ Fall River - Replace Bridge	Shasta County	CR-1	Potential earth disturbance
Shasta County Bridge	22	Cassel Fall River Road @ Pit River - Replace Bridge	Shasta County	CR-1	Potential earth disturbance
Shasta County Bridge	23	Soda Creek Road @ Soda Creek - Replace Bridge	Shasta County	CR-1	Potential earth disturbance
Shasta County Bridge	24	Gas Point Road at No Name Ditch - Replace Bridge	Shasta County	CR-1	Potential earth disturbance
Shasta County Bridge	25	Lower Gas Pt Road @ NFk Cottonwood Creek - Replace Bridge	Shasta County	CR-1	Potential earth disturbance
Shasta County Bridge	26	Ash Creek Road @ Sacramento River overflow - Replace Bridge	Shasta County	CR-1	Potential earth disturbance
Shasta County Bridge	27	Parkville Road @ Ash Creek - Replace Bridge	Shasta County	CR-1	Potential earth disturbance
Shasta County Bridge	28	Inwood Road @ South Fork Bear Creek - Replace Bridge	Shasta County	CR-1	Potential earth disturbance

Table 4.4-3
2015 RTP/SCS Projects that May Result in Cultural Resources Impacts

SRTA Project Name	Project Number	Project	Location	Impact	Description of Impact
Shasta County Bridge	29	Island Road @ Little Tule River - Replace Bridge	Shasta County	CR-1	Potential earth disturbance
Shasta County Bridge	30	Main Street @ Castle Creek - Replace Bridge	Shasta County	CR-1	Potential earth disturbance
Shasta County Bridge	31	Pittville Road @ Pit River - Replace Bridge	Shasta County	CR-1	Potential earth disturbance
Shasta County Bridge	32	Riverside Road @ Sacramento River - Replace Bridge	Shasta County	CR-1	Potential earth disturbance
Shasta County Bridge	33	Park Avenue at Burney Creek - Replace Bridge	Shasta County	CR-1	Potential earth disturbance
Shasta County Bridge	34	La Moine Road @ Slate Creek - Replace Bridge	Shasta County	CR-1	Potential earth disturbance
Shasta County Bridge	35	Platina Road @ Arbuckle Gulch - Replace Bridge	Shasta County	CR-1	Potential earth disturbance
Shasta County Bridge	36	Gibson Road @ Boulder Creek - Replace Bridge	Shasta County	CR-1	Potential earth disturbance
Shasta County Bridge	37	Jackrabbit Flat Rd @ Burney Creek - Replace Bridge	Shasta County	CR-1	Potential earth disturbance
Shasta County Bridge	38	Churn Creek Rd @ Churn Creek 6C-86 - Replace Bridge	Shasta County	CR-1	Potential earth disturbance
Shasta County Bridge	39	Bland Road @ NF Wilson Creek - Replace Bridge	Shasta County	CR-1	Potential earth disturbance
Shasta County AT	1	Burney - Tamarack Ave. and Park Ave., class ii bike lane	Shasta County	CR-1	Potential earth disturbance
Shasta County AT	2	Burney - Mountain View Drive, Quebec St., Sugar Pine, Safe Routes to School	Shasta County	CR-1	Potential earth disturbance
Shasta County AT	3	Burney - Park Avenue, between Tamarack Avenue and Burney Creek, Construct shoulders	Shasta County	CR-1	Potential earth disturbance
Shasta County AT	4	Burney - Erie Street, Construct sidewalks	Shasta County	CR-1	Potential earth disturbance
Shasta County AT	5	Burney - Quebec Street, Construct sidewalks	Shasta County	CR-1	Potential earth disturbance
Shasta County AT	6	Burney - Toronto Avenue, between Erie and Quebec Streets, Construct sidewalks	Shasta County	CR-1	Potential earth disturbance
Shasta County AT	7	Old Oregon Trail from College View to Collyer Drive, class ii bike lane and interchange improvements	Shasta County	CR-1	Potential earth disturbance

Table 4.4-3
2015 RTP/SCS Projects that May Result in Cultural Resources Impacts

SRTA Project Name	Project Number	Project	Location	Impact	Description of Impact
Redding Bridge	1	State Bridge #06C0340, Sacramento Drive @ Olney Creek - Bridge Replacement	Redding	CR-1	Potential earth disturbance
Redding Bridge	2	State Bridge #06C0344, Sharon Ave over ACID Canal - Bridge Replacement	Redding	CR-1	Potential earth disturbance
Redding Bridge	3	State Bridge #06C0104, Old Alturas Road @ Churn Creek - Bridge Replacement	Redding	CR-1	Potential earth disturbance
Redding Bridge	4	State Bridge #06C0335, Eastside Road @ Olney Creek - Bridge Replacement	Redding	CR-1	Potential earth disturbance
Redding Bridge	5	State Bridge #06C0341, Girvan Road @ Olney Creek - Bridge Replacement	Redding	CR-1	Potential earth disturbance
Redding Bridge	6	State Bridge # 06C0071, Railroad Ave over Canyon Hollow - Bridge Rehabilitation	Redding	CR-1	Potential earth disturbance
Redding Bridge	7	State Bridge # 06C0078, Westside Rd @ ACID Canal - Bridge Replacement	Redding	CR-1	Potential earth disturbance
Redding Bridge	8	State Bridge # 06C0085, Eastside Rd @ Canyon Hollow - Bridge Replacement	Redding	CR-1	Potential earth disturbance
Redding Bridge	9	State Bridge # 06C0088, Old Oregon Trail @ W. Fork Stillwater Creek - Bridge Replacement	Redding	CR-1	Potential earth disturbance
Redding Bridge	10	State Bridge #06C0307, Canyon Road @ ACID Canal - Bridge Replacement	Redding	CR-1	Potential earth disturbance
Redding Bridge	11	State Bridge # 06C0033, Lake Blvd @ SPRR - Bridge Rehabilitation	Redding	CR-1	Potential earth disturbance
Redding Bridge	12	State Bridge # 06C0047, Locust St @ ACID Canal - Bridge Rehabilitation	Redding	CR-1	Potential earth disturbance
Redding Bridge	13	State Bridge # 06C0057, Twin View Blvd @ Boulder Creek - Bridge Rehabilitation	Redding	CR-1	Potential earth disturbance
Redding Bridge	14	State Bridge # 06C0106, Hartnell Ave @ Churn Court - Bridge Rehabilitation	Redding	CR-1	Potential earth disturbance
Redding Bridge	15	State Bridge # 06C0070, Westside Rd @ Oregon Gulch - Bridge Rehabilitation	Redding	CR-1	Potential earth disturbance
Redding Bridge	16	State Bridge # 06C0106, Hilltop Dr @ I-5 - Bridge Rehabilitation (South Replacement)	Redding	CR-1	Potential earth disturbance
Anderson Capacity	1	Gateway Drive - Balls Ferry to Deschutes - construct 2 lane road	Redding	CR-1	Potential earth disturbance
Shasta Lake Capacity and Safety	1	Cascade Boulevard Reconstruction including bike/ped	Redding	CR-1	Potential earth disturbance

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4.5 ENERGY

In order to ensure that energy implications are considered in project decisions, the California Environmental Quality Act (CEQA) requires that EIRs include a discussion of the potential energy impacts of proposed projects, with particular emphasis on avoiding or reducing inefficient, wasteful and unnecessary consumption of energy.

4.5.1 Setting

Energy relates directly to environmental quality. Energy use can adversely affect air quality and other natural resources. Fossil fuels are burned to create electricity which powers homes and commercial/industrial buildings, to create heat and to power vehicles. Seventy-percent (70%) of greenhouse gas production (GHGs) in California is caused by burning fossil fuels for these types of uses; this pollution is linked to changes in global climate and depletion of stratospheric ozone (California Air Resources Board, 2008).

Transportation energy use is related to the fuel efficiency of cars, trucks and public transportation; choice of different travel modes (auto, carpool, walking, biking, and public transit); and miles traveled by these modes. Construction and routine operation and maintenance of transportation infrastructure also consume energy. In addition, residential, commercial and industrial land uses consume energy, typically through the usage of natural gas and electricity.

Land use patterns in Shasta County tend to display a reliance on gas/diesel powered vehicles to move people and goods. Low density residential and employment development outside of the South Central Urban Region of Shasta County makes the development of alternative transportation modes such as transit, bicycles, and walking a much more difficult and costly task. The environmental effects of low density residential development patterns resulting in increased energy use and air quality degradation have been well documented. A continued reliance on gasoline-powered vehicles commits an ever-increasing share of the urban environment to streets, highways, and parking, creating an ever-expanding demand for road maintenance as a circulation system wears out (County of Shasta 2004).

Residential pockets outside of the South Central Urban Region of Shasta County are continuing to develop in a low density urban residential pattern. One consequence of this trend is that total per capita energy, required particularly for transportation needs, is higher than would otherwise be the case if higher residential density options were implemented. Numerous studies point to long-term economic risks and excessive costs associated with a continuing dependence on a petroleum-based transportation sector required to serve a low density residential urban pattern. This trend often forecloses future alternative, energy efficient transportation options due to more costly construction and implementation requirements (County of Shasta 2004).

a. Energy Supply. Natural gas-fired generation has been the dominant source of electricity in California for many years. However, the two largest sources of energy produced in California are crude oil, at approximately 1,123.4 trillion (10^{12}) British Thermal Units (BTU), and renewable energy sources, at approximately 812.8 trillion (10^{12}) BTU. Other sources of energy

produced in California include nuclear electric power, natural gas, biofuel, hydroelectric, wind, and solar (Energy Information Administration [EIA], 2014).

Shasta County does not have any active oil or gas wells (California Department of Conservation Well Data 2014). Shasta County is not present in the California Department of Conservation Well Finder or 2013Annual Report of the State Oil & Gas Supervisor.

b. Energy Consumption and Sources. Total energy consumption in the United States in 2011 is estimated at approximately 97.3 quadrillion (10^{15}) British thermal units (BTUs) (Energy Information Administration, Annual Energy Review [AER] 2012). Petroleum provides approximately 36% of the energy used in the United States (AER 2012). Coal provides approximately 20% and natural gas provides approximately 26% of the energy used, and nuclear and total renewable sources supply the rest in roughly equal proportions. On a per capita basis, California is ranked fourth lowest of the states in terms of energy use (209.6 million [10^6] BTU per person annually), or about 34% less than the United States' average per capita consumption of 315.9 million BTU per person annually (AER, 2012).

Most of the energy generated in California is from coal and natural gas. Natural gas provides approximately 46% of the state's generated energy, and coal provides approximately 18%. The remaining 36% of state energy generation is from a variety of energy resources, including nuclear, hydropower, wind, and other renewable energy sources (California Energy Commission, 2009 Integrated Energy Policy Report). While in-state generation resources provide the majority of California's power, California is part of a larger system that includes all of western North America. In 2011, California produced 70% of the electricity it uses and the rest was imported from outside the country. In 2011, California used 272,645 million kilowatt hours (kWh) of electricity per year (California Energy Commission, Electricity and Natural Gas Division website, 2013). Shasta County consumed approximately 3,088 million cubic feet (Mcf) of natural gas in 2008 from residential, commercial, and industrial uses and is projected to consume 3,748 Mcf by year 2035 (using the 2008 natural gas consumption rate). Shasta County consumed approximately 1,676 kWh of electricity in 2008 and is projected to consume 2,034 kWh in 2035 (using the 2008 electricity consumption rate). The projected annual electricity and natural gas consumption rates for the years 2013, 2020, and 2035 are shown in Table 4.5-1.

Table 4.5-1
Annual Energy and Natural Gas Consumption in Shasta County

Year	2008◊	2013†	2020†	2035†
Population‡	176,629	176,722	190,192	214,364
Electricity (million kWh)	1,676	1,677	1,805	2,034
Natural Gas (Mcf)	3,088	3,090	3,325	3,748

†Note: The annual electricity and natural gas consumption totals for Shasta County for 2013-2035 are derived from 2008 per capita consumption rates.
‡The 2008 population for Shasta County was based upon the California Department of Finance California County Population Estimates and Components of Change by Year (Report E-2), December 2011. The 2013, 2020, and 2035 population for Shasta County was based upon SRTA's RTP population forecasts.
◊The 2008 per capita electricity consumption rate was 9,489 kWh/capita, and the 2008 per capita natural gas consumption rate was 0.017 Mcf/capita.The 2008 Shasta Electricity and Natural Gas consumption data is provided by the California Energy Commission Energy Consumption Data Management System.

Regardless of the rate of production of oil and gas resources around the world, increasing attention has been paid to the need for reducing consumption of these resources. Electricity is provided in the city of Redding by Redding Electric Utility (REU). Throughout most of the unincorporated areas of the County, electricity and natural gas are supplied by Pacific Gas & Electric Company (Shasta Economic Development Corporation 2014).

Petroleum. Petroleum-based fuels are used for 96% of the State's transportation activity. Most gasoline and diesel fuel sold in California for motor vehicles is refined in California to meet state-specific formulations required by the California Environmental Protection Agency's Air Resources Board (CARB). Major petroleum refineries in California are concentrated in three counties: Contra Costa, Kern, and Los Angeles (California Energy Commission, Petroleum Statistics & Data website, accessed January 22, 2013).

As stated in Section 4.12, *Transportation and Circulation*, approximately 4,638,709 vehicle miles were traveled each weekday in Shasta County in 2005, and approximately 4,744,583 vehicle miles were traveled each day in Shasta County in 2013 (an increase of approximately 2.3% from 2005). This equates to approximately 1.63 billion vehicle miles travelled in 2013 (SRTA 2015).

In 2010, Californians consumed over 18 billion gallons of gasoline and diesel fuel on the State's roadways (California Energy Commission, Fuels & Transportation Division website, accessed January 22, 2013). In 2008, an estimated sale of 79 million gallons of retail gasoline and sales of 23 million gallons of diesel fuel were made (California Energy Commission) by a population of 176,629 in Shasta County (California Department of Finance). Extrapolating this information and using the estimated annual growth rate in vehicle miles traveled (VMT) of 0.28 % between 2005 and 2013, approximately 82.6 million gallons of gasoline were consumed in the County in the baseline year (2013), which is approximately 226,355 gallons per day or 1.28 gallons per person per day (based on a 2013 countywide population of 176,722 persons estimate by SRTA RTP population forecast) Approximately 24.1 million gallons of gasoline were consumed in 2013, which is approximately 65,901 gallons per day or 0.37 gallons per person per day.

One gallon of gasoline is equivalent to approximately 114,000 British thermal units (BTUs), while one gallon of diesel is equivalent to approximately 138,700 BTUs (U.S. Environmental Protection Agency [EPA], August 1995; U.S. EIA, June 2012). Therefore, approximately 34 billion BTUs of fuel were consumed per day in 2013 (see Table 4.5-2).

Table 4.5-2
Annual Gasoline, Diesel and Energy Consumption in Shasta County

	2008 Annual Fuel use (million gallons)	2013 Annual Fuel Use (million gallons)	2008 Daily Energy Use (Billion BTUs)	2013 Daily Energy Use (Billion BTUs)
Gasoline	79.0	80.1	24.7	25.0
Diesel	23.0	23.3	8.7	8.9
Total	**102.0**	**103.4**	**33.4**	**33.9**

Natural Gas. In 2008, California received 46% of its natural gas supply from basins located in the Southwest, 19% from Canada, 22% from the Rocky Mountains, and 13% from

basins located within California (California Public Utilities Commission website, accessed March 24, 2013). Once the gas arrives in California, it is distributed by three major gas utilities – San Diego Gas & Electric, Southern California Gas Company, and Pacific Gas & Electric – that provide a collective total of 98% of the state's natural gas (California Energy Commission, Natural Gas Data and Statistics website, accessed January 22, 2013).

Alternative Fuels.

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, eleven hydrogen refueling stations are located in California; however, none are located in Shasta County (U.S. Department of Energy [DOE], "Hydrogen Basics," 2014).

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 fifty biodiesel refueling stations located in California, however, none are located in Shasta County. (DOE, "Biodiesel," 2014).

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. Unlike batteries, fuel cells convert chemical energy from hydrogen into electricity. According to Plugshare.com, there are multiple public electrical charging stations in Shasta County. Locations include camping and RV resorts, local hotels (Red Lion Hotel and Best Western Hilltop Inn), a school (Redding School of the Arts), two car dealer lots (Lithia and Crown Nissan), and one private business (EV4U Custom Conversions).The charging stations primarily exist along Interstate Route 5, although US Route 44 and 89 show one public station installed for each route in the eastern portion of the County (Plugshare).

c. Energy and Fuel Efficiency. Petroleum-based fuels are currently used for 96% of the state's transportation needs (California Energy Commission, Natural Gas Data and Statistics, 2013). Though the demand for gasoline and diesel fuel is rising because of population growth and limited mass transit, the increase in demand can be partially offset by efficiency improvements. Land use policies that encourage infill and growth near transit centers, improved vehicle fuel efficiency, and replacement of older, less fuel-efficient cars with new cars, with improved fuel economy, will all serve to reduce fuel consumption. In the future, increasing gasoline prices may apply downward pressure to gasoline demand in the state.

d. Regulatory Setting. Programs and policies at the state and national levels have emerged to bolster the previous trend towards energy efficiency, as discussed below. Former President Bush adopted the *National Energy Policy Act of 1992* and Former Governor Wilson of California approved the *1992-1993 California Energy Plan*, prepared by the California Energy

Commission. Both call for increased efficiency and encourage alternative fuels. The Shasta Regional Climate Action Plan sought to implement this policy direction at the local level.

The *National Energy Policy Act of 1992* calls for programs that promote efficiency and the use of alternative fuels. *The 1992-1993 California Energy Plan* emphasizes a "portfolio" approach to energy planning, including development of a diverse energy base. Effective improvements in efficiency and development of new fuels and technologies comprise the heart of the state's plan (California Energy Action Plan Update, February 2008).

The California Energy Commission encourages local jurisdictions to prepare and adopt an Energy Element to their General Plans. Energy Elements assume an essential role by shaping and refining broader-based state and federal policies to fit local needs.

Federal Regulations.

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 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%.

State Regulations.

Senate Bill 1078: California Renewables Portfolio Standard Program. Senate Bill (SB) 1078 (Chapter 516, Statutes of 2002), and as expanded under SB 2 in 2011 (California Public Utilities Commission), 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% of their supply from renewable sources by 2017. SB 2 expanded this law and required procurement from eligible renewable energy resources to 33% 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.

Local Regulations.

Shasta Regional Climate Action Plan. The Shasta Regional Climate Action Plan (RCAP) serves as a guiding document for actions of the cities of Shasta Lake, Redding, and Anderson and the unincorporated County to reduce GHG emissions and adapt to the potential effects of climate change. Although none of the cities or the County have formally adopted the plan, the SRCAP features customizable measure development, where jurisdictions can select which measures of the SRCAP apply to their community and also establish their own performance standards and participation level. Jurisdictions also have the option to defer land use and transportation measure development to RTP or local planning processes (Shasta Regional Climate Action Plan, February 2010).

Shasta County 2030 General Plan. The Energy Element of the Shasta County 2030 General Plan includes goals and policies that promote energy savings and utilization of renewable energy resources, promoting energy education, and conserving nonrenewable energy resources (Shasta County 2030 General Plan, August 2012). These goals and policies are consistent with goals of the RTP projects.

City of Redding. The Transportation Element of the city of Redding 2000-2020 General Plan includes polices that require new development to provide sidewalks or other pedestrian-dedicated facilities on both sides of new public streets, with some exceptions. New developments are also required to provide bicycle facilities or pay in-lieu fees based on the fair share of that development's impacts on the bikeway system and needs identified in a Comprehensive Bikeway Plan (City of Redding 2000). These policies are consistent with goals of the RTP projects.

City of Anderson 2007 General Plan Circulation Element. The Circulation Element of the city of Anderson General Plan includes policies to promote and provide bicycle and pedestrian facilities, street design standards to accommodate new bicycle and pedestrian infrastructure and traffic as well as traffic-calming features, and efficient regional transportation network planning (City of Anderson 2007). These policies are consistent with goals of the RTP projects.

City of Shasta Lake 1999 General Plan. The city of Shasta Lake 1999 General Plan includes objectives and policies to conserve nonrenewable energy resources such as transportation fuels and land area. Subdivision design would require consideration of passive solar energy

techniques, such as for street and lot layout, and new buildings are required to develop a design manual showing examples of energy conservation in subdivision planning, site layout, landscaping, and building design. Furthermore, the General Plan includes two measures to evaluate converting city-owned vehicles to alternative fuels and to amend the zoning ordinance to permit alternative fuel/recharging facilities in several districts to reduce energy consumption. These objectives, measures, and policies are consistent with goals of the RTP projects.

4.5.2 Impact Analysis

a. **Methodology and Significance Thresholds.** CEQA sets forth a legal framework for identifying significant effects on the environment caused by discretionary actions taken by state and local governments that qualify as a "project."

Appendix F includes "a list of possible energy impacts and potential conservation measures designed to assist in the preparation of an EIR" (CEQA Guidelines, App. F, § II.) The list included in Appendix F represents "[e]xamples of energy conservation measures[.]" (CEQA Guidelines, § 15126.4, subd. (a)(1)(C)). In drafting the Appendix F list, the California Natural Resources Agency explained that "specific items [on the list] may not apply" to all projects (CEQA Guidelines, App. F, § II.)

The 2015 RTP EIR is a Program EIR, not a project-level EIR. Use of Appendix F, and the discussion of energy impacts in this document, reflects the programmatic purpose behind the 2015 RTP EIR. In Appendix F, energy conservation is described in terms of decreased per capita energy consumption, decreased reliance on natural gas and oil, and increased reliance on renewable energy sources (CEQA Guidelines, App. F, § I.) SRTA considered the guidance provided in Appendix F both in analyzing the program's energy impacts and in developing mitigation measures to further reduce its impacts. The significance thresholds for the 2015 RTP were formulated in consideration of these factors. For the purposes of this analysis, a potential impact would occur if the project involved inefficient, wasteful and unnecessary consumption of energy.

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 2015 RTP projects, it also includes energy consumption that is not due to the 2015 RTP, 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 all the remaining 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 the baseline 2013 year, 2020, and 2035 VMT with and without the 2015 RTP (as analyzed in Section 4.12, *Transportation and Circulation*). In addition, VMT and associated energy consumption during the interim year 2020 with the plan are also presented.

Shasta County's 2013 fuel consumption was extrapolated from the 2012 fuel consumption using an annual growth rate of 0.28%, which was the annual growth rate in VMTs between 2005 and 2013. The 2013 fuel consumption was converted to BTUs (refer to Table 4.5-1) and then divided by 2013 annual VMT to derive a regional BTU/VMT conversion factor of 6,915 BTUs per VMT.

It should be noted that the BTU/VMT factor was slightly higher in previous years and 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 2013-based factor to future year (2020, and 2035) VMT therefore provides a reasonable worst case evaluation of energy consumption as the energy efficiency of vehicles in 2035 is anticipated to be higher than current fuel efficiency of vehicles.

Indirect Energy Consumption. Indirect energy is the energy required to construct, operate, and maintain the transportation network, as well as to manufacture and maintain on-road vehicles and transit vehicles. Therefore, construction-related impacts associated with the 2015 RTP are included in the indirect energy analysis. The indirect energy analysis was conducted using the Input-Output methodology developed by Caltrans (1983). This method converts VMT, lanes-miles, or construction dollars into energy consumption based on data from other transportation projects in the United States.

Table 4.5-3 shows the indirect energy consumption factors used in this analysis. It should be noted that indirect energy consumption due to production of fuel and transportation/transmission to the end users is not included in this analysis, as any such analysis would be speculative.

Table 4.5-3
Indirect Energy Consumption Factors†

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

†Note: 2013 dollars converted to 1977 dollars as a reasonable worst-case inflation assumption using United States Department of Labor and Statistics inflation converter. Note that transportation projects with construction costs planned further in the future would result in lower energy use relative to construction cost, due to anticipated additional future inflation.

b. Project Impacts and Mitigation Measures. This section describes generalized impacts associated with some of the projects anticipated under the RTP.

Impact E-1 **Future transportation improvement projects and implementation of the land use scenario envisioned by the 2015 RTP would increase demand for energy beyond existing conditions. However, the 2015 RTP would result in lower VMT and consume less energy than the 'No Project' scenario. The project would not increase energy use relative to future 'No Project' conditions, would not result in inefficient, wasteful, or unnecessary use of energy, and would be consistent with adopted plans and policies related to energy conservation. As such, this impact would be Class III, *less than significant*.**

Daily operation of the region's transportation system uses energy in the form of fuel consumed by propulsion of passenger vehicles (automobiles, vans, and trucks) and transit vehicles (buses and trains). Some highway and roadway improvements included in the RTP will increase vehicle capacity, allowing a greater number of vehicles to use regional facilities. However, increasing capacity and improving roadways and intersections does not necessarily result in an increase in motor vehicle trips. Increases in motor vehicle trips are primarily a combined function of population growth and employment growth. It should be noted that population growth and growth in VMT would occur within the region regardless of whether the 2015 RTP is implemented. As a result, energy consumption as it relates to vehicles would increase beyond the 2013 baseline in any scenario. The 2015 RTP would help to minimize energy consumption by improving the overall efficiency of the transportation system. In addition, many 2015 RTP projects (e.g., bikeway and pedestrian projects, and transit projects), as well as the proposed land use pattern in the SCS, would improve the availability of alternative transportation modes, help reduce congestion, and resultant harmful air quality emissions in the region. Generally, the

availability of these alternative modes would be expected to reduce overall motor vehicular trips, vehicle miles traveled, and associated energy consumption.

Construction and maintenance of the proposed RTP projects (including construction and maintenance of roadways) would result in short-term consumption of energy resulting from the use of construction equipment and processes. During construction activities, energy would be needed to operate construction equipment. In addition, roadway and transit construction materials (such as asphalt and concrete), surface treatments, steel, and 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 projects envisioned by the 2015 RTP. The California Green Building Standards Code (CALGreen Code) includes specific requirements related to recycling, construction materials, and energy efficiency standards, which would apply to construction of roadway and transit improvement projects, as well as future infill envisioned by the 2015 RTP and help to minimize waste and energy consumption. All construction and maintenance conducted pursuant to the 2015 RTP, or as a result of improvements made by the 2015 RTP, would be required to comply with the CALGreen Code.

Table 4.5-4 shows the VMT and total direct and indirect energy use (BTUs) in the County under existing/base year (2013) conditions and under the 2020 with the plan, 2035 with the plan, and 2035 'No Project' scenarios.

Table 4.5-4
Direct and Indirect Transportation Energy Use†

Scenario	Analysis Year	Region-Wide Weekday VMT (thousands)	Direct Energy Use (Daily Billion BTUs)	Indirect Energy Use (Daily Billion BTUs)	Total Energy Use (Daily Billion BTUs)	Energy Use per Capita (Daily BTUs)
Base Year	2013	4,745	34.7	11.7	46.4	262,262
2015 RTP	2020	5,107	37.3	12.4	49.7	261,490
2015 RTP	2035	6,096	44.5	14.7	59.2	276,070
RTP ('No Project')	2035	6,111	44.6	14.7	59.3	276,755

†These VMT exclude external VMT (trips that pass through the County, but do not originate from or travel to a destination within the County). Pass through trips are not made by Shasta County residents. For the purpose of this discussion, VMT focuses on those trips that originate and/or terminate within Shasta County.

As shown in Table 4.5-4, total energy use would increase over time due to regional socioeconomic (population and employment) growth. However, the 2015 RTP would result in reduced VMT and direct and indirect energy use as compared to the 'No Project' scenario for the horizon year (2035). A decrease in VMT under the RTP would result in decreased fuel consumption. In 2035, the 2015 RTP would result in a 0.25% reduction in total daily energy usage when compared to the 'No Project' scenario.

For the purposes of this analysis, a potential impact would occur if the project involved inefficient, wasteful, and unnecessary consumption of energy. As discussed above, the RTP would result in a decrease in total energy usage when compared to the baseline without the RTP. As described in the *Methodology and Significance Thresholds* section, direct energy usage is energy used in the daily operation of the transportation system (e.g., consumption of fuel). The reduced VMT under the 2015 RTP would directly result in reduced region-wide fuel consumption, as well as better freeway and roadway levels of service than the 'No Project scenario'. The transportation improvements proposed and land use scenario envisioned under the 2015 RTP would result in a more efficient transit system. The 2015 RTP also would result in greater availability of public transit and other alternative modes of transportation. The reduction in overall congestion resulting from these service level improvements would reduce fuel consumption and promote fuel efficiency beyond what is accounted for in the above analysis. In addition, improvements to state fuel efficiency standards for vehicles and state mandated increases in the supply and use of alternative transportation fuels would further reduce fuel consumption, such as implementation of electric vehicle charging station plan. Therefore, the RTP would not result in inefficient, unnecessary, or wasteful consumption of gasoline or diesel fuel.

The RTP promotes infill development in existing commercial corridors in combination with high-quality transit service in later years (e.g., Redding Area Bus Authority) and improved bicycle and pedestrian infrastructure. Infill projects would reduce VMT and energy use because they would locate people closer to existing goods, services and transportation hubs, thereby resulting in shorter vehicle trips, promote active transportation (walking or biking), encourage the use of alternative modes of transit (e.g., buses) and result in fewer vehicle trips. Buildout 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 infill projects are anticipated to be constructed using standard building practices. These projects would also be subject to the CALGreen Code and Title 24 of the California Energy Code, which set forth specific energy efficiency requirements related to design, construction methods and materials.

As described in the *Methodology and Significance Thresholds* section, indirect energy is the energy required to construct, operate, and maintain the transportation network, including roadways. Indirect energy reductions under the 2015 RTP are similarly a result of reduced VMT under the 2015 RTP scenario. As vehicles drive fewer miles, less wear and tear occurs on roadways, thereby requiring less maintenance and associated energy consumption. The indirect energy use totals shown in Table 4.5-3 account for construction and maintenance of roadways and rail lines. Transportation projects implemented under the 2015 RTP would result in indirect energy use due to construction of planned and programmed projects. Nevertheless, due to the reduction in VMT attributed to the 2015 RTP and the associated reduction in indirect energy use, the 2015 RTP would result in lower indirect energy use compared to the 'No Project' scenario, and would not would not require unusual, unnecessary, or wasteful amounts of energy.

New transportation facilities that require energy for operation, such as signal lighting, roadway or parking lot lighting, and electronic equipment will increase energy demand. New landscaping irrigation also increases energy demand through water pumping and treatment.

However, the RTP would result in a net decrease in energy use in the region, and energy consumption is not anticipated to be unnecessary or wasteful, as all lighting, signage, and irrigation systems would comply with applicable energy efficiency requirements of the California Building Code.

Consistency with Energy Conservation Policies**.** As discussed above, the 2015 RTP would result in fewer long distance VMT (and thus less energy consumption) when compared with the 'No Project' scenario and therefore would result in an overall energy savings. Accordingly, inconsistencies between the 2015 RTP 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.

SRTA monitors regulations related to fuel efficiency standards and alternative fuel vehicles. The 2015 RTP would not conflict with such regulations including the Energy Policy and Conservation Act and CAFE Standards, EPAct, Energy Independence and Security Act of 2007, AB 1493: Reduction of Greenhouse Gas Emissions, and AB 1007: State Alternative Fuels Plan. In addition, AB 2076: Reducing Dependence on Petroleum addresses alternative fuels and motor vehicle efficiency, but also addresses reducing VMT. As shown, the 2015 RTP would reduce total VMT as compared to future 'No Project' scenario conditions. Thus the proposed RTP is consistent with California Assembly Bill 2076.

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 2015 RTP would not result in wasteful, inefficient, or unnecessary usage of energy. Therefore the 2015 RTP is consistent with the Warren-Alquist Act.

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% 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 2015 RTP 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 2015 RTP.

As discussed in Section 2.0, *Project Description*, consistent with the requirements of SB 375, SRTA 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 emissions 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 MPOs develop for use in the preparation of their RTPs.(completed)*
- *California Air Resources Board (CARB) must develop regional GHG emission reduction targets for automobiles and light trucks for 2020 and 2035 by September 30, 2010 (completed)*
- *Each MPO must prepare an SCS as part of its RTP to demonstrate how it will meet the regional GHG targets.(SRTA is preparing an SCS as part of the 2015 RTP)*
- *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.(completed by SRTA)*
- *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.(SRTA to complete)*
- *After adoption, each MPO must submit its SCS to the CARB for review.(anticipated to be completed following RTP adoption)*
- *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.(anticipated to be completed in 2015)*

The proposed 2015 RTP would comply with these requirements and therefore 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. As discussed in Section 2.0, *Project Description*, SRTA must maintain 2005 levels of per capita GHG emissions from passenger vehicles to meet the SB 375 target" by 2020 and 2035. As discussed in Section 4.8, *Greenhouse Gas Emissions/Climate Change*, implementation of the RTP will help the region achieve its SB 375 and AB 32 GHG emissions reduction targets. Therefore, the 2015 RTP is consistent with the requirements of SB 375, as well as AB 32.

Locally, the proposed 2015 RTP would be consistent with the overall transportation energy conservation goals of the Shasta County Air Quality Management District's Regional Climate Action Plan. These goals encourage reductions in the growth of VMT and commute trips. The proposed 2015 RTP includes projects such as expanded bicycle infrastructure and pedestrian walkways to promote alternative means of transportation.

The proposed RTP would also be consistent with the Shasta County 2030 General Plan Circulation Element's overall transportation goals and policies as well as goals and policies of the General Plans from the cities of Anderson, Shasta Lake and Redding (as summarized above in the *Regulatory Setting*). These goals and policies encourage the provision of a safe, comprehensive, and coordinated transportation system that includes a broad range of transportation modes.

In addition, the proposed 2015 RTP includes guidelines, goals, and policies that would reduce long-term energy use from transportation within the project area. To meet requirements of SB 375, the preferred growth scenario in the SCS incorporates the following growth guidelines:

- *Identifies future land use patterns;*
- *Identifies areas to accommodate long-term housing needs as well as 8-year housing needs;*
- *Considers resource areas and farmland;*
- *Identifies transportation needs and the planned transportation network; and*
- *Sets forth a future land use pattern to meet GHG emissions reduction targets.*

As discussed above, the 2015 RTP would result in lower future VMT and fuel consumption, and a decrease in total energy usage compared to conditions without the 2015 RTP. In addition, the 2015 RTP would not result in wasteful or inefficient energy consumption within the region, and is generally consistent with applicable policies regarding energy conservation. Therefore, the 2015 RTP would not have a significant impact on energy. Impacts would be less than significant.

Mitigation Measures. Transportation project lead agencies can and should implement the following mitigation measures for 2015 RTP transportation projects. Shasta County and the cities of Anderson, Redding and Shasta Lake should implement these measures, where relevant, to land use projects implementing the RTP/SCS.

The following mitigation measures recommended by SRTA are not required to reduce energy impacts to less than significant. They are provided as measures that could be implemented to reduce energy consumption. Project-specific environmental impacts may require these measures be revised or expanded in response to site-specific conditions.

E-1(a) New facilities should be designed with energy-efficient equipment and passive solar design (e.g., orientation of building to maximize natural heating and cooling, solar water heating, use of daylighting, and placement of trees to aid passive cooling, protection from prevailing winds, and maximum year-round solar access), provided that additional capital costs are offset by estimated energy savings during the first 5 years of operation. Additional improvements with longer payback periods, such as photovoltaic solar electric systems, should be considered where applicable.

E-1(b) All lighting should be energy efficient and designed to use the least amount of energy to serve the purpose of the lighting. Lighting should utilize solar energy wherever feasible.

E-1(c) New landscaping design and irrigation systems should be water efficient**.** To the extent possible, reclaimed water should be used for roadside landscape irrigation.

Significance After Mitigation. Impacts would be less than significant without mitigation. Implementation of recommended measures would further reduce energy consumption in the region.

Impact E-2 2015 RTP projects would not significantly impact the transportation of energy resources within the County. This impact would be Class III, *less than significant.*

Transportation is an important component of energy production. Shasta County contains no active oil wells (California Dept. of Conservation, Division of Oil, Gas & Geothermal Resources, 2012). Proposed projects and policies in the 2015 RTP would not affect pipeline transport of crude oil; however, oil and by-products of oil and gas (items such as fertilizer, linoleum, perfume or insecticide) development may be transported through Shasta County on regional highways, railroads, and/or air transport.

Natural Gas Liquids (NGLs) are byproducts of oil and gas production and are commonly transported by truck or rail (National Petroleum Council, 2011). NGLs burn hotter than methane because they have a higher energy content. As a result, even small quantities of NGLs in a natural gas flow can result in a larger impact on the overall energy contained in the natural gas (Independent Natural Gas Information Site, accessed November 15, 2013; Santa Barbara County Energy Division website, NGL Transportation, January 2013). Transporting NGLs has been identified as the highest risk to public safety associated with oil and gas development. This high ranking largely stems from the risk of transporting these products via highway, through populated areas, combined with heightened probability of human error. Truck transportation safety is a consideration in the design of all highway and roadway construction, and all transportation improvements pursuant to the RTP would comply with federal, state, and local regulations that govern transportation safety; therefore, this impact would be less than significant.

Mitigation Measures. None required.

Significance After Mitigation. Impacts would be less than significant.

c. Specific RTP Projects That May Result in Impacts. As discussed, the 2015 RTP and 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. Rather, the proposed transportation improvements and land use scenario envisioned by the 2015 RTP would result in less energy demand than the 'No Project' scenario.

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4.6 ENVIRONMENTAL JUSTICE

4.6.1 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" (Government Code Section 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 the California Environmental Quality Act (CEQA) to include considerations of environmental justice, although environmental justice is not explicitly mentioned in the CEQA guidelines. The report defines "fairness" in this context to mean that "the benefits of a healthy environment should be available to everyone, and the burdens of pollution should not be focused on sensitive populations or on communities that already are experiencing its adverse effects."

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 (DOT) issued its own order, 5680.2, to clarify and reinforce environmental justice policies related to transportation planning. A branch of the DOT, 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.

Issues of environmental justice impact low-income populations and minority populations. Environmental justice issues include concerns related to human health and safety; economic development, society and culture; accessibility and the natural environment. Collectively, these populations are defined as Environmental Justice communities and are defined in greater detail below. Environmental justice impacts are socioeconomic impacts for which EIR analysis and CEQA findings are not required. (See CEQA Guidelines Sections 15064(e), 15131.) Environmental justice discussions are included in the EIR for informational purposes only.

b. Demographics. Tables 4.6-1, 4.6-2, and 4.6-3 summarize 2012 demographic information for the SRTA region. For the purposes of this analysis, Environmental Justice communities were identified through analysis of demographic and socioeconomic data for minority and low-income populations based on 2008-2012 American Community Survey data.

Since the proposed project is a regional transportation plan and would affect transportation patterns, the way the region commutes to work was also analyzed.

Race/Ethnicity. Table 4.6-1 shows the total population within the study area as well as the racial and ethnic composition of the cities and communities comprising the SRTA region as of 2012. Note that "Hispanic" is defined as an ethnicity while the others listed in Table 4.6-1 are races. To prevent double counting, persons who identified themselves as Hispanic were excluded from racial population counts, but comprise a portion of the total minority population. Data for White and Minority populations comprise 100% of the SRTA population.

In 2012, 17.6% of the residents, or 31,265 persons, of the unincorporated areas of Shasta County were identified as being a minority race or ethnicity. The largest minority group in the SRTA region is Hispanic (8.4%), followed by Other races (3.4%). Thus, Shasta County is not considered an Environmental Justice community (as defined by race/ethnicity), as minority groups comprise less than 50% of the population within the County.

Similar to the County population, all of the cities and communities comprising the SRTA region have minority populations of less than 50%, with Hispanics being the highest occurring minority. Census Designated Places (CDPs) in Shasta County with a Hispanic population of 15% or more include: Cottonwood, Fall River Mills, Hat Creek, and McArthur. Overall minority groups comprise less than 25% of the cities and CDPs with the exception of three communities: Lakehead (33.7%), McArthur (31.3%), and Round Mountain (36.9%). Although demographic information is not available for the five reservations located in Shasta County, it is assumed for the purposes of this analysis that Big Bend Reservation, Montgomery Creek Reservation, Pit River Reservation, Rancheria Reservation, and Roaring Creek Reservation all have minority populations greater than 50% and are therefore Environmental Justice communities.

Income. The poverty rate represents the percent of households that fall below the U.S. Department of Health and Human Services poverty threshold (U.S. Department of Health & Human Services, 2013). A "household" is defined as all the people who occupy a housing unit, including related and unrelated persons (Census, 2014). Households with incomes at or below the poverty threshold are considered low-income. Table 4.6-2 illustrates the median income, poverty rate by household and unemployment rate for the cities and communities within the SRTA region as of 2012. For comparison purposes, in 2012 the national poverty rate was 14.6% and the state of California's poverty rate was 14.9% (American Community Survey, 2012). The average poverty rate for Shasta County in 2012 was 12.6%, which is lower than both the state and national averages. However, approximately 41% of the cities and communities in the SRTA region have higher poverty rates than the state and national average, including the City of Anderson (19.0%) and the following communities: Big Bend CDP (44.4%), Cottonwood CDP (19.7%), Fall River Mills CDP (23.2%), French Gulch CDP (22.9%), Hat Creek CDP (20.0%), Lakehead CDP (31.5%), Montgomery Creek CDP (69.2%), and Mountain Gate CDP (54.2%).

Table 4.6-1
Population, Race, and Ethnicity in the SRTA Region (2012)

Location	Total Population	White		Black		American Indian		Asian		Pacific Islander		Other		Hispanic		Minority	
	People	People	%	People	%	People	%	People	%	People	%	People	%	People	%	People	%
County of Shasta	**177,693**	**146,440**	**82.4%**	**1,563**	**0.9%**	**3,688**	**2.1%**	**4,599**	**2.6%**	**319**	**0.2%**	**6,102**	**3.4%**	**14,994**	**8.4%**	**31,265**	**17.6%**
City of Anderson	9,971	7,818	78.4%	154	1.5%	181	1.8%	288	2.9%	74	0.7%	509	5.1%	947	9.5%	2,153	21.6%
City of Redding, UA	90,088	73,500	81.6%	977	1.1%	1,392	1.5%	2,913	3.2%	93	0.1%	2,971	3.3%	8,254	9.2%	16,600	18.4%
City of Shasta Lake	10,173	8,357	82.1%	50	0.5%	203	2.0%	186	1.8%	37	0.4%	330	3.3%	1,010	9.9%	1,816	17.9%
Bella Vista CDP	2,605	2,284	87.7%	3	0.1%	56	2.1%	16	0.6%	20	0.8%	24	0.9%	202	7.8%	321	12.3%
Big Bend CDP	78	64	82.1%	4	5.1%	0	0.0%	0	0.0%	0	0.0%	10	12.8%	0	0.0%	14	17.9%
Big Bend Reservation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Burney CDP	2,737	2,441	89.2%	0	0.0%	102	3.7%	10	0.4%	9	0.3%	97	3.5%	78	2.8%	296	10.8%
Cassel CDP	402	390	97.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	12	3.0%	12	3.0%
Cottonwood CDP	3,991	3,091	77.4%	21	0.5%	142	3.6%	0	0.0%	0	0.0%	47	1.2%	690	17.3%	900	22.6%
Fall River Mills CDP	487	390	80.1%	0	0.0%	0	0.0%	11	2.3%	0	0.0%	2	0.4%	84	17.2%	97	19.9%
French Gulch CDP	298	279	93.6%	0	0.0%	2	0.7%	0	0.0%	0	0.0%	17	5.7%	0	0.0%	19	6.4%
Hat Creek CDP	160	130	81.3%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	30	18.8%	30	18.8%
Keswick CDP	331	294	88.8%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	17	5.1%	20	6.0%	37	11.2%
Lakehead CDP	493	327	66.3%	0	0.0%	0	0.0%	137	27.8%	0	0.0%	18	3.7%	11	2.2%	166	33.7%
McArthur CDP	249	171	68.7%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	78	31.3%	78	31.3%
Millville CDP	845	799	94.6%	0	0.0%	3	0.4%	0	0.0%	0	0.0%	5	0.6%	38	4.5%	46	5.4%
Montgomery Creek CDP	104	81	77.9%	2	1.9%	0	0.0%	0	0.0%	0	0.0%	17	16.3%	4	3.8%	23	22.1%
Montgomery Creek Reservation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Mountain Gate CDP	1,401	1,153	82.3%	0	0.0%	35	2.5%	0	0.0%	0	0.0%	181	12.9%	32	2.3%	248	17.7%
Old Station CDP	78	78	100.0 %	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Palo Cedro CDP	1,599	1,300	81.3%	12	0.8%	50	3.1%	0	0.0%	0	0.0%	70	4.4%	167	10.4%	299	18.7%
Pit River Reservation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Redding Rancheria Reservation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Roaring Creek Reservation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Round Mountain CDP	103	65	63.1%	3	2.9%	35	34.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	38	36.9%
Shasta CDP	1,898	1,565	82.5%	0	0.0%	14	0.7%	18	0.9%	0	0.0%	71	3.7%	230	12.1%	333	17.5%
Shingletown CDP	2,137	1,813	84.8%	37	1.7%	118	5.5%	54	2.5%	0	0.0%	47	2.2%	68	3.2%	324	15.2%

Notes:
CDP = Census Designated Place, UA = Urbanized Area, NA = Not Available; the American Community Survey does not include data for tribal communities or specific reservations.
Due to rounding, adding each minority group and Whites or adding Minorities and Whites may not equal 100%.
Source: U.S. Census 2008-2012 5-Year American Community Survey.

Table 4.6-2
Income and Poverty in the SRTA Region (2012)

Location	Median Income Households	Poverty Rate %	Unemployed Persons	Unemployed %
County of Shasta	**$44,396**	**12.6%**	**10,871**	**7.6%**
City of Anderson	$34,306	19.0%	768	9.8%
City of Redding	$43,667	13.2%	5,452	7.6%
City of Shasta Lake	$39,420	14.3%	623	7.9%
Bella Vista CDP	$63,125	5.1%	32	1.5%
Big Bend CDP	$37,857	44.4%	0*	0.0%*
Big Bend Reservation	NA	NA	NA	NA
Burney CDP	$38,337	12.7%	166	7.4%
Cassel CDP	$59,583	0.0%	9	3.2%
Cottonwood CDP	$48,644	19.7%	335	10.9%
Fall River Mills CDP	$34,744	23.2%	0*	0.0%*
French Gulch CDP	$23,750	22.9%	25	9.3%
Hat Creek CDP	$50,625	20.0%	0*	0.0%*
Keswick CDP	$53,750	5.6%	25	8.4%
Lakehead CDP	$43,571	31.5%	128	31.4%
McArthur CDP	$21,250	0.0%*	44	17.7%
Millville CDP	$63,750	0.0%*	44	7.3%
Montgomery Creek CDP	$13,542	69.2%	0*	0.0%*
Montgomery Creek Reservation	NA	NA	NA	NA
Mountain Gate CDP	$27,672	54.2%	207	18.9%
Old Station CDP	$38,810	0.0%*	9	12.7%
Palo Cedro CDP	$77,764	9.8%	144	11.4%
Pit River Reservation	NA	NA	NA	NA
Redding Rancheria Reservation	NA	NA	NA	NA
Roaring Creek Reservation	NA	NA	NA	NA
Round Mountain CDP	$19,412	0.0%*	0*	0.0%*
Shasta CDP	$69,242	0.0%*	88	5.4%
Shingletown CDP	$50,994	6.6%	71	3.7%

Source: U.S. Census 2008-2012 5-Year American Community Survey.
NA = Data not available
** due to the small populations of some cities and communities, rates and persons are listed as 0% or 0*

For comparison purposes, in 2014 the national unemployment rate was 6.3% and the state of California's unemployment rate was 7.8% (Bureau of Labor Statistics, April 2014). Thus, with an unemployment rate of 7.6%, Shasta County had an unemployment rate lower than the state average, but higher than the national average. Within the SRTA region, several cities and communities had unemployment rates higher than both the state and national average. These

include: the Cities of Anderson (9.8%), Shasta Lake (7.9%); and the CDPs of Cottonwood (10.9%), French Gulch (9.3%), Keswick (8.4%), Lakehead (31.4%), McArthur (17.7%), Mountain Gate (18.9%), Old Station (12.7%), and Palo Cedro (11.4%).

Concentrations of Minority and Low-Income Groups. The concentration of low-income and minority groups were determined by correlating data presented in Tables 4.6-1 and 4.6-2. The minority population groups of Shasta County comprised 17.6% of the total population. Shasta County's minority population is comprised of 8.4% Hispanic, 2.6% non-Hispanic Asian populations, 0.9% non-Hispanic Black/African-American, 2.1% American Indian, 0.2% Pacific Islander, and 3.4% other race. In Shasta County the median household income is $44,396 and 12.6% of the households are considered to be low-income (as defined by the federal government as annual income for one individual of $11,490 or less) (U.S. Department of Health & Human Services, 2013 Poverty Guidelines, 2013).

Frequently, areas with high concentrations of minority populations also have high concentrations of low-income households. The three cities and CDPs with minority populations greater than 25% (Lakehead, McArthur, and Round Mountain) also have a greater percentage of households considered to be low-income.

Mobility. Mobility refers to the movement of people via multiple modes, including individual cars, 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. Low-mobility populations are limited in their ability to access needed goods and services or the means by which they reach their destination are expensive or inconvenient. Auto-oriented cities and communities with few safe or reliable transportation alternatives are mobility-limiting as residents have few transportation options. Low-income populations may have restricted mobility if they do not have access to a private vehicle.

Table 4.6-3 shows the distribution of transportation modes within the SRTA region. All cities and communities within the SRTA region have roughly similar commuting mode choices, with single-occupancy vehicles being the most common choice, followed by people who carpool, work from home, and walk/no vehicle.

Concentrations of Low-Mobility Populations. Low-mobility populations are defined by the availability of a vehicle. Groups without access to a vehicle tend to rely on alternative modes of transportation such as walking or public transportation. In Shasta County, approximately 2.4% of households, or 1,567 households, do not have access to a vehicle. Areas with the highest percentage of households without a vehicle in the SRTA region include the CDPs of Burney (10.7%), French Gulch (6.9%), Shasta (6.1%), Shingletown (6.0%), and Keswick (4.2%).

Table 4.6-3
Transportation Modes to Work in the SRTA Region (2012)

Location	No vehicle		Drive Alone		Carpool		Public Transit		Walk		Other		Work at Home	
	Households	%	People	%	People	%	People	%	People	%	People	%	People	%
County of Shasta	**1,567**	**2.4%**	**53,416**	**80.0%**	**5,910**	**8.9%**	**480**	**0.7%**	**1,594**	**2.4%**	**1,444**	**2.2%**	**3,907**	**5.9%**
City of Anderson	73	2.0%	2,759	77.4%	473	13.3%	0	0.0%	132	3.7%	69	1.9%	131	3.7%
City of Redding	960	2.7%	28,523	80.3%	3,285	9.2%	398	1.1%	825	2.3%	826	2.3%	1,660	4.7%
City of Shasta Lake	83	2.3%	3,055	84.4%	314	8.7%	20	0.6%	40	1.1%	43	1.2%	146	4.0%
Bella Vista CDP	0	0.0%	695	76.9%	37	4.1%	0	0.0%	10	1.1%	28	3.1%	134	14.8%
Big Bend CDP	0	0.0%	14	7.8%	0	0.0%	4	2.2%	0	0.0%	0	0.0%	0	0.0%
Big Bend Reservation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Burney CDP	110	10.7%	709	68.9%	69	6.7%	0	0.0%	198	19.2%	53	5.2%	0	0.0%
Cassel CDP	0	0.0%	85	63.0%	7	5.2%	0	0.0%	14	10.4%	0	0.0%	29	21.5%
Cottonwood CDP	0	0.0%	1,139	87.5%	46	3.5%	0	0.0%	0	0.0%	62	4.8%	55	4.2%
Fall River Mills CDP	0	0.0%	37	25.5%	21	14.5%	0	0.0%	11	7.6%	0	0.0%	76	52.4%
French Gulch CDP	5	6.9%	60	83.3%	2	2.8%	0	0.0%	1	1.4%	5	6.9%	4	5.6%
Hat Creek CDP	0	0.0%	57	64%	0	0.0%	0	0.0%	8	9.0%	0	0.0%	24	27.0%
Keswick CDP	5	4.2%	76	63.3%	0	0.0%	0	0.0%	7	5.8%	0	0.0%	37	30.8%
Lakehead CDP	0	0.0%	60	58.2%	31	30.0%	0	0.0%	0	0.0%	6	5.8%	6	5.8%
McArthur CDP	0	0.0%	24	26.1%	35	38.0%	0	0.0%	8	8.7%	0	0.0%	25	27.2%
Millville CDP	5	1.5%	277	83.1%	10	3.0%	0	0.0%	0	0.0%	5	1.5%	41	12.3%
Montgomery Creek CDP	0	0.0%	28	87.5%	4	12.5%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Montgomery Creek Reservation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Mountain Gate CDP	8	2.6%	204	66.2%	0	0.0%	0	0.0%	41	13.3%	0	0.0%	63	20.5%
Old Station CDP	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	7	100.0%	0	0.0%
Palo Cedro CDP	0	0.0%	453	86.9%	19	3.6%	0	0.0%	0	0.0%	0	0.0%	49	9.4%
Pit River Reservation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Redding Rancheria Reservation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Roaring Creek Reservation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Round Mountain CDP	0	0.0%	18	100.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Shasta CDP	57	6.1%	759	80.7%	29	3.0%	4	0.4%	40	4.3%	33	3.5%	75	8.0%
Shingletown CDP	43	6.0%	589	82.6%	28	3.9%	0	0.0%	42	5.9%	21	2.9%	33	4.6%

Source: U.S. Census 2008-2012 5-Year American Community Survey.
NA = Data not available.

Community Outreach. For a discussion of community outreach efforts (such as publishing the Notice of Preparation and public comment periods) see Section 1.0, *Introduction.*

c. Regulatory Framework

Federal Regulations. SRTA receives funding from federal agencies such as the Federal Highway Administration and Federal Transit Administration for some of its programs and activities. Therefore, SRTA 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 Regulations.

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, Environmental Justice Advisory Committee (CEJAC), to provide information and assistance to the Secretary of the California Environmental Protection Agency (Cal EPA) and Interagency Working Group on Environmental Justice (IWG) in establishing and implementing an intra-agency strategy to achieve environmental justice. In 2004, the Cal EPA 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.

Grants/Funding for Disadvantage Communities. Grant and other funding sources are available for local jurisdictions and for SRTA to assist in the financing of transportation projects located in disadvantaged communities. These grants provide incentives for those transportation improvements that are necessary but may not be feasible due to financial constraints. Grants and funding sources available for projects in the region include, but are not limited to, the following:

- California Department of Transportation Active Transportation Program (ATP)
- Strategic Growth Council's (SGC) Affordable Housing and Sustainable Communities (AHSC) Program
- SGC's Sustainable Agricultural Lands Conservation (SALC) Program
- SGC's Urban Greening Grant (UGG) Program
- SGC's Sustainable Communities Planning Grants and Incentives Program
- The California State Transportation Agency (CalSTA) Low Carbon Transit Operations Program.

Further, legislation passed in 2011, Senate Bill 535, requires that programs funded from revenues in the Greenhouse Gas Reduction Fund result in benefits to disadvantaged communities. The designation of "disadvantaged communities" is assigned to the California Environmental Protection Agency, and the establishment of guidelines for qualifying expenditures is assigned to the California Air Resources Board. The CalSTA's Low Carbon Transit Operations Program targets grants so that at least 50 percent of project expenditures will benefit disadvantaged communities in agencies that include communities designated as disadvantaged.

4.6.2 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 effects and social and/or economic effects for minority or low-income populations. Therefore, the 2015 RTP would have a significant impact on a community of concern if:

- Implementation of the 2015 RTP would lead to disproportionately high and adverse human health or environmental impacts to the minority populations, low-income populations, and/or populations with low mobility in the SRTA region.
- The mobility benefits derived from the 2015 RTP in terms of travel times and accessibility by transit and/or single occupancy vehicle would be substantially less for minority populations, low-income populations, and/or populations with low mobility in the SRTA region.

b. Project Impacts and Mitigation Measures.

Impact EJ-1 Implementation of the 2015 RTP may cause adverse effects on a minority or low-income population; however, these potential impacts would not be disproportionately high as per Executive Order 12898 regarding environmental justice. This would be a Class III, *less than significant* impact.

Temporary Impacts. During construction of some transportation improvement projects and future infill development under the 2015 RTP, some minority and/or low-income populations may be affected (see Figure 2-2 which shows the locations of the 2015 RTP projects, including those that may result in impacts to these communities). These improvement projects may have temporary air quality, noise, and traffic (refer to Sections 4.2 *Air Quality* and 4.11 *Noise* and 4.12 *Transportation and Circulation*) impacts on surrounding communities. Specific air quality impacts could include exposure to dust resulting from operation of construction vehicles (e.g., scrapers, loaders, dump trucks), and clearing and grading activities. Other air quality impacts include temporary 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 depending on the type of equipment used. Minority populations may be exposed to these impacts; however, such impacts would be mitigated to a less than significant level through implementation of the mitigation measures listed in Sections 4.2 *Air Quality* and 4.11 *Noise*. Temporary traffic impacts include delays during road closures or other disturbances caused by construction activities; however, because they are temporary, impacts related to traffic delay would not be considered significant. Since the 2015 RTP projects are located throughout the populated areas of the SRTA region and Environmental Justice communities are spread throughout the SRTA region, areas with high concentrations of environmental justice populations would not be disproportionately affected. Thus, these impacts are considered Class III, less than significant.

Long-Term Impacts. Minority populations located in proximity to major highways and roadways proposed for improvements may be exposed to hazardous criteria pollutants. However, as discussed in Section 4.2 *Air Quality*, PM_{10}, NOx, and VOC emissions under the 2015 RTP would be lower than both existing conditions and future conditions without the proposed 2015 RTP. As a result, impacts to minority populations that may occur in proximity to the roadways would be Class III, less than significant. Ambient noise throughout the region would increase as a result of an overall increase in vehicle activity. Mitigation measures identified in Section 4.11 *Noise,* would reduce potential impacts to less than significant.

Individual RTP projects may have impacts on specific Environmental Justice communities located in close proximity to the project. These communities contain various minority populations and may be affected by the 2015 RTP projects; however, many of the projects within these communities would improve access to other parts of the region as well as access to alternative modes of transportation. The 2015 RTP projects would not disproportionately impact environmental justice populations as other non-minority populations would be similarly impacted by 2015 RTP projects.

In addition to transportation projects, the future land use scenario envisioned by the RTP encourages infill. This strategy is intended to increase residential and commercial land use capacity within existing developed corridors, shifting a greater share of future growth to these corridors ultimately increasing density, improving circulation and multimodal connections. The proposed land use scenario would locate people closer to existing goods and services, as well as transportation hubs. As a result, the RTP land use scenario would locate people closer to areas with increased light and glare, increase concentrations of air pollutants, and elevated noise levels. These specific impacts are discussed in Sections 4.1 *Aesthetics*, 4.2 *Air Quality* and 4.11 *Noise*, respectively. While future residents within infill projects could include minority populations, this land use scenario would not disproportionately affect minority populations as future infill projects would serve a diverse population and would be dispersed throughout urbanized areas. Mitigation Measure AQ-3(a) states that project sponsors shall identify appropriate and feasible measures, to be incorporated into project building design for residential, school and other sensitive uses located within 500 feet of freeways, heavily travelled arterials, railways and other sources of diesel particulate matter and other known carcinogens. This measure would further ensure that any population, including environmental justice communities, would not be exposed to health hazards as a result of an RTP project.

Therefore, based on the analysis above, the 2015 RTP would not disproportionately expose minority populations, low-income population or low-mobility populations to adverse environmental impacts. Impacts would be Class III, less than significant.

Mitigation Measures. None required in addition to those recommended to address impacts to Air Quality, Noise and Transportation referenced above.

Significance after Mitigation. Impacts would be less than significant without mitigation.

Impact EJ-2 The mobility benefits derived from the 2015 RTP related to travel times and accessibility by transit, single-occupancy vehicles, bicycling or walking will not be less for minority populations, low-income populations, and populations with low mobility in the SRTA region than for the population as a whole. This impact would be Class III, *less than significant.*

2015 RTP transit projects are likely to improve the overall accessibility to high quality transit within the SRTA region. Proposed transit projects are distributed throughout the SRTA region and are focused around the higher populated and urbanized areas of the region. As such, the 2015 RTP projects would increase the ability of the Environmental Justice communities to use public transit to travel to other parts of the SRTA region. Based on the evaluation of the transportation improvement projects and future land use patterns envisioned by the 2015 RTP, mobility benefits would not be significantly less for low-income or minority populations. Overall, the 2015 RTP would improve mobility for minority populations and Environmental Justice communities, as well as non-minority populations. Impacts would be Class III, less than significant.

Mitigation Measures. None required.

Significance after Mitigation. Impacts would be less than significant without mitigation.

c. Projects That May Result in Impacts. The 2015 RTP projects are listed in Appendix B. Some may create impacts, as discussed under Impact EJ-1. However, overall, the 2015 RTP is expected to improve access and mobility throughout the SRTA region, including to/from and within the Environmental Justice communities. Additionally, individual projects could impact Environmental Justice communities, but would not necessarily do so disproportionately when compared to the overall population.

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4.7 GEOLOGY

This section discusses potential impacts relating to geologic and soil hazards.

4.7.1 Setting

a. Regional Geology. Shasta County is situated where the Central Valley of California meets the convergence of the Klamath and Coastal Mountain Ranges to the northwest and west, with the Cascade Mountain range to the northeast and east (Shasta County 2011). Shasta County lies at the northern end of the Great Central Valley and has the unique distinction of having three different mountain ranges flow into the County: Sierra Nevada Mountain Range, Cascade Mountain Range, and Coastal Mountain Range. Figure 4.7-1 shows the geomorphic provinces present within Shasta County.

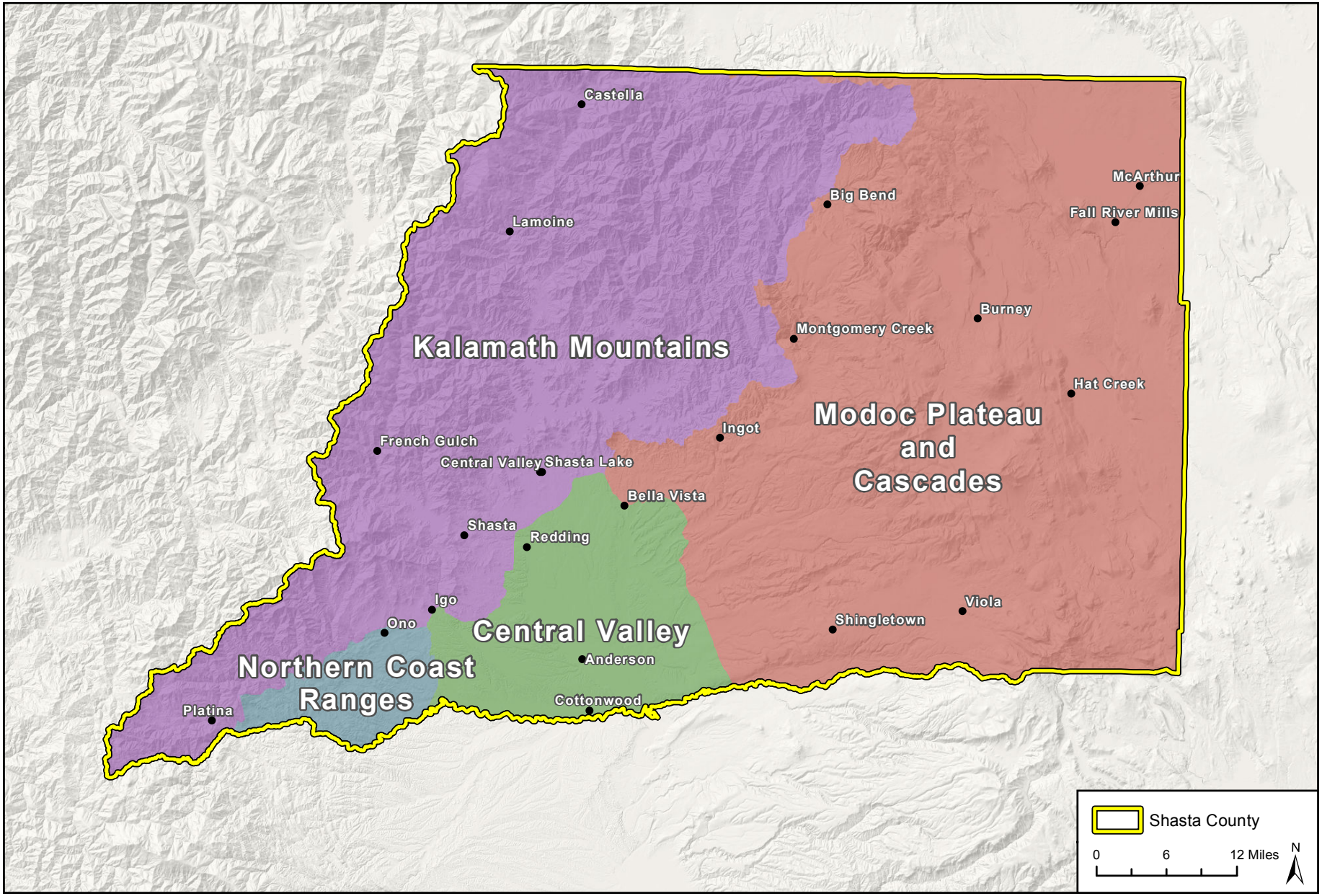
In Shasta County, the Great Central Valley area includes the cities of Anderson, Redding, and Shasta Lake (Shasta County 2011). The Sierra Nevada Mountain Range in the eastern section of the County is part of a mountain range that runs north-south for 400 miles. The topography of the Sierra Nevada is shaped by uplift and glacial action. The Coastal Mountain Range segment identified as the Trinity Mountains are located between Trinity Lake and Lake Shasta. The range lies in a southwest-northeasterly direction about 17 miles northwest of Redding, and stretches over a distance of 30 to 35 miles. Peaks range form about 4,000 feet at the southern end of the mountains, to no more than 7,200 feet. The Cascade Mountain Range extends northward for more than 700 miles from Lassen Peak through Oregon and Washington to the Fraser River in southern British Columbia, Canada. In Shasta County, the Cascades extend from north to south through the eastern half of the county. Most of the summits in the Cascades are extinct volcanoes, but Lassen Peak (10,457 feet) and several others have erupted in the recent past.

Shasta County features extreme topographic diversity. Five of California's eleven geomorphic provinces are within the county limits. These five geomorphic provinces are described in the following paragraphs.

The Klamath Mountains geomorphic province makes up the northwest quarter of Shasta County, as well as some of the southwestern border. It is characterized by deep canyons and rugged ridges and peaks that range from 500 feet near Redding to 6,000 to 8,000 feet above sea level near the Trinity-Shasta County line (CGS 2002). The rock types are ancient sedimentary, igneous, and metamorphic rocks which contain practically no groundwater.

The North Coastal Range province is located south of the Klamath Mountains, composed of northwest-trending mountain ranges (2,000 to 4,000, occasionally 6,000 feet above sea level) (CGS 2002), and valleys. The North Coastal Range province extends into the southwest corner of Shasta County as far as Clear Creek. A small portion of it reaches into Shasta County between the unincorporated areas of Ono and Platina. The topography is characterized by low, rounded, brush-covered hills and north trending ridges. Rock types include predominantly sandstone and shale of marine origin.

The Cascade Range lies immediately east of both the Klamath Mountains and the Great Central Valley provinces and extends from north to south through the eastern half of the county. The



Data provided by the California Geological Survey, 2003.

Geomorphic Provinces in Shasta County

Figure 4.7-1

Cascade province occupies most of the eastern half of Shasta County. The province is composed of a chain of volcanic cones, dominated in Shasta County by Mt. Lassen. Lassen Peak, which marks the southern terminus of the Cascade province, is located in the southeast corner of the county. The axis of the province extends north- west through Mount Shasta. Mt. Lassen last erupted in the early 1900s. The Pit River, which originates on the Modoc Plateau further east, has cut a steep canyon through the volcanic materials comprising the Cascade province.

The Great Central Valley province is an area of low relief in the south central portion of the county. It is essentially an interior plain. Most of the southern half of Shasta County is included in the Great Valley province. Rock types in this province are all sedimentary, capable of storing and transmitting large quantities of ground water. The greatest concentration of wells and the greatest use of ground water for irrigation and domestic purposes are in this province. The Great Valley is a trough in which sediments have been deposited almost continuously since the Jurassic (about 150 million years ago).

The Modoc Plateau province is situated in the northeast portion of the County (elevation 4,000-6,000 feet above sea level) (CGS 2002). It is bounded on the west and south by the Cascade province, and the basin and range on the east and south. The Modoc Plateau province is made up of thick basaltic lava flows with some interbedded lake sediments. Structurally, the area is characterized by north-trending tilted fault blocks; the topographically low areas may contain lake sediments. Fall River Valley, a portion of this area, is an ancient lakebed with an elevation of 3,500 feet.

b. Faulting and Seismicity. Generally defined, an earthquake is an abrupt release of accumulated energy in the form of seismic waves when movement occurs along a fault. The severity of an earthquake generally is expressed in two ways—magnitude and intensity. The energy released, measured on the Moment Magnitude (MW) scale, represents the size of an earthquake. The Richter Magnitude (M) scale has been replaced in most modern building codes by the MW scale because the MW scale provides more useful information to design engineers. The intensity of an earthquake is measured by the Modified Mercalli Intensity (MMI) scale, which emphasizes the current seismic environment at a particular site and measures groundshaking severity according to damage done to structures, changes in the earth surface, and personal accounts. Table 4.7-1 (Modified Mercalli Intensity Scale) identifies the level of intensity according to the MMI scale and describes that intensity with respect to how it would be received or sensed by its receptors.

Faults are categorized as active, potentially active, and inactive. A fault is classified as active if it has moved during the Holocene time (during the last 11,000 years). A fault is classified as potentially active if it has experienced movement within Quaternary time (during the last 1.8 million years). Faults that have not moved in the last 1.8 million years are generally considered inactive.

Table 4.7-1
Modified Mercalli Intensity Scale

Modified Mercalli Intensity	Description
I	Not felt except by a very few under especially favorable conditions
II	Felt by a few people at rest, especially in upper floors of buildings
III	Felt noticeably indoors, but not always recognized as a quake; vibration like a passing truck
IV	Felt indoors by many and outdoors by few. Sensation like heavy truck striking building
V	Felt by nearly everyone. Some breakage of windows, dishes, and plaster
VI	Felt by all; some heavy furniture moved; falling plaster; damage small
VII	Damage negligible in buildings of good design and construction
VIII	Damage slight in specially designed structures; considerable damage in ordinary substantial buildings; Walls, monuments, chimneys fall
IX	Damage considerable; buildings shift off foundations
X	Most masonry and frame structures destroyed; railroad rails bent
XI	Few structures remain standing; bridges destroyed
XII	Damage total; lines of sight and level are distorted; objects thrown into the air

Source: US Geological Survey. http://earthquake.usgs.gov/learn/topics/mercalli.php

In 1972, the California State Legislature enacted the Alquist-Priolo Earthquake Fault Zoning Act (California Pubic Resources Code Section 2622), which requires the State Geologist to delineate Earthquake Fault Zones around all known traces of potentially and recently active faults in California. The Alquist-Priolo Act requires withholding of construction permit approval until geologic investigation has determined that the building site is not threatened by surface fault displacement. The Earthquake Fault Zones are usually one-quarter mile or less in width. The California Division of Mines and Geology (CDMG) has prepared maps which identify Alquist-Priolo Earthquake Fault Zones in Shasta County. These maps were adopted in November 1991 by the CDMG and include some rural areas in northeastern Shasta County which include generally the following areas:

- Portion of upper Butte Creek area north of Lassen Park. (southern McArthur Fault)
- Generally the Hat Creek Rim area including portions of Cassel. (Hat Creek Fault)
- Portions of the Day Bench area. (Pittville Fault)
- Eastern portions of Fall River Valley including eastern McArthur. (McArthur Fault)
- Portions of Long Valley north of Burney. (Rocky Ledge Fault)
- East of Johnson Park. (Rocky Ledge Fault)

The CDMG is also conducting research on the extent and significance of a series of "thrust" faults recently discovered in the extreme southwest portion of the County in areas of sedimentary shelf rocks located at the eastern base of the Coast Range in the Sacramento Valley (Shasta County General Plan 2001).

Development proposals for critical or high density structures within a half mile of any fault which is identified as needing a special geologic hazard study by the CDMG Earthquake Fault Zone Maps are required to include fault zone information with the proposal's application. Critical or high density structures may include hospitals, schools, power plants, dams,

administrative/office buildings, or high density apartment buildings (Shasta County General Plan 2001). Such a study should be performed by a registered geologist according to the general guidelines of the California Division of Mines and Geology.

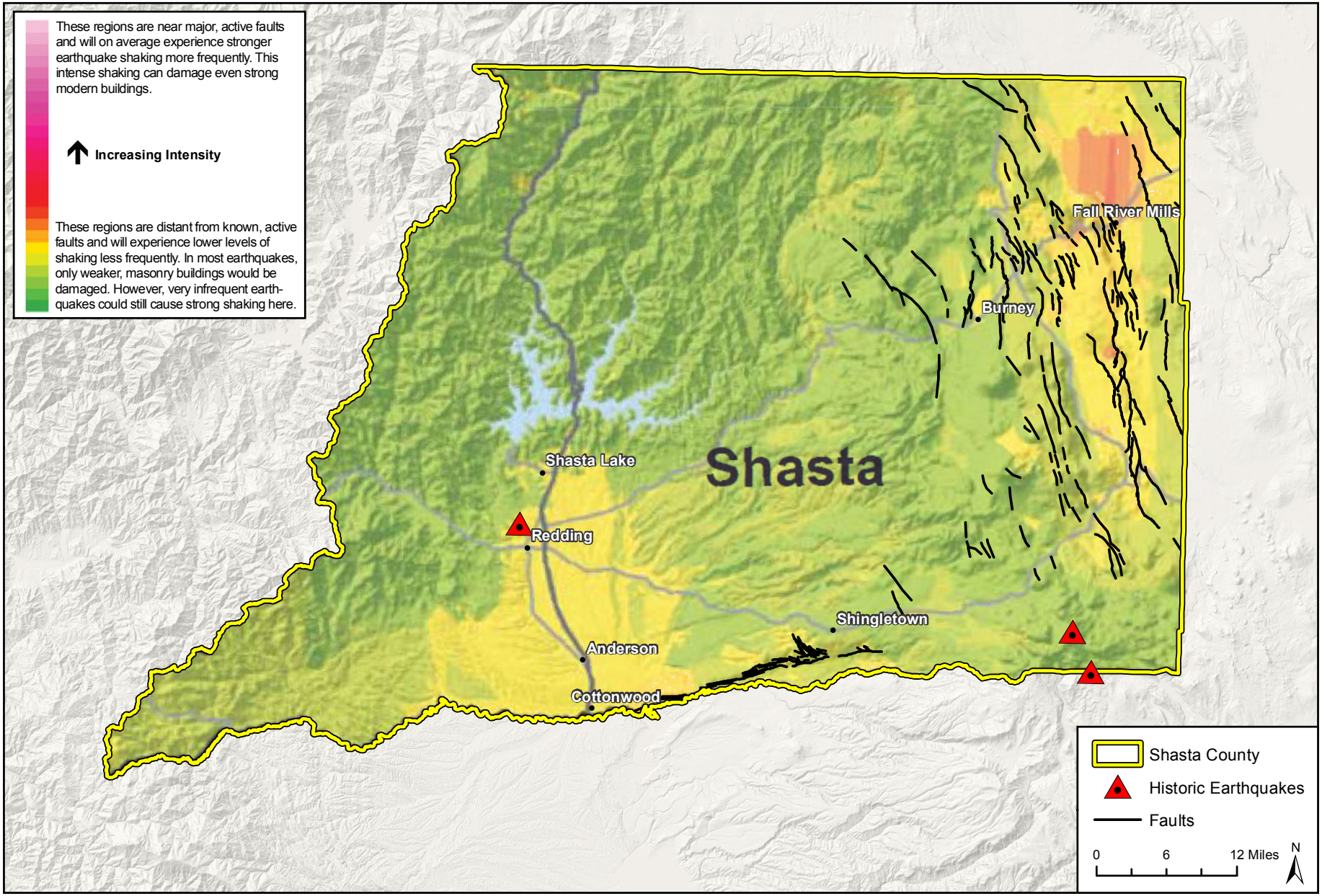
c. History of Earthquakes. Shasta County has a low level of historic seismic activity (Shasta County, 2011). In the past 120 years there has been no significant property damage or loss of life due to earthquakes occurring within or near the County. Maximum recorded intensities have reached MM VII (damage negligible in buildings of good design and construction), with possibly one instance of MM VIII (damage slight in specially designed structures; considerable damage in ordinary substantial buildings; Walls, monuments, chimneys fall). Most of the stronger intensity seismic activity in Shasta County has occurred in the eastern half of the County near Lassen Peak. The City of Redding is located in the less seismically active western half of Shasta County, referred to as an area of moderate seismicity. Earthquake activity has not been a serious hazard in the City of Redding's history, nor is it probable that it will become a serious hazard in the future. Research of historical earthquakes indicates that Redding has experienced several moderate sized earthquakes, magnitude 4.0 to 4.5 (estimated) in 1904, 1915, 1919, 1920 and 1930.

Figure 4.7-2 shows historic earthquakes in Shasta County that have been greater than magnitude 5.0. Of the three historic earthquakes shown, two were in the southeast corner of Shasta County and took place in 1920 and 1950 in an area where RTP projects would not take place. The other remaining earthquake occurred in 1998 near the City of Redding and where many RTP projects would take place.

On November 26 (Thanksgiving Day), 1998, the City of Redding experienced a local magnitude ML 5.2 earthquake that was centered three miles north-northwest of Redding near Keswick Dam. This was the largest recorded earthquake since the U.S. Geological Survey began monitoring Shasta County in 1981 and believed to be the largest earthquake in the Redding area since 1878. No structural damage was reported in the City of Redding.

d. Ground-shaking. There are fault lines located in southern and eastern Shasta County that could produce low to moderate ground shaking. Ground shaking is the principal cause of damage in a seismic event and could catalyze dam failures, landslides and fires. According to the U.S. Geological Survey (USGS), factors that affect the potential damage of structures and systems as a result of severe ground shaking include epicenter location and depth, the proximity to a fault, the direction of the rupture, the magnitude, the existing soil and geologic conditions, and the structure-type. Newer structures are more resistant to ground shaking. Structure damage is considered likely when ground motion average peak accelerates and reaches 10% and 15% of gravity (Shasta County 2011).

According to the California Geological Survey's (CGS) Probabilistic Seismic Hazards Assessment (PSHA), the area is subject to low and moderate ground shaking and lies within the 10% to 30% gravity zone (CGS 2003). The region within the boundaries of the County has not sustained damages attributed to earthquakes, dam failures, or landslides as far as records have been maintained and Shasta County has not proclaimed a state of emergency due to earthquakes events.



Data provided by ENPLAN, 2014.

Shasta County Earthquake Faults

Figure 4.7-2

The maximum earthquake intensity in the county is expected to be between MM VI & MM VII (see Table 4.7-1). These ground accelerations correspond to the earthquake that has a 10% probability of exceeding in 50 years, or the earthquake that has a return interval of 475 years. Damage in Shasta County resulting from earthquakes would most likely be from ground shaking, and less likely from related ground failure. The effects of ground shaking are best mitigated by adequate design for the maximum probable earthquake for the County. The effects of ground failure are best mitigated by adequate geotechnical investigations of specific sites. The County enforces the California Building Code, which establishes building requirements for all new structures based on predicted earthquake intensities. The risk of loss of life and property damage due to seismic activity is assumed to be minimized if the California Building Code is enforced (Shasta County Hazard Mitigation Plan 2011).

The City of Redding recently ran an earthquake scenario based on an expected peak ground acceleration (PGA) of 18%g over the entire County (Shasta County Hazard Mitigation Plan 2011). Building Damage Ratios were estimated at 6% for older structures located in the immediate downtown area of the City, and 3% for all other areas within the City. The Building Damage Ratio represents an estimate of the ratio, as a percentage, of the repair cost divided by the replacement cost. The higher damage ratio in the downtown area was chosen since these structures are typically older and less likely to have been constructed with any seismic code design provisions (i.e. pre seismic code buildings). The total damage is estimated at $198 million for the City as a whole, which is less than 1% of the damage estimates from the 1994 Northridge earthquake

e. Liquefaction. Liquefaction (the loss of soil bearing strength during a strong earthquake) is a potential occurrence in several areas with younger soils as well as in areas where the groundwater table is less than 50 feet deep. The severity of ground deformation due to liquefaction is dependent on the density and depth of the liquefied material. Shallower materials experience the most severe effects. Liquefaction potential is also determined from soil type and the duration and intensity of ground mobilization as a result of increased pore water pressure induced by significant groundshaking (Shasta County 2011). Given that groundshaking associated with seismic events in Shasta County would generally be low to moderate in intensity, the risk of liquefaction is also generally low.

The National Earthquake Hazards Reduction Program (NEHRP) rates soils from hard to soft, and give the soils ratings from Type A through Type E, with the hardest soils being Type A, and the softest soils rated at Type E. Liquefaction risk is considered high if there were soft soils (Types D or E) present within an active fault zone. Areas in Shasta County with the highest potential for liquefaction are located along the Sacramento River and its tributaries.
The majority of the soils in the County are types A-C, with some areas having type D. No type E soils were identified, nor was consistent mapping of soil types. For these reasons, combined with a lack of liquefaction history, liquefaction was not analyzed separately as a hazard from groundshaking in the Shasta County Hazard Mitigation Plan (Shasta County 2011). As mentioned above, Shasta County is subject to low to moderate groundshaking levels.

f. 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. Precipitation, topography, and geology affect landslides and debris flows. Human activities, such as mining,

road construction, and changes to surface drainage areas, also affect the landslide potential. Landslides often accompany other natural hazard events, such as floods, wildfires, or earthquakes. They can also occur slowly or very suddenly and damage and destroy structures, roads, utilities, and forested areas and cause injuries and death.

Landslides occur throughout Shasta County; however, landslides are more prevalent in the eastern and northern portions of Shasta County and are commonly related to the sedimentary and volcanic rocks in these vicinities (Shasta County, 2011). These areas are generally remote and relatively uninhabited areas. Landslides are considered a low or minor threat in the 2011 Shasta County Hazard Mitigation Plan.

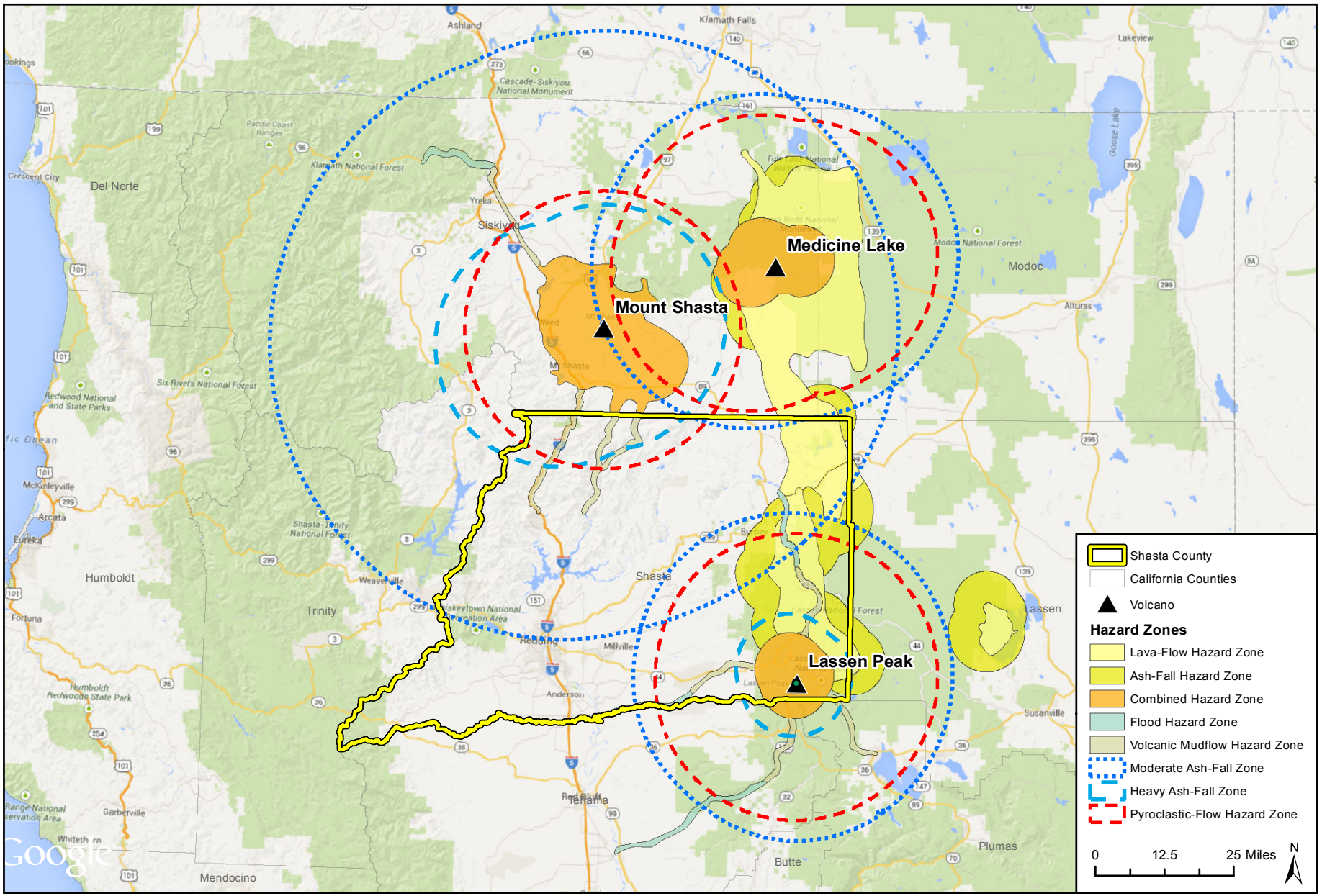
g. Expansive, Compressible/Collapsible Soils. Soils with relatively high clay content are expansive due to the capacity of clay minerals to take in water and swell (expand) to greater volumes. Because the bedrock and soils contain relatively significant amounts of clay, this can be a condition experienced along numerous roadways in the area. Collapsible and compressible soils occur in areas where fine-grained soils have accumulated relatively rapidly and not been buried with associated consolidation.

Most of Shasta County is characterized by moderately expansive soils with areas of low expansiveness in the South Central Region and southeastern corner of the County (Shasta County 2011). Expansive soils are considered a low or minor threat in the 2011 Shasta County Hazard Mitigation Plan.

h. Volcano. Volcanoes produce a wide variety of hazards that can endanger people and destroy property. Large explosive eruptions can endanger people and property hundreds of miles away and even affect global climate. Some of the volcano hazards, such as landslides, can occur even when a volcano is not erupting.

Volcanic eruptions result in fires, toxic gas emissions, air pollution, extensive ash deposits, and could catalyze earthquakes, landslides, and floods. Ash deposits can create public health, telecommunications, and structure damage hazards. California volcanoes are generally well removed from urban areas. Regions at greater risk of experiencing volcanic activity such as lava flows, ashfall, lahars (volcanic mudflows), and debris avalanches are limited to sparsely populated resort areas (for example, Shasta and Mammoth Lakes regions).

According to an April 2005 report published by the USGS, Mount Shasta and Lassen Peak, are considered to be "very high threat volcanoes" with limited monitoring (USGS, 2005). Mount Shasta erupted with pyroclastic flows in 1786, and Lassen Peak experienced a series of small explosions in 1914 that was followed by destructive lava flows in 1915 (USGS, 2004). Although Shasta County has experienced some volcanic activity, the South Central Urban Region has not sustained damages attributed to volcanic activity as far as records have been maintained. In their April 2005 report, the USGS proposed the highest level of monitoring, Level 4, for Mount Shasta and Lassen Peak, both of which are currently at the Level 2 monitoring stage. Monitoring includes tracking detailed changes in real-time of on-going activities such as seismic, land deformation, and gas emissions. Figure 4.7-3 shows the volcanic hazard zone, which covers the majority of Shasta County except for the southwest corner, where many RTP projects would occur.



Basemap provided by Google, 2014.
Data provided by ENPLAN, 2014.

Northern California Volcanic Hazards

Figure 4.7-3

Medicine Lake Volcano is a broad shield volcano capped by a 4- by 7-mile-wide caldera that erupted at least seven times in the past 4,000 years, most recently about 950 years ago. With a volume of more than 130 cubic miles, it is the largest volcano in the Cascade Mountain Range (USGS 2008).

Mount Shasta has been the most active volcano in California during the past 4,000 years. During that time, Shasta has erupted on average about once every 300 years, producing many pyroclastic flows and lahars. Mount Shasta last erupted in 1786 (USGS 2008).

The Lassen Volcanic Field includes Lassen Peak and is the southernmost volcanic center in the Cascade Mountain Range. The most recent volcanic eruptions in California occurred at Lassen Peak from 1914 to 1917. An explosive eruption on May 22, 1915, produced a large pyroclastic flow, lahars, and ash that fell as far away as Elko, Nevada, 300 miles to the east (USGS 2008).

Populations living near volcanoes are most vulnerable to volcanic eruptions and lava flows, although volcanic ash can travel and affect populations many miles away. While there are about 20 volcanic locations in California, only a few are active and pose a threat (USGS 2008).

Under the Disaster Relief Plan (Public Law 93-288), USGS, through its Volcano Hazards Program (VHP), is responsible for issuing warnings of potential volcanic disasters to civil authorities and affected communities. The mission of the VHP is to enhance public safety and reduce losses from volcanic events through forecasts and warnings of volcanic hazards. The VHP monitors volcano unrest and eruption; prepares volcano hazard assessments; conducts research on volcanic processes; and provides forecasts, warnings, and volcano-hazard information.

4.7.2 Impact Analysis

a. Methodology and Significance Thresholds. In accordance with the State CEQA Guidelines, a project would result in a significant impact if it would:

- *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;*
- *Result in substantial soil erosion or the loss of topsoil;*
- *Result in the loss of a unique geologic feature;*
- *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;*
- *Be located on expansive soil, creating substantial risks to life or property; or*
- *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.*

Because the location of each of the proposed RTP project improvements is different in geologic character, determination of significance is based on an individual study at the time of the project permit application and environmental review. Therefore, for the purposes of this EIR,

proposed transportation modifications that are located in areas of moderate to high geologic or soil hazard shall be considered significant.

Impacts related to soils capable of supporting septic tanks are discussed in Section 4.13, *Less than Significant Environmental Factors*.

b. Project Impacts and Mitigation Measures. This section describes generalized impacts associated with some of the projects anticipated under the 2015 RTP. Table 4.7-2 in Section 4.7.2.c summarizes the specific projects that could result in the impacts discussed in this section.

Impact G-1 **Some proposed 2015 RTP projects could be at risk from seismic activity. Although fault rupture and seismically induced liquefaction do not pose a substantial threat in Shasta County, ground-shaking may affect 2015 RTP projects. This is considered a Class II, *significant but mitigable* impact.**

As discussed in Section 4.7.1, *Setting*, there are fault lines located in southern and eastern Shasta County that could produce low to moderate ground shaking that would be experienced by 2015 RTP projects. Given that groundshaking associated with seismic events in Shasta County would generally be low to moderate in intensity, the risk of liquefaction is also generally low.

It is expected that future earthquakes would be low to moderate in intensity in the county, but very infrequent earthquakes could cause strong ground-shaking. Bridge-type structures are most susceptible to earthquake groundshaking, although roadways may also be damaged. Construction or modification of bridges over the Sacramento River is proposed. Potential impacts from ground-shaking to these project and other similar type projects would be significant but mitigable.

Mitigation Measures. SRTA recommends that individual project lead agencies implement the following mitigation measure for applicable transportation projects, including but not limited to those projects identified in Table 4.7-2. This measure can and should also be implemented for all projects developed pursuant to the 2015 RTP that would result in seismic impacts.

G-1 The lead agency in which a particular 2015 RTP bridge project is located shall ensure that the structure is designed and constructed to the latest geotechnical standards. In most cases, this will necessitate site-specific geologic and soils engineering investigations to exceed the code for high groundshaking zones. This can be accomplished through the placement of conditions on the project by the lead agency during individual environmental review.

Significance After Mitigation. Implementation of the above measure would reduce potential impacts to a less than significant level.

Impact G-2 Some projects proposed in the 2015 RTP may be located on unstable soils. This is considered a Class II, *significant but mitigable* impact.

Unstable soils encompass a range of geologic hazards such as liquefaction, landslides, and expansive soils. It is not expected that projects proposed in the 2015 RTP would be susceptible to liquefaction because groundshaking is usually low to moderate in intensity in Shasta County. Expansive soils are also considered a low or minor threat in Shasta County. Although impacts from liquefaction and expansive soils are not expected, impacts related to landslides are considered potentially significant, and each project in a landslide hazard area would require a more thorough evaluation as it is proposed.

Historically, most landslides in Shasta County have occurred in remote uninhabited portions of the eastern or northern part of the county, where the terrain is mountainous and groundshaking from seismic activity is higher in severity compared to the rest of the RTP plan area. Transportation improvements are proposed on Interstate 5 and State Routes 44, 89, and 299, which could potentially be subject to landslides in certain locations. The identification of on-site geologic hazards would require preparing project-specific geotechnical evaluations for proposed RTP projects. Due to the programmatic nature of the RTP, such detailed evaluation would only be required upon review of a given RTP project. The project-specific geotechnical evaluations prepared prior to implementing RTP projects would identify and evaluate geologic hazards for that particular project site. Generally, the analysis would recommend preparing sites for development to avoid the identified geologic hazards. Nonetheless, because projects under the proposed RTP would potentially be exposed to expansive soils and landslide hazards, potential impacts would be Class II, significant but mitigable.

Mitigation Measures. SRTA recommends that individual project lead agencies implement the following mitigation measure for applicable transportation projects, including but not limited to those projects identified in Table 4.7-2. This measure can and should also be implemented for all projects developed pursuant to the 2015 RTP that would result in impacts associated with expansive soils and landslides.

G-2 If an RTP project involves cut slopes over 15 feet in height, the lead agency in which the project is located shall ensure that specific slope stabilization studies are conducted. Possible stabilization methods include buttresses, retaining walls and soldier piles.

Significance After Mitigation. Implementation of Mitigation Measure G-2 would reduce potential impacts to a less than significant level.

Impact G-3 Implementation of proposed transportation improvements and future projects facilitated by the 2015 RTP could be subject to volcanic hazards. However, impacts are considered Class III, *less than significant.*

As discussed previously, Shasta County is in close proximity to three volcanoes (Mount Shasta, Lassen Peak, and Medicine Lake Volcano), and therefore could be subject to volcanic hazard

risk in the event of an eruption or volcanic activity. As shown in Figure 4.7-3, most of the County and therefore some RTP projects would be subject to varying degrees of ash-fall if an eruption were to occur. RTP projects in the eastern portion of the county may be subject to lava flows, ashfall, lahars (volcanic mudflows), and debris avalanches. However, the RTP would not directly increase the potential for people to be subject to volcanic hazards as the proposed RTP projects are intended to enhance existing transportation facilities rather than increasing development potential in remote areas that are located in close proximity to the regions three volcanoes. These projects could potentially reduce impacts related to volcanic hazards as transportation facilities including possible emergency or evacuation routes would be enhanced as a result of the RTP. In addition, in the event of volcanic activity, emergency evacuation procedures consistent with the USGS' Volcano Hazards Program (VHP) would be implemented reducing impacts. Impacts would be Class III, less than significant.

Mitigation Measures. None required.

Significance after Mitigation. Impacts would be less than significant without mitigation.

c. Specific RTP Projects That May Result in Impacts. Table 4.7-2 identifies projects that may create impacts as discussed in Section 4.7.2.b above. The individual projects listed could create significant geologic impacts but would not necessarily do so. Additional specific analysis will need to be conducted as the individual projects are implemented in order to determine the actual magnitude of impact. Mitigation measures discussed above would apply to these specific projects.

Table 4.7-2
2015 RTP Projects that May Result in Geologic and Soil Impacts

SRTA Project Name	Project Number	Project	Location	Impact	Description of Impact
Catrans Bridges	1	Route 44, Begin PM 59.62, 06-0084 Hat Creek, Bridge Replacement	Shasta County	G-1	Bridge Modification
Catrans Bridges	2	Route 5, Begin PM 66.8, 06-0095 Craig View Drive, Bridge Replacement	Shasta County	G-1	Bridge Modification
Catrans Bridges	3	Route 5, Begin PM 57.41, 06-0111 Sims Road UC, Superstructure or bridge replacement	Shasta County	G-1	Bridge Modification
Catrans Bridges	4	SR 44, Start/End PM 7.4, 06-0152 Cow Creek,Seismic retrofit	Shasta County	G-1	Bridge Modification
Catrans Bridges	5	SR 44, Start/End PM 4.55, 06-0151 Clough Creek, bridge rehabilitation	Shasta County	G-1	Bridge Modification
Catrans Bridges	6	Route 5, Begin PM 28.14, Pit River Bridge, Seismic and Paint	Shasta County	G-1	Bridge Modification
Catrans Bridges	7	Route 89, Begin PM 25.3, End PM 31.7, Lake Britton, Replace Bridge and realign roadway	Shasta County	G-1	Bridge Modification

Table 4.7-2
2015 RTP Projects that May Result in Geologic and Soil Impacts

SRTA Project Name	Project Number	Project	Location	Impact	Description of Impact
Catrans Bridges	8	SR 44, Start PM 0/ End PM 60, Bridges at various locations, Deck rehab, paint, joints, etc.	Shasta County	G-1	Bridge Modification
Catrans Bridges	9	SR 299, various locations in Shasta County, Deck rehab, paint and joint repair/replacement	Shasta County	G-1	Bridge Modification
Caltrans Operations	6	Route 5, Begin PM Var, End PM Var, In Shasta County at various locations on Interstate 5, Upgrade MBGR and possibly flatten some slopes	Shasta County	G-1	Bridge Modification
Shasta County Bridge	1	Spring Creek Road @ Fall River - Replace Bridge	Shasta County	G-1	Bridge Modification
Shasta County Bridge	2	Cassel Fall River Road @ Pit River - Replace Bridge	Shasta County	G-1	Bridge Modification
Shasta County Bridge	3	Soda Creek Road @ Soda Creek - Replace Bridge	Shasta County	G-1	Bridge Modification
Shasta County Bridge	4	Gas Point Road at No Name Ditch - Replace Bridge	Shasta County	G-1	Bridge Modification
Shasta County Bridge	5	Lower Gas Pt Road @ NFk Cottonwood Creek - Replace Bridge	Shasta County	G-1	Bridge Modification
Shasta County Bridge	6	Ash Creek Road @ Sacramento River overflow - Replace Bridge	Shasta County	G-1	Bridge Modification
Shasta County Bridge	7	Parkville Road @ Ash Creek - Replace Bridge	Shasta County	G-1	Bridge Modification
Shasta County Bridge	8	Inwood Road @ South Fork Bear Creek - Replace Bridge	Shasta County	G-1	Bridge Modification
Shasta County Bridge	9	Island Road @ Little Tule River - Replace Bridge	Shasta County	G-1	Bridge Modification
Shasta County Bridge	10	Ponderosa Way @ NFk Bear Creek - Replace Bridge	Shasta County	G-1	Bridge Modification
Shasta County Bridge	11	White House Road @ ACID Canal - Replace Bridge	Shasta County	G-1	Bridge Modification
Shasta County Bridge	12	Soda Creek Road @ SFk Soda Creek - Replace Bridge	Shasta County	G-1	Bridge Modification
Shasta County Bridge	13	Ponderosa Way @ Snow Creek - Replace Bridge	Shasta County	G-1	Bridge Modification
Shasta County Bridge	14	Bear Mtn. Road @ Deep Hole Creek - Replace Bridge	Shasta County	G-1	Bridge Modification
Shasta County Bridge	15	Holiday Rd @ Spr. Branch Stillwater Crk - Replace Bridge	Shasta County	G-1	Bridge Modification
Shasta County Bridge	16	Adobe Road @ Anderson Creek - Replace Bridge	Shasta County	G-1	Bridge Modification

Table 4.7-2
2015 RTP Projects that May Result in Geologic and Soil Impacts

SRTA Project Name	Project Number	Project	Location	Impact	Description of Impact
Shasta County Bridge	17	Oak Run Road @ Oak Run Crk - 6C-188 - Replace Bridge	Shasta County	G-1	Bridge Modification
Shasta County Bridge	18	Lakeshore Road @ Doney Crk - Replace Bridge	Shasta County	G-1	Bridge Modification
Shasta County Bridge	19	Lakeshore Road @ Charley Crk - Replace Bridge	Shasta County	G-1	Bridge Modification
Shasta County Bridge	20	Ponderosa Way @ Snow Creek - Replace Bridge	Shasta County	G-1	Bridge Modification
Shasta County Bridge	21	Spring Creek Road @ Fall River - Replace Bridge	Shasta County	G-1	Bridge Modification
Shasta County Bridge	22	Cassel Fall River Road @ Pit River - Replace Bridge	Shasta County	G-1	Bridge Modification
Shasta County Bridge	23	Soda Creek Road @ Soda Creek - Replace Bridge	Shasta County	G-1	Bridge Modification
Shasta County Bridge	24	Gas Point Road at No Name Ditch - Replace Bridge	Shasta County	G-1	Bridge Modification
Shasta County Bridge	25	Lower Gas Pt Road @ NFk Cottonwood Creek - Replace Bridge	Shasta County	G-1	Bridge Modification
Shasta County Bridge	26	Ash Creek Road @ Sacramento River overflow - Replace Bridge	Shasta County	G-1	Bridge Modification
Shasta County Bridge	27	Parkville Road @ Ash Creek - Replace Bridge	Shasta County	G-1	Bridge Modification
Shasta County Bridge	28	Inwood Road @ South Fork Bear Creek - Replace Bridge	Shasta County	G-1	Bridge Modification
Shasta County Bridge	29	Island Road @ Little Tule River - Replace Bridge	Shasta County	G-1	Bridge Modification
Shasta County Bridge	30	Main Street @ Castle Creek - Replace Bridge	Shasta County	G-1	Bridge Modification
Shasta County Bridge	31	Pittville Road @ Pit River - Replace Bridge	Shasta County	G-1	Bridge Modification
Shasta County Bridge	32	Riverside Road @ Sacramento River - Replace Bridge	Shasta County	G-1	Bridge Modification
Shasta County Bridge	33	Park Avenue at Burney Creek - Replace Bridge	Shasta County	G-1	Bridge Modification
Shasta County Bridge	34	La Moine Road @ Slate Creek - Replace Bridge	Shasta County	G-1	Bridge Modification
Shasta County Bridge	35	Platina Road @ Arbuckle Gulch - Replace Bridge	Shasta County	G-1	Bridge Modification
Shasta County Bridge	36	Gibson Road @ Boulder Creek - Replace Bridge	Shasta County	G-1	Bridge Modification
Shasta County Bridge	37	Jackrabbit Flat Rd @ Burney Creek - Replace Bridge	Shasta County	G-1	Bridge Modification

Table 4.7-2
2015 RTP Projects that May Result in Geologic and Soil Impacts

SRTA Project Name	Project Number	Project	Location	Impact	Description of Impact
Shasta County Bridge	38	Churn Creek Rd @ Churn Creek 6C-86 - Replace Bridge	Shasta County	G-1	Bridge Modification
Shasta County Bridge	39	Bland Road @ NF Wilson Creek - Replace Bridge	Shasta County	G-1	Bridge Modification
Redding Bridge	1	State Bridge #06C0340, Sacramento Drive @ Olney Creek - Bridge Replacement	Redding	G-1	Bridge Modification
Redding Bridge	2	State Bridge #06C0344, Sharon Ave over ACID Canal - Bridge Replacement	Redding	G-1	Bridge Modification
Redding Bridge	3	State Bridge #06C0104, Old Alturas Road @ Churn Creek - Bridge Replacement	Redding	G-1	Bridge Modification
Redding Bridge	4	State Bridge #06C0335, Eastside Road @ Olney Creek - Bridge Replacement	Redding	G-1	Bridge Modification
Redding Bridge	5	State Bridge #06C0341, Girvan Road @ Olney Creek - Bridge Replacement	Redding	G-1	Bridge Modification
Redding Bridge	6	State Bridge # 06C0071, Railroad Ave over Canyon Hollow - Bridge Rehabilitation	Redding	G-1	Bridge Modification
Redding Bridge	7	State Bridge # 06C0078, Westside Rd @ ACID Canal - Bridge Replacement	Redding	G-1	Bridge Modification
Redding Bridge	8	State Bridge # 06C0085, Eastside Rd @ Canyon Hollow - Bridge Replacement	Redding	G-1	Bridge Modification
Redding Bridge	9	State Bridge # 06C0088, Old Oregon Trail @ W. Fork Stillwater Creek - Bridge Replacement	Redding	G-1	Bridge Modification
Redding Bridge	10	State Bridge #06C0307, Canyon Road @ ACID Canal - Bridge Replacement	Redding	G-1	Bridge Modification
Redding Bridge	11	State Bridge # 06C0033, Lake Blvd @ SPRR - Bridge Rehabilitation	Redding	G-1	Bridge Modification
Redding Bridge	12	State Bridge # 06C0047, Locust St @ ACID Canal - Bridge Rehabilitation	Redding	G-1	Bridge Modification
Redding Bridge	13	State Bridge # 06C0057, Twin View Blvd @ Boulder Creek - Bridge Rehabilitation	Redding	G-1	Bridge Modification
Redding Bridge	14	State Bridge # 06C0106, Hartnell Ave @ Churn Court - Bridge Rehabilitation	Redding	G-1	Bridge Modification
Redding Bridge	15	State Bridge # 06C0070, Westside Rd @ Oregon Gulch - Bridge Rehabilitation	Redding	G-1	Bridge Modification
Redding Bridge	16	State Bridge # 06C0106, Hilltop Dr @ I-5 - Bridge Rehabilitation (South Replacement)	Redding	G-1	Bridge Modification

4.8 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 4.2*, Air Quality.*

4.8.1 Setting

a. Climate Change and Greenhouse Gases. Climate change is the observed increase in the average temperature of the Earth's atmosphere and oceans along with other substantial changes in climate (such as wind patterns, precipitation, and storms) over an extended period of time. The term "climate change" is often used interchangeably with the term "global warming," but "climate change" is preferred to "global warming" because it helps convey that there are other changes in addition to rising temperatures. The baseline against which these changes are measured originates in historical records identifying temperature changes that have occurred in the past, such as during previous ice ages. The global climate is continuously changing, as evidenced by repeated episodes of substantial warming and cooling documented in the geologic record. The rate of change has typically been incremental, with warming or cooling trends occurring over the course of thousands of years. The past 10,000 years have been marked by a period of incremental warming, as glaciers have steadily retreated across the globe. However, scientists have observed acceleration in the rate of warming during the past 150 years. Per the United Nations Intergovernmental Panel on Climate Change (IPCC), the understanding of anthropogenic warming and cooling influences on climate has led to a high confidence (90% or greater chance) that the global average net effect of human activities since 1750 has been one of warming. The prevailing scientific opinion on climate change is that most of the observed increase in global average temperatures, since the mid-20th century, is likely due to the observed increase in anthropogenic greenhouse gas concentrations (IPCC, 2007).

Gases that absorb and re-emit infrared radiation in the atmosphere are called greenhouse gases (GHGs). GHGs are present in the atmosphere naturally, are released by natural sources, or are formed from secondary reactions taking place in the atmosphere. The gases that are widely seen as the principal contributors to human-induced climate change include carbon dioxide (CO_2), methane (CH_4), nitrous oxides (N_2O), and fluorinated gases such as hydrofluorocarbons (HFCs) and perfluorocarbons (PFCs), and sulfur hexafluoride (SF_6). Water vapor is excluded from the list of GHGs because it is short-lived in the atmosphere and its atmospheric concentrations are largely determined by natural processes, such as oceanic evaporation.

GHGs are emitted by both natural processes and human activities. Of these gases, CO_2 and CH_4 are emitted in the greatest quantities from human activities. Emissions of CO_2 are largely by-products of fossil fuel combustion, whereas CH_4 results from off-gassing associated with agricultural practices and landfills. Man-made GHGs, many of which have greater heat-absorption potential than CO_2, include fluorinated gases and SF_6 (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 (CO_2) is used to relate the amount of heat absorbed to the amount of the gas emissions, referred to as "carbon dioxide equivalent" (CO_2E), and is the amount of a GHG emitted

multiplied by its GWP. CO_2 has a GWP of one. By contrast, CH_4 has a GWP of 21, meaning its global warming effect is 21 times greater than CO_2 on a molecule per molecule basis (IPCC, 1997).

The accumulation of GHGs in the atmosphere regulates the earth's temperature. Without the natural heat trapping effect of GHG, Earth's surface would be about 34° C cooler (CalEPA, 2006). However, it is believed that emissions from human activities, particularly the consumption of fossil fuels for electricity production and transportation, have elevated the concentration of these gases in the atmosphere beyond the level of naturally occurring concentrations. The following discusses the primary GHGs of concern.

Carbon Dioxide. The global carbon cycle is made up of large carbon flows and reservoirs. Billions of tons of carbon in the form of CO_2 are absorbed by oceans and living biomass (i.e., sinks) and are emitted to the atmosphere annually through natural processes (i.e., sources). When in equilibrium, carbon fluxes among these various reservoirs are roughly balanced (United States Environmental Protection Agency [USEPA], April 2012). CO_2 was the first GHG demonstrated to be increasing in atmospheric concentration, with the first conclusive measurements being made in the last half of the 20th century. Concentrations of CO_2 in the atmosphere have risen approximately 40% since the industrial revolution. The global atmospheric concentration of CO_2 has increased from a pre-industrial value of about 280 parts per million (ppm) to 391 ppm in 2011 (IPCC, 2007; National Oceanic and Atmospheric Association [NOAA], 2010). The average annual CO_2 concentration growth rate was larger between 1995 and 2005 (average: 1.9 ppm per year) than it has been since the beginning of continuous direct atmospheric measurements (1960–2005 average: 1.4 ppm per year), although there is year-to-year variability in growth rates (NOAA, 2010). Currently, CO_2 represents an estimated 82.8% of total GHG emissions (Department of Energy [DOE] Energy Information Administration [EIA], 2012). The largest source of CO_2, and of overall GHG emissions, is fossil fuel combustion.

Methane. Methane (CH_4) is an effective absorber of radiation, though its atmospheric concentration is less than that of CO_2 and its lifetime in the atmosphere is limited to 10 to 12 years. It has a GWP approximately 21 times that of CO_2. Over the last 250 years, the concentration of CH_4 in the atmosphere has increased by 148% (IPCC, 2007), although emissions have declined from 1990 levels. Anthropogenic sources of CH_4 include enteric fermentation associated with domestic livestock, landfills, natural gas and petroleum systems, agricultural activities, coal mining, wastewater treatment, stationary and mobile combustion, and certain industrial processes (USEPA, April 2012).

Nitrous Oxide. Concentrations of nitrous oxide (N_2O) began to rise at the beginning of the industrial revolution and continue to increase at a relatively uniform growth rate (NOAA, 2010). N_2O 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. Use of these fertilizers has increased over the last century. Agricultural soil management and mobile source fossil fuel combustion are the major sources of N_2O emissions. The GWP of N_2O is approximately 310 times that of CO_2.

Fluorinated Gases (HFCS, PFCS and SF6). Fluorinated gases, such as HFCs, PFCs, and SF_6, are powerful GHGs that are emitted from a variety of industrial processes. Fluorinated gases are used as substitutes for ozone-depleting substances such as chlorofluorocarbons (CFCs), hydrochlorofluorocarbons (HCFCs), and halons, which have been regulated since the mid-1980s

because of their ozone-destroying potential and are phased out under the Montreal Protocol (1987) and Clean Air Act Amendments of 1990. Electrical transmission and distribution systems account for most SF_6 emissions, while PFC emissions result from semiconductor manufacturing and as a by-product of primary aluminum production. Fluorinated gases are typically emitted in smaller quantities than CO_2, CH_4, and N_2O, but these compounds have much higher GWPs. SF_6 is the most potent GHG the IPCC has evaluated.

b. Statewide Greenhouse Gas Emissions Inventory. Worldwide anthropogenic emissions of GHGs were approximately 40,000 million metric tons (MMT) CO_2E in 2004, including ongoing emissions from industrial and agricultural sources, but excluding emissions from land use changes (i.e., deforestation, biomass decay) (IPCC, 2007). CO_2 emissions from fossil fuel use accounts for 56.6% of the total emissions of 49,000 MMT CO_2E (includes land use changes) and CO_2 emissions from all sources account for 76.7% of the total. Methane emissions account for 14.3% of GHGs and N_2O emissions account for 7.9% (IPCC, 2007).

Total U.S. GHG emissions were 6,821.8 MMT CO_2E in 2009 (USEPA, April 2012). Total U.S. emissions have increased by 10.5 % since 1990; emissions rose by 3.2 % from 2009 to 2010 (USEPA, April 2012). This increase was primarily due to (1) an increase in economic output resulting in an increase in energy consumption across all sectors; and (2) much warmer summer conditions resulting in an increase in electricity demand for air conditioning. Since 1990, U.S. emissions have increased at an average annual rate of 0.5%. In 2010, the transportation and industrial end-use sectors accounted for 32% and 26% of CO_2 emissions from fossil fuel combustion, respectively. Meanwhile, the residential and commercial end-use sectors accounted for 22% and 19% of CO_2 emissions from fossil fuel combustion, respectively (USEPA, April 2012).

Based upon the California Air Resources Board's (CARB) California GHG Inventory for 2000-2012, California produced 458.68 MMT CO_2E in 2011 (CARB, March 2014). The major source of GHG in California is transportation, contributing 36% of the state's total GHG emissions. Electric power is the second largest source of the state's GHG emissions (CARB, May 2014). California emissions are due in part to its large size and large population compared to other states. However, a factor that reduces California's per capita fuel use and GHG emissions, as compared to other states, is its relatively mild climate. CARB has projected statewide unregulated GHG emissions for the year 2020 will be 507 MMT CO_2E (CARB, August 2013). These projections represent the emissions that would be expected to occur in the absence of any GHG reduction actions.

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. Scientists have projected that the average global surface temperature could rise by1.0-4.5°F (0.6-2.5°C) in the next 50 years, and the increase may be as high as 2.2-10°F (1.4-5.8°C) in the next century. In addition to these projections, there are identifiable signs that climate change is currently taking place, including substantial ice loss in the Arctic (IPCC, 2007).

According to the CalEPA's *2010 Climate Action Team Biennial Report*, 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, April

2010). Below is a summary of some of the potential effects that could be experienced in California as a result of climate change.

Sea Level Rise. According to *The Impacts of Sea-Level Rise on the California Coast*, prepared by the California Climate Change Center (CCCC) (May 2009), climate change has the potential to induce substantial sea level rise in the coming century. The rising sea level increases the likelihood and risk of flooding. The study identifies a sea level rise on the California coast over the past century of approximately eight inches. Based on the results of various climate change models, sea level rise is expected to continue. The California Climate Adaptation Strategy (December 2009) estimates a sea level rise of up to 55 inches by the end of this century.

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, March 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% 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. In a span of only two years, Los Angeles experienced both its driest and wettest years on record (California Department of Water Resources [DWR], 2008; CCCC, May 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 wet winters and releasing it slowly during California's dry springs and summers. Based upon historical data and modeling DWR projects that the Sierra snowpack will experience a 25 to 40% 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).

Hydrology. As discussed above, 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 salt water intrusion. Sea level rise

may be a product of climate change through two main processes: expansion of sea water as the oceans warm and melting of ice over land. A rise in sea levels could jeopardize California's water supply due to salt water intrusion. Increased storm intensity and frequency could affect the ability of flood-control facilities, including levees, to handle storm events.

Agriculture. California has a $30 billion agricultural industry that produces half of the country's fruits and vegetables. Higher CO_2 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 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 1.0-4.5°F (0.6-2.5°C) in the next 50 years, and 2.2-10°F (1.4-5.8°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: (1) timing of ecological events; (2) geographic range; (3) species' composition within communities; and (4) ecosystem processes, such as carbon cycling and storage (Parmesan, 2004; Parmesan, C. and H. Galbraith, 2004).

d. Local Effects of Climate Change. While the above discussion identifies the possible effects of climate change at a global and potentially statewide level, current scientific modeling tools are unable to predict what local impacts may occur with a similar degree of accuracy. In general, regional and local predictions are made based on downscaling statewide models (CalEPA, 2010). Further, certain factors such as sea level rise would not have a direct impact to the Shasta County region which is located more than approximately 70 miles inland of the Pacific Ocean.

e. Regulatory Setting. The following regulations address both climate change and GHG emissions.

International and Federal Regulations. The United States is, and has been, a participant in the United Nations Framework Convention on Climate Change (UNFCCC) since it was produced by the United Nations in 1992. The UNFCCC is an international environmental treaty with the objective of, "stabilization of GHG concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system." This is generally understood to be achieved by stabilizing global GHG concentrations between 350 and 400 ppm, in order to limit the global average temperature increases between 2 and 2.4°C above pre-industrial levels (UNFCCC 2007). The UNFCCC itself does not set limits on GHG emissions for individual countries or enforcement mechanisms. Instead, the treaty provides for updates, called "protocols," that would identify mandatory emissions limits.

Five years later, the UNFCCC brought nations together again to draft the *Kyoto Protocol* (1997). The Kyoto Protocol established commitments for industrialized nations to reduce their

collective emissions of six GHGs (CO_2, CH_4, N_2O, SF_6, HFCs, and PFCs) to 5.2% below 1990 levels by 2012. The United States is a signatory of the Kyoto Protocol, but Congress has not ratified it and the United States has not bound itself to the Protocol's commitments (UNFCCC, 2007). The first commitment period of the Kyoto Protocol ended in 2012. Governments, including 38 industrialized countries, agreed to a second commitment period of the Kyoto Protocol beginning January 1, 2013 and ending either on December 31, 2017 or December 31, 2020, to be decided by the Ad Hoc Working Group on Further Commitments for Annex I Parties under the Kyoto Protocol at its seventeenth session (UNFCCC, November 2011).

The United States is currently using a voluntary and incentive-based approach toward emissions reductions in lieu of the Kyoto Protocol's mandatory framework. The Climate Change Technology Program (CCTP) is a multi-agency research and development coordination effort (led by the Secretaries of Energy and Commerce) that is charged with carrying out the President's National Climate Change Technology Initiative. However, the voluntary approach to address climate change and GHG emissions may be changing. The United States Supreme Court in *Massachusetts et al. v. Environmental Protection Agency et al*. ([2007] 549 U.S. 05-1120) held that the USEPA has the authority to regulate motor-vehicle GHG emissions under the federal Clean Air Act.

EPA and the National Highway Traffic Safety Administration (NHTSA) are taking coordinated steps to enable the production of a new generation of clean vehicles with reduced GHG emissions and improved fuel efficiency from on-road vehicles and engines. This will be done through coordination of the GHG emission limits and the NHTSA Corporate Average Fuel Economy (CAFE) standards. In May 2010, the final combined EPA and NHTSA standards that comprise the first phase of this national program were promulgated regarding passenger cars, light-duty trucks, and medium-duty passenger vehicles, covering model years 2012 through 2016. The CAFE standards require these vehicles to meet an estimated combined average emissions level of 250 grams of CO_2 per mile, equivalent to 35.5 miles per gallon (mpg) if the automobile industry were to meet this CO_2 level solely through fuel economy improvements. In October 2010, the agencies each proposed complementary GHG and CAFE standards under their respective authorities covering medium and heavy-duty trucks for the model years 2014-2018. In August 2012, new emissions limits and CAFE standards for the 2017 to 2025 model years were promulgated, increasing fuel economy to the equivalent of 54.5 mpg for cars and light-duty trucks.

In October 2009, the USEPA issued a Final Rule for mandatory reporting of GHG emissions for facilities that emit more than 25,000 metric tons (MT) CO_2E per year. 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. The first annual reports for these sources were due in March 2011. Additionally, the reporting of emissions is required for owners of SF_6- and PFC-insulated equipment when the total nameplate capacity of these insulating gases is above 17,280 pounds.

On May 13, 2010, the USEPA issued a Final Rule that took effect on January 2, 2011, setting a threshold of 75,000 MT CO_2E per year for GHG emissions. New and existing industrial facilities that meet or exceed that threshold require a permit prior to operation. On November 10, 2010, the USEPA published the "PSD and Title V Permitting Guidance for Greenhouse Gases." The USEPA's guidance document is directed at state agencies responsible for air pollution permits

under the federal Clean Air Act to help them understand how to implement GHG reduction requirements while mitigating costs for industry.

On January 2, 2011, the USEPA implemented the first phase of the Tailoring Rule for GHG emissions Title V Permitting. Under the first phase of the Tailoring Rule, all new sources of emissions are subject to GHG Title V permitting if they are otherwise subject to Title V for another air pollutant and they emit at least 75,000 MT CO_2E per year. Under Phase 1, no sources were required to obtain a Title V permit solely due to GHG emissions. Phase 2 of the Tailoring Rule went into effect July 1, 2011. At that time new sources were subject to GHG Title V permitting if the source emits 100,000 MT CO_2E per year, or they are otherwise subject to Title V permitting for another pollutant and emit at least 75,000 MT CO_2E per year.

On July 3, 2012 the USEPA issued the final rule that retains the GHG permitting thresholds that were established in Phases 1 and 2 of the GHG Tailoring Rule. These emission thresholds 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.

State Regulations. CARB is responsible for the coordination and oversight of state and local air pollution control programs in California. Various statewide and local initiatives to reduce the state's contribution to GHG emissions have raised awareness about climate change and its potential for severe long-term adverse environmental, social, and economic effects.

Assembly Bill (AB) 1493 (2002), 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, USEPA 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 took effect for model years starting in 2009 to 2016 and Pavley II, which is now referred to as "LEV (Low Emission Vehicle) III GHG" will cover 2017 to 2025. In January 2012, CARB approved a new emissions-control program combining the control of smog, soot causing pollutants and GHG emissions into a single coordinated package of requirements for passenger cars and light trucks model years 2017 through 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 would be fully implemented, new automobiles would emit 34% fewer GHGs. Statewide CO_2E emissions would be reduced by 3% by 2020 and by 12% by 2025. The reduction increases to 27% in 2035 and even further to a 33% reduction in 2050 (CARB, September 2013).[1]

In 2005, former Governor Schwarzenegger issued Executive Order (EO) S-3-05, establishing statewide GHG emissions reduction targets. EO S-3-05 provided that by 2010, overall GHG emissions shall be reduced to 2000 levels; by 2020, emissions shall be reduced to 1990 levels; and by 2050, emissions shall be reduced to 80% of 1990 levels (CalEPA, 2006). In response to EO S-3-05, CalEPA created the Climate Action Team (CAT), which in March 2006 published the Climate Action Team Report or "2006 CAT Report" (CalEPA, 2006). The 2006 CAT Report identified a recommended list of strategies that the state could pursue to reduce GHG emissions. These are

[1] *Percent reductions are from 2008 baseline emissions levels.*

strategies that could be implemented by various state agencies to ensure that the emission reduction targets in EO S-3-05 are met and can be met within the existing authority of the state agencies. The strategies include the reduction of passenger and light duty truck emissions, the reduction of idling times for diesel trucks, an overhaul of shipping technology/infrastructure, increased use of alternative fuels, increased recycling, landfill methane capture, etc.

California's major initiative for reducing GHG emissions is outlined in Assembly Bill 32 (AB 32), the "California Global Warming Solutions Act of 2006," signed into law in 2006. AB 32 codifies the statewide goal of reducing GHG emissions to 1990 levels by 2020 (essentially a 15% reduction below 2005 emission levels; the same requirement as under S-3-05), 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.

After completing a comprehensive review and update process, CARB approved a 1990 statewide GHG level and 2020 limit of 427 MMT CO_2E. The Scoping Plan was approved by CARB on December 11, 2008, and includes measures to address GHG emission reduction strategies related to energy efficiency, water use, recycling and solid waste, among other measures. The Scoping Plan includes a range of GHG reduction actions that may include direct regulations, alternative compliance mechanisms, monetary and non-monetary incentives, voluntary actions, and market-based mechanisms.

In 2014, CARB published The First Update to the Climate Change Scoping Plan (May 2014). The update defines CARB's climate change priorities and the groundwork to reach post-2020 goals set forth in EO S-3-05 and highlights California's progress toward meeting the "near-term" 2020 GHG emission reduction goals defined in the original Scoping Plan (2008). It also evaluates 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, transportation, and land use.

EO S-01-07 was enacted on January 18, 2007. The order mandates that a Low Carbon Fuel Standard ("LCFS") for transportation fuels be established for California to reduce the carbon intensity of California's transportation fuels by at least 10% by 2020.

Senate Bill (SB) 97, signed in August 2007, acknowledges that climate change is an environmental issue that requires analysis in California Environmental Quality Act (CEQA) documents. In March 2010, the California Natural Resources Agency (Natural 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 GHGs and climate change impacts.

CARB Resolution 07-54 establishes 25,000 metric tons of GHG emissions as the threshold for identifying the largest stationary emission sources in California for purposes of requiring the annual reporting of emissions. This threshold is just over 0.005% of California's total inventory of GHG emissions for 2004.

Senate Bill (SB) 375, signed in August 2008, enhances the state's ability to reach AB 32 goals by aligning transportation planning and funding, land use planning and state housing mandates at

the Metropolitan Planning Organization (MPO) level in order to reduce vehicle miles traveled (VMT) and transportation-related GHG emissions. As discussed in Section 2.0, *Project Description*, as mandated by CARB, Shasta Regional Transportation Agency (SRTA) must maintain or reduce 2005 levels of per capita GHG emissions from passenger vehicles in order to meet the SB 375 target. The SB 375 target is discussed further in the methodology section below.

In early 2010, CARB adopted a regulation for reducing SF_6 emissions from electric power system gas-insulated switchgear (17 CCR 95350). The regulation requires owners of such switchgear to: (1) annually report SF_6 emissions; (2) determine the emission rate relative to the SF_6 capacity of the switchgear; (3) provide a complete inventory of all gas-insulated switchgear and their SF_6 capacities; (4) produce a SF_6 gas container inventory; and (5) keep all information current for CARB enforcement staff inspection and verification. Changes to relevant facilities owned by PG&E and any gas insulated switchgear associated with the project would be subject to this regulation.

The California Renewables Portfolio Standards (RPS) pursuant to SB 1038, SB 1078, SB 1250, and SB 107 previously required investor-owned utilities, electric service providers, and community choice aggregators to increase the portion of energy that comes from renewable sources to 20% by 2010.

- *Senate Bill 1038 (Chapter 515, Statutes of 2002). The pertinent provisions of SB 1038 were formerly codified in Public Utilities Code Sections 383.5 and 445, but are now codified in Public Resources Code Sections 25740 through 25751 as a result of Senate Bill 183 (Chapter 666, Statutes of 2003).*

- *Senate Bill 1078; Chapter 516, Statutes of 2002. The pertinent provisions of SB 1078 are codified in Public Utilities Code Section 399.11 through 399.15. This law was subsequently amended to add Sections 399.16, 399.17, and 399.12.5 under Senate Bill 67 (Chapter 731, Statutes of 2003), Assembly Bill 200 (Chapter 5, Statutes of 2005), and Assembly Bill 2189 (Chapter 747, Statutes of 2006), respectively.*

- *Senate Bill 1250; Chapter 512, Statutes of 2006. SB 1250 amends pertinent provisions in Public Resources Code Sections 25740 through 25751*

- *Senate Bill 107; Chapter 464, Statutes of 2006. SB 107 amends pertinent provisions in Public Resources Code Sections 25740 through 25751 and Public Utilities Code Sections 399.11 through 399.16*

In April 2011, Governor Brown signed SB 2X requiring California to generate 33% of its electricity from renewable energy by 2020.

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.

Local Regulations and CEQA Requirements. Pursuant to the requirements of SB 97, the Natural 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 CEQA Guidelines

provide general regulatory guidance on the analysis and mitigation of GHG emissions in CEQA documents, but contain no suggested thresholds of significance for GHG emissions. Instead, they give lead agencies the discretion to set quantitative or qualitative thresholds for the assessment and mitigation of GHGs and climate change impacts. The general approach to developing a Threshold of Significance for GHG emissions is to identify the emissions level for which a project would not be expected to substantially conflict with existing California legislation, adopted for the purpose of reducing statewide GHG emissions sufficiently to move the state towards climate stabilization. If a project would generate GHG emissions above the threshold level, its contribution to cumulative impacts would be considered significant. To date, the Bay Area Air Quality Management District (BAAQMD), the South Coast Air Quality Management District (SCAQMD), the San Luis Obispo Air Pollution Control District (SLOAPCD), and the San Joaquin Air Pollution Control District (SJVAPCD) have adopted quantitative significance thresholds for GHGs. However, in March 2012 the Alameda County Superior Court (California Building Industry Association v. Bay Area Air Quality Management District) issued a judgment finding that the BAAQMD had failed to comply with CEQA when it adopted the thresholds contained in the BAAQMD's 2010 CEQA Guidelines.[2]

Shasta Regional Climate Action Plan (RCAP). In 2010, the Shasta County AQMD (SCAQMD) initiated the RCAP process. The primary objectives of the RCAP process were to contribute to the state's climate protection efforts and to provide CEQA review streamlining benefits for development projects within the region's four jurisdictions: the city of Anderson, the city of Redding, the city of Shasta Lake, and the unincorporated areas of Shasta County. To facilitate these objectives, SCAQMD worked with the four jurisdictions to prepare community-specific, independent climate action plans that contained GHG emission inventories and forecasts, emission reduction measures, and implementation and monitoring programs. The climate action plans provide a summary of jurisdictional GHG inventories and describe how each jurisdiction will achieve GHG reductions through local actions that contribute to the statewide GHG emissions reduction target defined in AB 32, CEQA guidelines, and other state guidance. The RCAP document serves as a collection of the individual climate action plans and demonstrates the region's commitment to the state's GHG reduction efforts. To date, the RCAP has not been adopted by any of the four jurisdictions and has not undergone CEQA review.

4.4.2 Impact Analysis

a. Methodology and Significance Thresholds. In March 2010, pursuant to the requirements of SB 97, the Natural Resources Agency adopted amendments to the *State CEQA Guidelines* for the feasible mitigation of GHG emissions or the effects of GHG emissions. These guidelines are used in evaluating the cumulative significance of GHG emissions from the proposed project.

According to the adopted *CEQA Guidelines*, impacts related to GHG emissions from the proposed project would be significant if the project would:

[2] In August 2013, the First District Court of Appeal overturned the trial court and held that the thresholds of significance adopted by the BAAQMD were not subject to CEQA review. In view of the trial court's order which remains in place pending final resolution of the case, the BAAQMD is no longer recommending that the thresholds be used as a generally applicable measure of a project's significant air quality impacts. BAAQMD states that lead agencies will need to determine appropriate air quality thresholds of significance based on substantial evidence in the record (BAAQMD, 2014).

- *Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment; and/or*
- *Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases.*

The vast majority of individual projects do not generate sufficient GHG emissions to create a project-specific impact through a direct influence to climate change; therefore, 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 15355).

For future projects, the significance of GHG emissions may be evaluated based on locally adopted quantitative thresholds, or consistency with a regional GHG reduction plan (such as a Climate Action Plan). To date, neither the SCAQMD nor County of Shasta has formally adopted GHG CEQA thresholds. As a result, this section uses three thresholds of significance (consistent with CEQA guidelines):

1. Increase in per capita GHG emissions compared to baseline conditions (defined as the emissions inventory for 2013);
2. Conflict with AB 32 or SB 375 GHG emission reduction targets; and/or
3. Conflict with applicable local GHG reduction plans.

For the GHG emissions impacts resulting from the proposed plan, this analysis evaluates potential impacts against both (1) a forecasted 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 proposed plan is adopted. The year 2013 is used as the EIR baseline, as it is the most recent year for which accurate county-wide VMT data is available. If county-wide per capita GHG emissions associated with the proposed plan do not significantly exceed the 2013 baseline, impacts related to GHG emissions would not be significant.

The SB 375-based threshold is also included as it demonstrates SRTA's achievement of CARB-specified targets and consistency toward achieving the goals of AB 32. For the Shasta County region, the targets set by CARB are not to exceed 2005 baseline levels by 2020 and 2035. In 2005, annual GHG emissions from passenger vehicles in the SRTA region were approximately 7,380 pounds of CO_2 per capita. Therefore, SRTA must maintain or reduce these levels in order to meet the target. If county-wide GHG emissions associated with the 2015 RTP do not exceed 7,380 pounds CO_2 per capita in 2020 or 2035, the plan would meet the mandate of SB 375 and be consistent with the overall 2020 emission reduction targets of AB 32.

The 2050 Executive Order S-3-05 emissions reduction target was not used as a threshold of significance because the Executive Order is stated as a "goal" rather than an adopted GHG reduction plan within the meaning of CEQA Guidelines Section 15064.4(b)(2), and furthermore, the 2050 target is well beyond the horizon year (2035) of the 2015 RTP. Although the Attorney General has advised that the Executive Order 2050 target can inform CEQA analysis, there is no requirement to use it as a threshold of significance. Further, the proposed plan, in meeting its SB 375 target, is in line with the goals of the Executive Order. The 2015 RTP was developed to meet the goals of SB 375, which require that SRTA must not exceed 2005 levels of per capita GHG

emissions from passenger vehicles by 2020 and 2035. In the future when the plan has a planning horizon to 2050 or beyond, compliance with S-3-05 will be evaluated. For the purposes of SB 375 compliance, passenger vehicles include the following vehicle categories from CARB's EMission FACtors (EMFAC) 2011 air quality model: LDA (passenger cars), LDT1 (light-duty trucks, 0-3,750 lbs), LDT2 (light-duty trucks, 3,751-5,750 lbs), and MDV (medium-duty trucks, 5,751-8,500lbs).

Construction Emissions. Although construction activity is addressed in this analysis, the California Air Pollution Control Officer Association (CAPCOA) does not discuss whether any of the suggested threshold approaches adequately address impacts from temporary construction activity. As stated in the CEQA and Climate Change white paper, "more study is needed to make this assessment or to develop separate thresholds for construction activity" (CAPCOA, 2008).

Additionally, the municipalities in Shasta County have not identified any construction-related GHG emissions thresholds. Construction-related emissions are speculative at the RTP level because such emissions are dependent on the characteristics of individual development projects. However, because construction of the 2015 RTP would generate temporary GHG emissions primarily due to the operation of construction equipment and truck trips, a qualitative analysis is provided below.

SRTA Methodology for Estimating GHG Emissions. Two basic quantities are required to calculate a given emissions estimate: an emission factor (CO_2) and an activity factor (VMT). In general, the emission factor is the amount of emissions generated by VMT. A county-wide, on-road mobile source emission estimate was calculated by summing the product of the vehicle activity (VMT and trips) generated by the land use pattern and transportation projects envisioned in the SCS (the preferred land use and transportation scenario as modeled by SRTA) and the emissions factors contained in CARB's EMFAC 2011 air quality model.

The EMFAC 2011 model generates an output of carbon dioxide (CO_2) emissions, which were used as the overall indicator of greenhouse gas emissions, per the recommendations of the CARB SB 375 Regional Targets Advisory Committee. In order to calculate the CO_2 emissions within EMFAC 2011, VMT, vehicle trips, and VMT by speed class distributions were extracted from the SRTA Activity-based Travel Demand Model (ShastaSIM) for the baseline years (2005 and 2013) and each of the target years (2020 and 2035) based on the preferred and alternative transportation/land use scenarios. The VMT speed bin data was then entered into the EMFAC 2011 model. The CO_2 emissions associated with vehicle starts are accounted for in the EMFAC 2011 model based on the distribution of vehicle starts by vehicle classification, vehicle technology class, and operating mode. EMFAC 2011 adds these vehicle starts to the running emissions to compute total on-road mobile source emissions. The CO_2 emissions for the vehicle classes were then extracted from the EMFAC 2011 output and reported. Per capita emissions rates were calculated by dividing total CO_2 emissions for each scenario by the region's population (provided by SRTA) in each respective year.

b. Project Impacts and Mitigation Measures.

Impact GHG-1 Construction of the transportation improvement projects and future land use patterns envisioned by the 2015 RTP would generate temporary short-term GHG emissions. Impacts would be Class II, *significant but mitigable*.

Construction activities associated with transportation improvement projects and future land use patterns envisioned by the proposed plan would generate temporary short-term GHG emissions primarily due to the operation of construction equipment and truck trips. Construction-related emissions are speculative at the plan level because such emissions are dependent on the characteristics of individual development projects. However, GHG emissions would be emitted from travel to and from the worksite and the operation of construction equipment such as graders, backhoes, and generators. Site preparation and grading typically generate the greatest amount of emissions due to the use of grading equipment and soil hauling. The precise construction timing and construction equipment for individual projects is not specifically known at this time. Nonetheless, construction activities would result in GHG emissions. Impacts would be potentially significant.

Mitigation Measures. SRTA recommends that individual project lead agencies implement the following mitigation measure for applicable transportation projects. Project-specific environmental impacts may require this mitigation measure be revised or expanded in response to site-specific conditions.

GHG-1 The individual project lead agency shall ensure that applicable GHG-reducing diesel particulate and NO_X emissions measures for off-road construction vehicles are implemented during construction. The measures shall be noted on all construction plans and the lead agency shall perform periodic site inspections. Applicable GHG-reducing measures include the following.

- Use of diesel construction equipment meeting CARB's Tier 2 certified engines or cleaner off-road heavy-duty diesel engines, and comply with the State Off-Road Regulation;
- 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 5 minute idling limit;
- Use of electric equipment in place of diesel-powered equipment, where feasible;
- Substitute gasoline-powered in place of diesel-powered equipment, where feasible;
- Use of alternatively fueled construction equipment on-site where feasible, 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;
- Recycling of at least 50 percent of construction waste materials.

Significance after Mitigation. With the implementation of the above mitigation, impacts related to short-term GHG emissions would be less than significant.

Impact GHG-2 Implementation of the 2015 RTP would not result in a significant increase in per capita GHG emissions compared to both 2013 baseline and future 'No Project' scenario. Impacts would be Class III, *less than significant*.

Projected GHG emissions for the years 2020 and 2035 under the proposed plan were compared to the 2013 baseline and to the GHG emissions projected under the future 'No Project' alternative, a scenario in which the transportation improvements identified in the proposed plan are not implemented. As discussed above, GHG emissions for the proposed plan were calculated using CARB's EMFAC 2011 air quality model based on the VMT that would be generated as a result of the proposed plan (refer to Section 4.12, *Transportation and Circulation*). Table 4.8-1 summarizes the plan's per-capita transportation-related emissions from all vehicles classes. An analysis of all vehicle classes is provided to determine the significance of total per-capita GHG emissions in accordance with the CEQA Guidelines. As such, if the 2015 RTP does not result in a significant increase in GHG emissions, impacts would be less than significant. This is independent of the SB 375 analysis and regional targets for per-capita transportation emissions from passenger vehicles, which are analyzed under Impact GHG-3 below.

Table 4.8-1
Total Per Capita Carbon Dioxide Emission Comparison: All Vehicle Classes

Scenario	CO_2 Emissions (lbs/year)†	Percent Change from 2013
2013 EIR Baseline	14,235	NA
2020 'No Project' Scenario	14,862	+4.4%
2020 Project (2015 RTP)	14,843	+4.3%
2035 'No Project' Scenario	16,257	+14.2%
2035 Project (2015 RTO)	16,229	+14.0%

†The on-road mobile source CO_2 emissions estimates for the 2015 RTP were calculated using CARB's EMFAC2011 emission inventory model. VMT data were extracted from ShastaSIM. VMT data includes pass-through trips from vehicles travelling through Shasta County that do not have an origin or destination within the county.

As shown in Table 4.8-1, the 2013 per capita GHG emissions were estimated for the plan area to be 14,235 pounds per year. With the proposed plan, the 2020 GHG per capita emissions were modeled for the plan area to be 14,843 pounds per year, an increase of four percent from 2013, and the 2035 GHG per capita emissions were modeled for the plan area to be 16,229 pounds per year, an increase of 14 percent from 2013. In addition, as shown in Table 4.8-1, for each future year projection (2020 and 2035) GHG emissions under the 'No Project' scenario would be higher

when compared to GHG emissions under the proposed plan. It is important to note that transportation related GHG emissions would continue to occur throughout the county regardless of whether the proposed plan is adopted. As demonstrated above, the proposed plan would contribute to an overall reduction in transportation related emissions compared to the 'No Project' scenario.

As previously discussed, the AB 32 Scoping Plan outlines the main state strategies for reducing GHGs to meet the 2020 target. Many of these strategies contribute to reductions from transportation-related emissions at the regional and local levels. The projections discussed above do not include any additional measures from the Scoping Plan to further reduce GHG emissions and are, therefore, conservative. Application of Pavley fuel efficiency standards and low carbon fuel standards, both Scoping Plan measures, are anticipated to reduce levels even further. Implementation of the 2015 RTP would help the region reduce per capita GHG emissions. Impacts would be less than significant.

In addition to the vehicle GHG emissions shown in Table 4.8-1, infill development projects envisioned by the proposed SCS chapter of the RTP would also result in GHG emissions due to electricity and natural gas consumption. However, it is important to note that residential and commercial growth is not directly attributed to the proposed plan. This growth is anticipated to occur in the region regardless of whether the proposed RTP is adopted. The SCS chapter of the RTP proposes that a portion of each jurisdiction's future growth greater than the amount projected in the 2010 RTP be encouraged to develop within established urban and rural community areas with existing infrastructure and transportation services. As a result, this land use scenario would result in fewer vehicle trips and possibly smaller residential units, which would result in fewer overall GHG emissions when compared to a traditional land use pattern that does not emphasize infill development. In addition, such development would take advantage of existing underutilized infrastructure capacity before necessitating the construction and associated impacts of new infrastructure systems. Impacts would be less than significant.

Mitigation Measures. None required.

Significance after Mitigation. Impacts are less than significant.

Impact GHG-3 Implementation of the 2015 RTP would not interfere with the GHG emissions reduction goals of AB 32 or SB 375. Impacts would be Class III, *less than significant*.

One of the goals of SB 375 is to reach the GHG emissions reduction targets for passenger vehicles set by CARB through an integrated land use, transportation, and housing plan. Achievement of this goal is an objective of the proposed plan. For the SRTA region, the targets set by CARB are not to exceed 2005 levels by 2020 and 2035. Table 4.8-2 summarizes the plan's per capita transportation-related emissions from passenger vehicles.

As shown in Table 4.8-2, the 2005 GHG per capita emissions from passenger vehicles were estimated for the plan area to be 7,394 pounds per year. With the proposed 2015 RTP, the 2020 GHG per capita emissions were modeled for the plan area to be 7,032 pounds per year, a decrease of 4.9 percent from 2005, and the 2035 emissions levels were modeled to be 7,361 pounds per year, a decrease of 0.4 percent from 2005. In addition, as shown in Table 4.8-2, for

each future year projection (2020 and 2035), passenger vehicle GHG emissions under the 'No Project' scenario would be higher when compared to GHG emissions under the proposed plan. It is important to note that passenger vehicle related GHG emissions would continue to occur throughout the county regardless of whether the proposed plan is adopted. As demonstrated above, the proposed plan would contribute to an overall reduction in passenger vehicle related emissions.

Table 4.8-2
Per Capita Carbon Dioxide Emission Comparison: Passenger Vehicles

Scenario	Population	Per Capita CO_2 Emissions (lbs/year)†	Percent Change from 2005
2005 Baseline	173,029	7,394	NA
2013 EIR Baseline	176,722	7,107	-3.9%
2020 'No Project' Scenario	190,192	7,044	-4.7%
2020 Project (2015 RTP)		7,032	-4.9%
2035' No Project' Scenario	214,364	7,379	-0.2%
2035 Project (2015 RTP)		7,361	-0.4%

†The on-road mobile source CO_2 emissions estimates for the 2015 RTP were calculated using CARB's EMFAC2011 emission inventory model. VMT data were extracted from ShastaSIM . VMT data excludes pass-through trips from vehicles travelling through Shasta County that do not have an origin or destination within the county.

These projections do not include any additional measures from the Scoping Plan to further reduce passenger vehicle GHG emissions and are, therefore, conservative. Application of Pavley fuel efficiency standards and low carbon fuel standards, both Scoping Plan measures, are anticipated to reduce levels even further. Implementation of the 2015 RTP would reduce passenger vehicle GHG emissions compared to the 2013 baseline and future 'No Project' scenario. Implementation of the proposed plan would help the region achieve its SB 375 reduction targets for years 2020 and 2035 and help the state achieve its AB 32 GHG emissions reduction targets. Therefore, impacts would be less than significant.

Mitigation Measures. None required.

Significance after Mitigation. Impacts are less than significant.

Impact GHG-4 Implementation of the 2015 RTP would not interfere with the goals of applicable GHG reduction plans and policies, as well as AB 32 and SB 375. Impacts would be Class III, *less than significant.*

As discussed in Impact GHG-3 above, the proposed RTP was determined to be consistent with the goals of AB 32. The projects and policies identified in the proposed RTP are designed to align transportation and land use planning to reduce VMT and transportation-related GHG emissions. Implementation of the proposed plan would help the region achieve its SB 375 GHG emissions reduction target, therefore contributing to the state's overall GHG emissions reduction goals identified in AB 32. Since the proposed plan is consistent with the goals of AB 32, it would not conflict with the goals of local reduction plans designed to meet the same state

goals. To date, no local climate action plans have been adopted in the region. Impacts would be less than significant.

Mitigation Measures. None required.

Significance after Mitigation. Impacts are less than significant.

c. Specific RTP Projects That May Result in Impacts. All proposed projects listed in Appendix B would have the potential to result in GHG emissions. However, the proposed plan as a whole is designed to reduce VMT and per capita transportation-related GHG emissions in accordance with SB 375 and AB 32. Since plan level emissions meet SRTA's SB 375 targets, all planned 2015 RTP projects remain below the thresholds of significance.

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4.9 HYDROLOGY AND WATER RESOURCES

This section discusses the impacts that development facilitated by the 2015 RTP could have on water supplies and quality. This section relied on information from the following sources:

- Shasta County Hazard Mitigation Plan 2011
- Redding Basin Water Resources Management Plan Environmental Impact Report
- AB3030 Groundwater Management Plan
- California Department of Water Resources, Groundwater Information Center

4.9.1 Setting

a. Regional Hydrology. The State Department of Water Resources (DWR) subdivides the state into ten hydrological regions for planning purposes, corresponding to the state's major drainage basins. Shasta County is located entirely within the Sacramento River Hydrological Region (HR) (DWR 2005).

The Sacramento River HR covers approximately 17.4 million acres (27,200 square miles). It extends south from the Modoc Plateau and Cascade Range at the Oregon border, to the Sacramento-San Joaquin Delta. The Sacramento Valley, which forms the core of the region, is bound to the east by the crest of the Sierra Nevada and southern Cascades and to the west by the crest of the Coast Range and Klamath Mountains. The Sacramento River HR is the main water supply for much of California's urban and agricultural areas (DWR 2003).

Groundwater provides about 31 percent of the water supply for urban and agricultural uses in the Sacramento River HR, and has long been developed in both the alluvial basins and the hard rock uplands and mountains. There are 88 basins/subbasins delineated in the Sacramento River HR. These basins underlie 5.053 million acres (7,900 square miles, about 29 percent of the entire region. The reliability of the groundwater supply varies greatly. The Sacramento Valley is recognized as one of the foremost groundwater basins in the state, and wells developed in the sediments of the Valley provide excellent supply in most years to irrigation, municipal, and domestic uses. Many of the mountain valleys of the region also provide significant groundwater supplies to multiple uses (DWR 2003).

b. Water Supply and Resources. Shasta County has two sources of water supplies: surface water and ground water. It is delivered via community systems and individual or on-site systems, which can derive water supply from either surface or groundwater sources.

Surface Water. The majority of the water supply in Shasta County comes from surface flows that are collected in the mountainous regions of the County, which then travel via streams, creeks, and rivers, into lakes, reservoirs, and groundwater basins. Below is a discussion of some of the large lakes and reservoirs within Shasta County:

Shasta Lake. Shasta Lake is a reservoir that lies about fifteen miles north of Redding with 365 miles of shoreline consisting of many arms and inlets. The four major arms of the lake, Sacramento, McCloud, Squaw Creek, and Pit, offer spectacular scenery as well as unusual geologic and historic areas of interest. Lake Shasta, also called Shasta Lake, is an artificial lake created by the construction of Shasta Dam across the Shasta-Trinity National Forest of Shasta

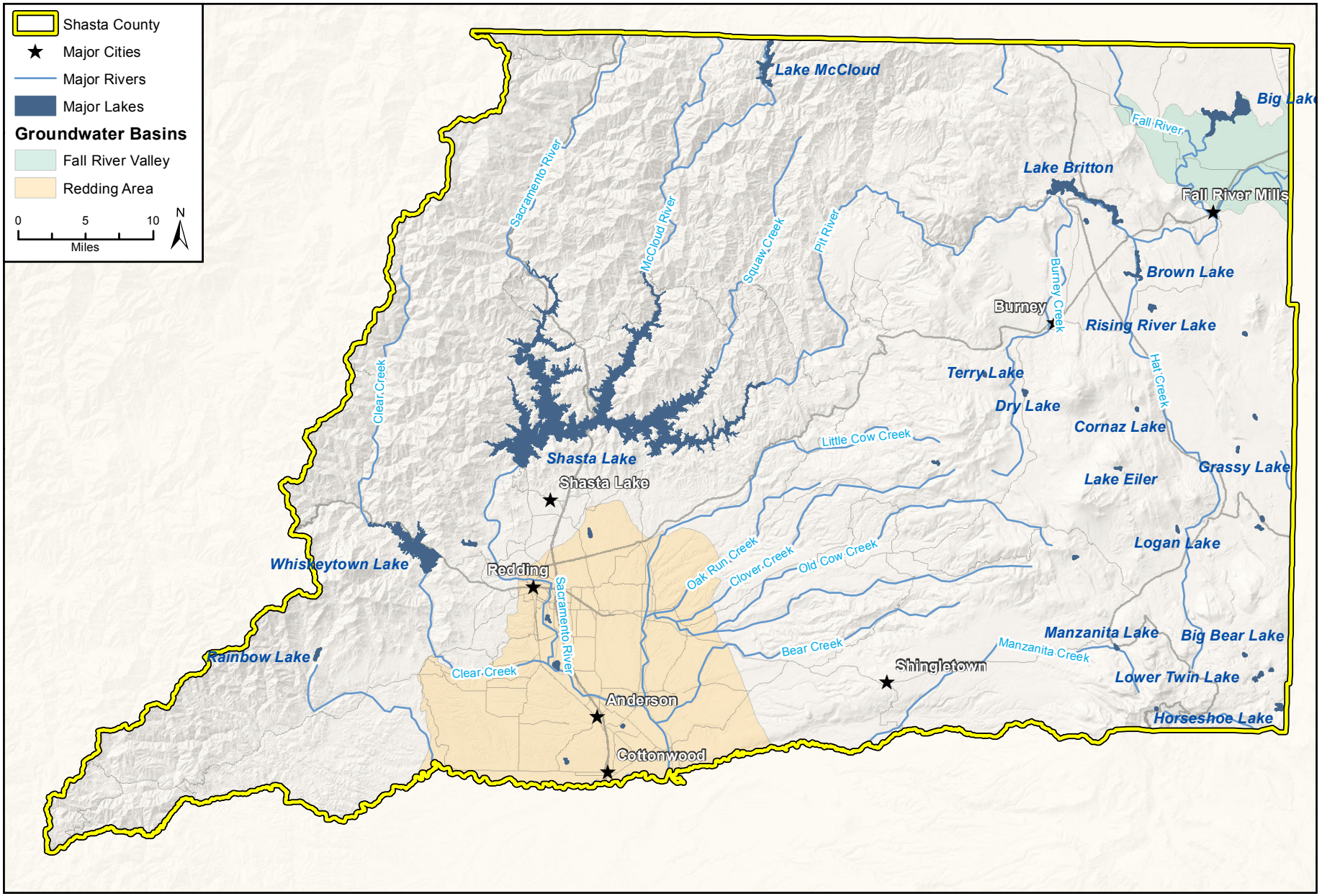
County, California, between 1935 and 1945. With a capacity of 4,552,000 acre-feet at full pool, the lake has an elevation of 1,067 feet, and a surface area of 30,000 acres, making it the state's largest reservoir, and its third largest body of water. Outflow from Shasta Dam provides electricity and irrigation for widespread areas of California below the dam as well as flood control for the Sacramento River during the rainy season (County of Shasta 2011).

In 2000, as a result of increased demands for water supplies and growing concerns over declines in ecosystem resources in the Central Valley of California, the United States Bureau of Reclamation initiated the Shasta Lake Water Resources Investigation (SLWRI) to evaluate the potential for enlarging Shasta Dam and Reservoir (Bureau of Reclamation 2013). The purpose of the project is to increase anadromous fish survival in the upper Sacramento river; increase water supplies and water supply reliability for agricultural, municipal and industrial, and environmental purposes; and address related water resource problems, needs, and opportunities. The Draft Environmental Impact Statement for the SLWRI was released on June 28, 2013 for a 90-day public review and comment period (Bureau of Reclamation 2013).

Keswick Dam and Reservoir. The Keswick Dam functions as an after-bay (regulating reservoir) for Shasta Dam and also generates power. The Bureau of Reclamation's Central Valley Water Project (CVP) is a complex operation of interrelated divisions. Shasta Dam acts as a flood control dam for the Sacramento River. Shasta Lake stores water for controlled releases downstream. The Trinity River Division diverts surplus water from the Trinity River, in the Klamath River Basin, into the Sacramento River. Water from the Trinity River Division enters the Sacramento at Keswick Reservoir in the Shasta Division. Downstream from the Shasta Division, the Sacramento River Division supplies Sacramento River water to Tehama, Glenn, Colusa, and Yolo Counties for irrigation.
Releases from the Shasta Division help control salinity in the Delta Division (County of Shasta 2011).

Whiskeytown Lake. Whiskeytown Lake is located 8 miles west of Redding in the Whiskeytown National Recreation Area, a portion of the larger Shasta-Trinity Recreation Area. It is formed by Whiskeytown Dam on Clear Creek as part of the CVP, providing water for agriculture. Additional water comes from Whiskey Creek and from the Lewiston Reservoir, which is supplied by the Trinity River, coming through the Clear Creek Tunnel from the bottom of Trinity Lake. As the water enters and exits Whiskeytown Lake through a series of tunnels and penstocks, it generates hydroelectricity through the Judge Francis Carr and Keswick Powerhouses. Whiskeytown Lake, located at the junction of the Klamath Mountain range and the northern edge of the Sacramento Valley, is home to a unique collection of animal and plant life. Whiskeytown Lake provides 36 miles of shoreline and 3,200 surface acres for fun and recreation. Whiskeytown has relatively stable water levels and less water traffic than other area lakes, making it the perfect home for Largemouth, Smallmouth, and Spotted Bass (County of Shasta 2011).

Groundwater. There are two major groundwater basins in Shasta County: the Fall River Valley Basin and the Redding Basin. The Redding basin is estimated to contain approximately 5.5 million acre-feet of groundwater and the Fall River Valley Basin is estimated to contain approximately one million acre-feet of storage. The groundwater basins are shown in Figure 4.9-1.



Data provided by California Department of Water Resources, 2014, ESRI, 2014.

Shasta County Hydrology

Figure 4.9-1

Fall River Valley Groundwater Basin. Fall River Valley Groundwater Basin is about seven miles long and 16 miles wide. A series or group of major springs discharge into the valley from the northerly plateau escarpment. These springs are substantial with sustained flows measured at 1,400- to 2,000- cubic feet per second (DWR 2004) and provide the bulk of the base flow that sustains most of the streams, ponds and lakes in the area. It has been speculated that the substance inflow for these springs originates 50 miles or more to the north at the Tule Lake/Klamath Lake basin and flows beneath and through the Medicine Lake Highlands. These springs have been extensively appropriated or diverted for irrigation and power development. Fall River is the primary stream draining the northern and central-valley areas, and the Pit River is the primary stream in the easterly and southerly portion of the basin. These rivers converge at the southwestern corner of the valley near Fall River Mills and flow westward out of the valley. Average annual precipitation within the basin is estimated to be 17- to 27- inches in the valley and 29- to 43-inches in the upland areas to the west (DWR 2004).

Redding Groundwater Basin. The Redding Basin is bisected by the Sacramento River, the largest river in California, and is bounded on the north by the largest reservoir in California, Shasta Lake (Shasta County Water Agency 2007). A Redding Basin Water Management Plan was passed in 1998 and last updated in 2007. It regulates and monitors water needs of districts within the Redding Basin. All of the incorporated cities and much of the RTP project area is within the Redding Groundwater Basin. The Basin has a population of about 150,000, encompasses approximately 275,000 acres, and includes the service areas of the following water purveyors:

- City of Anderson
- ACID
- Bella Vista Water District
- Centerville Community Services District (CCSD)
- Clear Creek Community Services District (CSD)
- Cottonwood Water District
- Jones Valley County Service Area (CSA)
- Keswick County Service Area (CSA)
- Mountain Gate (CSD)
- City of Redding
- City of Shasta Lake
- Shasta (CSD)
- The McConnell Foundation
- Large Industrial

The Basin also typically receives the most precipitation in California's Central Valley. Despite these water supply attributes, the water supplies available to a majority of the Basin's water purveyors are not adequate to meet current water demands in drought years (Shasta County Water Agency 2007).

The Redding Basin supply and demand, as of 2005, the project year for the most recent Redding Basin Water Resources Management Plan Environmental Impact Report, is shown in Table 4.9-1.

Table 4.9-1
Redding Basin Supply and Demand

	Existing Supply and Demand (2005)	
Scenario	**Normal (thousand acre-feet)**	**Drought (thousand acre-feet)**
Basin Water Demand	201	201
Basin Water Supply (surface and groundwater)	224	170
Basin Groundwater Pumping	16	24
Basin Surplus or (Deficit)	23	(30)

Source: Redding Basin Water Resources Management Plan EIR 2007

The Redding Basin Water Resources Management Plan EIR 2007 analyzes the existing basin water demand and supply of a study area containing all Redding Basin water purveyors, as well as projections for future scenarios. The preferred alternative in the 2007 EIR involved using a combination of the conjunctive use and water use efficiency alternatives to meet critical dry-year demand projections for the year 2030. Under that combination alternative, it was determined in the EIR that the Redding Groundwater Basin would be able to maintain a surplus of water supply.

c. Water Quality. Water quality is a concern because of its potential effect on human health, enterprise, 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).

Surface Water Quality. For the most part, surface water quality in the County is good, as is indicated by fish populations and recreational fishing activities. Potential hazards to surface water quality include the following nonpoint pollution problems: high turbidity from sediment resulting from erosion of improperly graded construction projects, concentration of nitrates and dissolved solids from agriculture or surfacing septic tank failures, contaminated street and lawn run-off from urban areas, and warm water drainage discharges into cold water streams. The most critical period for surface water quality is following a rainstorm which produces significant amounts of drainage runoff into streams at low flow, resulting in poor dilution of contaminates in the low flowing stream. Such conditions are most frequent during the fall at the beginning of the rainy season when stream flows are near their lowest annual levels. Besides the greases, oils, pesticides, litter, and organic matter associated with such runoff, heavy metals such as copper, zinc, and cadmium can cause considerable harm to aquatic organisms when introduced to streams in low flow conditions (Shasta County General Plan 2004).

Surface water pollution is also caused by erosion. Excessive and improperly managed grading, vegetation removal, quarrying, logging, and agricultural practices all lead to increased erosion of exposed earth and sedimentation of watercourses during rainy periods. In slower moving water bodies these same factors often cause a buildup of situation, which ultimately reduces the capacity of the water system to percolate and recharge groundwater basins, as well as adversely affecting both aquatic resources and flood control efforts (Shasta County General Plan 2004).

The State Water Resources Control Board (SWRCB), in compliance with the Clean Water Act (CWA), Section 303(d), has prepared a list of impaired water bodies in the state of California.

Table 4.9-2 shows the water bodies in Shasta County that are listed as impaired by the State Water Resources Control Board.

Table 4.9-2
Shasta County Water Bodies Listed as Impaired

Water Body	Impairment Constituent
Anderson Creek	Escherichia coli (E. coli)
Clear Lake	Mercury
Eastman Lake	pH
Willow Creek	Acid Mine Drainage, Copper, Zinc

Source: California Environmental Protection Agency (CalEPA), State Water Resources Control Board, 2010 Integrated Report, 303(D) Listed Waters.
http://www.waterboards.ca.gov/water_issues/programs/tmdl/integrated2010.shtml

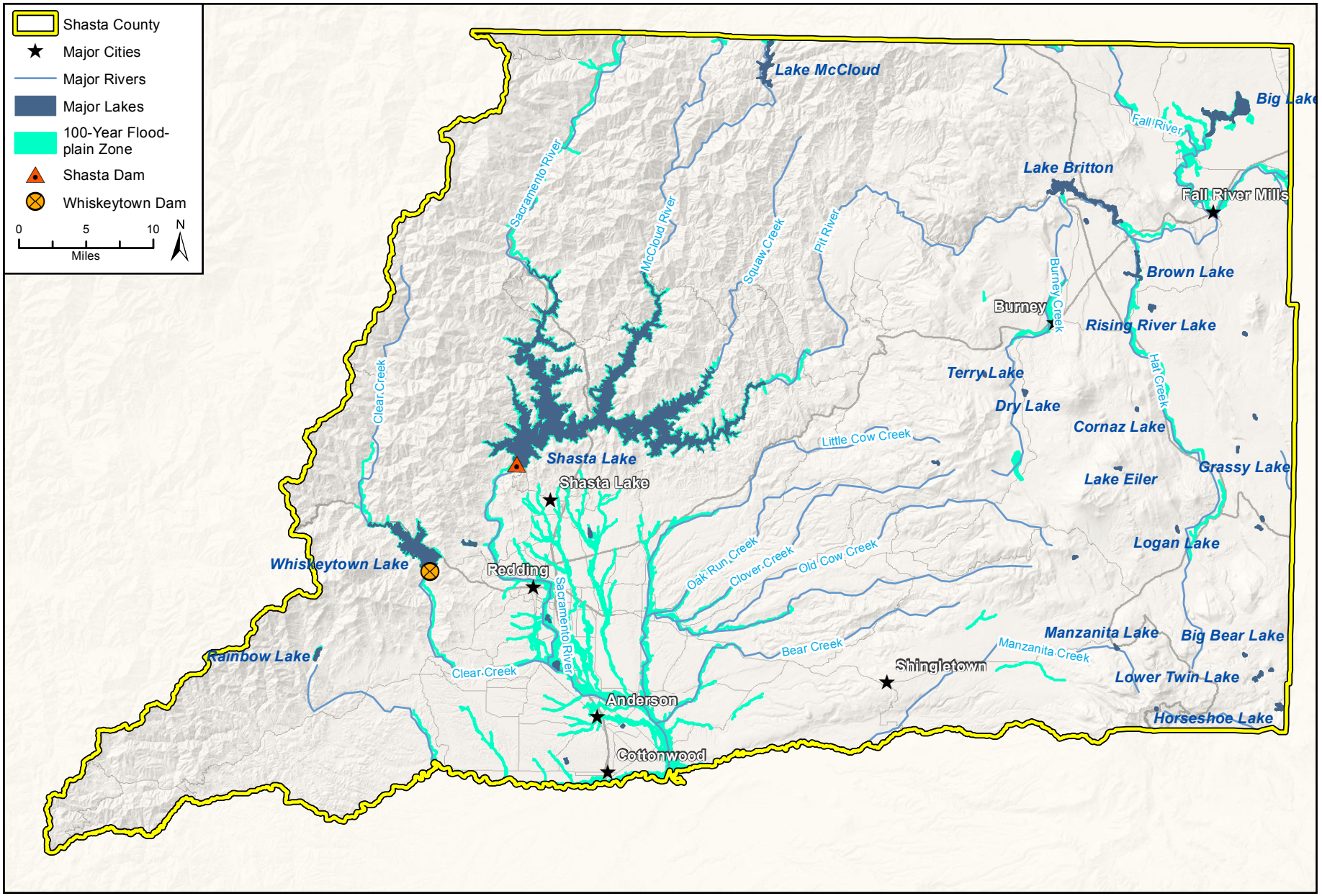
Groundwater Quality. The quality of water in underground basins and water-bearing soils is considered generally good throughout most of Shasta County. The 1997 Shasta County Water Resources Master Plan (SCWRMP) concluded that the quality of both groundwater and surface water in the Redding Basin is generally excellent and suitable for all anticipated beneficial uses. Potential hazards to groundwater quality involve the concentration of nitrates and dissolved solids from agricultural practices and septic tank failures. Several small pockets are found in the eastern portions of Fall River Valley where groundwater testing shows elevated levels of nitrates. Also, several areas within the Eastern Upland planning area contain potential groundwater quality and quantity limitations (Shasta County General Plan 2004). The following is a discussion of groundwater quality at each of the groundwater subbasins:

Redding Basin. High levels of total dissolved salts and chlorides are present in the lower Tehama and Tuscan Formations. Sodium and boron is present at shallow depth where wells draw from the Chico Formation. Locally high concentrations of iron and manganese occur in the basin (DWR 2004).

Fall River Valley Basin. Some well waters have high iron concentrations. Locally high nitrate, manganese, ammonia, and phosphorus also occur in the basin (DWR 2004).

d. Flood Hazards. Various areas in Shasta County are subject to flooding by rivers and creeks. Many of these same areas are also desirable locations for development as they are often characterized by level topography, good access to transportation systems, and soils well suited for agricultural operations and septic tank usage (Shasta County General Plan Flood Protection Element). The southwestern portion of Shasta County south of Shasta Lake and along the Sacramento River represents where the majority of RTP projects are located. As shown in Figure 4.9-2, many RTP projects are located in the vicinity of areas within the 100-year floodplain zone. The 100-year floodplain is defined by the Federal Emergency Management Agency (FEMA) as the area subject to a flood event having a one percent chance of being equaled or exceeded in any given year, referred to as the 100-year flood.

e. Tsunami. As an inland region separated from the Pacific Ocean by mountains, Shasta County is at no risk from tsunamis.



Data provided by California Department of Water Resources, 2014, ESRI, 2014.

Shasta County Flood Hazards

Figure 4.9-2

f. Dam Inundation/Seiches. Dam failure inundation is defined as the flooding which occurs as the result of structural failure of a dam. Flooding and overtopping, earthquakes, release blockages, landslides, lack of maintenance, inadequate assessment of surrounding geomorphologic characteristics, improper operation, poor construction, vandalism, or terrorism are typical causes of dam failure (County of Shasta 2011). Seismic activity may cause inundation by the action of a seismically-induced wave which overtops the dam without also causing dam failure. This action is referred to as a seiche. Water retained in a dam could also be displaced by the action of a volcanically-induced mudflow. Landslides flowing into a reservoir are also a source of potential dam failure or overtopping. Structurally defective dams can also be a cause of dam failure (Shasta County General Plan Safety Element).

More than 3,000 reservoirs are presently located in Shasta County. Of these, 36 are dams whose design, operation, and maintenance come under the authority of the California Department of Water Resources because of their size. The State Office of Emergency Services has further identified those jurisdictional dams whose failure may cause injury or loss of life.

Dam failure inundation hazards would present major health and safety implications in the RTP Plan area, particularly in the vicinity of the Shasta Lake and Whiskeytown Reservoir dams, which are identified in Figure 4.9-2. Failure of Shasta Dam would result in the inundation of most of Redding within less than an hour of failure. Within two hours, all of Anderson and much of the Sacramento River Valley downstream of Redding would be inundated.

Given its smaller size and location relative to existing development, failure of Whiskeytown Dam would be less impactful. Redding would not be affected, but over half of Anderson would be inundated within two hours of failure. A smaller portion of the Sacramento River Valley downstream of Clear Creek would also be inundated.

According to the Shasta County 2011 Hazard Mitigation Plan, a dam failure is highly unlikely. A dam overflow is more likely than a dam failure, but overtopping of the dam is also unlikely to take place. Shasta Dam, the biggest dam in Shasta County, and whose failure would cause the most significant potential risk, has never overflowed in its 60-year history. The design of the structure includes three spillway gates to minimize the possibility of a true overtopping of the dam. During an intense and prolonged storm period that might bring water levels near the top of the dam, these spillway gates would be lowered allowing water to be discharged down the spillway. Controlling, or funneling, the discharge down the spillway prevents structural erosion along the base and the sides of the dam, protects the turbine power generation plant at the base of the dam, and allows a controlled release. Furthermore, seismic activity is monitored and tunnels throughout the dam allow inspectors to monitor for cracks and seepage. Shasta Dam is built on bedrock and is geomorphologically sound. Also, as previously discussed under Surface Waters, the Shasta Lake Water Resources Investigation includes a proposal to heighten the dam by 18.5 feet, which may further reduce the risk of overtopping as well as reinforce the dam where necessary (Bureau of Reclamation 2013).Thus, the potential for dam failure, overtopping, and inundation of Shasta Dam is extremely low (County of Shasta 2011).

California has had approximately 45 failures of non-federal dams that were of "thin-arch" design. Shasta Dam is a federally controlled and inspected dam, and is considered a thick arch design. The most common cause of these dam failures was due to overtopping of earthen dams.

Non-federal dams in California are subject to state supervision through the state's Dam Safety Program under the jurisdiction of Department of Water Resources (DWR). A list of dams within the jurisdiction of the Department of Water Resources, including those within Shasta County, is provided by the Division of Safety of Dams. Division engineers and engineering geologists review and approve plans and specifications for the design of dams and oversee their construction to insure compliance with the approved plans and specifications. Reviews include site geology, seismic setting, site investigations, construction material evaluation, dam stability, hydrology, hydraulics, and structural review of appurtenant structures. In addition, division engineers inspect over 1,200 dams on a yearly schedule to insure the are performing and being maintained in a safe manner (County of Shasta 2011).

g. Regulatory Setting. Development throughout Shasta County is subject to various local, state, and federal regulations and permits regarding water quality and the use of water resources.

Federal.

Clean Water Act. The primary goals of the Federal Clean Water Act, 33 USC §§ 1251, *et seq*. (CWA) are to restore and maintain the chemical, physical, and biological integrity of the nation's waters and to make all surface waters fishable and swimmable. As such, the CWA forms the basic national framework for the management of water quality and the control of pollutant discharges. The CWA sets forth a number of objectives in order to achieve the above-mentioned goals. The CWA objectives include regulating pollutant and toxic pollutant discharges; providing for water quality which protects and fosters the propagation of fish, shellfish and wildlife; developing waste treatment management plans; and developing and implementing programs for the control of non-point sources pollution.

The CWA provides the legal framework for several water quality regulations including the National Pollutant Discharge Elimination System (NPDES), effluent limitations, water quality standards, pretreatment standards, anti-degradation policy, non-point source discharge programs, and wetlands protection.

Section 303(d) of the CWA requires identification and listing of water-quality limited or "impaired" water bodies where water quality standards or receiving water beneficial uses are not met. Once a water body is listed as "impaired," total maximum daily loads (TMDLs) must be established for the pollutants or flows causing the impairment. Once established, the TMDL allocates the loads among current and future pollutant sources to the water body. In general, where urban runoff is identified as a significant source of pollutants causing the impairments and is subject to load allocating, the implementation of and compliance with the TMDL total maximum daily loads requirements is administered through a combination of individual Industrial Stormwater Permits, the General Industrial and General Construction Stormwater Permits, and the NPDES program. The Environmental Protection Agency (EPA) has delegated the responsibility for administration of portions of the CWA to state and regional agencies, including the state of California. Accordingly, the primary regulations resulting from the CWA (i.e., NPDES program) are discussed in the state and local regulation discussions that follow.

Under Section 404 of the CWA, the Department of the Army, acting through the U.S. Army Corps of Engineers, has authority to permit the discharge of dredged or fill material in waters of the U.S. The Army Corps thereby has jurisdiction over the following categories of waters:

- Traditionally navigable waters and adjacent wetlands;
- Non-navigable tributaries of traditionally navigable waters that are relatively permanent, and wetlands that directly abut such tributaries; and
- Other waters that have a significant nexus with traditionally navigable waters.

Proposed activities are regulated through a permit review process (U.S. EPA, 2013). An individual permit is required for potentially significant impacts to jurisdictional waters. Individual permits are reviewed by the Army Corps, which evaluates applications under a public interest review, as well as the environmental criteria set forth in the CWA Section 404(b)(1) Guidelines, regulations promulgated by EPA.

No discharge of dredged or fill material may be permitted if: (1) a practicable alternative exists that is less damaging to the aquatic environment, or (2) the nation's waters would be significantly degraded. Thus, an application for a Section 404 permit must show that steps have been taken to avoid impacts to wetlands, streams and other aquatic resources; that potential impacts have been minimized; and that compensation will be provided for all remaining unavoidable impacts.

State.

Porter-Cologne Water Quality Control Act (California Water Code). The state of California is authorized to administer federal law or state-enacted laws regulating water pollution within the state. The Porter-Cologne Water Quality Control Act (Water Code §§ 13000, *et seq*.) includes provisions to address requirements of the CWA. These provisions include NPDES permitting, dredge and fill programs, and civil and administrative penalties. The Porter-Cologne Act is broad in scope and addresses issues relating to the conservation, control, and utilization of the water resources of the state. Additionally, the Porter-Cologne Act states that the quality of all the waters of the state (including groundwater and surface water) must be protected for the use and enjoyment by the people of the state.

The State Water Resources Control Board (SWRCB) and its nine Regional Water Quality Control Boards (RWQCBs) are agencies within the umbrella structure of the California Environmental Protection Agency (CalEPA). The SWRCB has the principle responsibility for the development and implementation of California water quality policy and must develop programmatic water quality control procedures to be followed by the RWQCBs. The Central Valley Regional Water Quality Control Board (CVRWQCB) is the region that regulates water quality permitting in Shasta County. The CVRWQCB adopted a Water Quality Control Plan (Basin Plan) for the Sacramento River Basin on 1975. The Basin Plan designates beneficial uses and establishes water quality objectives for groundwater and surface water within the Basin. The plan was updated and revised in October 2011.

Water Code § 13050 defines what is considered pollution, contamination, or nuisance. Briefly defined, pollution means an alteration of water quality such that it unreasonably affects the

beneficial uses of water (which may be for drinking, agricultural supply, or industrial uses). Contamination means an impairment of water quality to the degree that it creates a hazard to the public health. Nuisance is defined as anything that is injurious to health, is offensive to the senses, or is an obstruction to property use, and which affects a considerable number of people.

Discharge Permits. The SWRCB has issued a statewide NPDES General Permit for stormwater discharges associated with construction activities (known as the Construction General Permit [SWRCB Order No. 99-08-DWQ]). Any project that disturbs an area more than one acre requires a Notice of Intent (NOI) to discharge under the Construction General Permit. The Construction General Permit includes measures to eliminate or reduce pollutant discharges through implementation of a Stormwater Pollution Prevention Plan (SWPPP), which describes the implementation and maintenance of best management practices (BMPs) to reduce or eliminate pollutants in stormwater discharges and authorized non-stormwater discharges from the site during construction. The Construction General Permit contains receiving water limitations that require stormwater discharges to not cause or contribute to a violation of any applicable water quality standard. The permit also requires implementation of programs for visual inspections and sampling for specified constituents (e.g., non-visible pollutants). Any construction activities under the project that disturb more than one acre would be covered under the Construction General Permit.

To minimize the impact of stormwater discharges from industrial facilities, the NPDES stormwater program also includes an industrial stormwater permitting component. Operators of industrial facilities are required to have authorization under an NPDES industrial stormwater permit.

The RWQCB issues combined NPDES Permits under the CWA and California Water Code to all point source dischargers of waste to surface waters. To ensure protection of water quality, NPDES Permits may contain effluent limitations for pollutants of concern, pollutant monitoring frequencies, reporting requirements, schedules of compliance (when necessary), mandates for operating conditions, BMPs, and administrative requirements. NPDES Permits apply to publicly owned treatment works (POTWs) discharges, industrial wastewater discharges, and municipal, industrial, and construction site stormwater discharges.

4.9.2 Impact Analysis

a. Methodology and Significance Thresholds. Appendix G of the CEQA Guidelines considers a project to have significant impacts if a project would:

- *Violate any water quality standards or waste discharge requirements;*
- *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;*
- *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;*

- *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;*
- *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;*
- *Otherwise substantially degrade water quality;*
- *Place housing within a 100-year flood hazard areas structures which would impede or redirect flood flows;*
- *Place within a 100-year flood hazard area structures which would impede or redirect flood flows;*
- *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;*
- *Be subject to inundation by seiche, tsunami, or mudflow.*

Impacts related to drainage patterns, alteration of a stream or river, and inundation by seiche and tsunami are less than significant and are discussed in Section 4.13, *Less than Significant Environmental Factors.* Impacts related to mudflow are discussed in Impact G-3 in Section 4.7, *Geology*.

b. Project Impacts and Mitigation Measures. This section describes generalized impacts associated with some of the projects anticipated under the 2015 RTP.

Impact W-1 Implementation of proposed transportation improvements and future projects envisioned in the 2015 RTP would incrementally increase countywide water demand. Such impacts would be Class II, *significant but mitigable*.

Implementation of proposed transportation improvements and future projects facilitated by land use scenario envisioned in the 2015 RTP would result in both short-term and long-term impacts to the County's water supply. Due to the programmatic nature of the 2015 RTP, a precise, project-level analysis of the specific impacts of individual transportation projects on water supply is not possible at this time. However, the general nature of water supply impacts is described below.

During grading and general construction activities, water would be needed to suppress fugitive dust generated by construction equipment. Water used during construction could be drawn from the Redding or Fall River Valley Groundwater Basins, supplies of which would potentially be in deficit during drought years. Because this could contribute further to any potential water supply deficit, the short-term water impact of the proposed plan is considered potentially significant.

The majority of transportation improvements involve modification of existing infrastructure. As such, a substantial increase in landscaped areas, and thereby increase in water demand, is not anticipated for these projects. Two projects, however, involve the construction of medians on existing roadways, which could include landscaping. Projects that may require water supply include highway planting restoration and landscape upgrade projects on Interstate 5 in Anderson, Redding, Pine Grove, and Shasta Lake City. Irrigation of landscaping associated with these projects, and other projects in the proposed RTP, would generate demand for water. In addition, future infill development projects or development along key corridors constructed in

accordance with the 2015 RTP's preferred growth scenario (as outlined in the SCS Chapter of the RTP) would require water supply. The precise size and type of these projects is not known at this time; however, such development would require potable water. Transportation improvement projects in the 2015 RTP would be primarily located in areas served by the Redding Groundwater Basin.

Major 2015 RTP projects, such as road widenings and expansions, as well as new sidewalks, throughout the RTP plan area 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 at the expense of natural infiltration. The magnitude of impacts associated with individual 2015 RTP projects cannot be accurately determined at this programmatic stage of analysis. Nevertheless, given the potential for water supply deficit of the Redding Groundwater Basin during drought years, the reduction in groundwater recharge is considered to be potentially significant.

Mitigation Measures. SRTA recommends that individual project lead agencies implement the following mitigation measures for applicable transportation projects that result in hydrology and water quality impacts. Project-specific environmental documents prepared by the lead agency may adjust these mitigation measures as necessary to respond to site-specific conditions:

W-1(a) The individual lead agency of a 2015 RTP project shall ensure that, where economically feasible, reclaimed water is used for dust suppression during construction activities. This measure shall be noted on construction plans and shall be spot checked by the lead agency.

W-1(b) The individual lead agency of a 2015 RTP project shall ensure that low water use landscaping (i.e., drought tolerant plants and drip irrigation) is installed. When feasible, native plant species shall be used.

W-1(c) The individual lead agency of a 2015 RTP project shall ensure that, if feasible, landscaping associated with proposed improvements is maintained using reclaimed water.

W-1(d) The individual lead agency of a 2015 RTP project shall ensure that porous pavement materials are utilized, where feasible, to allow for groundwater percolation.

W-1(e) The individual lead agency of a 2015 RTP project that requires potable water service should coordinate with water supply system operators to ensure that the existing water supply systems have the capacity to handle the increase. If the current infrastructure servicing the project site is found to be inadequate, infrastructure improvements for the appropriate public service or utility should

be provided by the project sponsor. In addition, wherever feasible, reclaimed water should be used for landscaping purposes instead of potable water.

Significance After Mitigation. Implementation of the above measures would reduce potential impacts to a less than significant level.

Impact W-2 Implementation of proposed transportation improvements and future projects facilitated by the land use scenario envisioned in the 2015 RTP could result in soil erosion and contaminants in runoff, which could degrade surface and ground water quality. This impact is considered Class II, *significant but mitigable.*

Implementation of proposed transportation improvements and future projects facilitated by the land use scenario envisioned in the 2015 RTP (as described in the SCS chapter of the RTP) would result in both short-term and long-term impacts to water quality. Due to the programmatic nature of the 2015 RTP, a precise, project-level analysis of the specific impacts of individual transportation projects on water quality is not possible at this time. However, the general nature of water quality impacts is described below.

Certain transportation improvements, such as road widening and expansion, as well as infill projects, would increase overall impervious surface area throughout the County. These projects may generate significant adverse impacts to surface water quality. Pollutants and chemicals associated with urban activities would run off new roadways and other impervious surfaces flowing into nearby bodies of water during storm events. These pollutants would include, but are not limited to: heavy metals from auto emissions, oil, grease, debris, and air pollution residues. Such contaminated urban runoff may 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 repair of bridges could result in an increase in erosion and sedimentation of creek banks. This could affect both water quality and the stability of slopes along the creeks. Regulations under the federal Clean Water Act require that a National Pollutant Discharge Elimination System (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 Storm Water Pollution Prevention Plan (SWPPP) that contains specific actions, termed Best Management Practices (BMPs) to control the discharge of pollutants, including sediment, into the local surface water drainages. Many 2015 RTP projects, especially roadway extensions at the periphery of cities, would be subject to these regulations.

Mitigation Measures. SRTA recommends that individual project lead agencies implement the following mitigation measures for applicable transportation projects that result

in hydrology and water quality impacts. Project-specific environmental documents prepared by the lead agency may adjust these mitigation measures as necessary to respond to site-specific conditions:

W-2(a) The individual lead agency of a 2015 RTP 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-2(b) The individual lead agency of a 2015 RTP widening or roadway extension project 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.

W-2(c) For a 2015 RTP project that would disturb at least one acre, a SWPPP shall be developed prior to the initiation of grading and implemented for all construction activity on the project site. The SWPPP shall include specific BMPs to control the discharge of material from the site and into the creeks and local storm drains. BMP methods may include, but would not be limited to, the use of temporary retention basins, straw bales, sand bagging, mulching, erosion control blankets and soil stabilizers.

Significance After Mitigation. Implementation of the above measures would reduce potential impacts to a less than significant level.

Impact W-3 Implementation of proposed transportation improvements and future projects facilitated by the 2015 RTP could be subject to flood hazards due to storm events and/or dam failure. Impacts are considered Class II, *significant but mitigable.*

Implementation of proposed transportation improvements and future projects under the land use scenario envisioned by the 2015 RTP (as contained in the SCS chapter of the RTP) could be subject to flooding hazards due to storm events and/or dam failure. Due to the programmatic nature of the 2015 RTP, a precise, project-level analysis of the specific impacts of individual transportation projects on flooding hazards is not possible at this time. However, the general nature of these hazards, and their potential impacts, are described below.

Proposed transportation improvements and future projects envisioned by the 2015 RTP in low-lying areas and in proximity to waterways and/or dam inundation zones may be subject to the hazard of flooding. As discussed previously, dam failure, overtopping, and inundation is unlikely in Shasta County. However, failures of Shasta Lake or Whiskeytown Reservoir Dams would subject the cities of Redding and Anderson to inundation, where many RTP projects occur. The effects of flooding could include temporary inundation of a facility that impedes its use, or causes long-term damage to the facility. Flooding may also cause immediate damage to

roadways and bridges, particularly during high-velocity flood events that wash away or erode facilities. This would typically occur adjacent to rising rivers or streams. Any facility within the flood zone of a stream would be subject to impacts. Erosion caused by flooding can damage paved facilities, and bridge supports can be undermined or washed away. Flood hazards can also endanger occupants of habitable structures. Impacts are potentially significant.

Mitigation Measures. SRTA recommends that individual project lead agencies implement the following mitigation measures for applicable transportation projects subject to flood hazards. This measure can and should also be implemented for all projects developed pursuant to the 2015 RTP that would result in impacts from flooding.

W-3(a) If a 2015 RTP project is located in an area with high flooding potential due a storm event or dam inundation, the individual project lead agency 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.

W-3(b) For 2015 RTP projects within a dam failure inundation hazard zone, the project's lead agency shall ensure that a comprehensive flood risk communication strategy is developed, which would include an evacuation plan and/or an Emergency Action Plan and promote dam failure risk awareness and safety.

Significance After Mitigation. Implementation of the above measure would reduce potential impacts to a less than significant level.

c. Specific 2015 RTP Projects That May Result in Impacts. All 2015 RTP projects that require new construction or landscaping may result in impacts as discussed in Section 4.9.2.b above; and therefore, are not specifically identified in table format here. All 2015 RTP projects are listed in Appendix B. Additional specific analysis will need to be conducted as the individual projects are implemented in order to determine the actual magnitude of impact. Mitigation measures discussed above would apply to these specific projects.

4.10 LAND USE

4.10.1 Setting

a. Land Use Patterns. Located in the northernmost part of the Central Valley within the State of California, Shasta County covers approximately 3,850 square miles (Shasta County, GIS Dept., 2014). Open space, which includes federal and state public lands, county parks, regional serving city parks, quasi-public land, heritage resources, Pacific Crest Trail, and privately-owned and operated recreational facilities and open space resources, encompass approximately 1,230 square miles, or approximately 25 percent of the county. Much of this area is federally or State owned public lands located in the northwestern part of the Shasta County region comprised of Shasta-Trinity National Forest, Castle Crags State Park, and Shasta Lake; the western part of the county comprised of Whiskeytown National Recreation Area and Shasta-Trinity National Forest; the northeastern part of the County comprised of Ahjumawi Lava Springs State Park; and in the southeastern part of the County comprised of Lassen National Forest and Lassen Volcanic National Park. Approximately 55 percent or 1,195 square miles of the unincorporated land in Shasta County is either in timber or agricultural preserve. Incorporated cities in Shasta County capture less than two percent of the entire land area of the County (Shasta County General Plan, Amended September 2004).

The following three incorporated cities are located in Shasta County: Anderson, Redding, and the City of Shasta Lake. The City of Redding is the largest city within Shasta County with an estimated population of 91,207. The City of Anderson is the second largest city with an estimated population of 10,361 followed by the City of Shasta Lake with an estimated population of 10,128 residents. These three incorporated cities make up approximately 62%of Shasta County's total estimated population of 179,412 people (CA Dept. of Finance, 2014).

Unincorporated communities in the county include the town centers of Cottonwood, Palo Cedro, Burney/Johnson Park, and Fall River Mills/McArthur. There are 25 unincorporated rural community centers of Shasta County in the following areas or regions: Sacramento Canyon, Big Bend, Northeast Shasta, Lassen, Eastern Forest, Eastern Upland, South Central Region, Western Upland, and French Gulch. These unincorporated communities make up approximately 38% of Shasta County's total estimated population (CA Dept. of Finance, 2014).

Interstate 5 serves as the primary north-south travel and freight corridor for both the region and the Pacific Coast states of California, Oregon, and Washington. State Route (SR) 273 is a major regional north-south transportation corridor, providing secondary north-south travel from the City of Anderson to just beyond SR 299 in the City of Redding. Interstate 5, SR 273, and the Union Pacific Railroad, connect the Sacramento Valley, including the incorporated City of Shasta Lake, Redding, and Anderson and the unincorporated town center of Cottonwood. Major regional east-west transportation corridors, include SR 299, SR 151, SR 44, and SR 36. SR 299 and SR 44 provide primary east-west travel from the California coast to the state of Nevada. SR 299E connects the Sacramento and Fall River Valleys. SR 151 is designated a scenic route from the intersection of Shasta Dam Blvd. and Lake Blvd. and travels approximately three miles before stopping at Shasta Dam. SR 44 connects the Sacramento Valley with Lassen Volcanic National Park. SR 36 located at the southwest tip of the region, provides east-west travel from Fortuna, CA to Red Bluff in Tehama County and on to Nevada. SR 89 provides secondary

north-south travel from SR 36 in Tehama County, through Lassen National Park and eventually intersects with I-5 in Siskiyou County. Incorporated cities along these routes are Redding and Anderson on SR 273; City of Shasta Lake on SR 151; and Redding on SR 299 and SR 44. The unincorporated community town centers include Cottonwood on SR 273; Palo Cedro on SR 44; Burney/Johnson Park and Fall River Mills/McArthur on SR 299.

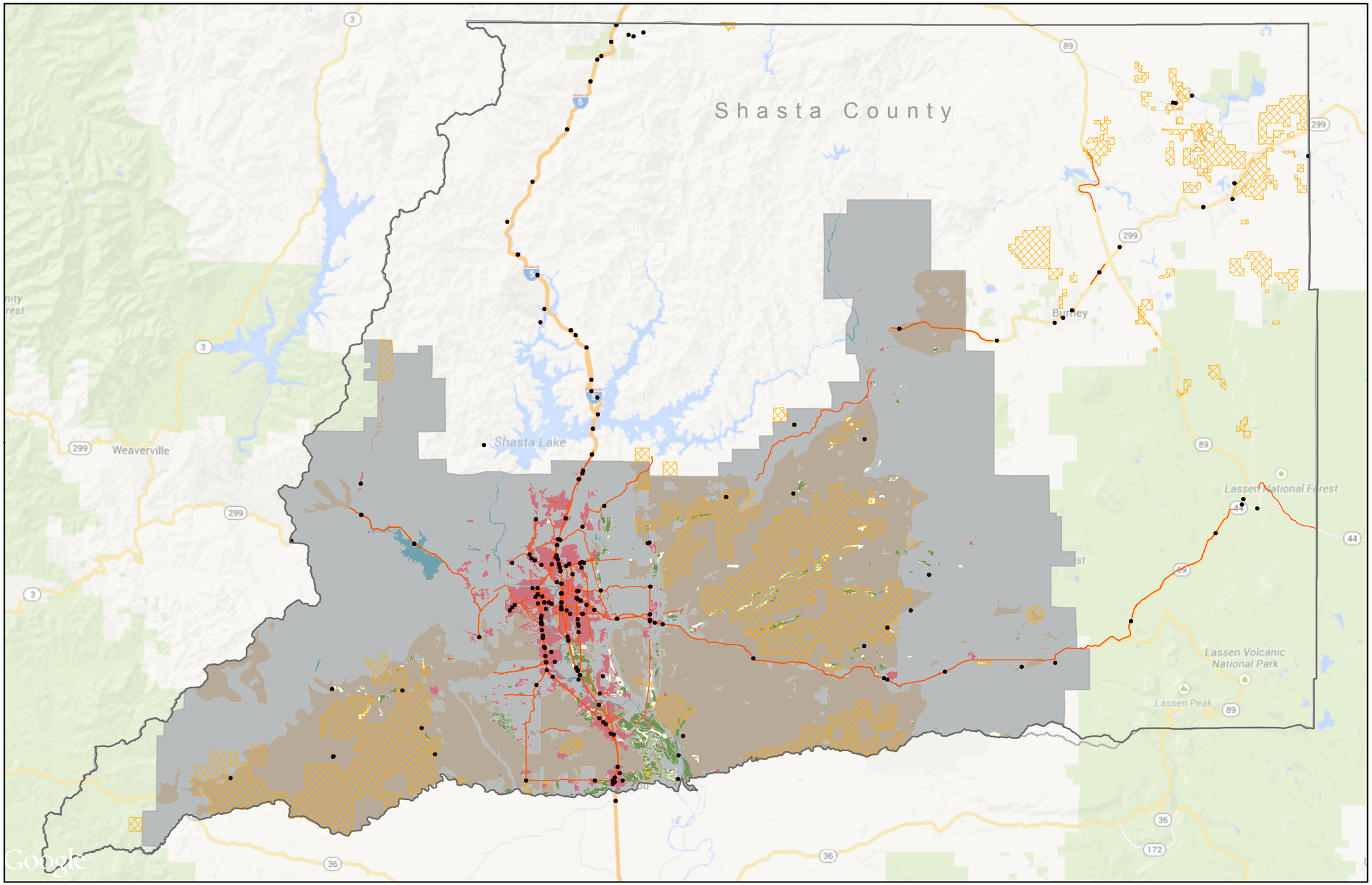
The largest unincorporated urban areas of the County are the town centers of Cottonwood, Palo Cedro, Burney/Johnson Park, and Fall River Mills/McArthur. Cottonwood is the largest urban cluster of unincorporated Shasta County, accounting for approximately 2.2% of all residents (U.S. Census, 2008-2012 5-Year American Community Survey). Figure 2-1 (from Chapter 2.0, "Project Description") shows the locations of the cities, unincorporated areas, and transportation routes in the County.

b. Agriculture. Shasta County is one of California's leading timber counties; as of 2012 the County ranked second among California counties for timber production. The top agricultural products that were produced in the County in 2011, listed in descending order are field crops, livestock, nursery stock, apiary products, and fruits and nuts. The leading agricultural commodity, field crops (i.e., hay, wild rice, pasture, and mint, etc.), represented 45.5% of Shasta County's total gross production value of $76.3 million in 2011 (Shasta County Department of Agriculture/Weights and Measures, 2011 Crop & Livestock Report, 2011). Much of the county's transportation system traverses the rich agricultural soils of the north Central Valley.

Regional Conversion of Farmland. Conversion of farmland is the loss of farmland due to development or land use changes that do not support agricultural production. The California Department of Conservation (DOC) has developed a classification system to categorize the quality of agricultural land resources and has implemented a Farmland Mapping and Monitoring Program (FMMP). As part of the FMMP, maps are updated biennially to provide land use conversion information for decision-makers to use when planning for the present and future of California's agricultural land resources.

Important Farmlands. The U.S. Soil Conservation Service Important Farmlands Inventory (IFI) system is used to inventory lands with agricultural value. This system divides farmland into classes based on productive capability of the land (rather than the mere presence of ideal soil conditions). The important farmlands map identifies five agriculture-related categories including prime farmland, farmland of statewide importance, unique farmland, farmland of local importance, and grazing land. Figure 4.10-1 illustrates the locations of important farmlands in Shasta County. A description of each of these categories is provided below.

- *Prime Farmland. Prime farmland is land with the best combination of physical and chemical features able to sustain long-term production of agricultural crops. This land has the soil quality, growing season, and moisture supply needed to produce sustained high yields. The land must have been used for the production of irrigated crops at some time during the two update cycles prior to the most recent mapping date (the most recent map update for the region is 2008).*



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FMMP and Williamson Act Lands

Figure 4.10-1

- *Farmland of Statewide Importance. Farmland of statewide importance is land similar to prime farmland, but with minor shortcomings, such as greater slopes or with less ability to hold and store moisture. The land must have been used for the production of irrigated crops at some time during the two update cycles prior to the mapping date.*

- *Unique Farmland. Unique farmland is land of lesser quality soils used for the production of the State's leading agricultural crops (i.e., crops of high economic value, such as oranges, olives, avocados, rice, grapes, and cut flowers). This land is usually irrigated, but may include non-irrigated orchards or vineyards, as found in some climatic zones of California. The land must have been cultivated at some time during the two update cycles prior to the mapping of 2008.*

- *Farmland of Local Importance. Farmland of local importance to the local agricultural economy, as determined by each County's Board of Supervisors and a local advisory committee.*

- *Grazing Land. Grazing land is land on which the existing vegetation is suited to the grazing of livestock. The minimum mapping unit for this category is 40 acres.*

c. Population and Housing. Shasta County is predominantly rural, and settlement patterns reflect this fact. Approximately 38% of the county's estimated population of 179,412 people lives outside the County's three incorporated areas (CA Dept. of Finance, 2014). There are 25 unincorporated rural communities in Shasta County. Urban development, including the three incorporated cities of Redding, Anderson, and the City of Shasta Lake and the unincorporated community of Cottonwood, is generally concentrated in the Sacramento River Valley along the transportation corridor of Interstate 5, SR 273, and the Union Pacific Railroad. Many of the county's unincorporated communities are comprised of rural development located 5-8 miles east and west of this Interstate 5/SR 273/Union Pacific Railroad corridor.

d. Regulatory Setting. The most direct regulation of land use and development in the plan area is provided by city and county governments, but there are numerous laws, regulations, policies, programs, and codes that at the federal and state levels of government also regulate land use in various ways within the plan area. To simplify the volume and complexity of the regulations presented, this regulatory setting focuses on laws, regulations, policies, and programs that directly affect land use designations and zoning.

Federal Regulations.

United States 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, 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, Federal Transit Administration, and Federal Aviation Administration 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.

Other Federal Regulations. The Army Corps of Engineers, U.S. Fish and Wildlife Service and U.S. Environmental Protection Agency, through enforcing the requirements of the Clean Water Act (CWA) of 1972 (33 U.S.C. § 1251 et seq.) and Endangered Species Act (ESA) of 1973 (16 U.S.C. § 1531 et seq.), have a significant influence on the location and amount of development in the region.

State Regulations.

General Plans. State law requires each city and county in California to adopt a general plan for the physical development of the land within its planning area. (Gov. Code, §§ 65300-65404.) The general plan must contain land use, housing, circulation, open space, conservation, noise, and safety elements, as well as any other elements that the city or county may wish to adopt. The circulation element of a local general plan must be correlated with the land use element.

Local Agency Formation Commissions. The Cortese-Knox-Hertzberg Local Government Reorganization Act (Cortese-Knox-Hertzberg Act) of 2000 (Gov. Code, § 56000 et seq.) establishes the process through which local agency boundaries are established and revised. Each county must have a local agency formation commission (LAFCO), which is the agency that has the responsibility to create orderly local agency boundaries, with the goal of encouraging "planned, well-ordered, efficient urban development patterns," the preservation of open-space lands, and the discouragement of urban sprawl. While LAFCOs have no land use power, their actions determine which local government will be responsible for planning new areas. LAFCOs address a wide range of boundary actions, including creation of spheres of influence for cities, adjustments to boundaries of special districts, annexations, incorporations, detachments of areas from cities, and dissolutions of cities. A city's sphere of influence is an indication of the city's future boundaries.

Senate Bill 375 – The Sustainable Communities and Climate Protection Act of 2008. In 2008, California enacted the Sustainable Communities and Climate Protection Act, also known as Sen. Bill No. 375 (Stats. 2008, ch. 728) (SB 375), which coordinates regional land use and transportation planning to reduce greenhouse gas emissions from cars and light trucks. The law resulted in several amendments to the currently adopted RTP process and regulations. Although the law has many smaller process-oriented changes that affect only the Metropolitan Planning Organization (MPO) preparing the plan, the bill also resulted in three major changes to the RTP process and the plan itself.

- *Create a Sustainable Communities Strategy (SCS).* The first major change is that the bill requires the MPO to adopt a Sustainable Communities Strategy (SCS) as part of the RTP. The SCS is a land use and transportation plan designed to achieve certain goals for the reduction of greenhouse gas emissions from automobiles and light trucks in the region.

The greenhouse gas targets are to be set by the California Air Resources Board (CARB) for the years 2020 and 2035, and will be updated every eight years.

The RTP has always been required to have a land use component that forecasts the amount and location of growth that is most likely to occur within the planning period. The purpose of the land use plan in the RTP is to pair with the transportation projects in the plan and inform the regional travel model, which forms the basis for the RTP. The SCS serves to more effectively link the land use and transportation components of the RTP.

- *Potential CEQA Streamlining Benefits for Land Use Projects.* The second significant change to regional land use planning under SB 375 is that the plan now offers various levels of CEQA benefits to certain projects. SB 375 provides three tiers of CEQA benefits for Residential Mixed Use Projects, Transit Priority Projects, and Sustainable Community Projects. Generally, a Residential Mixed Use project must be at least 75 percent residential and be consistent with the general land use designation, density, building intensity, and applicable policies of an SCS or APS accepted by CARB as achieving the greenhouse gas emissions reduction targets specified for Shasta County. Environmental documents for these projects are not required to discuss growth inducing impacts, reduced density alternatives, or any project specific or cumulative impacts from cars and light-duty truck trips on global warming or the regional transportation network.

  Transit Priority Projects (TPPs) must also be consistent with the SCS. In addition, the TPP must meet the following requirements: (1) the project must contain at least 50 percent residential based on total building square footage, but if less than 75 percent residential, it must have a minimum Floor Area Ratio of 0.75; (2) it must have a minimum net density of 20 dwelling units per acre; and (3) it must be located within one-half mile of a major transit stop or high quality transit corridor with 15 minute headways included in the regional transportation plan.

  Projects meeting the above requirements will have all the benefits of Residential Mixed Use projects, plus the option to conduct a "Sustainable Communities Environmental Assessment" (SCEA). Under the SCEA, an Initial Study is prepared identifying significant or potentially significant impacts. Where the lead agency determines that cumulative impacts have already been addressed and mitigated in an SCS accepted by CARB, they are not "considerable" for purposes of further environmental review. Also, traffic control and mitigation may be covered by jurisdiction-wide measures, and off-site alternatives do not need to be addressed. The standard of review for the SCEA is the "substantial evidence" standard, which is deferential to the agency. In the case of a legal challenge, the agency's analysis is presumed to be adequate and the burden of proof is on the plaintiff to demonstrate otherwise.

- *Linking the Proposed RTP to the Regional Housing Needs Allocation.* The last significant change to regional land use planning process under SB 375 is that the Regional Housing Needs Allocation (RHNA) process has been updated and linked to the RTP process. There are four areas of major change to the RHNA process under SB 375: extending the frequency of required updates to eight years, allowing some flexibility in the population

projections used in the RHNA determination, allowing greater flexibility in implementation timelines, and timing the RHNA process to coincide with the RTP update process.

Local Regulations.

General Plans. The most comprehensive land use planning for the plan area is provided by city and county general plans, which local governments are required by state law to prepare as a guide for future development. The general plan contains goals and policies concerning topics that are mandated by state law or which the jurisdiction has chosen to include. Required topics include land use, circulation, housing, conservation, open space, noise, and safety. Other topics that local governments frequently choose to address are public facilities, parks and recreation, and agriculture, among others. County general plans cover the unincorporated areas. City general plans are required to cover an area that is generally larger than the existing city limits (i.e., portions of the unincorporated area that fall within a city's sphere of influence).

Specific and Community Plans. A city or county may also provide land use planning by developing community or specific plans for smaller, more specific areas within their jurisdiction. These more localized plans provide for focused guidance for developing a specific area, with development standards tailored to the area, as well as systematic implementation of the general plan. Specific and community plans are required to be consistent with the city's or county's general plan.

Zoning. The city or county zoning code is the set of detailed requirements that implement the general plan policies at the level of the individual parcel. 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.

Airport Land Use Compatibility Plans. The California State Aeronautics Act requires counties with public-use airport to create an Airport Land Use Commission (ALUC) and prepare an airport land use compatibility plan (ALUCP) for each public use airport. The purpose of the code is to "protect public health, safety and welfare by ensuring the orderly expansion of airports and the adoption of land use measures that minimize the public's exposure to noise and safety hazards within areas around public airports to the extent that these areas are not already devoted to incompatible uses" (Public Utilities Code Section 21670 *et. seq.*). Cities and counties with jurisdiction within the areas included in an ALUCP (i.e., Airport Influence Area) must submit their general and specific plans to the ALUC for review upon adoption or amendment to determine whether they are consistent with the ALUCP.

4.10.2 Impact Analysis

a. Methodology and Significance Thresholds. Land use impacts were assessed based upon the level of physical impact anticipated in the various issues that can affect compatibility of existing and proposed land uses on air quality, noise, and aesthetics. Pursuant to the State CEQA guidelines, potentially significant impacts would result if the project would:

- *Physically divide an established community;*
- *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; or*
- *Conflict with any applicable habitat conservation plan or natural community conservation plan.*

Impacts are also considered potentially significant if a specific transportation improvement or land use change would displace homes or businesses or result in significant population growth. No habitat conservation plans or natural community conservation plans applicable to the study area were identified. Thus, this issue is not discussed further in this EIR.

Regarding agriculture resource impacts, pursuant to the State CEQA guidelines, potentially significant impacts would result if the project would:

- *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;*
- *Conflict with existing zoning for agricultural use, or a Williamson Act contract;*
- *Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use;*
- *Conflict with existing zoning for, or cause rezoning of, forest land, timberland, or timberland zoned Timberland Production;*
- *Result in the loss of forest land or conversion of forest land to non-forest use.*

The 2015 RTP would not conflict with existing zoning for, or cause rezoning of, forest land, timberland or timberland zoned Timberland Production; or result in the loss of forest land or conversion of forest land to non-forest use. Forest resources are discussed in Section 4.14 *Less Than Significant Environmental Factors*.

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 as related to air quality, noise, and light and glare. This section describes generalized impacts associated with the transportation improvement projects and the land use scenario envisioned by the 2015 RTP.

Impact LU-1 Implementation of proposed transportation improvements and the land use scenario envisioned by the 2015 RTP could result in land use conflicts with existing sensitive land uses. This is considered a Class II, *significant but mitigable* impact.

Due to the programmatic nature of the 2015 RTP, a precise, project-level analysis of the specific land use conflicts for each RTP project is not possible at this time. In general, however, proposed transportation improvement projects and the land use scenario envisioned by the 2015 RTP could result in land use conflicts with existing and future nearby sensitive land uses. The proposed transportation improvements would result in temporary impacts related to air quality, noise, and visual character changes during construction. Nearby sensitive receptors could be temporarily exposed to such impacts. Long term land use conflicts related to proposed

transportation improvements include impacts related to air quality, light and glare, and noise. As roadways are widened, expanded or otherwise improved to accommodate more vehicles, this would result in localized increases in toxic air emissions (primarily diesel and re-entrained dust emissions), ambient noise, and potentially light and glare. Nearby sensitive receptors, including existing and future residential land uses would be exposed to these impacts.

In addition, the 2015 RTP encourages infill development to minimize interregional trips and long distance commuting. This type of development would locate people closer to existing urbanized areas and transportation hubs. This has the potential to expose people to toxic air contaminants (primarily diesel emissions), re-entrained dust (contaminated particulate matter), increased light and glare, and increased noise levels. Impacts would be most pronounced in residential areas, or in areas with schools, parks, or other land uses with large numbers of children or elderly people, who are most sensitive to noise and safety impacts. However, as discussed in Sections 4.2 *Air Quality* and 4.12 *Noise*, these impacts would be reduced to a less than significant level after implementation of the required mitigation measures contained therein. In general, the RTP aims to implement roadway projects and improvements, decrease traffic congestion, increase mobility, and improve alternative transportation infrastructure. However, construction and implementation of new transportation facilities or expansion of existing facilities could divide established communities in the short-term and long-term. Short-term construction impacts would include physical barriers that limit access to a community or restrict movement within a community due to road or sidewalk closures, or other temporary construction-related inconveniences. Long-term impacts could result from the construction of widened or expanded roadways or transit facilities in existing communities. For example, the widening of a roadway could be perceived as too great a distance to cross by a pedestrian, or increased traffic volumes could discourage pedestrian usage due to safety risks or elevated noise levels. These impacts would not be significant, however. The 2015 RTP is intended to improve the multimodal transportation system with increased investments in transit and complete streets projects as well as more maintenance, rehabilitation, and operational improvements.

Mitigation Measures. Mitigation measures listed under Impact AQ-1 and AQ-3 in Section 4.2, *Air Quality,* would reduce localized air quality impacts. Mitigation measures listed under Impacts N-1, N-2, and N-3, in Section 4.11, *Noise,* would reduce potential noise impacts. No mitigation is required for impacts related to dividing established communities.

Significance After Mitigation. Land use compatibility impacts related to air quality and noise would be less than significant with implementation of mitigation measures referenced above.

Impact LU-2 Implementation of proposed transportation improvements and the land use scenario envisioned by the 2015 RTP could temporarily and/or permanently displace or disrupt existing residences and businesses. This is considered a Class II, *significant but mitigable* impact.

During construction on both new and existing roadways, businesses may be temporarily disrupted through temporary road or lane closures, or blockage of access to parking. In addition, projects that involve extension of roadways may result in displacement of residents or

businesses. Both temporary disruption and permanent displacement are considered potentially significant impacts.

The majority of transportation improvements would occur within existing roadway rights-of-way and are not expected to displace residents or businesses. However, it is possible that future transportation projects, particularly widening or expansion projects, could encroach onto private property, potentially requiring the removal of existing structures and/or otherwise limiting access as described above. Further, future development projects could displace residents if redevelopment of existing residential structures occurs. The intention of infill development projects is to develop on vacant or highly under-utilized properties in existing urbanized areas. As a result, significant numbers of people are not expected to be displaced. Nonetheless, it is possible that some people may be displaced as a result of development envisioned in the Shasta Forward report. Access and disruption impacts associated with construction would occur to varying degrees with all construction projects, but would be most acute in urban areas with high volumes and traffic and businesses that depend upon ease of vehicular access. Impacts would be potentially significant.

Mitigation Measures. SRTA recommends that individual project lead agencies implement the following mitigation measures for applicable transportation projects that may result in potential impacts relating to temporary disturbance to and/or permanent displacement of residences and businesses.

LU-2(a) The individual project lead agency of RTP projects with the potential to displace residences or businesses should assure that project-specific environmental reviews consider alternative alignments and developments that avoid or minimize impacts to nearby residences and businesses.

LU-2(b) Where project-specific reviews identify displacement or relocation impacts that are unavoidable, the individual project lead agency should ensure that all applicable local, state, and federal relocation programs are used to assist eligible persons to relocate. In addition, the lead agency shall review the proposed construction schedules to ensure that adequate time is provided to allow affected businesses to find and relocate to other sites.

LU-2(c) For all RTP projects that could result in temporary lane closures or access blockage during construction, a temporary access plan should be implemented by the lead agency to ensure continued access to affected cyclists, businesses, and homes. Appropriate signs and safe access shall be guaranteed during project construction to ensure that businesses remain open.

Significance After Mitigation. Implementation of recommended measures would mitigate impacts relating to temporary disturbance and long-term displacement.

Impact LU-3 The 2015 RTP would be consistent with applicable adopted state and local goals, policies and regulations. This is a Class III, *less than significant,* impact.

State-level policies applicable to the 2015 RTP include MAP-21, Caltrans Smart Mobility 2010, SB 375 and AB 32. The 2015 RTP contains goals that guide future transportation improvement projects and land use patterns within the region. The goals of the 2015 RTP are based on, and consistent with, both the planning factors stated in MAP-21, and the Caltrans Smart Mobility 2010 framework, tailored to the Shasta 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 2015 RTP sets goals that address the need for future development, an expanded transportation system, and the health and safety of Shasta County residents and visitors. These goals are:

- **Optimize the use of existing regionally significant roadways** to prolong functionality and maximize return-on-investment.
- **Strategically increase capacity** on regionally significant roadways to keep people and freight moving effectively and efficiently.
- Provide an integrated, context-appropriate range of **practical transportation choices**.
- Create **vibrant, people-centered communities.**
- Strengthen **regional economic competitiveness** for long-term prosperity.
- Promote **public access, awareness, and action** in planning and decision-making processes.
- Practice and promote **environmental and natural resource stewardship.**

As a result, while roads may be expanded and widened under the 2015 RTP, such projects would generally include improvements to pedestrian facilities as well, thereby limiting the potential to divide a community, while improving overall pedestrian safety. Additionally, the 2015 RTP would encourage infill development within existing urbanized areas to reduce the 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 type of development would not divide a community; rather it would promote the development of existing vacant or underutilized properties, thereby locating people closer to existing employment, goods and services within an established community. Impacts related to dividing an established community would be less than significant.

In addition, the 2015 RTP will help the region reach its GHG emission reduction targets established by the CARB under AB 32 and SB 375, as discussed in Section 4.8 *Greenhouse Gas Emissions/Climate Change*. The 2015 RTP encourages infill development and development along key transportation corridors to reduce automobile traffic and commute trip lengths. The 2015 RTP would meet the CARB established goal of no increase in per capita GHG emissions for the planning year 2020 and no increase in per capita GHG emissions in planning year 2035 as the per capita GHG emissions under the 2015 RTP would be reduced by 4.9% in 2020 and 0.4% in 2035 compared to 2005 baseline emissions levels (see Section 4.8, *Greenhouse Gas Emissions/Climate Change,* Table 4.8-2).

At the local level, the 2015 RTP 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 allowable densities.

In planning for projected growth in the region, the 2015 RTP 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 2015 RTP. Full implementation of the 2015 RTP is therefore dependent on local government policy decisions and voluntary local government action.

The proposed 2015 RTP 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
- Each local jurisdictions' Capital Improvements Program
- 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 2015 RTP 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 2015 RTP have been proposed by the various jurisdictions that comprise the SRTA region. The 2015 RTP and associated programmed or planned projects are generally consistent with local and regional plans and policies. Additionally, the 2015 RTP includes policies for encouraging consistency with other state, regional, and local policies. Impacts would be less than significant.

Mitigation Measures. None required.

Significance after Mitigation. Impacts are less than significant.

Impact LU-4 Implementation of proposed transportation improvements and the land use scenario envisioned by the RTP could redistribute residential and commercial development; however, RTP projects that are included in local General Plans would not significantly induce growth beyond that already anticipated, as the primary purpose of proposed improvements is to accommodate projected growth. This is a Class III, *less than significant*, impact.

The majority of transportation improvements are located in existing urbanized areas such as Anderson, Redding, and the city of Shasta Lake; 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 widening) or improving

access to undeveloped areas (in the case of road extensions). However, 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. These improvements are designed and intended to accommodate anticipated growth. The improvements would be phased to respond to land development as it occurs under adopted general plans. New roadways would be funded, in part, by fees generated by new development. If roadways were to be constructed in advance of land development (because of Caltrans or other outside funding), the local general plans would still control the ultimate extent of urban expansion in an area.

The land use scenario envisioned by the 2015 RTP includes strategies that encourage and incentivize development projects within existing urbanized areas and rural community centers and therefore represents a change in growth patterns. Compared to the current trend, the 2015 RTP assumes a greater portion of each jurisdiction's forecast growth and development would be captured within established areas having existing infrastructure and services, with a focus on infill and redevelopment on vacant and underutilized parcels. Infill projects or the redevelopment of existing buildings to increase residential density would not necessarily result in significant new population growth within these jurisdictions; rather it would accommodate anticipated growth in a more concentrated fashion within existing urban cores and rural community centers rather than in greenfield areas on the periphery of urban areas or within rural or semi-rural areas. Therefore, population growth impacts would be less than significant.

Mitigation Measures. No mitigation measures are required.

Significance After Mitigation. Impacts would be less than significant.

Impact LU-5 Implementation of proposed transportation improvements and the land use scenario envisioned by the 2015 RTP could result in the conversion of agricultural lands including Prime Farmland and lands under Williamson Act contract to non-agricultural uses. This is considered a Class I, *significant and unavoidable* impact.

Much of Shasta County is not prime farmland, but is categorized as grazing land and other land (Other land is defined by both the state Important Farmlands Inventory and the Natural Resources Conservation Service as vacant and nonagricultural land surrounded on all sides by urban development and greater than 40 acres. Common examples include low density rural developments, brush, timber, wetland, and riparian areas not suitable for livestock grazing, confined livestock, poultry, or aquaculture facilities, strip mines, borrow pits, and water bodies smaller than 40 acres. Prime farmland, farmland of statewide importance, and unique farmland, are located primarily along the Sacramento River and various creeks throughout the County as shown on Figure 4.10-1. These riparian areas contain extensive high-quality agricultural soils, defined as prime soils (Class I or II soils). A number of roadway extensions, shoulder widening projects, and bike lane projects throughout the county could encroach on prime agricultural soils, or soils that could support high quality agricultural production.

The proposed land use scenario includes a compact land pattern with an emphasis on infill development. Since the land use scenario would place a greater emphasis on development in

existing urban areas and limit expansion at community or city borders (where urban development interfaces with agricultural lands), impacts in the form of conversion of agricultural land would be minimal. However, impacts from individual development projects will need to be addressed on a case-by-case basis. Local roadway projects and bike or pedestrian paths are less likely to impact Prime Farmland than expressways and highways, as these projects are more likely to be located within existing urban areas (either incorporated or unincorporated) and are less likely to require substantial amounts of additional right of way. Nevertheless, because the actual magnitude of impacts from individual projects cannot be determined at this time, the overall impact to Prime Farmland would be potentially *significant*.

The Williamson Act allows county and city governments to define compatible land uses for contract lands within their jurisdictions, as long as those uses are consistent with the compatibility principles set forth in Government Code, Section 51238.1. Public agencies acquiring contracted lands for a public use (such as transportation facilities) must comply with Government Code Section 51293. Two criteria must be met when acquiring contracted lands:

1. The location is not based primarily on a consideration of the lower cost of acquiring land in an agricultural preserve.
2. If the land for any public improvement is agricultural land covered under a Williamson Act contract and there is no other land within or outside the preserve on which it is reasonably feasible to locate the public improvement.

The proposed land use scenario focuses on infill development growth among other strategies. Since the land use scenario would place a greater emphasis of development in existing urban areas and limit expansion at community or city borders where urban development interfaces with agricultural lands impacts in the form of conversion of agricultural land would be minimal. However, impacts from individual development projects will need to be addressed on a case-by-case basis. Transportation improvement projects may result in the direct conversion of Williamson Act lands that are currently in renewal status (participating in the Williamson Act contract program) or are in the process of being released from the program (non-renewal). This impact would be potentially *significant*.

Mitigation Measures. No measures are available to mitigate the loss of agricultural lands, short of eliminating proposed roadways that would traverse or be adjacent to Prime Farmland or Williamson Act lands. SRTA recommends that individual project lead agencies implement the following mitigation measures for applicable transportation projects that may result in impacts to agricultural lands. Project-specific environmental impacts conducted by a lead agency for an applicable transportation project may require these mitigation measures be revised or expanded in response to site-specific conditions:

LU-5(a) When new roadway extensions or widenings are planned, the individual project lead agency should assure that project-specific environmental reviews consider alternative alignments that reduce or avoid impacts to Prime Farmlands.

LU-5(b) Rural roadway alignments shall follow property lines to the extent feasible, to minimize impacts to the agricultural production value

of any specific property. Farmers should be compensated for the loss of agricultural production at the margins of lost property, based on the amount of land deeded as road right-of-way, as a function of the total amount of production on the property.

LU-5(c) Individual project lead agencies should consider corridor realignment, buffer zones, setbacks, and fencing to reduce conflict between agricultural lands and neighboring uses.

LU-5(d) Quantify potential for direct conversion of Important Farmland using the Land Evaluation and Site Assessment (LESA) model or a similar quantitative tool.

LU-5(e) Compensate for conversion impacts to Prime Farmland by purchasing agricultural conservation easements (ACE) or funding the acquisition of agricultural mitigation lands through an appropriate land trust.

LU-5(f) Individual project lead agencies should conduct an analysis of potential conflicts with Williamson Act contracts at the project level, consistent with the State CEQA Guidelines. If the impacts of the proposed roadway projects on Williamson Act contract lands are determined to be significant, implement the following measures to reduce the impacts to a less-than-significant level:

a. Design the proposed roadway projects to avoid or minimize the displacement of current and reasonably foreseeable agricultural operations from affected Williamson Act contract lands.
b. Where it has been determined that cancellation of a Williamson Act contract for a parcel, or a portion of a parcel, may result in impacts to Prime or Important Farmland, Mitigation Measure LU-5(a) shall be implemented.

Significance After Mitigation. Although the above measures would reduce impacts to Prime Farmland lands under Williamson contract to the degree feasible, such impacts cannot be fully mitigated due to the potential conversion to non-agricultural use. Impacts from individual projects will need to be addressed on a case-by-case basis; however, because impacts to individual Prime Farmland and lands under Williamson contract cannot be assumed to be less than significant, agricultural impacts are considered *significant and unavoidable*.

c. Specific 2015 RTP Projects That May Result in Impacts. All RTP projects that require the construction of physical structures may result in land use impacts discussed in Impacts LU-1 through LU-4 and are therefore not mentioned in a table format. Individual projects could create significant impacts related to land use but would not necessarily do so. Additional specific analysis will need to be conducted as the individual projects are implemented in order to determine the actual magnitude of impact. Mitigation measures discussed above could apply to these specific projects for land use. RTP projects that require the addition of lanes or

widening of lanes or a shoulder to an existing roadway or highway or that require construction of a new roadway, highway or bike lanes and are adjacent to agricultural lands have the potential to impact agricultural resources including Prime Farmlands and Williamson Act contract lands. All construction projects adjacent to agricultural lands have the potential impact to agricultural resources as described in Impacts LU-5. Table 4.10-1 lists representative projects that have the potential to impact agricultural resources.

Table 4.10-1
2015 RTP Projects that May Result in Agriculture Impacts

SRTA Project Name	Project Number	Project	Location	Impact	Description of Impact
Caltrans Operations	14	I-SR 299, Start/End PM 60.6, Hillcrest	Shasta County (Hillcrest)	LU-5	Potential impacts to nearby agricultural lands
Caltrans Bridges	7	Route 89, Begin PM 25.3, End PM 31.7, Lake Britton, Replace Bridge and realign roadway	Shasta County	LU-5	Potential impacts to nearby agricultural lands
Caltrans Operations	12	Route 299, Begin PM 41.5, End PM 55.2, Safety Device Paving and Pullouts	Shasta County	LU-5	Potential impacts to nearby agricultural lands
Redding Active Transportation	28	class ii bike lane: Route College View Dr, From Bodenhamer Blvd (Future), To Old Alturas Rd	Redding	LU-5	Potential impacts to nearby agricultural lands
Shasta County Safety	11	Bear Mountain Road - Shoulder Widening and Improve Alignment	Shasta County	LU-5	Potential impacts to nearby agricultural lands
Shasta County Safety	20	Old 44 Drive Shoulder Widening and Realignment, Silver Bridge Rd to Oak Run Rd	Shasta County	LU-5	Potential impacts to nearby agricultural lands
Redding Active Transportation	35	class ii bike lane: Route Old Oregon Trail, From Oasis Rd, To State Route 44	Redding	LU-5	Potential impacts to nearby agricultural lands
Shasta County Capacity	6	Deschutes Road Widen to 3-Lanes, Old 44 Drive to Boyle Road	Shasta County	LU-5	Potential impacts to nearby agricultural lands
Shasta County Safety	23	Deschutes Road at Boyle and Old Deschutes Rd Roundabout/Signal	Shasta County	LU-5	Potential impacts to nearby agricultural lands
Shasta Lake Active Transportation	1	Class I Bikeway + Regional Trail - Churn Creek	Shasta Lake	LU-5	Potential impacts to nearby agricultural lands

Table 4.10-1
2015 RTP Projects that May Result in Agriculture Impacts

SRTA Project Name	Project Number	Project	Location	Impact	Description of Impact
Caltrans ITS	52	SR 273, Start PM 5/End PM 20.033, From Anderson to JCT I-5, Fiber Installation	Shasta County (near Anderson)	LU-5	Potential impacts to nearby agricultural lands
Regional Capacity	2	Route 5, Begin PM R 3.8, End PM R 9.7 0.2 mile south of North Street to Knighton Road Overcrossing, Redding to Anderson 6-Lane Phase 2	Shasta County (Redding to Anderson)	LU-5	Potential impacts to nearby agricultural lands
Shasta County Safety	9	Churn Creek Road, Shoulder Widening from Rancho to Knighton	Shasta County	LU-5	Potential impacts to nearby agricultural lands
Shasta County Safety	17	Churn Creek Road, Shoulder Widening from Knighton to Airport	Shasta County	LU-5	Potential impacts to nearby agricultural lands
Shasta County Safety	3	Deschutes Road Shoulder Widening, Brundage Rd. to Balls Ferry Rd.	Shasta County	LU-5	Potential impacts to nearby agricultural lands
Shasta County Active Transportation	8	Road segment Gas Point Road, From I-5/Cottonwood, To Happy Valley Road, class ii bike lane	Shasta County	LU-5	Potential impacts to nearby agricultural lands
Shasta County Capacity	4	New E-W Road -New N-S to Rhonda Construct 3 lane road	Shasta County	LU-5	Potential impacts to nearby agricultural lands
Shasta County Safety	10	4th Street Median Lane, Main Street to Balls Ferry Road	Shasta County	LU-5	Potential impacts to nearby agricultural lands

4.11 NOISE

4.11.1 Setting

a. Overview of Sound Measurement.

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 that contained in the actual fluctuating levels 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 lightly traveled roads typically attenuates at a rate of about 4.11 dBA per doubling of distance. Noise from heavily traveled roads typically attenuates at about 3 dBA per doubling of distance.

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 Sources. Ambient noise levels in Shasta County vary widely depending upon proximity to noise generators, such as major roads, airports, and rail lines. The major noise sources in the county are described below.

Motor Vehicle Traffic. Roadways and traffic noise are the dominant source of ambient noise in the County. The noise generated from vehicles using roads within the County is governed primarily by the number of vehicles, type of vehicles (mix of automobiles, trucks, and other large vehicles), and speed. The noisiest single road corridor in the county is Interstate 5 (I-5), due to both the high traffic volumes experienced and the high speed of traffic, which can create noise in areas up to 500 feet away from the source. In 2012, daily traffic on I-5 ranged from 64,000 vehicles near Route 44 in Redding to 15,300 vehicles in the northern part of the County up to the Siskiyou County Line (Caltrans, http://traffic-counts.dot.ca.gov/2012all /Route5-6.html, 2013). Noise levels along the I-5 corridor exceed 65 dBA CNEL within varying distances from the centerline of the freeway.

Railroad Operations. In general, noise is generated during rail operations by locomotives starting and stopping, trains braking, the connection and disconnection of cars,

train whistles, and track noise (the trains' wheels running on the track). Railroad operations through Shasta County consist of the Union Pacific Railroad (UPRR) single high speed main line track which parallels Interstate 5. Amtrak passenger trains also operate on this UPRR main line through Shasta County.

Main line operations in Shasta County affect the City of Redding and a number of small communities and rural residential uses located near the tracks. Currently multiple freight trains and two passenger trains pass through the County per day (Amtrak, Coast Starlight schedule, effective June 9, 2014). Freight trains may occur at any time during the day or night. According to the Shasta County General Plan Noise Element (2004), measured noise levels near railroads were between 69.5 and 76.0 dBA Ldn at 50 feet from the tracks and between 65.0 and 71.5 dBA Ldn at 100 feet from the tracks.

Aircraft Operation. The County's General Plan Noise Element identified aircraft operations noise as a major source of noise within the County. There are three operational airports within Shasta County: Redding Municipal Airport, Benton Airport, and Falls River mills Airport.

Redding Municipal Airport. The Redding Municipal Airport is a commercial service primary airport owned by the City of Redding. It is the only airport in the county served by scheduled airlines. The airport contains two runways. In 2008, total aircraft operations (takeoffs and landings) totaled nearly 74,000. The 1993/94 noise impacts for the Redding Municipal Airport were identified in the document entitled Redding Municipal Airport Master Plan Report Update, August 1995. Noise contours shown in the Noise Element Background Report identify that the 65 dB CNEL contour is confined primarily to the airport property. The 60 dB CNEL contour extends outside of the property, but does not encroach on existing residential uses (Shasta County General Plan, 2004).

Benton Airport. Benton is a classified as a General Aviation Facility within the USDOT/FAA National Plan of Integrated Airport Systems. The airport is a small, single runway, Visual Flight Rules (VFR) airport for single and small twin-engine general aviation aircraft. It is owned and operated by the City of Redding. In 2008, total aircraft operations (takeoffs and landings) totaled 35,000. Existing land use surrounding Benton Airpark is a mix of residential, open space and office. In order to reduce noise levels at nearby sensitive receptors, a traffic pattern for department and landing was developed to orient noise away from receptors (City of Redding, http://www.ci.redding.ca.us/transeng/airports/benton.htm, accessed 2014).

Fall River Mills Airport. Fall River Mills Airport (also known as Tonkin Field) is a single-runway General Aviation Facility owned and operated by the County of Shasta. The 2001 noise impacts for Fall River Mills Airport were provided by Mead and Hunt Company in the Environmental Assessment (EA) for the Fall River Mills Airport Layout Plan dated April 2003. The existing CNEL contours for the operations at the Fall River Mills Airport indicate that the 65 CNEL contour is contained entirely within the existing airport boundary. Aviation growth at the Fall River Mills Airport can also impact the area surrounding the airport. The total number of aircraft operations is expected to increase from 6,000 in 2001 to 15,000 by the year 2021. The future (2021) CNEL contours for the operations at the Fall River Mills Airport are provided in Section 4, Environmental Setting and Consequences of the Environmental Assessment (EA).

Based upon the noise contours, the 65 dB CNEL contour is confined to lands designated Public Facility and Agriculture. The 60 dB CNEL contour encompasses Public Facility, Agriculture, and Urban Residential lands (Shasta County General Plan, 2004).

Transit Operations. Public transportation in the Redding area is provided by the Redding Area Bus Authority (RABA) which provides both fixed route and demand-response transit services. The fixed route service consists of ten local and three express routes. RABA also operates a complementary paratransit service which provides curb-to-curb transportation for individuals who, because of a mobility impairment, are not able to use a regular fixed route system. RABA's transportation system links residential, industrial, commercial, and retail centers within Redding and the surrounding area. Rural services consist of express routes (commuter) to Burney, Redding Municipal Airport, and Shasta College. Fixed route and complementary paratransit services are provided for the City of Anderson. Amtrak and Greyhound also provide bus service through Shasta County. School buses provide transportation for various school districts (Shasta County General Plan Circulation Element, 2004).

The Shasta Senior Nutrition Program (SSNP) is the designated Consolidated Transportation Services Agency (CTSA) within Shasta County. SSNP is a non-profit organization which provides complimentary paratransit transportation services to the senior population and mobility impaired in the rural areas of the County (SRTA, http://www.srta.ca.gov/158/Consolidated-Transportation-Services-Age, accessed March 2015).

Industrial Operations. Shasta County contains a number of different industrial operations, including lumber mills, concrete plants, and rock and asphalt quarries, that produce noise. The Shasta County General Plan Noise Element includes noise measurements for industrial facilities throughout the County. As shown on Figure 4.11-1, generally a normally acceptable exterior noise level for industrial uses ranges in volume from approximately 55 dBa to 75 dBa.

Agricultural Operations. Farming operations are common throughout Shasta County. Some of the more common noise sources associated with farming operations include tractors, harvesting equipment and spray equipment. A general rule-of-thumb is that a diesel engine will produce noise levels of 75-85 dBA at approximately 50 feet. Although farming operations occasionally generate significant noise levels, such levels generally do not last more than a few hours at a given location unless a stationary piece of equipment such as a pump master (or engine) is involved. For this reason, significant cumulative noise exposure as defined by Ldn would not generally be expected to result from typical farming operations within Shasta County.

c. Regulatory Framework. Various federal agencies have set standards for transportation-related noise and vibration sources that are closely linked to 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 Regulations. Relevant federal regulations include those established by the Federal Highway Administration (FHWA), Federal Transit Authority (FTA), Federal Aviation Administration (FAA), and Department of Housing and Urban Development (HUD).

Federal Highway Administration. 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 passby noise standard is 80 dB at 15 meters from the vehicle pathway centerline. These controls are implemented through regulatory controls on truck manufacturers. The FHWA regulations for noise abatement 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 Noise Abatement Criteria (NAC).

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 lead agency "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.

Traffic noise impacts, as defined in 23 CFR § 772.5, occur when the predicted noise level in the design year approach or exceed the 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 57 dB Leq and 66 dB Leq, respectively, during the peak hour of traffic noise. Table 4.11-1 summarizes NAC corresponding to various land use activity categories. Activity categories and related traffic noise impacts are determined based on the actual land use in a given area.

Table 4.11-1
Noise Abatement Criteria

NAC, Hourly A-Weighted Noise Level, dBA Leq(h)	Description of Activities
57 (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.
67 (Exterior)	Residential, 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,
52 (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.
72 (Exterior)	Hotels, motels, offices, restaurants/bars, and other developed lands not included above.

Source: FWHA, http://www.fhwa.dot.gov/environment/noise/regulations_and_guidance/faq_nois.cfm, accessed February 2014.

Federal Aviation Administration (FAA). Aircraft operated in the U.S. are subject to federal requirements regarding noise emissions levels. These requirements are set forth in Title 14 CFR, Part 36. Part 36 establishes maximum acceptable noise levels for specific aircraft types, taking into account the model year, aircraft weight, and number of engines

Federal Transit Administration. The FTA has developed guidance to evaluate noise impacts from operation of surface transportation modes (i.e. passenger cars, trucks, buses, and rail) in the 2006 FTA *Transit Noise Impact and Vibration Assessment*. 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.

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 requires noise attenuation measures be provided when proposed projects are to be located in high noise areas. Within the HUD Noise Assessment Guidelines, potential noise sources are examined for projects located within 15 miles of a military or civilian airport, 1,000 feet from a road or 3,000 feet from a railroad.

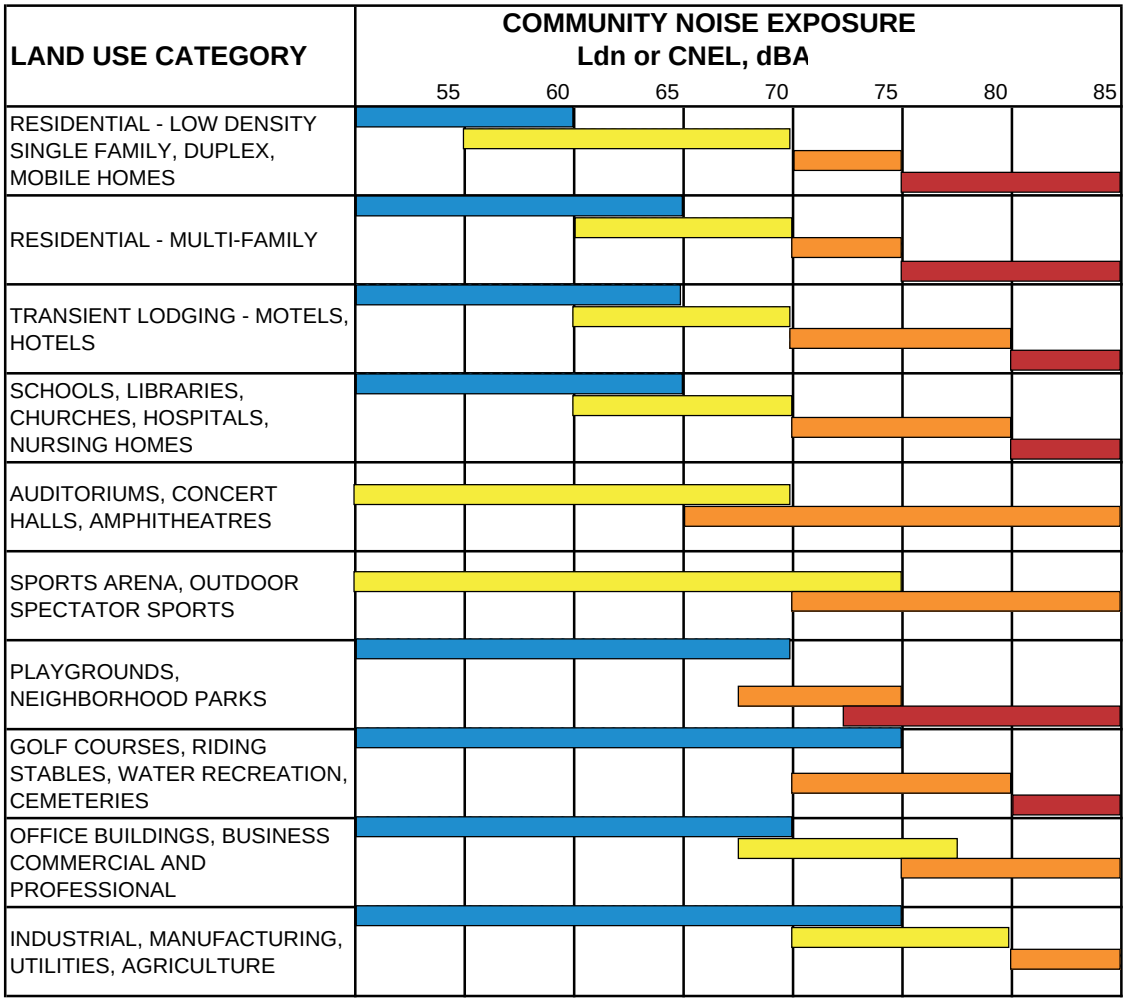
HUD exterior noise regulations state that 65 dBA Ldn noise levels or less are acceptable for residential land uses and noise levels exceeding 75 dBA Ldn are unacceptable. HUD's regulations do not contain standards for interior noise levels. Rather a goal of 45 decibels is set forth and the attenuation 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. Noise criteria are consistent with FHWA and related state requirements.

State Regulations. Relevant state noise regulations include those established by the California Department of Health Services and the California Department of Transportation (Caltrans), as well as standards in the California Code of Regulations. The Governor's Office of Planning and Research have also established guidelines regarding sound level and land use compatibility. There are no adopted state policies or standards for ground-borne vibration. However, Caltrans recommends that extreme care be taken when sustained pile driving occurs within 7.5 meters (25 feet) of any building, 15 to 30 meters (50 to 100 feet) of a historic building or near a building in poor condition.

State of California General Plan Guidelines. The state of California General Plan Guidelines (California Governor's Office of Planning and Research, 2003) identifies guidelines for the Noise Elements of city and county General Plans, including a sound level/land-use compatibility chart that categorizes, by land use, outdoor Ldn ranges in up to four categories (normally acceptable, conditionally acceptable, normally unacceptable, and clearly unacceptable). These guidelines provide the state's recommendations for city and county General Plan Noise Elements, as shown in Figure 4.11-1. Compliance with the guidelines by the cities and counties is not required, but nonetheless is quite common because many general plan noise elements are based on these guidelines. The noise element guidelines identify the normally acceptable range for low-density residential uses as less than 60 dB, and the conditionally acceptable range as 55–70 dB. The normally acceptable range for high-density residential uses is identified as Ldn values below 65 dB, and the conditionally acceptable range is identified as 60–70 dB. For educational and medical facilities, Ldn values below 70 dB are considered normally acceptable, and Ldn values of 60–70 dB are considered conditionally acceptable. For office and commercial land uses, Ldn values below 70 dB are considered normally acceptable, and Ldn values of 67.5–77.5 are categorized as conditionally acceptable. These overlapping Ldn ranges are intended to indicate that local conditions (existing sound levels and community attitudes toward dominant sound sources) should be considered in evaluating land-use compatibility at specific locations.

California's Airport Noise Standards. 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.

The Aeronautics Division of the California Department of Transportation has published the *California Airport Land Use Planning Handbook* (October 2011). The purpose of the California Airport Land Use Planning Handbook is to provide guidance for conducting airport land use



NORMALLY ACCEPTABLE
Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal conventional construction, without any special noise insulation requirements.

NORMALLY UNACCEPTABLE
New construction or development should generally be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be made and needed noise insulation features included in the design

CONDITIONALLY ACCEPTABLE
New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features included in the design. Conventional construction, but with closed windows and fresh air supply systems or air conditioning will normally suffice.

CLEARLY UNACCEPTABLE
New construction or development should generally not be undertaken.

Guidelines for the Preparation and Content of Noise Elements of the General Plan, California Office of Planning and Research, 2003.

Noise Compatibility Matrix Figure 4.11-1

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)."

California Department of Transportation. The state of California establishes noise limits for vehicles licensed to operate on public roads. For heavy trucks, the state passby standard is consistent with the federal limit of 80 dB. The state passby 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* (May 2011) for assessing noise levels associated with roadway projects.

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.

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 Ldn 45 dB 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 Ldn 60 dB. Applicable thresholds are shown in Figure 4.11-1.

State Aeronautics Act. The State Aeronautics Act (Public Utilities Code, Section 21670 et seq.) requires the preparation of an Airport Land Use Compatibility Plan (ALUCP) for nearly all public-use airports in the state (Section 21675). The intent of the ALUCP is to encourage compatibility between airports and the various land uses that surround them. Some of the actions that airport operators 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 operators may also consider limitations on airport use but such restrictions can be overridden by the FAA 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 Regulations. Shasta County has established policies and regulations concerning noise that could adversely affect noise-sensitive land uses. The Noise Element of the County's General Plan contains planning guidelines relating to noise and identifies goals and policies to support achievement of those goals. Noise element guidelines relate primarily to land use compatibility with noise sources such as traffic, aircraft, trains, and fixed sources. Table 4.11-2 lists General Plan policies that may apply to individual projects of the 2015 RTP and are designed to regulate noise levels within the County.

Table 4.11-2
Local General Plan Noise Policies

Shasta County	
Policy N-a	New noise-sensitive uses shall not be allowed in areas where the noise level created by existing non-transportation noise sources will exceed the noise level standards of Table N–IV (shown in Table 4.11-3) as measured immediately within the property line or within a designated outdoor activity area (at the discretion of the Planning Director) of the proposed project, unless effective noise mitigation measures will be incorporated into the project design to achieve compliance with the standards specified in Table N–IV (shown in Table 4.11-3).
Policy N-b	Noise likely to be created by a proposed non-transportation land use shall be mitigated so as not to exceed the noise level standards of Table N–IV (shown in Table 4.11-3) as measured immediately within the property line of adjacent lands designated as noise-sensitive. Noise generated from existing or proposed agricultural operations conducted in accordance with generally accepted agricultural industry standards and practices is not required to be mitigated.
Policy N-c	Where proposed non-residential land uses are likely to produce noise levels exceeding the performance standards of Table N–IV(shown in Table 4.11-3) upon existing or planned noise-sensitive uses, an acoustical analysis shall be required as part of the environmental review process so that appropriate noise mitigation may be included in the project design. The requirements for the content of an acoustical analysis are given by Table N-V.
Policy N-d	The feasibility of proposed projects with respect to existing and future transportation noise levels shall be evaluated by comparison to Figure N-1 and Table N–VI (shown in Table 4.11-4).
Policy N-e	New development of noise-sensitive land uses will not be permitted in areas exposed to existing or projected noise levels from transportation-related sources which exceed the levels specified in Table N–VI (shown in Table 4.11-4) unless the project design includes effective mitigation measures to reduce both exterior and interior noise levels to satisfy the requirements in Table N–VI (shown in Table 4.11-4).
Policy N-f	Noise created by new transportation sources shall be mitigated to satisfy the levels specified in Table N–VI (shown in Table 4.11-4) at outdoor activity areas and/or interior spaces of existing noise-sensitive land uses. Transportation noise shall be compared with existing and projected noise levels shown in Tables N-I and N-II.
Policy N-g	Existing noise-sensitive uses may be exposed to increased noise levels due to future roadway improvement projects as a result of increased traffic capacity and volumes and increases in travel speeds. In these instances, it may not be practical to reduce increased traffic noise levels consistent with those contained in Table N-VI (shown in Table 4.11-4). Therefore, as an alternative, the following criteria may be used as a test of significance for increases in the ambient outdoor activity areas of the noise level of noise-sensitive uses created as a result of a new roadway improvement project: • Where existing traffic noise levels are less than 60 dB Ldn, a +5 dB Ldn increase will be considered significant; and • Where existing traffic noise levels range between 60 and 65 dB Ldn, a +3 dB Ldn increase will be considered significant; and • Where existing traffic noise levels are greater than 65 dB Ldn, a + 1.5 dB Ldn increase will be considered significant.

Table 4.11-2
Local General Plan Noise Policies

Policy N-h	Where noise-sensitive land uses are proposed in areas exposed to existing or projected exterior noise levels exceeding the levels specified in Table N-VI (shown in Table 4.11-4) or the performance standards of Table N-IV, an acoustical analysis shall be required as part of the environmental review process so that effective noise mitigation measures may be included in the project design.
Policy N-i	Where noise mitigation measures are required to achieve the standards of Tables N-IV (shown in Table 4.11-3) and N-VI (shown in Table 4.11-4), the emphasis of such measures shall be placed upon site planning and project design. The use of noise barriers shall be considered a means of achieving compliance with the noise standards only after all other practical design-related noise mitigation measures have been integrated into the project. Note: Existing dwellings and new single-family dwellings are not subject to County review with respect to satisfaction of the standards of the Noise Element. As a consequence, such dwellings may be constructed in areas where noise levels exceed the standards of the Noise Element. It is not the responsibility of the County to ensure that such dwellings meet the noise standards of the Noise Element, or the noise standards imposed by lending agencies such as HUD, FHA and Cal Vet. If homes are located and constructed in accordance with the Noise Element, it is expected that the resulting exterior and interior noise levels will conform to the HUD/FHA/Cal Vet noise standards.
Policy N-j	Encourage railroad officials to install noise-mitigation features on trains, equipment, and at fixed-based facilities whenever possible, and instruct railroad engineers to limit their use of air horns to reduce rail-related noise impacts on cities, towns, and rural community centers.
Policy N-k	All County airports lacking adopted noise level contours consistent with the General Plan forecast year of 2025 should update their respective Master Plans or Comprehensive Land Use Plans (CLUP) to reflect aircraft operation noise levels for existing and future operations.
Policy N-l	The use of site planning and building materials/design as primary methods of noise attenuation is encouraged. Recommended techniques include, but are not limited to, such items as: <u>Site Planning</u> • Use of building setbacks and dedication of noise easements to increase the distance between the noise source and the receiver. • Locating uses and orienting buildings that are compatible with higher noise levels adjacent to noise-generators or in clusters as a means to shield more noise-sensitive areas and uses. • Using noise-tolerant structures, such as garages or carports, to shield noise-sensitive areas. • Clustering office, commercial, or multiple-family residential structures to reduce interior open-space noise levels. • Locate automobile and truck access to commercial or industrial land uses abutting residential parcels at the maximum practical distance from the residential parcels. • Avoid the siting of commercial and industrial loading and shipping facilities adjacent to residential parcels whenever practicable. • Parking areas for commercial and industrial uses should be set back from adjacent • residential uses to the maximum extent feasible, or buffered and shielded by walls, fences, berms, and/or landscaping techniques. <u>Building Materials/Design</u> • Using dense building materials and tight-fitting doors. • Employing multi-glazed and multi-pane windows. • Placing unopenable windows on the side of the structure facing a major roadway and entry doors on the side of the building facing away from the major roadway. • Avoiding placing balconies and patio areas facing major transportation routes.

Table 4.11-3
Shasta County General Plan Noise Element
Noise Level Performance Standards
for New Projects Affected by or Including Non-Transportation Sources

Noise Level Descriptor	Daytime (7 AM to 10 PM)	Nighttime (10 PM to 7 AM)
Hourly Leq, dB	55	50

The noise levels specified above shall be lowered by 5 dB for simple tone noises, noises consisting primarily of speech or music, or for recurring impulsive noises. These noise level standards do not apply to residential units established in conjunction with industrial or commercial uses (e.g., caretaker dwellings).

The County can impose noise level standards which are more restrictive than those specified above based upon determination of existing low ambient noise levels.

In rural areas where large lots exist, the exterior noise level standard shall be applied at a point 100' away from the residence.

Industrial, light industrial, commercial, and public service facilities which have the potential for producing objectionable noise levels at nearby noise-sensitive uses are dispersed throughout the County. Fixed-noise sources which are typically of concern include, but are not limited to, the following:

HVAC Systems	Cooling Towers/Evaporative Condensers
Pump Stations	Lift Stations
Emergency Generators	Boilers
Steam Valves	Steam Turbines
Generators	Fans
Air Compressors	Heavy Equipment
Conveyor Systems	Transformers
Pile Drivers	Grinders
Drill Rigs	Gas or Diesel Motors
Welders	Cutting Equipment
Outdoor Speakers	Blowers

The types of uses which may typically produce the noise sources described above include, but are not limited to: industrial facilities including lumbermills, trucking operations, tire shops, auto maintenance shops, metal fabricating shops, shopping centers, drive-up windows, car washes, loading docks, public works projects, batch plants, bottling and canning plants, recycling centers, electric generating stations, race tracks, landfills, sand and gravel operations, and athletic fields.

Note: For the purposes of the Noise Element, transportation noise sources are defined as traffic on public roadways, railroad line operations, and aircraft in flight. Control of noise from these sources is preempted by federal and state regulations. Other noise sources are presumed to be subject to local regulations, such as a noise control ordinance. Non-transportation noise sources may include industrial operations, outdoor recreation facilities, HVAC units, loading docks, etc.

Source: Shasta County General Plan Noise Element, Table N-IV, 2004.

Table 4.11-4
Shasta County General Plan Noise Element -
Maximum Allowable Noise Exposure Transportation Noise Sources

Land Use	Outdoor Activity Areas[1] Ldn/CNEL, dB	Interior Spaces	
		Ldn/CNEL, dB	Leq, dB[2]
Residential	60[3]	45	--
Transient Lodging	60[4]	45	--
Hospitals, Nursing Homes	60[3]	45	--
Theaters, Auditoriums, Music Halls	--	--	35
Churches, Meeting Halls	60[3]	--	40
Office Buildings	--	--	45
Schools, Libraries, Museums	--	--	45
Playgrounds, Neighborhood Parks	70	--	--

[1] Where the location of outdoor activity areas is unknown, the exterior noise level standard shall be applied to the property line of the receiving land use. Where it is not practical to mitigate exterior noise levels at patio or balconies of apartment complexes, a common area such as a pool or recreation area may be designated as the outdoor activity area.
[2] As determined for a typical worst-case hour during periods of use.
[3] Where it is not possible to reduce noise in outdoor activity areas to 60 dB Ldn/CNEL or less using a practical application of the best-available noise reduction measures, exterior noise levels of up to 65 dB Ldn/CNEL may be allowed provided that available exterior noise level reduction measures have been implemented and interior noise levels are in compliance with this table.
[4] In the case of hotel/motel facilities or other transient lodging, outdoor activity areas such as pool areas may not be included in the project design. In these cases, only the interior noise level criterion will apply

Source: Shasta County General Plan Noise Element, Table N-V, 2004.

Shasta County does not have a noise ordinance. The County uses the standards set forth in the General Plan Noise Element described above to asses noise impacts.

Shasta County has three incorporated cities each with its own noise standards. The applicable noise standards for the 2015 RTP projects include, but are not limited to, the policies described below in each jurisdiction[1]. Noise standards for the County and the cities within the County typically apply land-use compatibility criteria of 60-65 dBA Ldn as being the normally acceptable range for new residential developments, and interior noise criteria of 45 dBA Ldn, consistent with the overall state recommendations in Figure 4.11-1.

Anderson. The City of Anderson General Plan (May 1, 2007) Noise Element includes three noise policies to ensure noise is at acceptable levels in residential and mixed-use neighborhoods (NP-1), to avoid placing high noise generators next to sensitive uses (NP-2), and to avoid placing noise-sensitive land uses near noise-generating land uses (NP-3).

Redding. The City of Redding General Plan Noise Element (March 27, 2000) includes descriptions of noise generators and noise sensitive uses and measures existing noise conditions. Policies relate to construction and commercial hours, transportation-related noise, and siting of new land uses.

City of Shasta Lake. The Shasta Lake General Plan (June 15, 1999) includes two policies related to noise. Policy N-a relates to the siting and planning of new development and prohibits

[1] *Please note that not all applicable policies are summarized. Each jurisdiction may have additional noise standards not included in the list below. The policies listed below are intended to provide a summary of general noise standards within the local jurisdictions where RTP projects may be located.*

residential development in areas such that a 45 dBA CNEL interior noise level cannot be achieved. Policy N-b calls for considering and mitigating noise impacts when designing improvements in the circulation system.

4.11.2 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 May 2006 Federal Transit Administration (FTA) *Transit Noise and Vibration Impact Assessment*.

Pursuant to the State *CEQA Guidelines*, potentially significant impacts would occur if the project would result in:

- *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;*
- *Exposure of persons to or generation of excessive ground-borne vibration or ground-borne noise levels;*
- *A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project; or*
- *A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project.*
- *For a project located 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;*
- *For a project within the vicinity of a private airstrip, exposure of people residing or working in the project area to excessive noise levels.*

The last two criteria are discussed in Section 4.13, *Less than Significant Environmental Factors.*

Since this document analyzes noise impacts on a program level only, project-level analyses for various projects within the 2015 RTP will be necessary in the future. The project proponent or local jurisdiction shall be responsible for ensuring adherence to the mitigation measures prior to construction. The analysis of potential impacts should include an assessment of all applicable standards, including those established by local jurisdictions, counties, the state of California, and federal agencies, where appropriate.

Local Thresholds. Shasta County and the incorporated cities within the County each have their own noise standards. Noise standards for the County and the cities within the county typically apply land-use compatibility criteria of 60-65 dBA Ldn as being the normally acceptable range for new residential developments, and interior noise criteria of 45 dBA Ldn, consistent with the overall state recommendations in Figure 4.11-1.

b. Project Impacts and Mitigation Measures. This section describes generalized impacts associated with some of the projects anticipated in the 2015 RTP.

Impact N-1 Construction activity associated with transportation improvement projects and development envisioned by the 2015 RTP would create temporary noise level increases in discrete locations throughout the County. Impacts would be Class II, *significant but mitigable.*

Noise. The operation of equipment during the construction of roadway infrastructure, as well as development projects, would result in temporary increases in noise in the immediate vicinity of individual construction sites. As shown in Table 4.11-5, 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 such equipment as backhoes, bulldozers, shovels, and front end loaders.

Table 4.11-5
Typical Construction Noise Levels (in 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: Typical noise level 50 feet from the source was taken from FTA, May 2006. Noise levels at 25 feet, 100 feet and 200 feet were extrapolated using a 6 dBA attenuation rate for the doubling of distance. Noise levels are measured in Leq for the expected duration that each piece of equipment is expected to operate. Each noise level assumes the piece of equipment is operating at full power for the expected duration to complete the construction activity. The duration varies widely between each piece of equipment. Noise levels also depend on the model and year of the equipment used. The noise levels assume simultaneous construction activities associated with the respective phase of construction and equipment being used.

Noise generated by construction activity would be variable depending on the project and intensity of equipment use. Roadway widening projects would likely require the operation of many pieces of heavy-duty equipment that generate high noise levels. Alternatively, repainting/restriping would typically be less intense requiring minimal, if any, use of heavy equipment. This conservative analysis assesses construction noise based on the operation of heavy-duty equipment. Noise levels from point sources such as construction sites typically attenuate at a rate of about 6 dBA per doubling of distance. Therefore, areas within 800 feet of construction site with heavy-duty equipment may be exposed to noise levels exceeding 65 dBA. Impacts related to construction noise would be significant but mitigable.

Vibration. Construction-related vibration has the potential to damage structures, cause cosmetic damage (e.g., crack plaster), or disrupt the operation of vibration-sensitive equipment. Vibration can also be a source of annoyance to individuals who live or work close to vibration-

generating activities. Heavy construction operations can cause substantial vibration near the source. As shown in Table 4.11-6, the highest impact caused by equipment such as pile drivers or large bulldozers can generate vibrations of 1.518 to 0.089 inches per second of peak particle velocity (PPV) at a distance of 25 feet. Similar to construction noise, vibration levels would be variable depending on the type of construction project and related equipment use.

Table 4.11-6
Construction Equipment Vibration Levels

Equipment		Peak Particle Velocity (PPV) at 25 Feet (Inches per Second)	Root Mean Square (RMS) at 25 Feet (Vdb)
Pile Driver (Impact)	Upper Range	1.518	112
	Typical	0.644	104
Pile Driver (Sonic)	Upper Range	0.734	105
	Typical	0.170	93
Vibratory Roller		0.210	95
Clam Shovel Drop (Slurry Wall)		0.202	94
Hydrol Mill (Slurry Wall)	In Soil	0.008	66
	In Rock	0.017	75
Large Bulldozer		0.089	87
Caisson Drilling		0.089	87
Loaded Trucks		0.076	86
Jackhammer		0.035	79
Small Bulldozer		0.003	58

Source: Federal Transit Administration, Transit Noise and Vibration Impact Assessment, 2006.

Typical project construction activities, such as the use of jackhammers, other high-power or vibratory tools, compactors, and tracked equipment, may also generate substantial vibration (i.e., greater than 0.2 inches per second PPV) in the immediate vicinity, typically within 15 feet of the equipment. Through the use of scheduling controls, typical construction activities would be restricted to hours with least potential to affect nearby properties. Thus, perceptible vibration can be kept to a minimum and not result in human annoyance or structural damage.

Some specific construction activities result in higher levels of vibration. Pile driving has the potential to generate the highest vibration levels and is the primary concern for structural damage 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. Depending on the proximity of existing structures to each construction site, the structural soundness of the affected buildings and construction methods, vibration caused by pile driving or other foundation work with a substantial impact component such as blasting, rock or caisson drilling, and site excavation or compaction may be high enough to be perceptible within 100 feet and damage existing structures within 50 feet. Impacts related to vibration from construction activities would be significant but mitigable.

Mitigation Measures. Local noise and vibration general plan policies and ordinance requirements would apply to construction activity associated with 2015 RTP implementation. In addition, the following mitigation measures N-1(a) through N-1(e) are recommended. SRTA

recommends that individual project lead agencies implement the following mitigation measures for applicable transportation projects. These measures can and should be implemented for all projects developed pursuant to the 2015 RTP that would result in temporary construction noise and/or vibration impacts. Project-specific environmental impacts may require these mitigation measures be revised or expanded in response to site-specific conditions:

N-1(a) Individual project lead agencies of 2015 RTP projects shall ensure that, where residences or other noise sensitive uses are located within 800 feet of construction sites, appropriate measures shall be implemented to ensure consistency with local noise ordinance requirements relating to construction. Specific techniques may include, but are not limited to, restrictions on construction timing, use of sound blankets on construction equipment, and the use of temporary walls and noise barriers to block and deflect noise.

N-1(b) If a particular project within 800 feet of sensitive receptors requires pile driving, the individual project lead agency in which this project is located shall require the use of pile drilling techniques instead, where feasible. This shall be accomplished through the placement of conditions on the project during its individual environmental review.

N-1 (c) Individual project lead agencies shall ensure that equipment and trucks used for project construction utilize the best available noise control techniques (including mufflers, use of intake silencers, ducts, engine enclosures and acoustically attenuating shields or shrouds).

N-1(d) Individual project lead agencies shall ensure that impact equipment (e.g., jack hammers, pavement breakers, and rock drills) used for project construction be hydraulically or electrical powered wherever feasible to avoid noise associated with compressed air exhaust from pneumatically powered tools. Where use of pneumatically powered tools is unavoidable, use of an exhaust muffler on the compressed air exhaust can lower noise levels from the exhaust by up to about 10 dBA. When feasible, external jackets on the impact equipment can achieve a reduction of 5 dBA. Whenever feasible, use quieter procedures, such as drilling rather than impact equipment operation.

N-1(e) Locate stationary noise sources as far from sensitive receptors as possible. Stationary noise sources that must be located near existing receptors will be adequately muffled.

Significance After Mitigation. With implementation of local noise control requirements and proposed mitigation, impacts would be reduced to a less than significant level.

Impact N-2 Implementation of the 2015 RTP would increase traffic-generated noise levels on highways and roadways which could expose sensitive receptors to noise in excess of normally acceptable levels. This is a Class II, *significant but mitigable,* impact.

Traffic Noise. The 2015 RTP includes several projects that would potentially increase traffic noise levels by increasing the traffic itself. Such projects include the construction of new bridges and connector roads, as well as improvements to roads that would allow increased traffic volumes. Such 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, in some cases, widening and extension projects would accommodate additional traffic volumes and/or relocate noise sources closer to receptors. It should be noted that while traffic may increase in certain locations, the expected number of annual vehicle miles traveled (VMT) in 2035 would be reduced from 2,096,446,080 annually without the RTP ('No Project' scenario) to 2,091,078,172 annually with the RTP, a reduction of approximately 5.4 million VMT annually. As the VMT decreases, noise associated with VMT would also decrease.

Airports. The 2015 RTP includes projects intended to improve overall operations at existing public use airports. Projects include taxiway and runway rehabilitation, apron improvements, new systems for airport operations, new runways, security fencing, and new hangars. These include pavement maintenance at Fall River Mills Airport, parallel runway and taxiway construction and apron improvements at Redding Municipal Airport, and rehabilitation, security fencing, and taxi lane construction at Benton Airpark. Airport improvement projects or programs would not directly or indirectly increase aircraft operations at public use airports in the county. Therefore, the 2015 RTP would not increase ambient noise levels near airports. No significant impacts due to aircraft operations would occur.

Transit Projects. Proposed projects include improvements designed to enhance bus service. Improvements include the construction of bus stop amenities, transfer facilities, the provision of replacement vans and buses, computer equipment, fare equipment, security upgrades, continuing transit for rural areas, and investments in para-transit and elderly services. These proposed projects would not expand existing public transit services within Shasta County. One proposed project involves expansion of the service area for complementary paratransit bus services for seniors under the Shasta Senior Nutrition Program (SSNP). This would involve expansion of complementary paratransit bus services and would not involve additional fixed-route operations. Noise associated with complementary paratransit bus services is periodic, temporary, and infrequent. Therefore, the overall change in the noise environment would not be significant.

Rail Projects. Rail-related projects included in the 2015 RTP include improvements to railroad crossings. These projects would not increase railroad operations or support the growth of passenger rail systems. Since there would be no increase in train trips, there would be no increase ambient noise levels in the vicinity of the rail line. There would be no overall change in the noise environment.

Mitigation Measures. SRTA recommends that individual project lead agencies implement the following mitigation measures for applicable transportation projects. These measures can and should be implemented for all projects developed pursuant to the 2015 RTP

that would result in noise impacts. Project-specific environmental impacts may require these mitigation measures be revised or expanded in response to site-specific conditions:

N-2(a) Individual project lead agencies of 2015 RTP projects that would result in noise exceeding normally acceptable levels shall complete detailed noise assessments using applicable guidelines (e.g., Federal Transit Administration Transit *Noise and Vibration Impact Assessment* for rail and bus projects and the California Department of Transportation *Traffic Noise Analysis Protocol* for roadway projects). The individual project lead agency shall ensure that a noise survey is conducted to determine potential alternate alignments which allow greater distance from, or greater buffering of, noise-sensitive areas. The noise survey shall be sufficient to indicate existing and projected noise levels, to determine the amount of attenuation needed to reduce potential noise impacts to applicable state and local standards. This shall be accomplished during the project's individual environmental review as necessary.

N-2(b) Where new or expanded roadways or transit are found to expose receptors to noise exceeding normally acceptable levels, the individual project lead agency shall consider various sound attenuation techniques. The preferred methods for mitigating noise impacts will be the use of appropriate setbacks and sound attenuating building design, including retrofit of existing structures with sound attenuating building materials where feasible. In instances where use of these techniques is not feasible, the use of sound barriers (earthen berms, sound walls, or some combination of the two) will be considered. Long expanses of walls or fences should be interrupted with offsets and provided with accents to prevent monotony. Landscape pockets and pedestrian access through walls should be provided. Whenever possible, a combination of elements should be used, including open grade paving, solid fences, walls, and, landscaped berms. Determination of appropriate noise attenuation measures will be assessed on a case-by-case basis during a project's individual environmental review pursuant to the regulations of the applicable lead agency.

Significance After Mitigation. Implementation of the recommended programmatic measures would reduce potential impacts to a less than significant level.

Impact N-3 The proposed 2015 RTP land use scenario would encourage infill development, which may place sensitive receptors in areas with unacceptable noise levels. This is a Class II, *significant but mitigable*, impact.

The 2015 RTP is based on a preferred land use and transportation scenario which lays out a pattern of future growth emphasizing intensified land use distribution that concentrates growth in urban areas and corridors. This land use scenario would shift a greater share of future residential and commercial growth within urban areas. New noise sensitive development in infill areas could be exposed to noise levels exceeding the County or City noise standards. Potential sources of noise exposure include: roadway traffic, railway or bus operations, commercial activity, and industrial activity. Impacts are potentially significant.

Mitigation Measures. Local general plan noise policies and ordinance requirements would apply to development associated with RTP implementation. SRTA recommends that individual project lead agencies implement the following mitigation measure for applicable transportation projects located in close proximity to noise sensitive uses that would result in impacts related noise exposure.

N-3 If a 2015 RTP project is located in an area with exterior ambient noise levels above local noise standards or in an area with potential cumulative noise levels above local noise standards (based on traffic volumes from regionally adopted travel demand model), the individual project lead agency shall ensure that a noise study is conducted to determine existing and projected noise levels and feasible attenuation measures needed to reduce potential noise impacts to such uses to an exterior and interior noise level below local standards. Such measures may include, but are not limited to: dual-paned windows, solid core exterior doors with perimeter weather stripping, air condition system so that windows and doors may remain closed, and situating exterior doors away from roads. This shall be accomplished during the project's individual environmental review.

Significance After Mitigation. Compliance with local general plans and implementation of the programmatic mitigation measure would reduce potential impacts to a less than significant level.

c. Specific 2015 RTP Projects That May Result in Impacts. The proposed projects listed in Appendix B would have the potential to result in noise impacts. All projects that involve construction activities would result in Impact N-1, temporary increases in noise and vibration associated with construction. The individual projects that would accommodate additional roadway, freeway, or bus traffic could create significant noise impacts associated with Impact N-2, but would not necessarily do so. In addition, road widening/extension projects or construction of new roadways have the potential to place roadway traffic noise closer to sensitive receptors. Land use projects that would include infill development could create significant impacts associated with Impact N-3. Additional specific analysis will need to be conducted as the individual projects are implemented in order to determine the actual magnitude of impact. Mitigation measures discussed above would apply to these specific projects.

4.12 TRANSPORTATION AND CIRCULATION

4.12.1 Setting

a. Freeway, Highway, and Arterial Network. The Shasta County regional road system is a network of highways and roads, connecting cities and unincorporated communities, providing rapid and efficient goods movement throughout the county. The regional road system also provides access to adjacent counties, Lassen Volcanic National Park, the Shasta-Trinity National Forest, Lava Beds National Monument in Siskiyou County, numerous Native American Indian Reservations, and other destinations. The regional road network is illustrated on Figures 2-1 and 2-2 in Section 2.0, *Project Description*.

The regional road system consists of approximately 520 miles of two- and four-lane streets/roadways within the incorporated cities of Redding, Anderson and Shasta Lake. There are approximately 1,188 miles of roadway classified as County roads and 314 miles of state highway. The remaining 574.5 miles are under the jurisdiction of various federal and state agencies and federally recognized tribes. (Caltrans, 2001-2012). The regional roads which connect cities, or provide access through cities in the county include:

- Interstate 5 from the Tehama County line to Siskiyou County line through Shasta County;
- State Route 299 from the Lassen County line through Redding to the Trinity County line;
- State Route 273 Cottonwood near the south county line to I-5 near Oasis Road in Redding.
- State Route 151 from I-5 west through the Shasta Lake City to Shasta Dam.
- State Route 44 from I-5 in Redding east to the Lassen County line;
- State Route 89 from the Siskiyou County line to the intersection with SR 44 near Old Station. A segment of SR 89 is the access route to Lassen National Park in southeast Shasta County; and
- SR 36 from the Tehama County line through the community of Platina in southwest Shasta County to the Trinity County line.

Operations. A variety of performance measures can be used to assess transportation systems. Depending on the type of performance evaluation required, performance measures may be very specific and focus on specific intersections or roadway segments, or performance measures may be aggregated to evaluate the overall operation of a regional transit system. A regional travel model typically only contains information on the number of lanes and link capacity on roadway segments and lacks information detailed enough to calculate accurate intersection information. Because of the programmatic nature of the proposed 2015 RTP, the performance measures discussed herein focus on vehicles miles traveled (VMT) as the metric to determine whether the RTP would achieve SRTA's GHG reduction goals.

VMT is as a measurement of miles traveled by vehicles in a specified region for a specified time period. For this EIR, VMT defines the number of miles traveled within Shasta County under baseline conditions and how those numbers would change during future year conditions with and without implementation of the 2015 RTP. VMT for this EIR does not include trips that pass

through (pass through trips) Shasta County or external trips. RTP improvements do not include new roadways, by passes or other improvements that would reduce pass through VMT. Further, pass through trips are not made by Shasta County residents. For the purpose of this discussion, VMT focuses on those trips that originate and/or terminate within Shasta County. Increased VMT is anticipated with regional growth that would occur with or without the project. An increase in VMT does not necessarily reflect deficient traffic operations. Rather, it shows how many miles would be traveled county-wide under varying scenarios. The annual VMT under 2005 conditions was 1,592,775,539; the annual VMT under 2013 baseline conditions was 1,631,787,301.

b. Transit Service. Existing mass transit services in Shasta County consist of both public transit and Amtrak rail passenger service. Transit services include inter-city, fixed-route, and demand-responsive operations. Services also include complementary paratransit services which are provided within ¾ mile of RABA's fixed-route service. Common interregional transit carriers within Shasta County include Amtrak, Greyhound, Sage Stage (Modoc County), and others. Redding Area Bus Authority (RABA) operates fixed route and demand-response service (such as the complementary paratransit service) within the cities of Anderson, Redding, and Shasta Lake, and in some parts of Shasta County. Under a contract with Shasta County, RABA operates an express route service, Burney Express, between the community of Burney and Redding. The service operates Monday through Friday, with two round-trips each day (Redding Area Bus Authority website, visited November 6, 2014).

Shasta Senior Nutrition Programs (SSNP). SSNP is a transportation provider for older-adults that services areas of Shasta County that are outside of the RABA service area. The SSNP is the Consolidated Transportation Services Agency (CTSA) for Shasta County. The CTSA provides specialized services to those who cannot use conventional transit services, such as older-adults and persons with disabilities. Hours of operation are Monday through Friday from 8:00 a.m. to 4:30 p.m. The *44 Express* provides transit service between 9:00 a.m. and 2:30 p.m. between Shingletown, Millville and Redding.

Lifeline Service. Shasta County contracts with SSNP to provide county Lifeline transit service to persons with disabilities living outside of the RABA service area. The areas served are Redding, Burney, Johnson Park, Cottonwood, Bella Vista, Palo Cedro, Happy Valley and Lakehead.

Intercity Bus and Rail Transportation Providers. Intercity service is defined as service that "connects two or more communities located within a distance greater than fifteen (15) miles apart of each other." Amtrak motorcoaches connect Redding to the Capitol Corridor (at the Sacramento station) and San Joaquin (at the Stockton station) train routes that link to other locations within California including the Bay Area and Central Valley.

Amtrak's Coast Starlight Seattle/Portland/Los Angeles rail route services Redding with one northbound and one southbound stop daily (both in the early A.M. hours). Greyhound offers north and southbound bus service four times daily in each direction from the Redding Greyhound Station; however no east or westbound service is provided Sage Stage, operated by the Modoc County Transportation Commission, provides daily bus service between Alturas and Redding. Trinity County began service from Weaverville to Redding starting in January, 2010.

Susanville Indian Rancheria. In July 2009, the Susanville Indian Rancheria started a public transportation program that provides roundtrip service from Susanville to Redding, via Westwood, Chester, and Red Bluff. The service operates on weekdays (excluding holidays), and includes three round-trips daily from Red Bluff to Redding. Paratransit vans that seat eight passengers and one wheelchair are used for the service.

c. Air Transportation. There are three public use airports in Shasta County. Two airports are operated by the city of Redding and one is operated by Shasta County. The Redding Municipal Airport is the only commercial airport in the county.

*City of Redding Airports***.** The city of Redding operates the Redding Municipal Airport and the Benton Airpark. Redding Municipal Airport is the only airport in the county served by scheduled airlines. It is a regional airport serving Shasta and the seven surrounding counties. It was originally built by the U.S. Army as a military airfield in 1942 and dedicated to the city of Redding in 1947. Today, it is the largest civilian facility in California, north of Sacramento. The airport has eighty four tie-down spaces and the city of Redding owns hangars that will accommodate 102 aircraft. Scheduled air service is provided by Skywest Airlines (United Express) which provides 2-3 round trips each day to San Francisco.

Charter service is provided by Redding Aero Enterprises and Air Shasta. These fixed base operators also provide aircraft sales, maintenance service, aircraft fuels, and accessories. Helicopter charter is provided by Redding Air Service and Air Shasta. The mix of aircraft based at Redding Airport is as follows: 169 single engine airplanes; 23 multi-engine airplanes; 6 jets; and 20 helicopters. There are a total of 270 daily operations and approximately 98,550 annual operations. The largest percentage (44.7%) of all operations is general aviation.

The main runway used by commercial aircraft is 7,000 feet long, and includes a high intensity lighting system, precision approach path indicator lights on Runway 34, runway end identification lights, and a visual approach slope indicator on Runway 16. The airport also has a terminal very high frequency omni-range radio facility and a precision instrument landing system to Runway 34, with a localizer back course approach on Runway 16.

Benton Airpark is uniquely situated within the city limits slightly more than one mile from Downtown Redding. Benton is a small, single runway, Visual Flight Rules (VFR) airport for single and small twin engine general aviation aircraft. It is classified as a General Aviation Facility within the USDOT/FAA National Plan of Integrated Airport Systems. It is located on 158 acres area surrounded by developable commercial land focused on aviation related services. Growth potential beyond the current airport boundary is constrained both by topography and residential encroachment. There are approximately 88 private aircraft based at Benton, in addition to aircraft for California Highway Patrol air operations and Mercy Medical Center air ambulance operations. Hillside Aviation provides charter air service, sales, fuel, and maintenance.

*County Airport***.** Fall River Mills Airport is located at an elevation of 3,323 feet in the northeast corner of the county, 70 miles from Redding. The airport was originally built in the 1940's with a gravel runway. Hangars, runway lights, tie-downs and security fencing have been added since 1965. This is a designated Remote Access airport. In 2006 and 2007, Shasta County overlaid the runway and taxiway. Fall River Mills Airport is currently a General Aviation

facility with a 5,000 foot runway, 10 based aircraft, and serves both piston powered and turbine powered general aviation transient aircraft. Services are limited to card lock Aviation Fuel sales. Other services include limited airframe and power plant repair; there are currently no other services and no Fixed Base Operators onsite.

d. Rail Transportation. Passenger rail service in the county is provided by Amtrak as noted above. Interregional freight rail operations in Shasta County are conducted by the Union Pacific Transportation Company. Freight loading/unloading opportunities on the Union Pacific Railroad (UPRR) mainline are available at the following general rail siding locations: Cottonwood, Culp, Anderson, Girvan, Redding, Silverthorn, O'Brien, Mead, Lakehead, Delta, Lamoine, Gibson, Sims, Conant, Dirigo, and Castle Crags.

Amtrak's Coast Starlight Seattle/Portland/Los Angeles rail route services Redding with one stop daily in each direction. The station is located at 1620 Yuba Street in downtown Redding. The station has an enclosed waiting area; however, there is no ticket counter nor are other services available.

e. Bicycle/Pedestrian Facilities. Bicycle facilities in Shasta County generally fall into three distinct categories. Class I facilities are dedicated lanes physically separated from traffic lanes. Class I lanes provide a safe and reliable means of transportation for those wishing to bicycle or walk to their destinations. Class II lanes are separated from adjacent traffic by striped lanes with optional striping scenarios to allow on-street parking. Bicycles travel in the same direction as adjacent traffic. The County has a Class III variation that provides a four foot delineated shoulder but no striped lane. Bicycle route signs are provided in rural areas.

The Sacramento River Trail, located in Redding, includes approximately eleven miles of paved trail on both sides of the river. The trail system primarily serves recreational uses. The city of Redding's Blue Gravel Mine Trail and Canyon Creek Trail total 2.5 miles of trails. The city of Redding has designated Class III bike routes on many streets, and has existing and proposed Class II bike lanes on approximately 20 streets (City of Redding Bikeway Action Plan, 2010-2015).

The city of Shasta Lake has 0.3 mile of Class I bike paths, 6.8 miles of Class II bike lanes, and no Class III bike routes. Shasta Lake adopted a new Bicycle Transportation Plan in 2009. The city of Anderson adopted a Bicycle Transportation Plan in 2007. The city of Anderson has 0.3 miles of existing Class I Bikeways, 3.5 miles of Class II Bikeways and 1.0 mile of Class III Bikeways in the city limits. In addition, the city of Anderson has 2.5 miles of bike path (Class I) in the Anderson River Park. There are also several miles of trails for off-road cyclists in and adjacent to the park near the Sacramento River. Unincorporated Shasta County has three existing Class II bikeways on Lake Boulevard, Deschutes Road and Ashby Road. Existing bike routes in the county include portions of the state and federal highways. The state highways provide vital links from the rural areas of Shasta County to the cities of Redding, Anderson and Shasta Lake.

f. Regulatory Setting.

Federal.

MAP-21. The most recent federal transportation legislation, the Moving Ahead for Progress in the 21st Century Act (MAP-21), was enacted in 2012. Through the RTP development process, MAP-21 encourages SRTA 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.*[1]

Specifically, MAP-21 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;*
- *(C) increase the security of the transportation system for motorized and non-motorized users;*
- *(D) increase the accessibility and mobility of people and 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; and*
- *(H) emphasize the preservation of the existing transportation system.*[2]

The 2015 RTP discusses in detail how these requirements are met.

National Environmental Policy Act (NEPA). The National Environment Policy Act of 1969 (42 U.S.C. § 4321 et seq.) requires federal agencies to assess the possible environmental consequences of projects which they propose to undertake, fund, or approve. While the RTP is not subject to NEPA, individual federally-funded programs or projects requiring federal approval will be subject to a NEPA evaluation at the time of project implementation.

State.

State requirements for long-range transportation plans are similar to the federal regulations. However, key additional requirements described in Government Code Section 65080 include:

- compliance with CEQA;
- consistency with State Transportation Improvement Program;

[1] *23 U.S.C. §134(g)(3)(A).*
[2] *23 U.S.C. §134(h)(1).*

- use of program level performance measures that include goals and objectives; and
- RTPs must include a policy element, an action element, and a financial element.

Plans must also include a Sustainable Communities Strategy (see Senate Bill 375 (SB 375) discussion below).

California Transportation Commission Regional Transportation Plan Guidelines. The CTC publishes and periodically updates guidelines for the development of long-range transportation plans. Pursuant to Government Code Section 65080(d), each regional transportation planning agency (RTPA) is required to adopt and submit an updated regional transportation plan (RTP) to the California Transportation Commission (CTC) and the Department of Transportation (Caltrans) every five years. SRTA is the designated RTPA for Shasta County and beginning in 2018, SRTA will update the RTP every four years.

Under Government Code Section 14522, the CTC is authorized to prepare guidelines to assist with 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 U.S. Census Bureau), use acceptable forecasting methodologies, and be consistent with the California 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 2010, 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 MPO's. SRTA is included in the "B" grouping of all MPO's. Groupings range from A through E, with E being the most complex and A being the least complex.

SB 375. The Sustainable Communities Strategy and Climate Protection Act of 2008, SB 375 (codified at CAL.GOVT CODE §§ 14522.1, 14522.2, 65080.01, 65080, 65400, 65583, 65584.01, 65584.02, 65584.04, 65587, 65588; CAL. PUB. RES. CODE §§2161.3, 21155, 21159.28), is a law passed in 2008 by the California legislature that requires each MPO 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 and California Air Resources Board (ARB). A complete description of SB 375 including GHG reduction targets is provided in Section 2.0, *Project Description*.

Regional.

2010 Regional Transportation Plan for Shasta County (RTP). The RTP was updated most recently in 2010. The previous update did not contain a Sustainable Communities Strategy, as this is a new requirement pursuant to SB 375 which went into effect after the 2010 RTP was completed. A comprehensive program EIR was prepared for the 2010 RTP to satisfy CEQA requirements. The 2010 RTP lists transportation projects to improve the transportation system during the 2010-2030 planning period. Although a number of projects from the 2010 RTP have been completed, many have not and have been incorporated into the 2015 RTP.

4.12.2 Impact Analysis

a. Methodology and Significance Thresholds. Thresholds of significance are used to determine whether implementation of the 2015 RTP would result in significant traffic/circulation impacts. The thresholds of significance outlined in this section are derived from the policies and practices of SRTA, as well as the performance standards detailed in the 2015 RTP.

Traffic Performance Standards and Thresholds. Travel demand models allow SRTA to obtain an understanding of the transportation network's performance characteristics (e.g., vehicle speeds, volume to capacity relationships, travel time, vehicle miles of travel, fuel consumption, and vehicle emissions) and estimate how socio-economic changes (e.g., population increases, land use development) will impact travel demand in the County. Furthermore, consequences of future changes, or absence of change, to the transportation system itself (e.g., building new facilities, improving existing facilities, or doing nothing at all) can be analyzed.

Traffic projections for the 2015 RTP were generated by SRTA's activity-based travel demand model (ShastaSIM). Regional travel demand models contain information on the number of lanes and link capacity on roadway segments over a large geographic area. This is in contrast to intersection specific analyses which are typically performed when reviewing operational impacts associated with individual development projects. Project specific analyses include details on lane geometrics, turning volumes and operational delay which are necessary to calculate level of service at specific intersections and adjacent roadway segments. The analysis provided herein is based on VMT for the region and related benefits (i.e., reduction in VMT) associated with 2015 RTP transportation improvements. As noted above, VMT for this section of the EIR does not include trips that pass through (pass through trips) Shasta County or external trips because for the purpose of this discussion, the VMT focuses on those trips that originate and/or terminate within Shasta County as these are the trips that relate to the RTP. Pass through trips and external trips are not within the RTP's purview.

The 2015 RTP establishes performance indicators for the overall regional transportation system based on model outputs of the travel model. For this analysis, Vehicle miles traveled (VMT) is the performance indicator used to determine potential impacts to the transportation system.

It is important to emphasize that population growth, urbanization and the volume of average daily traffic generated in Shasta County will increase by 2035. This will occur with or without implementation of the 2015 RTP as a result of a range of demographic and economic factors independent of transportation policies implemented by SRTA or land use decisions made by local agencies. In light of this, the analysis below describes operational changes between 2013 baseline VMT and a year 2035 baseline ('No Project') scenario as well as 2035 conditions assuming implementation of the 2015 RTP. The evaluation below describes the full effect of the proposed 2015 RTP and includes future growth that would occur with or without RTP implementation. The environmental impacts and mitigation measures are based on physical changes resulting from 2015 RTP implementation, rather than on future regional growth that would occur regardless of whether the plan is adopted and implemented.

The criteria for determining whether the 2015 RTP would have significant environmental impacts related to transportation and traffic were based in part on the environmental checklist

in Appendix G of the State CEQA Guidelines (14 CCR 15000 et seq.). According to the State CEQA Guidelines, significant impacts to transportation and traffic would occur if the plan would:

- *Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways pedestrian and bicycle paths, and mass transit;*
- *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; or*
- *Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities.*
- *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;*
- *Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment); or*
- *Result in inadequate emergency access.*

The last three criteria are related to project specific analyses that would occur in the future as projects within the 2015 RTP undergo environmental review. Thus, they are not used herein to determine whether significant traffic/transportation impacts would occur as a result of the 2015 RTP.

Transit Performance Standards. Of the region's transit providers, only RABA has developed publicly available transit performance standards. The transit performance standards are listed below as defined in the RABA Final Short Range Plan, June, 2014:

- 500,000 miles between accidents.
- 99% of all fixed-route transit trips are no more than 5 minutes late.
- All fixed routes meet headway standard of 60 minutes, with a target of 30 minute headways for routes that achieve an average productivity of 25 passengers per hour or exceed a 20% farebox ratio, at a minimum during the peak six service hours.
- All connecting buses arrive a minimum of two minutes before the scheduled departure time of the other connecting bus 99% of the time.
- 20,000 miles between road calls for all buses
- Passengers Per Vehicle Service Hour: System wide: 17.0; Fixed Route: 20.0; and Demand Response: 4.0.
- Passengers per Vehicle Service Mile: 1.0; System wide: 1.0; Fixed Route: 1.4; and Demand Response: 0.2
- Farebox Recovery: Systemwide target is 19%.
- Cost per Vehicle Revenue Hour: 90% of six California peer systems.

The performance criteria referenced above focus on overall system operations. The 2015 RTP allocates funding to provide equipment and resources (i.e., security systems, computers, new

fare boxes) to assist in meeting these criteria. Service improvements initiated by RABA that may result from these investments would not cause adverse environmental impacts.

The 2015 RTP also allocates funds for new transfer facilities and miscellaneous capital projects that may include actions that could have environmental effects depending on the scope of improvements and the location. Because details associated with these improvements are unknown at this time, it is assumed the improvements would be evaluated on a project specific basis as they are proposed.

Bicycle and Pedestrian Facilities Standards. The following bicycle plans direct bicycle planning within Shasta County:

- Shasta County 2010 Bicycle Transportation Plan;
- 2007 City of Anderson Bicycle Transportation Plan;
- City of Redding Bikeway Action Plan 2010-2015; and
- City of Shasta Lake 2009 Bicycle Transportation Plan.

The primary goals of bicycle plans are to provide a current description of the bikeway network, create uniformity in policies and design, identify funding opportunities and recommend programs to expand or improve the bikeway infrastructure. The recommended bikeway networks identify attractors (i.e., destinations that residents would want to access via bicycle such as parks and schools) and both existing and proposed future bikeways. The 2015 RTP would not have significant impacts to bicycle and pedestrian facilities if it is consistent with the aforementioned plans. If the 2015 RTP is inconsistent with these plans, it would have a significant and adverse impact if new or expanded facilities that result in a significant adverse physical change to the environment are required to ensure consistency.

b. Project Impacts and Mitigation Measures.

Impact T-1 **Total vehicle miles traveled on freeways and roadways in 2035 would increase when compared to existing (2013) baseline conditions. However, implementation of the 2015 RTP would reduce overall VMT in 2035 when compared to 2035 baseline conditions without the 2015 RTP. Impacts related to total freeway and roadway vehicle miles traveled would be Class III, *less than significant*.**

Two forecasts were generated for the 2015 RTP; the 2035 'No Project' scenario, which accounts for future growth without implementation of the 2015 RTP and the 2035 'with project' scenario, which accounts for future growth and all transportation projects and the land use scenario envisioned by the SCS component of the 2015 RTP.

Table 4.12-1 shows VMT in 2013, 2020 and 2035 for roadways throughout the county. As shown, both 2020 and 2035 annual VMT would increase above 2013 conditions. This increase is largely a result of population growth anticipated throughout the region by 2035. Growth projections indicate that population in Shasta County is expected to increase by 37,642 people, an increase of approximately 21%, between 2013 and 2035.

As such, the increase in VMT is not necessarily attributed to the 2015 RTP when compared to existing conditions. To evaluate the incremental impact of the 2015 RTP, future conditions in the year 2035 were evaluated with and without the 2015 RTP. As shown in Table 4.12-1, the 2015 RTP would result in less VMT when compared to 2035 'No Project' scenario conditions. Therefore, the 2015 RTP would result in circulation improvements when compared to conditions without the 2015 RTP. Impacts would be less than significant.

Table 4.12-1
Total Annual VMT
(excluding pass through trips)

2013 Annual VMT	2020 No Project Scenario VMT	2020 Project (2015 RTP) VMT	2035 No Project Scenario VMT	2035 Project (2015 RTP) VMT
1,631,787,301	1,755,518,261	1,753,809,453	2,096,446,080	2,091,078,172

VMT = Vehicle Miles Traveled

Mitigation Measures. No mitigation measures are required for overall freeway and roadway VMT impacts.

Significance After Mitigation. Impacts related to overall freeway and roadway VMT would be less than significant without mitigation.

Impact T-2 The 2015 RTP would generally be consistent with applicable alternative transportation plans and policies. This is a Class III, *less than significant* impact.

Transit. As mentioned in Section 4.12.2(a), RABA has developed transit performance standards related to system operations and there are projects within the 2015 RTP that address transit services. However, there are no specific infrastructure expansion projects that would allow a project-level analysis of potential impacts at this time. Transit projects included in the 2015 RTP would be consistent with applicable plans and policies because the transit improvements would likely improve access to transit services and improve access to alternative modes of transportation. Further, transit authorities in the region were consulted during preparation of the 2015 RTP. Transit improvements or service expansions in the 2015 RTP may contribute to a growth in transit use and contribute to an expected reduction in VMT across Shasta County with 2015 RTP implementation. Impacts would be less than significant.

Bicycle and Pedestrian Facilities. The 2015 RTP contains numerous projects designed to improve bicycle and pedestrian facilities. Further, the 2015 RTP includes goals and policies that support bicycle and pedestrian facilities and funded roadway projects may include bikeways and pedestrian facilities. During preparation of the 2015 RTP, SRTA consulted with member agencies to obtain input on the list of projects, in part, to ensure consistency with local plans, including bicycle plans. No new or expanded facilities that would result in significant adverse physical changes to the environment are required to ensure consistency between the 2015 RTP and bicycle plans; thus, the 2015 RTP is consistent with applicable plans and policies, including the bicycle plans referenced above. Impacts would be less than significant.

Rail Transportation. The 2015 RTP encourages the use of alternative modes of transportation, including the use of rail. However, no specific funded rail improvement projects are included in the 2015 RTP. Future train trips within the region are expected to minimally increase by 2035. The degree of potential traffic impacts resulting from the expansion of rail service would depend on current traffic conditions when additional service begins, the circulation pattern around the station, and any roadway improvements in the station area, which at this point is not known. It is not anticipated that vehicle trips generated by additional train trips would be significant. Impacts would be less than significant.

Aviation. The 2015 RTP encourages the use of alternative modes of transportation, and supports aviation services within Shasta County. The 2015 RTP contains a number of projects designed to improve or expand existing infrastructure at Redding Airport, Benton Airpark and Fall River Mills Airport. However, none would increase air service nor would they impact traffic circulation around the airports. If air service were to increase because of higher demand, it is not anticipated that vehicle trips generated by additional aircraft service would be significant. 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. Induced Travel. Induced travel is vehicle activity resulting from new trip generation as a response to new highway capacity. In other words, induced travel is new trips or diversion of existing trips to new, farther, destinations generated in response to increased highway capacity. Trips that are generated by socioeconomic growth and trips that do not result in a net increase in trips (e.g., trips that are diverted from one roadway to another as a result of roadway improvements) are not induced travel.

The theory behind induced travel and increased travel demand is that increased highway capacity (i.e., a new or widened roadway) reduces the "cost" of travel (i.e., travel time), thereby increasing the demand for travel. Induced travel, however, is only one potential component of increased travel demand. Schiffer, Steinvorth, & Milam (2004) notes that travelers may respond to reduced travel time in several different ways: route diversion, mode change, destination change, schedule change, trip consolidation, and possibly new trips.

The relationship between increases in highway capacity and traffic is very complex, involving various travel behavior responses, residential and business location decisions, and changes in regional population and economic growth." Schiffer et al. (2003, p. 5) reach similar conclusions from their literature review: "[t]he statistical relationship between road supply and traffic is not the result of a simple, one-way, causal link" and it is "[d]ifficult to disentangle the many contributors to increased travel."

As Parthasarathi et al. (2003, p. 1335) state, "considerable controversy has existed over the existence and importance of the response of demand to supply." Schiffer et al. (2003, p. 4) conclude that "the research of induced travel is still evolving and that researchers are just beginning to unravel the complex relationships between investments in roadway capacity and the resulting travel demand effects." Induced travel may occur, but "[t]o what degree and under what circumstances these increases occur is a matter of debate" (Schiffer et al., 2003, p. 4).

In *Generated Traffic and Induced Travel: Implications for Transport Planning*, Litman (2009, Abstract) argues that adding capacity to a roadway increases "generated traffic," which "fills a significant portion of capacity added to [a] congested urban road." Litman, however, defines "generated traffic" as "diverted traffic (trips shifted in time, route and destination), and induced vehicle travel (shifts from other modes, longer trips and new vehicle trips)" (2009, Abstract). Similarly, although Noland (2001, Abstract) finds "that added lane mileage can induce significant additional travel," his definition of induced travel includes "mode shifts, route shifts, redistribution of trips, generation of new trips, and long run land use changes that create new trips and longer trips."

When the types of travel demand are clearly differentiated, most studies conclude that trips related to socioeconomic growth and trips diverted from other facilities account for the majority of increased travel demand experienced along major highways. *Effects of Increased Highway Capacity on Travel Behavior* (CARB by Dowling and Associates, 1995) and *Expanding Metropolitan Highways, Implications for Air Quality and Energy* (Transportation Research Board Report 245) conclude that if new highway capacity does fill up, it is due *not to* induced travel, but rather to travelers diverting from other facilities or time periods in the short term, and to socioeconomic growth in the long term.

Other literature confirms the prominence of diverted trips in the short-term. The Atlanta Regional Commission (2006), in *ARC Analysis of Induced Travel Effects and VMT Diversion*, explains that the change in VMT compared to the change in lane-miles "inherently contains several different changes in travel demand. Probably the most important is the change of path, whereas a trip which used to use an arterial now is re-routed to the freeway" (p. 5). *The South Coast Highway 101 Deficiency Plan* generalizes the findings from *Effects of Increased Highway Capacity on Travel Behavior* (CARB by Dowling and Associates, 1995) and *Expanding Metropolitan Highways, Implications for Air Quality and Energy* (Transportation Research Board Report 245) as follows: "Most of the increase in peak period traffic observed (90+ percent) when capacity of a congested highway is increased is the result of shifts in traffic from other routes or time periods rather than new increases in highway system use." The FHWA (2007) states: "While some of these [traveler] responses [to increased highway capacity] do represent new trips, much of the observed increase in traffic comes from trips that were already being made before the increase in highway capacity, or reflect predictable traveler behavior that is accounted for in travel demand forecasts."

Another complication in drawing conclusions from the literature is that many studies have not differentiated between the impacts of new roads versus widened roads and roads in urban/developed areas versus roads in rural/undeveloped areas. Schiffer et al. (2003) found in their literature review that "[i]nduced travel effects for constructing new roadways versus widening existing roadways were not definitive" and "[u]rban versus rural differences in induced travel are unknown" (p. 5). Those who have specifically studied the differentiations have confirmed that they are important. The results of a study by Parthasarathi, Levinson, & Karamalaputi (2003) "indicate that larger stable jurisdictions do not produce a change in VKT [vehicle kilometers traveled], while growing MCDs [Minor Civil Divisions] do" (p. 1345). The same study highlights "the importance of separating new construction from the expansion of existing links" (Summary). The authors found that most previous studies had not made the differentiation between new roads and widened roads, and, not surprisingly, their results showed that any impacts from widening would likely be less than any impacts from new roads.

Major transportation projects in the 2015 RTP emphasize the widening of an existing roadway rather than the construction of new roadways. Therefore, it is likely that any potential induced travel impacts from the RTP would not be as great as the studies cited above would suggest.

The complexities of the topic of induced travel have led to a variety of conclusions in the literature. "Depending upon methodologies and data sources, analyses of induced travel provide differing results" (Strathman et al., 2000, p. 5). The wide variety of values calculated for the elasticity of travel demand highlights this problem.

The FHWA (2007) defines demand elasticity as "the percentage change in the quantity demanded for a good, divided by the associated percentage change in the price of the good." In the case of travel, the "demand" is usually VMT and the "price" (or "supply") is usually lane-miles. There are several ways to calculate elasticities; the most commonly used equation is:

$$Elasticity = \frac{\Delta\, VMT}{\Delta\, Lane\ Miles}$$

An elasticity of 0.0 means that any increase in lane-miles does not cause any increase in VMT, while an elasticity of 1.0 means that every percentage increase in lane-miles causes an equal percentage increase in VMT. Schiffer et al. (2003, p. 5) found that "As measured by the increase in VMT with respect to an increase in lane-miles, short-term effects have an elasticity range from near zero to about 0.40, while long-term elasticities range from about 0.50 to 1.00." Similarly, Noland (2001, Abstract) found elasticities "of about 0.3—0.6 in the short run and between 0.7 and 1.0 in the long run." The ARC (2006) found the elasticity for increasing freeway capacity to be approximately 0.40.
The FHWA (2007) further advises that "extreme caution should be used when interpreting the results of these studies to make inferences about the magnitude of induced travel. …despite the large number of empirical studies involving travel demand elasticities, there is very little agreement among researchers or transportation planning professionals on acceptable values of demand elasticities to use in estimating induced travel. …indiscriminate application of demand elasticities can significantly over-estimate induced travel impacts."

Conclusion. Travel demand in Shasta County may increase in the future, but data indicates demand will be driven primarily by socioeconomic growth. If any induced travel does occur, it will likely be insignificant.

Improvements in the 2015 RTP make it speculative to quantify exact induced travel increases. However, based on the preceding analysis, there would not be a significant impact on infrastructure, services or congestion relating to induced travel.

d. Specific 2015 RTP Projects That May Result in Impacts. The analysis within this section discusses the potential transportation and circulation related impacts associated with the transportation improvement projects and the land use scenario envisioned by the 2015 RTP. The projects that comprise the program are evaluated herein in their entirety and all are intended to improve traffic circulation rather than cause adverse impacts. No specific projects that are likely to have an adverse impact on traffic/transportation system would be implemented; thus, none are specified within this section.

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4.13 LESS THAN SIGNIFICANT ENVIRONMENTAL FACTORS

Section 15128 of the California Environmental Quality Act (CEQA) Guidelines requires an EIR to briefly describe any possible significant effects that were determined not to be significant. The environmental factors discussed below represent the remainder of checklist questions as listed in Appendix G of the CEQA Guidelines that were not discussed in the other impact sections of the EIR (sections 4.1 through 4.12). Those impacts determined to be less than significant previously in this EIR (Impacts AQ-2, AQ-4, AQ-5, E-1, E-2, EJ-1, EJ-2, G-3, GHG-2, GHG-3, GHG-4, LU-3, LU-4, T-1, and T-2) are discussed in detail in sections 4.1 through 4.12 of this EIR.

4.13.1 Agriculture and Forestry

The 2015 RTP would not conflict with existing zoning for, or cause rezoning of, forest land, timberland or timberland zoned Timberland Production; or result in the loss of forest land or conversion of forest land to non-forest use.Therefore, impacts related to forest land would be less than significant. Agriculture impacts are discussed in Section 4.10, *Land Use*.

4.13.2 Biological Resources

The 2015 RTP would not conflict with an adopted Habitat Conservation Plan, Natural Community Conservation Plan (HCP/NCCP), or other approved local, regional, or state habitat conservation plan, as there are no adopted habitat or natural community conservation plans in the region (see Section 4.3, Biological Resources) that cover activities proposed by the 2015 RTP. Thus, the 2015 RTP would not conflict with an adopted HCP/NCCP. Therefore, impacts would be less than significant.

4.13.3 Geology

The 2015 RTP does not include projects that would require the use of septic tanks or alternative waste water disposal systems. Future infill development is anticipated to connect to existing wastewater infrastructure. Therefore, impacts related to soils incapable of adequately supporting the use of septic tanks would be less than significant.

4.13.4 Hazards and Hazardous Materials

Transportation improvement projects under the 2015 RTP could facilitate the transport of hazardous materials on roadways or railways in Shasta County but would not directly result in a transport-related hazard. Compliance with existing laws and regulations, such as the federal Resource Conservation and Recovery Act (RCRA) and the state Hazardous Waste Control Act and California Vehicle Code, would ensure that the transport of hazardous materials, the handling of acute hazardous substances within proximity to schools, and the release of hazardous materials would be adequately controlled such that impacts would be less than significant. With respect to hazardous materials sites listed under Government Code Section 65962.5, the majority of transportation improvements involve modification of existing facilities, rather than construction of new facilities, and would not occur on known hazardous sites. With regard to future projects that would develop new facilities, because of the programmatic nature

of the project, it is not possible to determine with accuracy whether future projects located on previously undisturbed land would contain hazardous materials. However, such projects would be required to address any on-site environmental issues, including any potential hazardous materials and mitigate such impacts accordingly. Impacts would be less than significant.

Some projects under the 2015 RTP may be located within an airport hazard zone; however, the 2015 RTP would not directly expose people or create a new airport safety hazard.
The 2015 RTP would not expose people to new wildland fire hazards, as future infill projects would occur in existing urbanized areas, not adjacent to wildlands. Finally, the 2015 RTP would have no adverse impact on adopted emergency response plans or emergency evacuation plan; rather, by improving circulation in the County, it could have beneficial impact on emergency response and evacuation. Impacts would be less than significant.

4.13.5 Hydrology and Water Resources

The 2015 RTP would not change the drainage pattern of an area or result in flooding due to the alteration of a stream or river, as the 2015 RTP does not propose such actions. The majority of projects would occur within existing rights-of-way and would not generate significant new surface water runoff that could exceed the capacity of stormwater infrastructure. Impacts would be less than significant.

As an inland region separated from the Pacific Ocean by mountains, Shasta County is at no risk from tsunamis. Earthquake-induced seiches also do not pose a risk to Shasta County. Therefore, impacts related to tsunamis and seiches would be less than significant.

4.13.6 Land Use

As described above under 4.13.2, the 2015 RTP would not conflict with an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan as there are no adopted habitat or natural community conservation plans in the region (see Section 4.3, Biological Resources) that cover activities proposed by the 2015 RTP. Therefore, impacts would be less than significant.

4.13.7 Mineral Resources

The 2015 RTP primarily involves modifications to existing roadways, including improvements related to intersections, safety, and widening, as well as alternative transportation projects. In addition, future infill development would be located within existing urbanized areas. These projects would not be located on site with known mineral resources or locally important mineral resources.

4.13.8 Noise

Any future infill project under the 2015 RTP 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, which would ensure that noise attenuation features are implemented into the project as necessary. Impacts would be less than significant.

4.13.9 Population/Housing

Improvements associated with the 2015 RTP would not necessarily result in direct population growth beyond anticipated growth in the region. Rather, they are designed to fully support the transportation needs of the growing population while implementing the infill development approach outlined in the SCS. The SCS is designed to accommodate growth by encouraging infill development in already urbanized areas. The 2015 RTP transportation improvement projects are intended and designed to support the land use patterns established in the SCS. Therefore, the 2015 RTP is consistent with projected and planned growth. Further, all transportation improvement projects and land uses envisioned by the RTP are anticipated by the general plans of the applicable local jurisdictions, as all improvements have been coordinated with the applicable local jurisdiction. Therefore, population growth impacts would be less than significant.

4.13.10 Public Services

Transportation projects under the 2015 RTP would not generate demand for police or fire services, schools, parks, or other public facilities. Future infill 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 the 2015 RTP would not result in new population growth; rather it would redistribute future populations to existing urban cores. 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. Impacts would be less than significant.

4.13.11 Recreation

Transportation projects under the 2015 RTP would not generate demand for park land. Future infill projects may increase demand on park land. However, this demand would not exceed that already anticipated by the respective areas in which these projects would be located. This is primarily because the 2015 RTP would not result in new population growth; rather it would redistribute future populations to existing urban cores. In addition, local member agencies would address any park land demand issues as development is proposed. Impacts would be less than significant.

4.13.12 Utilities and Service Systems

The 2015 RTP transportation improvements 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. Construction activities may generate temporary quantities of solid waste that would need to be disposed of at local landfills. However, impacts would be temporary in nature and reduced by compliance with the California Green Building Code, which requires that

construction operations recycle a minimum of 50% of waste generated. Future infill projects may need to connect to existing sewer services, which may increase demand for wastewater treatment. In addition, sewer connections may need to be upgraded and resized to accommodate additional flow. The necessary improvements would be determined by local member agencies at the time such projects are proposed. Improvements would generally occur within existing utility easements and would not create new environmental impacts. Similarly, such projects would generate solid waste, which may require landfill capacity. However, this demand would not exceed that already anticipated by the respective areas in which these projects would be located. This is primarily because the 2015 RTP would not result in new population growth; rather it would redistribute future populations to existing urban cores. Impacts would be less than significant.

5.0 LONG-TERM EFFECTS

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 are projects which 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 create 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 Economic Growth

Implementation of the 2015 RTP would create economic growth in Shasta County as a result of construction-related job opportunities and by encouraging infill development opportunities in Strategic Growth Areas (SGAs). The 2015 RTP implementation would also generate additional employment opportunities for transportation construction, maintenance and operation. The SCS Chapter of the 2015 RTP encourages infill development in the region's SGAs as part of the objective to "Enhance community health, safety, and well-being" (Objective 4-2) and by enhancing mobility, destination accessibility, transportation affordability, and economic opportunity. The 2015 RTP could lead to more vibrant communities, with better access to and within infill areas creating new economic opportunities or expanding existing employment opportunities. In addition, one of the major goals of the 2015 RTP (Goal #5) is to strengthen high-value industries that generate below average travel demand and to improve the efficient movement of goods and services for industries that are reliant upon the transportation network. This is to be accomplished by reinforcing or otherwise facilitating sustainable economic development initiatives and by identifying and resolving transportation-related barriers to economic activity and productivity.

The potential employment increase related to both construction-related job opportunities and new or expanded economic opportunities in SGAs or those opportunities related to maintenance and operation of transportation projects 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 beyond those impacts discussed in this EIR are not expected to result from economic growth generated by the 2015 RTP. Further, all transportation improvement projects and land uses envisioned by the 2015 RTP (including associated population and economic growth) are anticipated by the general plans of the applicable local jurisdictions, as all improvements have been coordinated with the applicable local jurisdiction. Impacts associated with such growth are discussed in Sections 4.1 through 4.13 of this EIR.

5.1.2 Removal of an Impediment to Growth

The majority of 2015 RTP transportation improvements will take place in existing urbanized areas such as the cities of Anderson, Redding, and the City of Shasta Lake. The remaining bulk of transportation improvements will take place throughout the unincorporated area and communities of Shasta County. Such transportation improvements can be perceived as removing an obstacle to growth by either creating additional traffic capacity (in the case of widenings) or improving 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 any obstacles to growth. Rather, they are designed to fully support the transportation needs of the growing population while implementing the infill development SGAs approach outlined in the SCS. The SCS is designed to accommodate growth by encouraging development in already urbanized areas and located near key transportation corridors rather than sprawl development on greenfields/undeveloped areas of the region. The 2015 RTP transportation improvement projects are intended and designed to support the land use patterns established in the SCS. Therefore, the 2015 RTP is consistent with projected and planned growth. Further, all transportation improvement projects and land uses envisioned by the RTP 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 2015 RTP update is anticipated to cover a 20-year period from 2015 to 2035. 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 Sustainable Communities Strategy. 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 2015 RTP 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 2015 RTP, traffic conditions throughout the county would continue to worsen as the county's population grows, see Section 4.12 *Transportation and Circulation*. The increasing traffic may also worsen safety problems on some county roads. However, implementation of the project would involve certain tradeoffs 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 2015 RTP are short-term in nature, resulting primarily from construction of the proposed transportation projects. Typical construction-related impacts can involve the following issues: noise, air

quality, aesthetics, and hydrology/water quality. 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 and building materials, see Section 4.5 *Energy*.

Long-term environmental impacts are associated with increased paving, and the related loss of agricultural soils, biological impacts, and cultural resources (historic resources), as discussed in their respective sections of this EIR. In addition, the 2015 RTP would result in an overall increase in the urbanized character of the region. Mitigation measures have been prescribed to minimize these impacts. However, impacts in certain instances (aesthetics, cultural resources (historic resources), biological resources, and land use (conversion of agricultural lands) would remain significant.

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6.0 ALTERNATIVES

As required by Section 15126(d) of the *State CEQA Guidelines,* this EIR examines a range of reasonable alternatives to the proposed project 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. An alternative location for the Plan as a whole is not possible. However, within Shasta County, the 2015 RTP considers different patterns of land use and transportation investments to accommodate forecast future growth and regional housing needs.

The alternative land use and transportation scenarios modeled and analyzed by SRTA are described in Chapter 6 of the 2015 RTP and the preferred scenario is described in detail within Chapter 4, of the 2015 RTP. VMT was calculated for each scenario using SRTA's recently adopted regional activity-based travel demand model (ShastaSIM), and then input to CARB's EMFAC 2011 emission factor model to measure greenhouse gas emissions.

This alternatives analysis includes the following alternatives to the proposed 2015 RTP:

Alternative 1: No Project Alternative: The No Project Alternative represents the continued implementation of the 2010 RTP, updated to reflect current conditions and forecasts.

Alternative 2: Mobility - Enhanced Transportation Choices: Alternative 2 focuses on increasing the use of multi-modal transportation options by making aggressive transit and active transportation investments across Shasta County. Additional funding for alternative transportation modes is assumed in the form of increased state grant support for active transportation projects; SRTA's continued support of local agencies in seeking active transportation grants; and an additional funding emphasis on active transportation by SRTA. Future populations would be more dispersed than in the 2015 RTP; however, active transportation and transit projects would improve mobility options.

Alternative 3: Accessibility - Encourage Transportation Efficient Land Use. Alternative 3 focuses on transportation-efficient land use patterns. This is accomplished by way of targeted transportation investments and the application of regional and local incentives, programs, and policies that encourage infill and redevelopment on vacant and underutilized parcels within strategic growth areas. The level of transportation investments by mode would not change from current practice; however, the location of said investments would favor transportation-efficient urban areas and rural community centers. Residential densities would be higher than the 2015 RTP, resulting in fewer acres of land converted for new development. Funding for development incentives is assumed to come from state grants such as Cap and Trade, Affordable Housing and Sustainable Development programs.

The State CEQA Guidelines require that an EIR identify any alternatives that were considered but rejected as infeasible during the scoping process and a brief explanation justifying the determination. During the development of the 2015 RTP, SRTA received extensive public and

agency comment and participation in developing the alternatives analyzed in this EIR. During this process, all comments and recommendations for transportation improvements were considered and integrated into the alternatives developed and discussed herein.

6.1 ALTERNATIVE 1: NO PROJECT ALTERNATIVE

6.1.1 Description

Alternative 1: No Project Alternative: The No Project Alternative represents the continued implementation of the 2010 RTP, updated to reflect current conditions and forecasts. While some transportation benefits may occur by implementing programmed improvements, relative to the 2015 RTP, Alternative 1 would not perform as well. Specifically, it would result in higher VMT as fewer trips by transit, bicycle or walking would occur. Further, there would be an increased amount of agricultural land converted and critical habitat impacted because the more compact development envisioned in the 2015 RTP would not occur; instead development under this alternative would occur to a greater extent in undeveloped areas.

6.1.2 Impact Analysis

a. Aesthetics. Implementation of this alternative would result in more visual impacts as compared to the proposed project, as development and RTP projects would be located in currently undeveloped areas under this alternative whereas the proposed 2015 RTP would focus more projects and development in existing urbanized areas and Strategic Growth Areas (SGAs). Many capital improvements would be constructed under this alternative, and the gradual transformation toward a more urban/small urban character would occur in many parts of Shasta County. Therefore, overall aesthetic impacts associated with implementation of this alternative may be more than the 2015 RTP. To a different degree, both the No Project and 2015 RTP would have aesthetic impacts and require mitigation measures discussed in Section 4.1, *Aesthetics*.

b. Air Quality. Implementation of this alternative would result in more construction related air quality impacts because it would require transportation and non-transportation infrastructure in currently undeveloped areas rather than take advantage of existing underutilized systems. In addition, the VMT for this alternative would be greater than for the 2015 RTP; thus, operational emissions for PM_{10}, ROG and NO_x would be greater than those shown in Table 4.2-8 in Section 4.2, *Air Quality*. The 2015 RTP is intended to increase residential and commercial land use capacity within existing transit corridors which would shift a greater share of future growth to these corridors, ultimately increasing density, and improving circulation and multimodal connections. The regional VMT would be higher under this alternative than the proposed project. Thus, overall air quality impacts would be slightly greater under this alternative when compared to the 2015 RTP. All mitigation measures identified in Section 4.2 *Air Quality* would be required to reduce or avoid potentially significant impacts.

c. Biological Resources. Implementation of this alternative would result in more impact to biological resources as more roadway extensions, widening projects and creek crossings in undeveloped areas would occur under this alternative. This would result in more ground disturbance and more impacts to special status plants, animals, wetlands and/or riparian

habitat outside developed urban areas than anticipated if the 2015 RTP were implemented. As discussed in Section 4.3, there are 177 special-status species known to occur or with potential to occur within Shasta County. Thirty-one of these species (26 animal species and 5 plant species) are given high levels of protection by the federal government through listing under FESA and/or by the State government through listing under CESA or Fully Protected. Impacts associated with the No Project Alternative are mitigable (Class II) and all related mitigation measures referenced in Section 4.3, *Biological Resources* would apply.

d. Cultural Resources. Implementation of this alternative would involve more ground disturbance than would occur under the 2015 RTP because it would require additional new transportation and non-transportation infrastructure in currently undeveloped areas rather than take advantage of existing underutilized systems; and therefore, would increase the potential to impact unknown cultural resources. Impacts related to unknown cultural resources would be significant but mitigable (Class II) and all related mitigation measures referenced in Section 4.4, *Cultural Resources*, would apply. Because this alternative would include less infill and development concentration in urban areas, relative to the 2015 RTP, potential impacts to historic structures from infill projects may be reduced. However, the expansion of urban areas into undeveloped land that may occur under this alternative could result in potential impacts to cultural resources. These impacts may be greater than what would occur if development were concentrated in already disturbed urban areas as envisioned by the 2015 RTP. Overall, impacts related to cultural resources would be slightly greater under this alternative than what could occur as a result of 2015 RTP.

e. Energy. Because construction of new transportation and non-transportation infrastructure would be greater under the No Project alternative, energy use associated with construction activities is expected to be more than under the 2015 RTP. This alternative would not include many of the capital improvements envisioned under the proposed 2015 RTP that would improve transportation efficiency and reduce regional energy demand. As shown in Table 4.5-3, Section 4.5, *Energy*, the No Project scenario would increase energy consumption when compared to the 2015 RTP for the 2035 horizon year.

For the purpose of discussion, one alternative would have a greater energy impact than another if it involved inefficient, wasteful, and unnecessary consumption of energy. The transportation improvements included in the 2015 RTP would result in a more efficient transit system, greater availability of public transit and other alternative modes of transportation, as well as a more energy efficient land use scenario than the No Project alternative. The reduction in overall VMT resulting from these improvements would reduce fuel consumption and promote fuel efficiency. Thus, in comparison to the 2015 RTP, the No Project Alternative would result in less efficient use of energy resources across Shasta County; and therefore, would have a greater impact to energy resources than the 2015 RTP. Mitigation measures identified in Section 4.5, *Energy*, would be applicable.

f. Environmental Justice. Because the No Project Alternative would not include some of the capital improvements defined within the 2015 RTP, it would likely result in fewer direct impacts to minority and/or low income populations relative to air quality, noise and traffic. Like the 2015 RTP, these impacts would remain less than significant (Class III). However, this alternative would not involve the implementation of transportation projects or infill

development projects that would improve mobility for low income and minority populations and communities of concerns. Therefore, environmental justice impacts with respect to mobility benefits would be greater under the No Project alternative than the 2015 RTP.

g. Geology and Soils. Because the No Project Alternative does not include some of the new interchanges, bridges, roads, and fixed facilities, there would be less exposure of new structures to hazardous 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 damaged or injured by geologic hazards could be greater than under the proposed 2015 RTP. Therefore, the overall impact of the No Project Alternative would be similar to that expected under the 2015 RTP and impacts would remain significant, but mitigable (Class II). All related mitigation measures referenced in Section 4.7, *Geology,* would be required.

h. Greenhouse Gas Emissions/Climate Change. Implementation of the No Project Alternative would result in more construction related GHG impacts because it would require additional new transportation and non-transportation infrastructure in undeveloped areas rather than take advantage of existing underutilized systems. In addition, this alternative would not include the SCS component of the RTP. As shown in Table 4.8-1, of Section 4.8, *Greenhouse Gas Emissions/Climate Change*, GHG emissions under the No Project Alternative would be higher when compared to GHG emissions with the 2015 RTP. This is primarily a result of the transportation efficiency benefits associated with the 2015 RTP that wouldn't occur under the No Project Alternative. As long-term GHG emissions would be higher under the No Project Alternative, the overall impact of this alternative would be greater than what would occur under the 2015 RTP.

i. Hydrology and Water Resources. Because the amount of future construction activity is more likely to occur in undeveloped areas under the No Project Alternative compared to the proposed 2015 RTP, the amount of water needed for dust suppression activities and the potential for water quality impacts resulting from erosion would be slightly increased. Impacts related to water quality and water supply would remain significant but mitigable (Class II) and all related mitigation measures referenced in Section 4.9, *Hydrology and Water Resources*, would be required.

Further, under the No Project Alternative, the increase in impermeable, paved surfaces would likely be more than anticipated under the 2015 RTP as development under this alternative would occur to a greater extent in undeveloped areas. Overall, groundwater recharge potential would be worse under the No Project Alternative than the proposed 2015 RTP but impacts would remain significant but mitigable (Class II) and all related mitigation measures referenced in Section 4.9, *Hydrology and Water Resources*, would be required.

j. Land Use. Development density would be less under the No Project alternative than the 2015 RTP. Consequently, anticipated land use conflicts between adjacent uses related to localized air quality, light and glare, and noise may be less under the No Project alternative when compared to a more concentrated development pattern anticipated under the 2015 RTP. However, overall impacts related to air quality, light and glare, and noise would be greater under the No Project Alternative as development in rural areas or undeveloped areas would

occur to a greater extent than under the proposed 2015 RTP. These areas would likely have little or no existing air emissions, light and glare, or noise sources. Similar to the 2015 RTP, it is likely that impacts would be less than significant (Class III).

Because fewer projects would be implemented, temporary disruptions to residents and businesses associated with temporary road or lane closures or impacts to parking access would be less. As discussed in Section 4.10, *Land Use*, many road widening projects would have the ability to limit direct crossings and access for nearby residents and businesses. Similar to the 2015 RTP, impacts would be significant but mitigable (Class II).

Implementation of the No Project Alternative would not avoid potential impacts to land use. Impacts would occur to a certain extent and remain the same or slightly greater than the 2015 RTP under the No Project alternative. Related mitigation measures referenced in Section 4.10, *Land Use* would apply.

k. Noise. Because noise is a site specific issue, noise studies would be prepared for each project to determine whether impacts would occur. Construction activity under the No Project Alternative would occur in more undeveloped areas thus there would be fewer noise sensitive receptors in close proximity. This would reduce temporary noise impacts. However, construction noise would still occur and impacts may be significant and mitigable. All related mitigation measures specified in Section 4.11, *Noise*, would be required.

Although the number of transportation projects would be reduced as compared to the proposed project and there would be fewer sensitive receptors located in close proximity to transportation projects as development would occur in undeveloped areas, an increase in traffic volumes resulting from regional growth would likely occur. Whether noise impacts would be greater or less remains dependent on project specific studies. Regionally, the difference in VMT between the No Project alternative and the 2015 RTP is not enough to noticeably change noise levels. Because a number of transit improvements planned under the 2015 RTP would not be implemented under the No Project Alternative, the potential for increased transit noise, while site specific, overall would be less than the 2015 RTP. However, because development under the No Project Alternative would occur to a greater extent than under the proposed 2015 RTP in undeveloped areas that would likely have little or no existing noise sources, the new sources of noise associated with development may increase impacts compared to the 2015 RTP. Overall, noise impacts would be similar to or slightly greater than the proposed project.

l. Transportation and Circulation. The No Project Alternative would not include some of the projects envisioned under the 2015 RTP , including some new bikeway and pedestrian projects (active transportation), new transit projects, new intelligent transportation system/transportation demand management projects and aviation projects. Many of these projects are intended to reduce automobile trips and address traffic congestion, and in many cases would serve as mitigation measures to reduce potential impacts associated with planned long-term development.

Overall, VMT within the region would increase as a result of regional population growth. As discussed in Section 4.12 *Transportation and Circulation*, overall VMT would be greater under the No Project Alternative compared to the 2015 RTP as projects intended to reduce VMT would

not occur. Under the No Project Alternative, fewer transit projects would be implemented which would result in greater impact to populations dependent on transit services. As a result, impacts to public transit would be greater under the No Project Alternative when compared to the 2015 RTP (in other words, the No Project Alternative would result in fewer benefits to public transit than the 2015 RTP). Thus, overall, impacts to transportation and circulation would be greater under the No Project alternative than the proposed project.

6.2 ALTERNATIVE 2: MOBILITY - ENHANCED TRANSPORTATION CHOICES

6.2.1 Description

Alternative 2 focuses on increasing the use of multi-modal transportation options by making aggressive transit and active transportation investments across Shasta County. Additional funding for alternative transportation modes is assumed in the form of increased state grant support for active transportation projects; SRTA's continued support of local agencies in seeking active transportation grants; and an additional funding emphasis on active transportation by SRTA. Future populations would be more dispersed than in the 2015 RTP as new development and infrastructure would likely occur in currently undeveloped areas; however, active transportation and transit projects would improve mobility options.

a. Aesthetics. The Mobility Alternative may result in greater overall transportation and non-transportation infrastructure construction activity and ground disturbance than the 2015 RTP because improvements would be spread across Shasta County rather than within existing developed urban and town centers envisioned under the 2015 RTP. In comparison, the 2015 RTP would include more compact land use in existing urban areas where future populations would be more dispersed in small urban or rural areas in the region. For the Mobility Alternative, transportation projects within small urban or rural areas would occur to a greater extent than proposed in the 2015 RTP; thus, visual/aesthetic impacts in these areas would be greater. Similar to the 2015 RTP, many capital improvements would be constructed and the gradual transformation toward a more urban/small urban character throughout areas of Shasta County would continue under this alternative. Overall, aesthetic impacts would be greater under the Mobility Alternative than under the 2015 RTP and all mitigation measures discussed in Section 4.1, *Aesthetics* would be required.

b. Air Quality. Implementation of the Mobility Alternative would result in similar short-term air quality impacts compared to the 2015 RTP as construction activities related to transportation projects would expose people to construction-related air emissions. Accordingly, air pollutant emissions (including diesel particulates from construction equipment) would be similar under this alternative when compared to the 2015 RTP.

The VMT would be greater under the Mobility Alternative (approximately 6,105,010 weekday VMT in the year 2035) than the 2015 RTP (approximately 6,095,620 weekday VMT in the year 2035) which can be explained by the likelihood that transportation improvements will provide less benefit to commuters living outside urban areas where transit and active transportation improvements are focused. As shown in Table 6-1, regional air emissions would be somewhat similar to, though slightly greater than the 2015 RTP since the overall VMT for the Mobility

Alternative would be slightly greater than the 2015 RTP. All mitigation measures identified in Section 4.2 *Air Quality* would be required.

Table 6-1
Regional Emissions Analysis‡

Scenario	PM_{10} (tons/day)†	NOx (tons/day)†	VOC (tons/day)†
2013 EIR Baseline	0.58	11.87	3.60
2035 'No Project' Scenario	0.58	4.40	1.72
2035 Project (2015 RTP)	0.58	4.39	1.72
2035 Alternative 2: Mobility Alternative	0.58	4.39	1.72

‡The on-road mobile source criteria pollutant emissions estimates for the 2015 RTP were calculated using CARB's EMFAC2011 emission inventory model. VMT data were extracted from ShastaSIM. VMT data includes pass-through trips from vehicles travelling through Shasta County that do not have an origin or destination within the county.
†PM_{10} and NOx emissions are presented above using winter values and VOC emissions are presented above using summer values to provide a worst case estimate based on the seasons in which individual criteria pollutant emissions are highest.

c. Biological Resources. The Mobility Alternative may result in greater overall transportation and non-transportation infrastructure construction activity and ground disturbance than the 2015 RTP because improvements would be spread across Shasta County rather than within existing developed urban and town centers envisioned under the 2015 RTP. These projects may have little or no impact on biological resource; however, like the 2015 RTP, projects that occur along the urban edge could impact biological resources. Because the majority of improvements in the 2015 RTP are expected to result in more concentrated development along existing roadway corridors and within existing urban areas, this 2015 RTP would result in fewer impacts to special status plants and animals, and sensitive habitats, as compared to the Mobility Alternative. Impacts related to wildlife movement would be greater under this alternative because the location of projects that could potentially impact wildlife movement could encroach more into environmentally sensitive lands than under the 2015 RTP. Impacts to sensitive plant and animal species would remain significant but mitigable and all related mitigation measures would apply. Potential impacts related to wildlife movement would remain potentially significant and unavoidable and all related mitigation measures defined in Section 4.3, *Biological Resources*, would apply.

d. Cultural Resources. The Mobility Alternative may result in greater overall transportation and non-transportation infrastructure construction activity and ground disturbance than the 2015 RTP because improvements would be spread across Shasta County rather than within existing developed urban and town centers envisioned under the 2015 RTP. In both the Mobility Alternative and the 2015 RTP, projects that occur along the urban edge could impact cultural resources; however, because a greater number of improvements are expected to be concentrated along existing corridors and urban and rural community centers in the 2015 RTP, the Mobility Alternative may result in comparatively more impacts to cultural resources. Impacts related to unknown cultural resources would remain significant but mitigable and all related mitigation measures would apply. Because the Mobility Alternative may also include infill development in existing downtowns and neighborhoods where transit projects are implemented, potential impacts to historic structures could be similar to the

proposed project. Overall, impacts under the Mobility Alternative related to cultural resources would be worse related to unknown cultural resources and similar related to historic structures depending on the location and surrounding resources when compared to the 2015 RTP. All related mitigation measures defined in Section 4.4, Cultural *Resources*, would apply.

e. Energy. The Mobility Alternative would include many of the same transit and active transportation components of the 2015 RTP, thereby encouraging the use of alternative modes of transit (e.g. buses), walking and bicycling. However, this alternative would result in higher VMT as future populations would be more dispersed throughout the region than under the 2015 RTP since the Mobility Alternative does not include transportation-efficient land use patterns that would encourage development within existing developed urban and town centers. Energy consumption under the Mobility Alternative would be greater than under the 2015 RTP. Mitigation measures identified in Section 4.5, *Energy*, would be applicable.

f. Environmental Justice. The Mobility Alternative would result in similar impacts to environmental justice populations related to air quality, noise, and traffic; however, impacts would remain less than significant (Class III). Transit improvements may increase accessibility to alternative transit modes compared to existing conditions which would benefit environmental justice populations. Although Strategic Growth Areas identified in the 2015 RTP overlap with identified disadvantaged communities, it does not cover such areas as comprehensively as the Mobility Alternative. Impacts as they relate to environmental justice communities would be slightly less than the 2015 RTP.

g. Geology and Soils. This alternative would include some similar types of transportation projects as the 2015 RTP though the location and/or type of project constructed may be different. This may result in similar impacts related to geological conditions. Impacts may occur in developed urban areas as transit improvements would likely occur in these areas relative to small urban or rural areas. However, because future populations would be more dispersed throughout the region than under the 2015 RTP since the Mobility Alternative does not include transportation-efficient land use patterns that would encourage development within existing developed urban and town centers, impacts from geologic hazards on new development in these areas may occur, similar to the 2015 RTP.The overall impact of this alternative would be similar to that expected under the proposed project and impacts would remain significant but mitigable. All related mitigation measures included in Section 4. 7, *Geology*, would be required.

h. Greenhouse Gas Emissions/Climate Change. Construction-related GHG emissions under this alternative would be similar to or less than the 2015 RTP because the types of projects (transit and active transportation) may be smaller in scope than roadway and/or highway infrastructure projects. In comparison to the 2015 RTP, VMT under the Mobility Alternative would be greater and thus, as shown in Table 6-2, GHG emissions are expected to also be higher under this alternative. Although it should be noted that in comparison to the 'No Project' scenario for the year 2035, the Mobility Alternative would have less VMT and GHG emissions and impacts would be less than significant. All mitigation measures included in Section 4.8, *Greenhouse Gas Emissions/Climate Change*, would be applicable.

Table 6-2
Per Capita Carbon Dioxide Emission Comparison: All Vehicle Classes

Scenario	CO_2 Emissions (lbs/year)†	Percent Change from 2013
2013 EIR Baseline	14,235	NA
2035 'No Project' Scenario	16,257	+14.2%
2035 Project (2015 RTP)	16,229	+14.0%
2035 Alternative 2: Mobility Alternative	16,248	+14.07%

†The on-road mobile source CO_2 emissions estimates for the 2015 RTP were calculated using CARB's EMFAC2011 emission inventory model. VMT data were extracted from ShastaSIM. VMT data includes pass-through trips from vehicles travelling through Shasta County that do not have an origin or destination within the county.

i. Hydrology and Water Resources. Because future construction activity would be more dispersed outside of existing urban areas and rural communities under the Mobility Alternative than the 2015 RTP, water needed for construction dust suppression activities and the potential for water quality impacts resulting from erosion would be more. Because a greater development concentration is likely to occur in existing urban areas and rural communities in the 2015 RTP, the amount of new landscaping requiring water for irrigation under the Mobility Alternative is expected to be more than the 2015 RTP. Further, the amount of new impermeable surfaces under the Mobility Alternative would be more than the 2015 RTP since it spreads transportation projects and non-transportation projects across the region rather than in Strategic Growth Areas. Overall, impacts to water quality and water supply, as well as reductions in groundwater recharge associated with this alternative would be more than for the 2015 RTP. Impacts are significant but mitigable and all related mitigation measures identified in Section 4.9, *Hydrology and Water Quality*, would be required.

j. Land Use. This alternative may facilitate similar development in proximity to transit projects in comparison to the proposed project; however the future populations under the Mobility Alternative would be more dispersed. As such, anticipated land use conflicts related to localized air quality, light and glare, and noise may be less under the Mobility Alternative when compared to a more concentrated development pattern anticipated under the 2015 RTP. Impacts would remain less than significant. However, overall impacts related to air quality, light and glare, and noise would be greater under the Mobility Alternative as development in rural areas or undeveloped areas would occur to a greater extent than under the proposed 2015 RTP. These areas would likely have little or no existing air emissions, light and glare, or noise sources. Similar to the 2015 RTP, it is likely that impacts would be less than significant (Class III).

Like the 2015 RTP, temporary disruptions to residents and businesses related to road/lane closures and/or impacts to parking access may occur where improvements occur in urban/small urban areas. Those impacts that are potentially significant could be mitigated. All related mitigation measures associated with the proposed project as identified in Section 4.10, *Land Use*, would apply.

Transit and active transportation projects envisioned under the Mobility Alternative could be smaller in scope than highway and roadway infrastructure projects, but the location of these projects under the 2015 RTP would be more concentrated in existing urban areas and rural communities rather than dispersed in undeveloped areas throughout Shasta County as they

would be under the Mobility Alternative. As a result, the Mobility Alternative would result in a similar level of impact to agriculture and agricultural land compared to the 2015 RTP; however, they would remain significant and unavoidable (Class I) and related mitigation measures identified in Section 4.10, *Land Use*, would apply.

k. Noise. Under this alternative construction activities would likely be smaller in scope than those associated with the 2015 RTP; however, they may result in temporary noise impacts. Impacts will vary depending on the project location. Those occurring in urban areas may have a greater impact depending on the proximity of receptors. Traffic noise under the Mobility Alternative would be slightly greater than the 2015 RTP as overall VMT would increase from approximately 6,095,620 weekday VMT for the 2015 RTP to approximately 6,105,010 weekday VMT in the year 2035 under the Mobility Alternative. Impacts would remain significant but mitigable and all related mitigation measures identified within Section 4.11, *Noise*, would be required.

l. Transportation and Circulation. The Mobility Alternative would focus on transit and active transportation improvement projects throughout the region. Total VMT under this alternative is expected to be higher than the 2015 RTP because fewer projects intended to reduce commuter traffic would be constructed and the alternative travel mode choices would be less practical when not supported by land use. Based on the increase in VMT under the Mobility Alternative (an increase from approximately 6,095,020 weekday VMT to approximately 6,105,010 weekday VMT in the year 2035) which can be explained by the likelihood that transportation improvements will provide less benefit to commuters living outside urban areas where transit and active transportation improvements are focused, potential impacts to transportation and circulation would be greater under the Mobility Alternative. However, it should be noted that in comparison to the 2035 'No Project' scenario, the Mobility Alternative would reduce overall VMT in the region (a decrease from 6,111,264 weekday VMT under the 'No Project' scenario in 2035 to 6,105,010 weekday VMT under the Mobility Alternative) and thus this alternative would result in beneficial traffic impacts.

6.3 ALTERNATIVE 3: ACCESSIBILITY - ENCOURAGE TRANSPORTATION EFFICIENT LAND USE

6.3.1 Description

Alternative 3 focuses on transportation-efficient land use patterns. This is accomplished by way of targeted transportation investments and the application of regional and local incentives, programs, and policies that encourage infill and redevelopment on vacant and underutilized parcels within strategic growth areas. The level of transportation investments by mode would not change from current practice; however, the location of said investments would favor transportation-efficient urban areas and rural community centers. Residential densities would be higher than the 2015 RTP resulting in fewer acres of land converted for new development and fewer non-transportation infrastructure improvements projects since existing infrastructure systems with excess capacity would be relied upon first to serve the same population. Funding for development incentives is assumed to come from state grants such as Cap and Trade, Affordable Housing and Sustainable Development programs.

6.3.2 Impact Analysis

a. Aesthetics. This alternative would result in more compact development patterns than the proposed 2015 RTP. This would result in greater visual changes within urban boundaries. To the extent higher density projects are developed under this alternative, a change in the character of existing urbanized areas would occur similar to those of the 2015 RTP. With this alternative, as with the proposed 2015 RTP, many capital improvements would be constructed, and the gradual transformation toward a more urban/small urban character would continue. However, this alternative would result in less urbanization of small urban and rural areas, and therefore less aesthetic impact in those areas. Overall, aesthetic impacts under this alternative would be better in rural areas and worse within existing urban boundaries than the 2015 RTP. All mitigation measures discussed in Section 4.1, *Aesthetics* would be required.

b. Air Quality. Implementation of this alternative would result in similar short-term construction-related air quality impacts as compared to the proposed 2015 RTP because a similar amount of overall land development and associated construction activity would occur. Higher density and more compact development projects with this alternative would locate people closer to transit and destinations easily accessible by walking or bicycling, thereby encouraging the use of alternative modes of travel. Accordingly, the Accessibility Alternative would reduce VMT compared to the 2015 RTP from approximately 6,095,620 weekday VMT under the 2015 RTP to approximately 6,090,819 weekday VMT under the Accessibility Alternative. Due to this reduction in VMT, the overall potential air quality impacts would be slightly less than the 2015 RTP as shown in Table 6-3. Accordingly, overall toxic air emissions (diesel particulates) would be slightly less under this alternative as would emissions of PM_{10}, ROG, and NO_X. Overall, air quality impacts would be less under this alternative when compared to the 2015 RTP. However, all mitigation measures identified in Section 4.2 *Air Quality* would be required.

Table 6-3
Regional Emissions Analysis‡

Scenario	PM_{10} (tons/day)†	NOx (tons/day)†	VOC (tons/day)†
2013 EIR Baseline	0.58	11.87	3.60
2035 'No Project' Scenario	0.58	4.40	1.72
2035 Project (2015 RTP)	0.58	4.39	1.72
2035 Alternative 3: Accessibility Alternative	0.58	4.38	1.71

‡The on-road mobile source criteria pollutant emissions estimates for the 2015 RTP were calculated using CARB's EMFAC2011 emission inventory model. VMT data were extracted from ShastaSIM. VMT data includes pass-through trips from vehicles travelling through Shasta County that do not have an origin or destination within the county.
†PM_{10} and NOx emissions are presented above using winter values and VOC emissions are presented above using summer values to provide a worst case estimate based on the seasons in which individual criteria pollutant emissions are highest.

c. Biological Resources. This alternative would result in less ground disturbance because land development and transportation roadway projects under this alternative would occur to a greater extent in existing urban areas and fewer projects would occur in rural or undeveloped areas compared to the 2015 RTP. This alternative may result in less impact to

special status plants and animals, and sensitive habitats, as compared to the 2015 RTP. Impacts related to wildlife movement may be similar under this alternative, since the type of transportation projects that could potentially impact wildlife movement would be included. Like the 2015 RTP, impacts to sensitive plant and animal species would be potentially significant but mitigable. Potential impacts related to wildlife movement would remain potentially significant and unavoidable and all related mitigation measures discussed in Section 4.3, *Biological Resources,* would apply.

d. Cultural Resources. This alternative would result in less ground disturbance from growth occurring adjacent and outward from existing communities and from expansion in roadway corridors. Potential impacts related to unknown cultural resources would remain significant but mitigable (Class II) and all related mitigation measures identified in Section 4.4, *Cultural Resources,* would apply. Since this alternative would include more infill development than anticipated under the 2015 RTP, potential impacts to historic structures from infill projects may be greater. Overall, impacts related to cultural resources better related to unknown cultural resources and worse related to historic structures under this alternative when compared to the 2015 RTP.

e. Energy. Higher density and more compact development projects under the Accessibility Alternative would locate people closer to transit and walkable or bikeable destinations, thereby encouraging the use of alternative modes of travel and thus reducing VMT under this alternative in comparison to the 2015 RTP. Thus, overall energy consumption would be slightly less with the Accessibility Alternative when compared to the 2015 RTP. Mitigation measures identified in Section 4.5, *Energy*, would be applicable.

f. Environmental Justice. This alternative would result in similar impacts to environmental justice populations related to air quality, noise and traffic as the 2015 RTP and impacts would remain less than significant (Class III). However, the Accessibility Alternative would provide greater opportunity for alternative transportation and the mobility benefits that would be derived under the 2015 RTP. Therefore, environmental justice impacts as they relate to mobility benefits would be less than those of the 2015 RTP as it is likely that a greater number of low income/minority populations would be served.

g. Geology and Soils. This alternative would include projects that would increase infill densities within existing urban areas relative to the 2015 RTP. This may result in an increased likelihood of potential impacts related to hazardous conditions if projects required the disturbance of contaminated areas. Impacts that might be encountered would remain significant and mitigable (Class II). All related mitigation measures defined in Section 4.7, *Geology*, would be required.

h. Greenhouse Gas Emissions/Climate Change. Overall VMT under the Accessibility Alternative would be slightly less than the 2015 RTP (a reduction from approximately 6,095,620 weekday VMT to approximately 6,090,819 weekday VMT in the year 2035), albeit an insignificant amount given the margin of error found in travel demand forecast modeling and emissions post-processing. Thus, as shown in Table 6-4, GHG emissions are expected to also be slightly lower than the 2015 RTP under this alternative. Construction-related emissions of GHGs under the Accessibility Alternative could be slightly less than the 2015 RTP due to the

more compact development patterns. Nevertheless, all mitigation measures included in Section 4.8, *Greenhouse Gas Emissions/Climate Change*, would be applicable

Table 6-4
Per Capita Carbon Dioxide Emission Comparison: All Vehicle Classes

Scenario	CO_2 Emissions (lbs/year)†	Percent Change from 2013
2013 EIR Baseline	14,235	NA
2035 'No Project' Scenario	16,257	+14.2%
2035 Project (2015 RTP)	16,229	+14.0%
2035 Alternative 3: Accessibility Alternative	16,215	+13.9%

†The on-road mobile source CO_2 emissions estimates for the 2015 RTP were calculated using CARB's EMFAC2011 emission inventory model. VMT data were extracted from ShastaSIM. VMT data includes pass-through trips from vehicles travelling through Shasta County that do not have an origin or destination within the county.

i**. Hydrology and Water Resources.** Because the amount of future ground disturbance would be similar under this alternative as that in the 2015 RTP, water needed for construction dust suppression activities and the potential for water quality impacts resulting from erosion would be similar to the 2015 RTP. Under this alternative, the amount of new landscaped areas requiring water for irrigation would be less because infill development is anticipated to occur at higher densities within existing urban areas. For this reason, water quality impacts and water supply impacts, as well as incremental reductions in groundwater recharge would be less under this alternative relative to the 2015 RTP. As such, impacts would be less in severity but remain significant but mitigable (Class II) and all related mitigation measures included in Section 4.9, *Hydrology and Water Quality*, would be required.

j. Land Use. This alternative would include greater high density and infill development when compared to the proposed 2015 RTP. Thus, anticipated land use conflicts related to air quality, light and glare, and noise would be greater in areas where development would occur. Impacts would be less than significant (Class III).

Greater infill and high density development projects would be implemented; and therefore, more temporary disruptions to residents and businesses would be expected. Greater disruptions associated with temporary road or lane closures or impacts to parking access would also occur. However, these impacts would occur to a certain extent and impacts would remain significant but mitigable (Class II). Related mitigation measures identified in Section 4.10, *Land Use*, would apply.

This alternative would result in less impact to agriculture and agricultural land because more projects would occur in urban areas rather than on agricultural lands. However, any impact to agricultural lands would remain significant and unavoidable (Class I) and related mitigation measures identified in Section 4.10, *Land Use*, would apply.

k. Noise. Overall construction activities would be similar to those of the 2015 RTP but would occur more as infill development in existing urban and rural communities rather than in undeveloped areas of Shasta County. For noise receptors located near construction sites, noise impacts are expected to be similar to those described for the 2015 RTP. Noise would be generated by roadway operation and vary depending on traffic volume and speed. The lower

VMT anticipated under this alternative (a reduction from approximately 6,095,620 weekday VMT under the 2015 RTP to approximately 6,090,819 weekday VMT under the Accessibility Alternative) would result in less traffic related noise. Impacts would be significant but mitigable (Class II) and all related mitigation measures identified in Section 4.11, *Noise*, would be required.

l. Transportation and Circulation. This alternative would focus more exclusively on urban infill projects and transit improvements relative to the 2015 RTP. VMT would be slightly less than the 2015 RTP as a result of higher population densities in urban areas. Under the Accessibility Alternative, there would be approximately 6,090,819 weekday VMT which is slightly less than the approximately 6,095,620 weekday VMT in the year 2035 for the 2015 RTP. Transportation and circulation impacts under this alternative would be less than anticipated for the 2015 RTP.

6.4 ENVIRONMENTALLY SUPERIOR ALTERNATIVE

This section compares the impacts of the three alternatives under consideration to those of the proposed project. Table 6-5 shows whether each alternative would have impacts that are less than, similar to or greater than the proposed project for each of the issue areas studied.

The No Project Alternative (Alternative 1) would not be considered environmentally superior overall. Although it would result in the fewest construction-related impacts and impacts associated with ground disturbance, many of the transportation improvements and greater density development envisioned in the 2015 RTP would not occur. As a consequence, total VMT, energy use, air contaminant, and GHG emissions impacts would be greater with this alternative as compared to the 2015 RTP.

The Mobility Alternative's transit and active transportation improvements would improve accessibility to alternative modes of transportation, but the Accessibility Alternative is not considered environmentally superior to the proposed project because the additional land use strategies known to affect VMT would not be present and therefore would not reduce VMT as much as the 2015 RTP. This would result in greater air quality, GHG, energy, and transportation impacts. Further, it may have a greater impact on aesthetics (change of character), agricultural lands, and biological resources.

The Accessibility Alternative performs similar to the 2015 RTP and in comparison to the other alternatives analyzed in the EIR under CEQA, it is considered to be environmentally superior. Overall, VMT would be less than the 2015 RTP as this alternative would result in higher urban densities. Further, this alternative would result in a decrease in the amount of agricultural lands that may be converted for other uses and the amount of habitat impacted (biological resources). Additionally, based exclusively on VMT, this alternative would result in slightly less air contaminant emissions, GHG emissions, and transportation impacts than the 2015 RTP. The Accessibility Alternative is determined to be the environmentally superior alternative when considering overall environmental impact relative to the performance metrics and attainment of SB 375 requirements.

Table 6-5
Impact Comparison and Ranking of Project Alternatives

Issues		2015 RTP	Alternative 1: No Project	Alternative 2: Mobility Alternative	Alternative 3: Accessibility Alternative
Aesthetics	Environmental Rank	1	4	3	1
	Discussion	Under the No Project Alternative and Mobility Alternative traffic improvements and development would be spread across Shasta County rather than within existing developed urban and town centers envisioned under the 2015 RTP or the Accessibility Alternative. The Accessibility Alternative would have fewer impacts related to change of visual character in the rural or undeveloped areas of the County compared to the 2015 RTP, but would have more impacts related to the change of character within existing urban and rural communities as density would be increased within these areas. Thus both the 2015 RTP and the Accessibility Alternative would have similar overall impacts.			
Air Quality	Environmental Rank	2	4	3	1
	Discussion	Construction emissions would be fairly similar for each alternative. However, for operational emissions, because the Accessibility Alternative would result in the lowest VMT, it would generally result in the fewest associated air quality emissions.			
Biological Resources	Environmental Rank	2	4	3	1
	Discussion	Under the No Project Alternative and Mobility Alternative traffic improvements and development would be spread across Shasta County rather than within existing developed urban and town centers envisioned under the 2015 RTP or the Accessibility Alternative. Thus these alternatives may have more impact on biological resources in the undeveloped areas. Between the Accessibility Alternative and the 2015 RTP, land development and transportation roadway projects under the Accessibility Alternative would occur to a greater extent in existing urban areas and fewer projects would occur in rural or undeveloped areas than under the 2015 RTP.			
Cultural Resources	Environmental Rank	1	3	3	1
	Discussion	Under the No Project Alternative and Mobility Alternative traffic improvements and development would be spread across Shasta County rather than within existing developed urban and town centers envisioned under the 2015 RTP or the Accessibility Alternative. Thus these alternatives may have more impact on cultural resources in these undeveloped areas. Between the Accessibility Alternative and the 2015 RTP, land development and transportation roadway projects under the Accessibility Alternative would occur to a greater extent in existing urban areas and fewer projects would occur in rural or undeveloped areas than under the 2015 RTP. Thus the Accessibility Alternative would be superior for unknown cultural resources in undeveloped areas but the 2015 RTP would be superior as it relates to historic resources in existing urban and rural communities.			
Energy	Environmental Rank	2	4	3	1
	Discussion	The Accessibility Alternative would locate people closer to transit and walkable or bike able destinations, thereby encouraging the use of alternative modes of travel and thus reducing VMT under this alternative in comparison to the other scenarios. Thus, overall energy consumption would be slightly less with the Accessibility Alternative.			

Table 6-5
Impact Comparison and Ranking of Project Alternatives

Issues		2015 RTP	Alternative 1: No Project	Alternative 2: Mobility Alternative	Alternative 3: Accessibility Alternative
Environmental Justice	Environmental Rank	2	4	1	*3*
	Discussion	The Mobility Alternative would provide transit improvements that may increase accessibility to alternative transit modes compared to existing conditions which would benefit environmental justice populations. Although Strategic Growth Areas identified in the 2015 RTP overlap with identified disadvantaged communities, it does not cover such areas as comprehensively as the Mobility Alternative. The No Project and Accessibility Alternative would not include the levels of investments in alternative transit modes that would benefit environmental justice communities compared to either the Mobility Alternative or the 2015 RTP.			
Geology	Environmental Rank	1	1	1	1
	Discussion	Each alternative would have some beneficial geology impacts and some negative impacts and thus would have similar overall impacts. The No Project Alternative would result in fewer transportation projects overall, thus reducing some impacts related to geologic hazards, but would not replace some aging infrastructure that may be impacted by geologic conditions.			
Greenhouse Gases	Environmental Rank	2	4	3	1
	Discussion: GHG EMFAC Results	7,361 lbs CO_2/yr/capital	7,379 lbs CO_2/yr/capital	7,372 lbs CO_2/yr/capital	7,356 lbs CO_2/yr/capital
Hydrology	Environmental Rank	2	4	3	1
	Discussion	For the No Project Alternative and Mobility Alternative, impacts to water quality and water supply, as well as reductions in groundwater recharge associated with these alternatives would be more than for the 2015 RTP and Accessibility Alternative as transportation projects and non-transportation projects would be dispersed across the region rather than in Strategic Growth Areas. And because infill development is anticipated to occur at higher densities within existing urban areas under the Accessibility Alternative in comparison to the 2015 RTP, the Accessibility Alternative would have the least impact to hydrology and water quality.			
Land Use	Environmental Rank	2	4	3	1
	Discussion	Under the No Project Alternative and Mobility Alternative, traffic improvements and future populations would be spread across Shasta County rather than within existing developed urban and town centers envisioned under the 2015 RTP or the Accessibility Alternative. Thus these alternatives may have more land use conflicts as a result of development in currently undeveloped areas. Further these alternatives may result in greater conversion of agricultural lands to non-agricultural uses. Because the Accessibility Alternative would result in less possible conversion of agricultural lands than under the 2015 RTP, it would have slighter better impacts to land use.			
Noise	Environmental Rank	2	4	3	1
	Discussion	Construction noise would generally be similar under each of the scenarios. For operational noise, because the Accessibility Alternative would result in overall lower VMT compared to the other scenarios, the Accessibility Alternative would result in less traffic related noise.			

Table 6-5
Impact Comparison and Ranking of Project Alternatives

Issues		2015 RTP	Alternative 1: No Project	Alternative 2: Mobility Alternative	Alternative 3: Accessibility Alternative
Transportation and Circulation	Environmental Rank	2	4	3	1
	Discussion: Weekday VMT (excluding pass through trips)	6,095,620 VMT	6,111,264 VMT	6,105,010 VMT	6,090,819 VMT
Overall	**Total Points**	**21 points**	**44 points**	**32 points**	**14 points**
	Final Rank based on Points	**2**	**4**	**3**	**1**

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7.1 REFERENCES

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7.2 LIST OF PREPARERS

This EIR was prepared by Rincon Consultants, Inc. under contract to the Shasta Regional Transportation Agency. Persons involved in data gathering analysis, project management, and quality control include:

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Appendix A

Notice of Preparation (NOP)
NOP Comments

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STATE CLEARING HOUSE

Notice of Preparation for an Environmental Impact Report

2015 Regional Transportation Plan

Notice is hereby given that the Shasta Regional Transportation Agency (SRTA) will be the lead agency for the preparation of an Environmental Impact Report for the 2015 Regional Transportation Plan ("RTP"). Pursuant to section 15082 of the California Environmental Quality Act (CEQA), SRTA is soliciting views from your agency as to the scope and content of the environmental information which is germane to your agency's statutory responsibilities in connection with the proposed project. SRTA will also accept written comments concerning the scope and content of the EIR from interested persons of the general public and organizations concerned with the project.

The Draft EIR will be a Program EIR. A Program EIR is prepared on a series of actions that can be characterized as one large project. A program level EIR allows SRTA to analyze the regional or general impacts of the projects and policies within the RTP. A more detailed or project-level environmental review (if required) of the projects included in the RTP will be conducted by the responsible agencies, including Caltrans, Shasta County, and the cities within the county, before each project is approved for construction and implementation.

The project description, location, environmental review requirements, and probable environmental issues to be addressed in the EIR are attached. An Initial Study is not attached and is not required because the need for an EIR has previously been determined, in accordance with State CEQA Guidelines Section 15060(d).

The 2015 RTP will address all transportation modes including motor vehicles, transit (commuter and local), rail, goods movement (rail freight and trucking), bicycle and pedestrian facilities, aviation systems, intelligent transportation systems (ITS), and transportation systems management (TSM) programs and projects within the horizon year of 2035. Specifically the RTP is intended to meet the region's transportation goals regarding current and future mobility needs through the identification of policies, actions, and a list of projects which will address these needs. The RTP will guide the development of the Regional and Federal Transportation Improvement Programs (RTIP and FTIP) as well as other transportation programming documents and plans throughout Shasta County.

This RTP will include a Sustainable Communities Strategy (SCS), which is a new component in the RTP required by California Senate Bill 375, the Sustainable Communities and Climate Protection Act of 2008 ("SB 375"). SB 375 mandates regional greenhouse gas ("GHG") reduction targets for cars and light trucks and, pursuant to that law, the California Air Resources Board (CARB) has established 2020 and 2035 GHG reduction targets for each region covered by one of the state's metropolitan planning organizations (MPOs). As the MPO for Shasta County, SRTA is required to prepare an SCS as part of the RTP that demonstrates how GHG reduction targets will be met through integrated land use, housing, and transportation planning. SRTA will develop several possible growth scenarios to evaluate the effect of various land use and transportation choices on meeting the established GHG emissions targets per SB 375.

SRTA will host an EIR Scoping Meeting. The purpose of the Scoping meeting is to solicit input on the scope and content of the environmental analysis that will be included in the Draft EIR and to discuss and learn about the RTP process.

The date, time and location of the meeting are as follows:

- **Wednesday, February 19, 2014**
  3:30 PM
  Redding Library Community Room
  1100 Parkview Ave.
  Redding, CA 96001

Because of the time sensitive nature of the regional transportation planning process, we request your response at the earliest possible date. Mail comments to Jennifer Pollom at **SRTA, 1255 East Street, Suite 202, Redding, CA 96001** or e-mail comments to srta@srta.ca.gov no later than **March 12, 2014.** Please identify the name, phone number, and email address of a contact person at your agency. Comments from the public must also include name, phone number, and email or postal address.

For more information, visit www.srta.ca.gov or call 530-262-6190.

PROJECT DESCRIPTION AND SCOPE OF ENVIRONMENTAL ANALYSIS

Project Title

Program EIR for the Shasta Regional Transportation Agency (SRTA) 2015 Regional Transportation Plan (RTP)

Project Location

The geographical extent of the proposed RTP includes the area within the limits of Shasta County, California, including the incorporated cities of Anderson, Redding and Shasta Lake. Capital improvement projects identified in the RTP may be located on Interstate 5 (I-5), state highways, county roads and local streets, as well as on airport property, transit district property, federal lands, state lands and tribal lands.

Project Description

The proposed 'project' is the 2015 RTP. SRTA is in the process of preparing the RTP as required by Section 65080 et seq, of Chapter 2.5 of the California Government Code, and federal guidelines pursuant to the federal surface transportation reauthorization, "Moving Ahead for Progress in the 21st Century" (MAP-21), the Transportation Conformity for the Air Quality Attainment Plan per 40 CFR Part 51 and 40 CFR Part 93, and requirements set forth in Assembly Bill 32, The Global Warming Solutions Act of 2006, and Senate Bill 375, The Sustainable Communities and Climate Protection Act of 2008. The compendium of projects, policies and programs which aim to meet the transportation needs of the region while reducing congestion and improving air quality comprise the 2015 RTP.

SRTA's previous RTP was adopted in July 2010 (http://srta.ca.gov/pastel/RT_RTP.html). The 2015 RTP is the culmination of a multi-year effort that aims to maintain or enhance the efficient and effective movement of goods, services and persons. Further, the SCS will seek to coordinate local land use and transportation systems within the region to reduce emissions from cars and light trucks. SRTA is required by federal law to develop an RTP that determines the needs of the transportation system and prioritizes proposed transportation projects. The RTP is also necessary to obtain and allocate federal funding for regional transportation projects.

RTP Framework

The 2015 RTP's unified strategy would include the following key elements:

- An overall description of the region's current and future challenges in accommodating growth and meeting mobility needs.
- A fiscally-constrained transportation network that consists of US and State Highways, local roadways, bicycle and pedestrian facilities, public transit, airports and passenger and freight rail.
- An integrated transportation and land use strategy for accommodating the region's future employment and housing needs, and that protects sensitive habitat and resource areas.
- Intelligent Transportation System (ITS) and Transportation Demand Management (TDM) measures that improve system efficiency by influencing individual travel behavior.
- A financial plan that lays out the funding sources and mechanisms required to implement the strategies of the RTP. The financial plan will also recommend additional innovative financing strategies that can be implemented to carry out additional needed projects and programs.
- A transportation system performance evaluation that lays out the ability of the proposed strategies to address challenges.
- Additional strategies and illustrative or planned projects that have little or no money programmed for funding.

Sustainable Communities Strategy

The 2015 RTP will include a newly required element called the Sustainable Communities Strategy (SCS) pursuant to the requirements of SB 375. Under SB 375, MPOs such as SRTA are required to develop an SCS as part of the RTP, showing how the region intends to reduce, to the extent feasible, greenhouse gas emissions from cars and light trucks to meet a specified target for 2020 and 2035. The California Air Resources Board (ARB) issued SRTA a regional GHG target of no increase in per capita GHG emissions for the planning year 2020 and no increase in per capita GHG emissions in planning year 2035, as compared to baseline per capita emissions levels in 2005. If the targets cannot be feasibly met, an Alternative Planning Strategy (APS) will be prepared by SRTA to show how the targets could be achieved through alternative development patterns, infrastructure, or additional transportation measures or policies without the limitations of fiscal or other constraints. SRTA's intent is to achieve these targets with the SCS. The GHG reductions are to be derived from fewer and/or shorter per capita automobile and light truck trips resulting from integrated transportation, land use, housing and environmental planning.

Furthermore, SB 375 requires that the SCS shall identify general land uses, residential densities, and building intensities as well as areas to house future residents (see California Government Code Section 65080(b)(2)(B) for the full list of SB 375 requirements).

Issues to Be Addressed in the EIR

The impact categories listed below have been preliminarily identified for analysis in the 2015 RTP EIR.

- Aesthetics (Visual Resources)
- Agricultural and Forest Resources
- Air Quality
- Biological Resources
- Cultural Resources
- Energy
- Environmental Justice
- Geology/Soils
- Greenhouse Gas Emissions
- Hazards/Hazardous Materials
- Hydrology/Water Quality
- Land Use/Planning
- Mineral Resources
- Noise
- Population/Housing
- Public Health & Services
- Recreation
- Transportation/Traffic
- Utilities/Service Systems

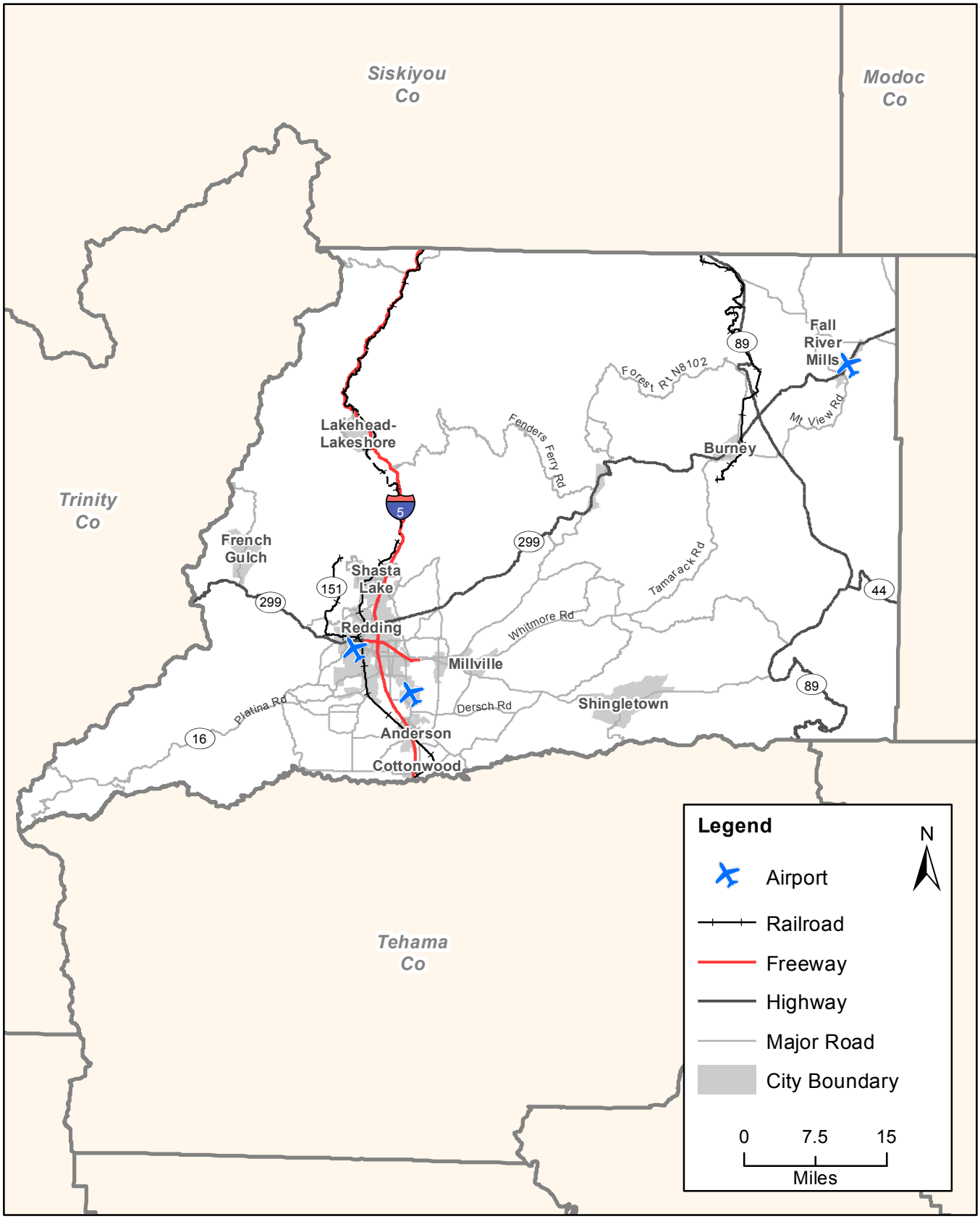
In addition, the EIR will address cumulative impacts, growth inducing impacts, and other issues required by CEQA.

Through the NOP, SRTA is seeking input on further categories of analysis or areas of focus within the specified categories above.

CEQA Streamlining

SB 375 contains CEQA incentives, or streamlining provisions at the project level, to encourage the implementation of coordinated land use and transportation planning within the RTP. Certain types of development projects (i.e., transit priority projects or residential/mixed use projects, as defined by the statute) may qualify for CEQA streamlining as long as the requisite criteria are met. Generally, this means that the proposed project seeking to utilize the CEQA incentives is determined to be consistent with an approved SCS. Consistency will be determined by the local jurisdiction that is the lead agency for each project to be streamlined. SRTA's primary role is to include appropriate information in the SCS, such as land use information as required by SB 375 and/or guidance to aid in interpreting land use information that will allow a jurisdiction to make a consistency determination with respect to appropriate streamlining options on a project by project basis.

The programs and projects to be included in the 2015 RTP will be programmatically addressed in the EIR. This will allow SRTA to analyze the regional or general impacts of the program and projects. A more detailed or project level environmental assessment, if required, will be provided by the various responsible agencies, including Caltrans, Shasta County, and the cities within the County, for the various projects included in the RTP, before the projects are approved for construction.



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RTP Plan Area

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SHASTA REGIONAL
TRANSPORTATION AGENCY

CALIFORNIA
Water Boards

EDMUND G. BROWN JR.
GOVERNOR

MATTHEW RODRIQUEZ
SECRETARY FOR
ENVIRONMENTAL PROTECTION

Central Valley Regional Water Quality Control Board

20 February 2014

Ms. Jennifer Pollom
Shasta Regional Transportation Agency
1255 East Street, Suite 202
Redding, CA 96001

COMMENTS ON THE NOTICE OF PREPARATION FOR PROPOSED 2015 REGIONAL TRANSPORTATION PLAN, SHASTA COUNTY

The Central Valley Regional Water Quality Control Board (Central Valley Water Board) is a responsible agency for this project, as defined by the California Environmental Quality Act (CEQA). On 10 February 2014, we received your request for comments on the Notice of Preparation for the 2015 Regional Transportation Plan.

The 2015 Regional Transportation Plan (RTP) is an update of a long-range planning document. The 2015 RTP is the culmination of a multi-year effort that aims to maintain or enhance the efficient movement of goods, services and persons. Further, the Sustainable Community Strategy will seek to coordinate local land use and transportation systems within the region to reduce emissions from cars and light trucks. Shasta Regional Transportation Agency is required by federal law to develop an RTP that determines the needs of the transportation system and prioritizes proposed transportation projects. The RTP is also necessary to obtain and allocate federal funding for regional transportation projects.

Based on our review of the information submitted for the proposed project, we have the following comments:

Clean Water Act (CWA) Section 401, Water Quality Certification
The Central Valley Water Board has regulatory authority over wetlands and waterways under both the Federal Clean Water Act (CWA) and the California Water Code, Division 7 (CWC). Discharge of dredged or fill material to waters of the United States requires a CWA Section 401 Water Quality Certification from the Central Valley Water Board. Typical activities include any modifications to these waters, such as stream crossings, stream bank modifications, filling of wetlands, etc. 401 Certifications are issued in combination with CWA Section 404 Permits issued by the Army Corps of Engineers. The proposed project must be evaluated for the presence of jurisdictional waters, including wetlands and other waters of the State. Steps must be taken to first avoid and minimize impacts to these waters, and then mitigate for unavoidable impacts. Both the Section 404 Permit and Section 401 Water Quality Certification must be obtained prior to site disturbance.

Isolated wetlands and other waters not covered by the Federal Clean Water Act
Some wetlands and other waters are considered "geographically isolated" from navigable waters and are not within the jurisdiction of the Clean Water Act. (e.g., isolated wetlands, vernal pools, or stream banks above the ordinary high water mark). Discharge of dredged or fill material to these waters may require either individual or general waste discharge requirements

from the Central Valley Water Board. If the U.S. Army Corps of Engineers determine that isolated wetlands or other waters exist at the project site, and the project impacts or has potential to impact these non-jurisdictional waters, a Report of Waste Discharge and filing fee must be submitted to the Central Valley Water Board. The Central Valley Water Board will consider the information provided and either issue or waive Waste Discharge Requirements. Failure to obtain waste discharge requirements or a waiver may result in enforcement action.

Any person discharging dredge or fill materials to waters of the State must file a report of waste discharge pursuant to Sections 13376 and 13260 of the CWC. Both the requirements to submit a report of waste discharge and apply for a Water Quality Certification may be met using the same application form, found at:
http://www.waterboards.ca.gov/centralvalley/water_issues/water_quality_certification/wqc_application.pdf

General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities (CGP)
Construction activity, including demolition, resulting in a land disturbance of one acre or more must obtain coverage under the CGP. The 2015 Regional Transportation Plan must be conditioned to implement storm water pollution controls during construction and post-construction as required by the CGP. To apply for coverage under the CGP the property owner must submit Permit Registration Documents electronically prior to construction. Detailed information on the CGP can be found on the State Water Board website:
http://www.waterboards.ca.gov/water_issues/programs/stormwater/gen_const.shtml

Post-Construction Storm Water Requirements
Studies have found the amount of impervious surface in a community is strongly correlated with the impacts on community's water quality. New development and redevelopment result in increased impervious surfaces in a community. Post-construction programs and design standards are most efficient when they involve (i) low impact design; (ii) source controls; and (iii) treatment controls. To comply with Phase II Municipal Storm Water Permit requirements the City of Redding must ensure that new developments comply with specific design strategies and standards to provide source and treatment controls to minimize the short and long-term impacts on receiving water quality. The design standards include minimum sizing criteria for treatment controls and establish maintenance requirements. The proposed project must be conditioned to comply with post construction standards adopted by the City of Redding in compliance with their Phase II Municipal Storm Water Permit.

Dewatering Alternative 1: Discharge to Storm Drains or Waters of the United States
A dewatering permit, *General Order for Dewatering and Other Low Threat Discharges to Surface Waters*, (Central Valley Water Board Order No. R5-2008-0082, adopted 12 June 2008) may be required for pump testing, pipeline dewatering and/or construction activities. This general NPDES (National Pollutant Discharge Elimination System) permit covers the discharge to waters of the United States of clean or relatively pollutant-free wastewater that poses little or no threat to water quality. The following categories are covered by the dewatering permit: well development water; construction dewatering; pump/well testing; pipeline/tank pressure testing; pipeline/tank flushing or dewatering; condensate discharges; water supply system discharges; miscellaneous dewatering/low threat discharges. The dewatering permit applies only to direct discharges to waters of the United States.
Failure to obtain a dewatering permit, when required, may result in enforcement action. An application form and a copy of the permit are available at this office.

Dewatering Alternative 2: Discharges to Land
Construction and system test dewatering discharges that are contained on land (i.e., will not enter waters of the United States) are allowed under Central Valley Water Board Resolution No. 2003-0003-DWQ provided the following conditions are met: (1) the dewatering discharge is of a quality as good as or better than underlying groundwater; and (2) there is a low risk of nuisance. Examples of dewatering discharges to land include a terminal basin, irrigation (with no return to waters of the United States), and dust control. You may request written confirmation from this office that the waiver is applicable.

If you have any questions or comments regarding this matter please contact me at (530) 224-4784 or by email at szaitz@waterboards.ca.gov.

Scott A. Zaitz, R.E.H.S.
Environmental Scientist
Storm Water & Water Quality Certification Unit

SAZ:wrb:lmw

cc w/o encl: Mr. Matt Kelley, U.S. Army Corp of Engineers, Redding
Ms. Donna Cobb, Department of Fish and Wildlife, Region 1, Redding
State Clearing House Number (2014022018)

R:\RB5\R5RSection\N Central Valley\aCross Section\Clerical\Storm_water\GDay\2014\CEQA Comment (2015 Regional Transportation Plan).doc

CENTRAL VALLEY FLOOD PROTECTION BOARD
3310 El Camino Ave., Rm. 151
SACRAMENTO, CA 95821
(916) 574-0609 FAX: (916) 574-0682
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February 24, 2014

Ms. Jennifer Pollom
Shasta Regional Transportation Agency
1255 East Street, Suite 202
Redding, California 96001

RECEIVED
FEB 27 2014
SHASTA REGIONAL
TRANSPORTATION AGENCY

Subject: 2015 Regional Transportation Plan
SCH Number: 2014022018
Document Type: Notice of Preparation

Dear Ms. Pollom:

Staff of the Central Valley Flood Protection Board (Board) has reviewed the subject document and provides the following comments:

The proposed project may impact streams which are under the jurisdiction of the Central Valley Flood Protection Board and include the following:

Bear Creek (Shasta County reach within designated floodway of the Sacramento River);

Churn Creek (Shasta County - within the Sacramento River floodway);

Clear Creek (Shasta County – Sacramento River to Whiskeytown Dam);

Clover Creek (Shasta County – to 1.1 miles upstream from Millville Plains Road);

Cottonwood Creek (Shasta County and Tehama – divides counties – to Dutch Gulch Dam);

Cow Creek (Shasta County – to 0.6 miles upstream of Millville Plains Road);

Dry Creek (Shasta County reaches within designated floodways of Clear and Cottonwood Creeks);

Little Cow Creek (Shasta County);

Oak Run Creek (Shasta County – to 0.6 miles upstream of Millville Plains Road);

Sacramento River (Kenwick Dam – to west end of Sherman Island);

Salt Creek (Shasta County)

The Board is required to enforce standards for the construction, maintenance, and protection of adopted flood control plans that will protect public lands from floods. The jurisdiction of the Board includes the Central Valley, including all tributaries and distributaries of the Sacramento River, the San Joaquin River, and designated floodways (Title 23 California Code of Regulations (CCR), Section 2).

A Board permit is required prior to starting work within the Board's jurisdiction for the following:

- The placement, construction, reconstruction, removal, or abandonment of any landscaping, culvert, bridge, conduit, fence, projection, fill, embankment, building, structure, obstruction, encroachment, excavation, the planting, or removal of vegetation, and any repair or maintenance that involves cutting into the levee (CCR Section 6);

- Existing structures that predate permitting, or where it is necessary to establish the conditions normally imposed by permitting. The circumstances include those where responsibility for the encroachment has not been clearly established or ownership and use have been revised (CCR Section 6);

- Vegetation plantings will require the submission of detailed design drawings; identification of vegetation type; plant and tree names (i.e. common name and scientific name); total number of each type of plant and tree; planting spacing and irrigation method that will be utilized within the project area; a complete vegetative management plan for maintenance to prevent the interference with flood control, levee maintenance, inspection, and flood fight procedures (CCR Section 131).

Vegetation requirements in accordance with Title 23, Section 131 (c) states "Vegetation must not interfere with the integrity of the adopted plan of flood control, or interfere with maintenance, inspection, and flood fight procedures."

The accumulation and establishment of woody vegetation that is not managed has a negative impact on channel capacity and increases the potential for levee over-topping. When a channel develops vegetation that then becomes habitat for wildlife, maintenance to initial baseline conditions becomes more difficult as the removal of vegetative growth is subject to federal and State agency requirements for on-site mitigation within the floodway. The project should include mitigation measures to avoid decreasing floodway channel capacity.

Hydraulic Impacts - Hydraulic impacts due to encroachments could impede flood flows, reroute flood flows, and/or increase sediment accumulation. The project should include mitigation measures for channel and levee improvements and maintenance to prevent and/or reduce hydraulic impacts. Off-site mitigation outside of the State Plan of Flood Control should be used when mitigating for vegetation removed within the project location.

The permit application and Title 23 CCR can be found on the Central Valley Flood Protection Board's website at http://www.cvfpb.ca.gov/. Contact your local, federal and State agencies, as other permits may apply.

The Board's jurisdiction, including all tributaries and distributaries of the Sacramento River and the San Joaquin River, and designated floodways can be viewed on the Central Valley Flood Protection Board's website at http://gis.bam.water.ca.gov/bam/.

If you have any questions, please contact me by phone at (916) 574-0651, or via e-mail at James.Herota@water.ca.gov.

Sincerely,

James Herota
Senior Environmental Scientist
Projects and Environmental Branch

cc: Governor's Office of Planning and Research
State Clearinghouse
1400 Tenth Street, Room 121
Sacramento, California 95814

Thank you for the opportunity, here today, to provide Comment on SRTA's "2015 Regional Transportation Plan --- Notice of Preparation for Environmental Impact Report", (which document can be found at http://www.srta.ca.gov/pastel/Adobe%20Files/Regional%20and%20Local%20Planning/2015%20RTP/SRTA%20RTP%20EIR%20Notice%20of%20Preparation.pdf).

Excerpt from pg. 3 of the document in question.:

RTP Framework

The 2015 RTP's unified strategy would include the following key elements:

- An overall description of the region's current and future challenges in accommodating growth and meeting mobility needs.
- A fiscally-constrained transportation network that consists of US and State Highways, local roadways, bicycle and pedestrian facilities, public transit, airports and passenger and freight rail.
- An integrated transportation and land use strategy for accommodating the region's future employment and housing needs, and that protects sensitive habitat and resource areas.
- Intelligent Transportation System (ITS) and Transportation Demand Management (TDM) measures that improve system efficiency by influencing individual travel behavior.
- A financial plan that lays out the funding sources and mechanisms required to implement the strategies of the RTP. The financial plan will also recommend additional innovative financing strategies that can be implemented to carry out additional needed projects and programs.
- A transportation system performance evaluation that lays out the ability of the proposed strategies to address challenges.
- Additional strategies and illustrative or planned projects that have little or no money programmed for funding.

Now, when (at the Feb. 25 2014, 3PM SRTA meeting) the question was posed concerning whether or not there be intent (under the Plan) to positively disincentivise development outside the "Strategic Growth Areas", perhaps using the recent controversy involving the County of Shasta vs. Reverge Anselmo as a possible template. The Staff person who responded responded by stating that this would not happen under the 2015 RTP. An encouraging response.

But then there's the third bullet point.:

- An integrated transportation and land use strategy for accommodating the region's future employment and housing needs, and that protects sensitive habitat and resource areas.

An excerpt from pg. 3 of Relevant Staff Report for Feb. 25 2014, 3PM SRTA Agenda Item #11.:

Beginning with the 2015 RTP planning cycle, SRTA must develop a coordinated transportation and land use strategy demonstrating how the region intends to reduce per-capita vehicle miles travelled (VMTs) & associated emissions. A variety of strategies, policies, & programs have been tested over the years by various size cities & regions throughout the nation. The following 'D' factors ...:

A second excerpt from the self-same pg. from the Staff Report, the first & third of the so-called 'D'-s are listed:

• Density -- i.e., increasing the number of persons, jobs, and residences in a given area;
[...]
• Design -- i.e., modifying the pattern or configuration of streets, and their relationship to surrounding buildings, to better serve pedestrians, bicyclists, and transit riders.

An excerpt from pg. 8 of the Relevant Staff Report for Feb. 25 2014, 3PM SRTA Agenda Item #11, under the heading of "Policies & Strategies".:

---

5. It is SRTA's policy to support local governments in implementing the "Sustainable Communities Strategy".

a. Facilitate or support joint efforts with local and regional partners to implement the five 'D' factors [...] to reduce vehicle miles travelled (VMTs) & associated emissions (i.e., (1)_**D**ensity, (2)_**D**iversity of Land Use, (3)_**D**esign of Streets and development, (4)_**D**estination Accessibility, and (5)_**D**istance to transit), with a coordinated emphasis on Strategic Growth Areas.

b. Utilise financial incentives, technical assistance, and/or other tools to promote private sector involvement in transportation-efficient development practices, including infill and redevelopment projects, with an emphasis on Strategic Growth Areas.

[...]

The above excerpts seem to betray an intent to disincentivise development activity outside the strategic growth areas.
Let us all hope that does not happen!!!
Indeed, let us all hope that what is being described is a program of positive incentivisation (involving, perhaps, expediting of the permutation process, among other similar things) for the development activity within the strategic growth areas, as opposed to the positive disincentivisation (as exemplified by the case of the County of Shasta vs. Reverge Anselmo) of development activity outside of the strategic growth areas!

Now, on to the discussion of Downtown parking.

In order to incentivise development, particularly commercial & mixed-use development, in the Strategic Growth Areas, there must not be reduction in parking availability! After all, where the parking situation is one of such reduced parking availability as would cause the parking to be more competitive, people coming into the area in order to patronise one or more of the area shops will need to drive around & around in order to get a desirable spot. This increases both emissions & VMTs. Where the situation gets too competitive, that will incentivise people to avoid that area altogether. Thus hoped for VMT savings would not materialise.

A response to that question, during the Feb. 25 2014, 3PM SRTA meeting was that parking reduction would incentivise people to access the area by bicycle, instead of by car. That response does not comport with reality. Here's how. Who would want to take the car home, just to take a bicycle to a store in a given strategic growth area, only to have the bicycle stolen less than five minutes after entering the store? And then there the issue of being quite limited as to the amount of merchandise one can take home via the bicycle, not to mention the inability to properly secure that merchandise (against theft) while patronising another store in the selfsame strategic growth area. Crime, as mentioned earlier, is quite the disincentive. And aggravating that situation is the three-judge panel overseeing the Coleman v. Brown implementation. The rulings of that panel have done much to aggravate property crime rates. As long as the 3-judge panel continue to insist on dumping felons on people's doorsteps, the resultant property crime escalation problem will continue to disincentivise travel, via bicycle, to strategic growth areas. Rather, the relevant rulings of the three-judge panel overseeing the Coleman v. Brown implementation have served to incentivise travel to such areas via automobile, if at all.

Now, property crime escalation resulting from the rulings of the 3-judge panel is outside the scope of the 2015 RTP. So the question then arises of the reason for to bring it up herein at all. The answer some people give to the question of reduction of parking availability is that such reduction supposedly incentivizes bicycle use. For reasons

already herein discussed, in addition to others that could be also discussed, that idea is pure fantasy. Parking availability must be protected against that reduction, if the patronising of the shops inside the strategic growth areas is to be incentivised. Additionally, those parking spaces must NEVER be metered! Parking meters disincentivise use of the affected parking spaces! Again, to incentivise commercial & mixed-use development inside the strategic growth areas, one must ensure that there be no further reduction in parking availability.

Also, to have development that encourages conservation, the power of HOAs (Homeowners' Associations) to punish acts of conservation (even during times of drought). This can be done, I suppose, by limiting their numbers via a moratorium on any new such encumbrances as CC&Rs (Community Covenants & Restrictions).

CC&Rs is that from whence most of the power of HOAs comes. Disincentivise CC&Rs & conservation behavior will be thus incentivised.

During this time of drought, HOAs can be expected to fine their member-homeowners for conserving water.

Take a look at this excerpt from http://blog.sfgate.com/stew/2014/01/24/drought-or-not-brown-lawns-bring-hoa-fines/.:

Drought or not, brown lawns bring HOA fines
Posted on January 24 2014 | By Demian Bulwa

Jerry Brown may have declared a drought emergency statewide and called for rationing, but that didn't stop a homeowners association in San Lorenzo from fining residents for having dead lawns, KTVU reported.

John Glisar, 55, told the station he doesn't want to water his lawn, but faces fines of between $100 to $1,000 if he doesn't after receiving a second warning from the San Lorenzo Village Homes Association.

"I'm going to water as much as I possibly can," Glisar said.

Another resident who has received violations and plans to begin watering to avoid more, Vanessa DeGuzman, said, "I think it's really ridiculous. We're in a drought right now, time to cut back on water."

According to KTVU, the homeowners association board declined to comment. But one member pointed to a copy of an upcoming board newsletter that reminds residents they must have a "well-maintained yard" and "invest in new landscaping once this drought is over."

And this from http://www.ktvu.com/news/news/local/fines-brown-yards-even-amidst-drought/nczhL/:

Fines for brown yards even amidst drought



By Mike Mibach

KTVU.com

SAN LORENZO, Calif. —
Despite the state being a drought-zone, some San Lorenzo residents are receiving citations for having a dead lawn.

John Glisar, 55, watered his brown-hued lawn Thursday; he said it's a move he didn't necessarily want to make but said he has little choice in the matter.

"The San Lorenzo Village Homes Association wants to fine me from $100 to $1000," said Glisar.

Glisar has lived in his home since 1985 and two months ago he received his first violation – asking him to maintain his yard or face a fine. This month he received another violation from the association titled "YARD MAINTENCE: lawn dry and dying."

Glisar said he took it to the Village Association to talk about the problem and was handed back the violation – with a written note in red ink that read, "30 days to get green from 1/21/14."

This month, Governor Jerry Brown encouraged California residents to cut back on water usage because of the drought but Glisar says he can't afford to be fined by the association so he'll continue to water his lawn.

"I'm going to water as much as I possibly can," said Glisar.

The Board of the San Lorenzo Village Homes Association said it was unable to comment about the violations. One board member did say residents can appeal and he did provide KTVU a copy of an upcoming article, "President's Corner," set to be published in its upcoming newsletter. In it, it is says according to CC&R's (covenants, conditions and restrictions) homeowners are required to have a "well-maintained yard." It also says homeowners are required to "invest in new landscaping once this drought is over."

Residents say they pay about $120 annually to the association.

Vanessa DeGuzman lives in the neighborhood and like Glisar, has received violations for her yard.

"I think it's really ridiculous. We're in a drought right now, time to cut back on water," she said.

DeGuzman, of mother to three, says it appears she has no choice and will have to start watering.

More on «Homeowners' Associations behaving badly»*****, later in this Comment.

On to discussion of another bullet point on pg. 3 of the Notice of Preparation.

Here is the fifth such bullet point.:

- A financial plan that lays out the funding sources and mechanisms required to implement the strategies of the RTP. The financial plan will also recommend additional innovative financing strategies that can be implemented to carry out additional needed projects and programs.

Financial plan --- Is the subject of so-called "road pricing" going to come up in the discussion, as any kind of serious proposal?

Here is an excerpt from a 2008 AB32 Scoping Plan Comment, found at http://www.arb.ca.gov/lispub/comm/bccomdisp.php?listname=scopingpln08&comment_num=258&virt_num=67

As I was looking through the Scoping Plan & through the ETAAC Final Report, desirous to have some idea of what the future might hold concerning those things

discussed within their pages, I came across the idea of so-called "congestion charges," a highly persecutory tax, inter alia.

But not only are "congestion charges" (a.k.a. "road pricing" (a.k.a. "congestion pricing")) a highly persecutory tax aimed at low-income households, immigrants, minorities, independent shop-keepers, et al, the idea, as portrayed in the herein above mentioned documents, is effectively an Orwellian public monitoring scheme potentially capable (depending on how implemented) of monitoring, by name, the comings & goings of any & all who, by chance, find themselves caught thereby.

So-called "congestion pricing" is manifestly designed to persecute lower-incomed motorists. After all, the rich can easily absorb the costs without batting an eye. The less affluent have more difficulty. And the most vulnerable suffer keenly the hardships "road pricing" is manifestly designed to impose. Now, on this subject of "road pricing," the ETAAC Final Report is blatantly contradictory of a stated "Environmental Justice" goal of increased mobility, which stated goal is found elsewhere in that selfsame document. "Congestion charges" also have the potential, via the power of the purse, to more closely & more efficiently dictate exactly who goes where, when, how, & under what circumstances.

Now, one aspect of the idea that has yet to be fully explored is that so-called "congestion pricing" also has the effect of segregating entire sections of cities from other sections, & vise versa[.]

[...]

Does the end always justify the means? That's a question asked by many of those who initially heard the news of the happenings at Abu Gharib, back when they were first reported. Face it! "Road pricing" is, in fact, a form of persecution, aimed at those who are least able to cope with the hardships it is manifestly designed to impose, and is, therefore, an idea which must find itself thrust upon the ashheap of history (by reason of wholesale rejection of its proposal)!

The following comes from an excerpt from an e-mail sent to Jack Wells (of CalTrans) on Jan. 5 2009 concerning the subject of "road pricing".:

Also, the "Road Pricing" schemes mentioned on pg. 22 of the Interim Report all involve close central monitoring of the comings & goings of all persons (vis a vis the use of such things as GPS transponders, RFID tags, etc.), with the idea of channeling behavior in whatever direction may be desired by whatever central authority may be in charge of a given system at a given time. The Founding Fathers must be rolling over in their graves at the sound of such things! "Road Pricing" is Orwellian! It is extremely Statist! It is an inevitable prelude to a whole litany of things far worse! What's next?

[...]

On pg. 28 of the Interim Report, the idea of "promoting social equity" is mentioned as a concern. Well, that concern is entirely counteracted & contravened with the whole idea of "Road Pricing." After all, "Road Pricing" is manifestly designed to impose the severest hardships on those least able to cope. By the way, the idea of near-ubiquitous toll collection devices is simply another form of so-called "Road Pricing."

In conclusion, "Road Pricing" is absolutely horrible, inexcusable, Orwellian, Totalitarian, Statist, etc. etc., and I must herenow urge that such idea be wholly abandoned & forsaken at the earliest possible opportunity (never again to be revisited)! Thank you.

In the wake of the revelation of NSA surveillance, not to mention of the recent incidents of ideologically motivated IRS misconduct, etc., etc., why even consider such a thing as "road pricing"?

That brings the discussion to so-called "Intelligent Traffic Systems", something brought up in the fourth bullet point of pg. 3 of the Notice of Preparation.:

- Intelligent Transportation System (ITS) and Transportation Demand Management (TDM) measures that improve system efficiency by influencing individual travel behavior.

Intelligent transportation systems?! At the Feb. 25 2014, 3PM SRTA meeting, the Staff Person responding to questions about what was meant by so-called "Intelligent Transportation Systems", along with several of the SRTA Board members, swore up & down that what was meant by "Intelligent Transportation Systems" had nothing to do with any kind of surveillance component, that it was all about transportation efficiency.

The Staff Person responding to questions about what was meant by so-called "Intelligent Transportation Systems", along with several of the SRTA Board members, swore up & down that what was meant by "Intelligent Transportation Systems" had nothing to do with any kind of surveillance component, that it was all about transportation efficiency.

Now, that which the Board members, themselves, seemed to discuss, then, sounds perfectly benign. However, when exploring the SRTA website, certain things were found, when either clicking onto link "Intelligent Transportation System (ITS)" (which link appears at http://www.srta.ca.gov/pastel/RT_ITS.htm), or going to http://en.wikipedia.org/wiki/Intelligent_transportation_system (the URL linked to via the

link "Intelligent Transportation System (ITS)"). Of course, some of the things found there were also found at http://www.srta.ca.gov/pastel/8%20Final%20Implementation%20Plan%20TAC_100913.pdf (in a document titled "Integrated Traffic Data Collection and Management Plan for the Shasta County, South Central Urban Region (SCUR)" found there).

What appears at the relevant links is definitely something that confirms some of the worst fears that people have concerning so-called “Intelligent Transportation Systems” (ITS). Such things should have no place in any transportation plan!!

Now, not EVERYTHING in the document titled "Integrated Traffic Data Collection and Management Plan for the Shasta County, South Central Urban Region (SCUR)" calls for such Stasi-esque abominations as those herein described. But the point of mentioning & describing them is: **a)** to point out that, at present, they are a possibility for inclusion in the 2015 RTP; and **b)** if they are not “culled out” from the Plan, then the Plan itself has some very Orwellian possibilities, indeed!

All that said, what IS this business with so-called "Intelligent Transportation Systems Implementation?"
Consider what so-called "smart meters" are all about. Real-Time Surveillance.
Even now, some in Washington D.C. are promoting precursor technology (e.g., so-called V2V (“Vehicle to Vehicle Automated Communication Technologies”) (ref.: **(a)** http://www.extremetech.com/extreme/176093-v2v-what-are-vehicle-to-vehicle-communications-and-how-does-it-work/4; **(b)** http://www.cato.org/blog/vmt-fee-yes-v2v-no; and **(c)** http://www.mercurynews.com/business/ci_25052391/government-require-vehicle-vehicle-communication-road-self-driving)) that could one day lead to the kind of real-time surveillance of transportation behavior, which surveillance capabilities the East German Stasi could only dream of!
With increased surveillance comes increased control.
Is this what is meant by so-called "Intelligent Transportation Systems Implementation?"

The following is excerpt from that found by when either clicking onto link "Intelligent Transportation System (ITS)" (which link appears at http://www.srta.ca.gov/pastel/RT_ITS.htm), or going to http://en.wikipedia.org/wiki/Intelligent_transportation_system (the URL linked to via the link "Intelligent Transportation System (ITS)"). Note that very little of what appears below has anything to do with promotion of transportation efficiency, but has everything to do with surveillance & control.:

Floating car data/floating cellular data

Main article: **Floating car data**

"Floating car" or "probe" data collection is a set of relatively low-cost methods for obtaining travel time and speed data for vehicles travelling along streets,

highways, motorways (freeways), and other transport routes. Broadly speaking, three methods have been used to obtain the raw data:

- **Triangulation Method.** In developed countries a high proportion of cars contain one or more mobile phones. The phones periodically transmit their presence information to the mobile phone network, even when no voice connection is established. In the mid-2000s, attempts were made to use mobile phones as anonymous traffic probes. As a car moves, so does the signal of any mobile phones that are inside the vehicle. By measuring and analysing network data using **triangulation**, pattern matching or cell-sector statistics (in an anonymous format), the data was converted into traffic flow information. With more congestion, there are more cars, more phones, and thus, more probes. In metropolitan areas, the distance between antennas is shorter and in theory accuracy increases. An advantage of this method is that no infrastructure needs to be built along the road; only the mobile phone network is leveraged. But in practice the triangulation method can be complicated, especially in areas where the same mobile phone towers serve two or more parallel routes (such as a motorway (freeway) with a frontage road, a motorway (freeway) and a commuter rail line, two or more parallel streets, or a street that is also a bus line). By the early 2010s, the popularity of the triangulation method was declining.
- **Vehicle Re-Identification.** Vehicle re-identification methods require sets of detectors mounted along the road. In this technique, a unique serial number for a device in the vehicle is detected at one location and then detected again (re-identified) further down the road. Travel times and speed are calculated by comparing the time at which a specific device is detected by pairs of sensors. This can be done using the MAC (Machine Access Control) addresses from Bluetooth devices, or using the RFID serial numbers from Electronic Toll Collection (ETC) transponders (also called "toll tags").
- **GPS Based Methods.** An increasing number of vehicles are equipped with in-vehicle satnav/GPS (satellite navigation) systems that have two-way communication with a traffic data provider. Position readings from these vehicles are used to compute vehicle speeds. Modern methods may not use dedicated hardware but instead Smartphone based solutions using so called **Telematics 2.0** approaches.

[…]

Sensing technologies

Technological advances in telecommunications and information technology, coupled with ultramodern/state-of-the-art microchip, **RFID** (Radio Frequency

Identification), and **inexpensive** intelligent **beacon** sensing technologies, have enhanced the technical capabilities that will facilitate motorist safety benefits for intelligent transportation systems **globally**. Sensing systems for ITS are vehicle- and infrastructure-based networked systems, i.e., **Intelligent vehicle technologies**. Infrastructure sensors are indestructible (such as in-road reflectors) devices that are installed or embedded in the road or surrounding the road (e.g., on buildings, posts, and signs), as required, and may be manually disseminated during preventive road construction maintenance or by sensor injection machinery for rapid deployment. Vehicle-sensing systems include deployment of infrastructure-to-vehicle and vehicle-to-infrastructure electronic beacons for identification communications and may also employ video **automatic number plate recognition** or vehicle magnetic signature detection technologies at desired intervals to increase sustained monitoring of vehicles operating in critical zones.

[...]

Video vehicle detection

Traffic-flow measurement and automatic incident detection using video **cameras** is another form of vehicle detection. Since video detection systems such as those used in **automatic number plate recognition** do not involve installing any components directly into the road surface or roadbed, this type of system is known as a "non-intrusive" method of traffic detection. Video from black-and-white or color cameras is fed into **processors** that analyse the changing characteristics of the video image as vehicles pass. The cameras are typically mounted on **poles** or structures above or adjacent to the roadway. Most video detection systems require some initial configuration to "teach" the processor the baseline background image. This usually involves inputting known measurements such as the distance between **lane** lines or the height of the camera above the roadway. A single video detection processor can detect traffic simultaneously from one to eight cameras, depending on the brand and model. The typical output from a video detection system is lane-by-lane vehicle speeds, counts, and lane occupancy readings. Some systems provide additional outputs including gap, headway, stopped-vehicle detection, and wrong-way vehicle alarms.

Intelligent transport applications

[...]

Automatic road enforcement

Main article: **Traffic enforcement camera**

A traffic enforcement camera system, consisting of a **camera** and a **vehicle**-monitoring device, is used to detect and identify vehicles disobeying a **speed limit** or some other road legal requirement and automatically ticket offenders based on the license plate number. Traffic tickets are sent by mail. Applications include:

- Speed cameras that identify vehicles traveling over the legal **speed limit**. Many such devices use **radar** to detect a vehicle's speed or electromagnetic loops buried in each lane of the road.
- **Red light cameras** that detect vehicles that cross a stop line or designated stopping place while a red **traffic light** is showing.
- **Bus lane** cameras that identify vehicles traveling in lanes reserved for **buses**. In some jurisdictions, bus lanes can also be used by taxis or vehicles engaged in **car pooling**.
- **Level crossing** cameras that identify vehicles crossing **railways at grade** illegally.
- Double white line cameras that identify vehicles crossing these lines.
- **High-occupancy vehicle lane** cameras that identify vehicles violating HOV requirements.
- Turn cameras at intersections where specific turns are prohibited on red. This type of camera is mostly used in cities or heavy populated areas.

Many of these things are also called for in document found at http://www.srta.ca.gov/pastel/8%20Final%20Implementation%20Plan%20TAC_100913.pdf (in a document titled "Integrated Traffic Data Collection and Management Plan for the Shasta County, South Central Urban Region (SCUR)" found there) --- many of these things, and more.

Here is summary list of a few.:

- Automatic License Plate Readers (ALPRs) (ref. pg.s 30, 31)
- Radio Frequency Identification (RFID) Tag Readers (ref. pg. 35)
- GPS Based Traffic Data obtained from private GPS service providers (e.g., TomTom®) (ref. pg.s 35, 36)

Additional list can be found on pg. 55, under heading of “Funding”, under the SubHeading thereof of “Congestion Mitigation and Air Quality Program (CMAQ)”. And here is summary list of a few.:

- Intelligent Transportation Infrastructure (ITI) (ref. link "Intelligent Transportation System (ITS)" (which link appears at http://www.srta.ca.gov/pastel/RT_ITS.htm); http://en.wikipedia.org/wiki/Intelligent_transportation_system (the URL linked to via the link "Intelligent Transportation System (ITS)"))
- Traffic Management and Traveler Information Systems (e.g., Electric Toll Collection Systems)
- Vehicle Congestion Pricing
- Idle Reduction Projects
- Under certain conditions, “PM-10 projects”

Now, again, not EVERYTHING in the document titled "Integrated Traffic Data Collection and Management Plan for the Shasta County, South Central Urban Region (SCUR)" calls for such Stasi-esque abominations as those herein described. But the point of mentioning & describing them is: **a)** to point out that, at present, they are a possibility for inclusion in the 2015 RTP; and **b)** if they are not “culled out” from the Plan, then the Plan itself has some very Orwellian possibilities, indeed!

*****Additional information about «Homeowners’ Associations behaving badly»:

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And now for a few excerpts from http://www.consumeraffairs.com/news/this-week-in-homeowners-association-news-111513.html:

This week in homeowners association news

There's never a shortage of HOAs-behaving-badly news stories
11/15/2013 | ConsumerAffairs |
By Jennifer Abel

[...]

Trees were too short
[I]n Merrit Island, Fla., homeowner Patrick Fitzgerald planted two magnolia saplings in this front yard, and his HOA fined him $5,000 (at $100 per day)* because the trees were “too short.”
The association board countered that trees in the HOA are supposed to be a minimum of 8 feet tall; if left alone the magnolia saplings should eventually reach if not surpass that, but apparently the HOA doesn’t feel like waiting.

In California this week, a couple living in Blackhawk filed a federal lawsuit against their HOA.** Seth and Carolynn Neri charge that their HOA discriminates against their three

children by passing rules forbidding any outdoor play. The lawsuit alleges that the HOA threatened to put a lien on the Neri's home if their children didn't stop playing outside.

In Charlotte, North Carolina, 66-year-old condo owner James Johnson has spent two years trying to convince his HOA board to make repairs to his home's foundation — repairs which he contends the board is contractually obligated to make. Members of the Quail Run HOA board confirmed to WCNC news that the HOA is supposed to make the repairs, but has delayed doing so for two years and counting because Johnson is a "troublemaker."***
As the WCNC news writer noted, with what we suspect is considerable understatement: "NBC Charlotte asked where HOA rules say being a 'troublemaker' means repairs taking years, but didn't get an answer at the time of this writing."

PhotoIn the Stapleton neighborhood of Denver, Colo., an HOA is seeking to ban "small farm animals"**** such as rabbits and chickens, despite a city sustainable-living ordinance allowing them in non-obtrusive numbers. Homeowner Caroline Batorowicz-Vierow keeps two chickens and a rabbit in her garage, and uses their pellets to fertilize her garden; the HOA board wants her to lose the animals, though board members would not comment on the situation to local news.
Batorowicz-Vierow's predicament touches upon another problem with joining an HOA: even if you like and agree with all of its rules now, one change in the board membership can make all those rules reverse.

Finally, out of Marietta, Georgia, comes an HOA story with a more-or-less happy ending for individual HOA homeowners: former HOA treasurer Jim Goshay has been charged with a felony after allegedly embezzling $43,000 from the HOA fund. Goshay paid the money back once he discovered the cops were investigating him, and was dismayed to discover that he's being prosecuted anyway. But at least the HOA got its money back, so the homeowners won't have to pay increased HOA dues to make up the difference.

**«HOA fines homeowner $5,000 (at $100 per day)* because trees were "too short"» story can also be found at http://abcnews.go.com/Business/fla-homeowners-association-fines-man-100-day-small/story?id=20890562
**«HOA banning outside play by resident children» story can also be found at http://www.sanramonexpress.com/news/2013/11/11/blackhawk-couple-sue-hoa-say-kids-cant-play-outside
***«Condo owner fights HOA for years over repairs» story can also be found at http://www.wcnc.com/news/local/Condo-owner-fights-HOA-for-years-over-repairs-230885641.html
****«HOA bunny ban» story can also be found at http://www.thedenverchannel.com/news/local-news/stapleton-hoa-moves-to-ban-farm-animals

This can be found at http://www.consumeraffairs.com/news/homeowners-associations-government-minus-the-checks-and-balances-110413.html.:

[…]

Abandon hope all ye who enter a community controlled by an HOA
11/04/2013 | ConsumerAffairs |
By Jennifer Abel

[…]

Horrible but real examples
Think we're going too far? Here's a snapshot, just from [the week before the date of this article].:



Photo via KSNV

An HOA in Las Vegas lost its long legal battle to prevent a family with a disabled son from keeping an ambulance parked in its driveway (the family used it to transport him to medical appointments). The U.S. Department of Housing and Urban Development (HUD) ruled that the Harbor Cove Homeowners Association violated fair housing and disability-discrimination laws, and had to pay the family $65,000.

(Prediction: expect a rise in the HOA fees charged to residents at Harbor Cove, to cover the HOA's legal costs and fines.)

 Photo via KXAN

Meanwhile, in Austin, Texas, a blind man is suing his HOA for erecting a fence that impedes his walk to the nearest bus stop.

News station KXAN reports that over a year ago, the city of Austin warned the Berdall Farms HOA that it needed to either remove the fence or put a gate in it, since the ungated fence impeded access for the disabled. Nobody from the HOA would actually speak to the news media, but did send out a press release saying the fence is for the safety and benefit of all HOA residents.

(Prediction: expect a rise in the HOA fee charged the residents at Berdall Farms, to cover the HOA's legal costs and fines in addition to whatever they spend on the fence.)

No way home

But HOA members in Glen Haven, Colorado, face an even worse dilemma. The main road leading to their neighborhood, The Retreat at Glen Haven, was washed out in a devastating flood six weeks ago, and for now, the only way to reach their neighborhood is over a private road running through a nearby cattle ranch.

The ranch owner told a local CBS affiliate that "she would allow homeowners to use the road with a written agreement from The Retreat's HOA, but the HOA board refused to sign the agreement without any explanation."



Photo via News4 Denver

On the HOA website, a spokesman for the board released a statement saying “Our RLA Board of Directors have had to make this very difficult decision based upon their desire to protect the long-term interests and integrity of the association …. I will not go into the reasons for this decision, but know that it was an extremely difficult decision for the board.” Though, presumably, less difficult than suffering weeks of homelessness because your HOA board thinks letting you drive home across a cattle ranch somehow threatens its integrity.

From http://www.ajc.com/news/news/hoa-pulls-plug-navy-sailors-welcome-home-sign/ndTX8/:

Posted: 2:17 p.m. Wednesday, Feb. 19 2014

HOA pulls plug on Navy sailor's welcome home sign
Lafayette, La. —

While Petty Officer Third Class Anthony Marsiglia is off to sea helping protect the nation his family is entrenched in a fight of its own against their homeowner's association.

The Louisiana family recently received a letter from the HOA's attorney asking them to take down a banner they've put up in anticipation of the sailor's long awaited homecoming.

The family put up a small sign to hang outside their home in the Lafayette subdivision, announcing Marsiglia's return.

KATC reports that the family was then asked to take down the sign because it allegedly violated HOA rules. An HOA attorney refused to comment other than to say that the

family could keep the sign up two weeks before Marsiglia arrived and two weeks after his arrival.

The station reports the HOA rules do state that a banner can only measure 24-by-36 inches, but does not give a time limit on how long a sign can be displayed.

The family's sign meets the size limit.

Marsiglia's mother Judi Pellegran is both confused and angry about why they may have received the notice, "I'm just not quite understanding why it can't stay up and they haven't been able to explain that to me either - He's left his daughter. This is how she keeps him in her heart everyday" said Pellegran.

Marsiglia is deployed on the U.S.S. Enterprise and is due home in the next few weeks.

This from http://www.10news.com/news/hoa-horror-story-man-out-hundreds-of-thousands-of-dollars-after-chimney-issues-lead-to-flooding-02192014:

HOA horror story: Man out hundreds of thousands of dollars after chimney issues lead to flooding
Chimney caps installed incorrectly at complex

Posted: 02/19/2014

- by Cristin Severance

SAN DIEGO - A La Jolla man is out hundreds of thousands of dollars after water damage occurred in his two condominiums. He blames the homeowners association for not installing the right chimney caps and taking months to fix the problem.

Dr. Kristoph Kuczkowski has lived in disarray for nearly two years. All of his items are on wooden pallets. His floors are ruined and the things he could save from water are piled in a bathtub. His mother's townhome, which is across from his, flooded as well.

"She spent like $85,000 using her retirement money and everything was damaged," said Kuczkowski.

The first flood occurred after it rained in April 2012.

Kuczkowski hired an expert who found the chimney caps in the complex had not been installed correctly and that they were put on by an unlicensed vendor.

"There have been multiple code violations inside the chimney," said Kuczkowski.

This started a two-year fight with the Woodlands North Homeowners Association to replace the 77 chimney caps on the property. The HOA is in charge of maintaining them and Kuczkowski could not repair the condos until they took action.

"The sources of water have to be addressed first," said his attorney Mary Goodhue Deutsch.

There is also an issue with a sloping driveway that causes flooding in his garage. "I've been dealing with the driveway longer than I've been dealing with the roof-related leaks," said Kuczkowski.

He has hired water mitigators, inspectors, mold companies and an attorney and could be out hundreds of thousands of dollars.

But it is not the money or even his condo that keeps him up at night. His mother put her life savings into her dream retirement condo and she passed away during all of this before she could even enjoy it.

"I just didn't think it would come to this," said Kuczkowski.

Code enforcement ordered the Woodlands North Homeowners Association to replace the chimney caps and they complied. Kuczkowski is still out all of that money from the flooding and is still dealing with the driveway issue.

Team 10 called and emailed the Woodlands North Homeowners Association and is still waiting for a comment.

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State of California – Natural Resources Agency
DEPARTMENT OF FISH AND WILDLIFE
Region 1 – Northern
601 Locust Street
Redding, CA 96001
www.wildlife.ca.gov

EDMUND G. BROWN JR., Governor
CHARLTON H. BONHAM, Director

March 10, 2014

Ms. Jennifer Pollom
Shasta Regional Transportation Agency
1255 East Street, Suite 202
Redding, CA 96001

Subject: Notice of Preparation for the 2015 Regional Transportation Plan Draft Environmental Impact Report SCH# 2014022018, Shasta County

Dear Ms. Pollum:

The California Department of Fish and Wildlife (Department) has reviewed the Notice of Preparation (NOP) of the Draft Environmental Impact Report (DEIR) for the 2015 Regional Transportation Plan (State Clearinghouse Number: 2014022018) (Project). The Department offers the following comments and recommendations on the Project in our role as the State's trustee for fish and wildlife resources, and as a responsible agency under the California Environmental Quality Act (CEQA), California Public Resources Codes §21000 *et seq*.

Project Description

The Project as stated in the NOP is to prepare an EIR for the 2015 Regional Transportation Plan (RTP), a long-range planning document that aims to maintain or enhance the efficient and effective movement of goods, services, and persons. The Sustainable Community Strategy (SCS) will seek to coordinate local land use and transportation systems within the region to reduce emissions from cars and light trucks. The RTP is also necessary to obtain federal funding for regional transportation projects.

Project Comments and Recommendations

The Department appreciates the opportunity to comment on the Project, relative to impacts to biological resources. The Department understands that the RTP is a planning document and that some projects will be addressed again through the CEQA process by specific agencies at a later time. However, if there are individual RTP projects that will be covered under this DEIR, and they will involve impacts to biological resources, the Department recommends the DEIR address them adequately through a biological resources assessment. A table outlining which projects will be included in this DEIR versus addressed at a later time should be provided so that the Department's comments are focused. To enable Department staff to adequately review and comment on the proposed Project, we recommend the following information be included in the DEIR, as applicable:

1. A biological assessment whereby a qualified biologist assesses the wildlife, plants, and habitats onsite while gathering pertinent information such as:

    a. Determine the potential for special status species and habitats to occur within the Project footprint by analyzing various electronic data bases including the Department's California Natural Diversity Data Base (CNDDB) as well as California Native Plant Society and U.S. Fish and Wildlife Service.

    b. Date/time/weather conditions on day of survey(s).

    c. A description of the natural environment.

    d. Methodology of surveys including, but not limited to, protocols used such as the Department's 2009 *Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities* (https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=18959&inline=1).

    e. A list of common and special status plant and wildlife species as well as habitats present onsite at the time of survey(s).

    f. Rare/local/unusual species and habitats or species present during the survey(s).

    g. Focused species-specific surveys, conducted at the appropriate time of year and time of day when the species are active or otherwise identifiable. Acceptable species-specific survey procedures should be developed in consultation with the Department and the U.S. Fish and Wildlife Service. Links to some survey procedures are provided on the Department's website.[1]

    h. All necessary biological surveys should be conducted in advance of DEIR circulation, and should not be deferred until after Project approval.

    i. Delineation of waters of the U.S. including other waters such as vernal pools, isolated wetlands and riparian habitats that are onsite or just adjacent to the Project.

    j. A map depicting the Project boundary.

    k. A map depicting the Project boundary with footprint of Project and/or impacted area.

[1] http://www.dfg.ca.gov/wildlife/nongame/survey_monitor.html

l. A vegetation map that uses the National Vegetation Classification System, for example *A Manual of California Vegetation*, and highlights any special status natural communities. If another vegetation classification system is used, the report should reference the system, provide the reason for its use, and provide a crosswalk to the National Vegetation Classification System.

m. A table depicting the vegetation communities found onsite with their respective acreage and the acreage impacted by the Project (both directly and indirectly).

n. A map depicting wildlife movement corridors especially those corridors extending to major rivers and their tributaries.

o. A discussion of potential impacts associated with increased lighting, noise, human activity, changes in drainage patterns, changes in water volume/velocity/quantity/quality, soil erosion and/or sedimentation in streams and water courses on or near the Project.

p. A table depicting special status plant or wildlife species that may or will be impacted by the Project.

2. A thorough discussion of potential direct, indirect, and cumulative impacts to biological resources.

a. The DEIR should present clear thresholds of significance to be used by the Lead Agency in its determination of environmental effects. A threshold of significance is an identifiable quantitative, qualitative or performance level of a particular environmental effect.

b. CEQA Guidelines, §15125, direct that knowledge of environmental conditions at both the local and regional levels is critical to an assessment of environmental impacts and that special emphasis shall be placed on resources that are rare or unique to the region.

c. Impacts associated with initial Project implementation as well as long-term operation and maintenance of the Project shall be addressed in the DEIR pursuant to CEQA Guidelines §15126.2 (a).

d. In evaluating the significance of the environmental effect of the Project, the Lead Agency should consider direct physical changes in the environment which may be caused by the Project and reasonably foreseeable indirect physical changes in the environment which may be caused by the Project. Expected impacts should be quantified (e.g., acres, linear feet, number of individuals taken, volume or rate of water extracted, etc. to the extent feasible).

e. Project impacts should be analyzed relative to their effects on off-site habitats and species. Specifically, this may include public lands, open space, downstream aquatic habitats, areas of groundwater depletion, or any other natural habitat or species that could be affected by the Project.

f. Impacts to and maintenance of wildlife corridor/movement areas and other key seasonal use areas should be fully evaluated and provided.

g. Potential for infestations of exotic and invasive species over a great distance especially pertaining to linear projects should be included in the DEIR (e.g., roads, highways, transmission lines, sewer/phone/cable lines, etc.).

h. A cumulative effects analysis shall be developed for species and habitats potentially affected by the Project. This analysis shall be conducted as described under CEQA Guidelines, §15130. General and specific plans, as well as past, present, and anticipated future projects, should be analyzed relative to their impacts to species and habitats. A map depicting entitled projects and foreseeable future projects should be included in the DEIR.

3. A range of Project alternatives should be analyzed to ensure that the full spectrum of alternatives to the proposed Project are fully considered and evaluated. Alternatives which avoid or otherwise minimize impacts to sensitive biological resources should be identified.

4. Avoidance, minimization, and mitigation measures to reduce significant impacts to less than significant. Mitigation measures for adverse Project-related impacts to sensitive plants, wildlife, and habitats should be developed and thoroughly discussed. Mitigation measures should first emphasize avoidance and reduction of Project impacts. For unavoidable impacts, the feasibility of onsite habitat restoration or enhancement should be discussed. If onsite mitigation is not feasible, off-site mitigation through habitat creation, enhancement, acquisition and preservation in perpetuity should be addressed. Attached is a checklist for *Developing Adequate and Successful Mitigation Measures* for your reference (Attachment).

5. A map with all of the entitled developments as well as new roads, highways, etc. should also be included in the DEIR to help with the cumulative impact analysis.

6. A map depicting areas where there is a continued problem between vehicle collisions with wildlife would be extremely helpful along with a discussion on whether or not underpasses, overpasses, or other safety measures could be implemented in those areas.

The Department appreciates the opportunity to comment on this Project. Questions regarding this letter and further coordination on these issues should be directed to Amy Henderson, Environmental Scientist, at (530) 225-2779 or by email Amy.Henderson@wildlife.ca.gov.

Sincerely,

Curt Babcock
Habitat Conservation Program Manager

Attachment

ec: Michael Harris, Amy Henderson and Kristin Hubbard
California Department of Fish and Wildlife
Michael.R.Harris@wildlife.ca.gov, Amy.Henderson@wildlife.ca.gov,
Kristin.Hubbard@wildlife.ca.gov

State Clearinghouse
State.clearinghouse@opr.ca.gov

Ms. Jennifer Pollom
Shasta Regional Transportation Agency
srta@srta.ca.gov

CHRON

From: Amy Pendergast <apendergast@co.shasta.ca.us>
Date: February 20, 2014 at 6:04:22 PM PST
To: "Jennifer Pollom (jennpollom@yahoo.com)" <jennpollom@yahoo.com>
Cc: Shellisa Moore <sdmoore@co.shasta.ca.us>
Subject: RTP and multimodal improvements near Shasta College

Hello Jenn – Thanks for your time today talking about the RTP. I'd like to suggest improvements for bicyclists and pedestrians in the vicinity of the Shasta College entrance for inclusion in the Regional Transportation Plan. I think it's very important to include safe, convenient and inviting bicycle and pedestrian facilities that connect students, employees and community members to the Shasta College campus. Such improvements would help fill a gap between the entrance and the recent addition of bicycle lanes on Old Oregon Trail just south of College View, as well as potentially lead to modal shift among students.

Last September a workshop was held at the Shasta College campus which was facilitated by Charlie Alexander of Fehr & Peers and Paul Zykofsky of the Local Government Commission regarding walkability and bikability on campus. Attached is Charlie's memo summarizing the workshop and suggesting next steps, which include:

> *In particular, improvements to the campus' South Entrance require detailed complete streets corridor planning. Shasta College could partner with Shasta County to apply for a Caltrans Transportation Planning Grant. The grant could be used to develop a corridor plan for Old Oregon Trail between Shasta College Drive and College View Drive. The corridor plan should evaluate alternative bikeway types on Old Oregon Trail, intersection control at the Old Oregon Trail/Collyer Drive/Shasta College Drive intersection, and improvements to the SR 299/Old Oregon Trail interchange. The Caltrans Transportation Planning Grants can be used for conceptual design, which should be adequate to make a determination as to the appropriate infrastructure solution for the South Entrance. Further grants should be pursued to fund design and construction.*

Last spring a Transportation, Walking & Bicycling survey of over 900 respondents was completed at Shasta College. The survey indicated a need for better bicycle and pedestrian accommodation at the Shasta College entrance (including the main entrance at Collyer/Old Oregon Trail, the Hwy 299 interchange, and the intersection at College View / Old Oregon Trail; and on campus bikeways providing an alternative to the entrance and main perimeter road on campus); many indicated that the south entrance is the most challenging portion of their bicycle commute and others indicated they would bicycle to the college if this area was improved. I'm happy to share any of that data.

Please let me know how I can help support this being incorporated into the upcoming RTP, as well as how to work towards physical improvements in this area.

Thank you!

Amy Pendergast
Healthy Shasta

Appendix B

Draft RTP Projects List

TABLE
Shasta Regional Transportation Agency
Summary of Projects - ITS
CALTRANS

Project Number	REGIONAL TRANSPORTATION PROJECTS	SHORT TERM TOTAL EST COST OF PROJECT	LONG TERM TOTAL EST COST OF PROJECT	PROJECT BAND	PROJECT TYPE/	EXPECTED FUNDING SOURCES
1	I-5, Start/End PM 9.77, Knighton Road, 1 CCTV at Knighton Road on I-5	$ 554,000		(2016-2025)	ITS	SHOPP
2	I-5, Start/End PM 24.7, Mountain Gate, 1 CMS FNBT at Mountain Gate on I-5 W/ Sign Bridge structure	$ 1,040,000		(2016-2025)	ITS	SHOPP
3	SR 299, various locations, Hatchet Mountain, Microwave. TMS Wireless Backbone East Extension (Hatchet Mtn.)	$ 233,000		(2016-2025)	ITS	SHOPP
4	Various Locations in Shasta County, Microwave. TMS Wireless Backbone South/West Ext (Tuscan Butte; Hoadley)	$ 8,000,000		(2016-2025)	ITS	SHOPP
5	SR 273/299, Redding, Signal Upgrades and Synchronization on 299 between Lake Blvd and I-5	$ 210,000		(2016-2025)	ITS	SHOPP
6	SR 44/299, Shasta County, Connect I-5 Fiber Backbone to District Office	$ 4,482,000		(2016-2025)	ITS	SHOPP
7	SR 44/299, Redding, Redding Local TMS Fiber Spurs	$ 1,377,000		(2016-2025)	ITS	SHOPP
8	SR 44/I-5, Shasta County, Connect I-5 Fiber Backbone to District Office via Microwave and Hub House at CRI	$ 824,000		(2016-2025)	ITS	SHOPP
9	SR 44/89, Old Station, 1 CCTV,1 HAR, and 3 CMS signs at Old Station at Jct SR44-SR89	$ 27,000		(2016-2025)	ITS	SHOPP
10	I-5/SR 273, Redding, Northern Redding TMS Fiber	$ 345,000		(2016-2025)	ITS	SHOPP
11	I-5, Start/End PM 61.7, Sweetbrier Rd, 1 CCTV at Sweetbrier Road on I-5	$ 702,000		(2016-2025)	ITS	SHOPP
12	I-5, Various Locations, Bailey/Anderson/Walters HAR Simulcast and Upgrade Walters HAR	$ 709,000		(2016-2025)	ITS	SHOPP
13	I-5, Various Locations, Fawndale HAR Extender & Simulcast upgrade to Redding HAR	$ 210,000		(2016-2025)	ITS	SHOPP
14	I-5, various locations,Redding, Detection. Redding Area TMS System - A series of TMS sites along I-5	$ 635,000		(2016-2025)	ITS	SHOPP
15	SR 44, Start/End PM 1.24, Victor Avenue, 1 CCTV at Victor Avenue on SR44	$ 474,000		(2016-2025)	ITS	SHOPP
16	SR 273, Start/End PM 5.83, Briggs St, 1 CCTV at Briggs Street on SR273	$ 210,000		(2016-2025)	ITS	SHOPP
17	SR 273, Start/End PM 12.68, Bonnyview Road, 1 CCTV at S. Bonnyview Road on SR273	$ 237,000		(2016-2025)	ITS	SHOPP
18	SR 273, Redding, South Redding TMS Fiber Loop	$ 54,000		(2016-2025)	ITS	SHOPP
19	SR 273, Redding, Redding Rural TMC	$ 1,357,000		(2016-2025)	ITS	SHOPP
20	SR 273, Anderson/Redding, Complete Signalization and Synchronization plan of SR 273	$ 210,000		(2016-2025)	ITS	SHOPP
	Total Short Term Needs =	**$ 21,890,000**				
21	I-5, Start/End PM 24.7, 1 CMS FNBT at Mountain Gate on I-5 W/ Sign Bridge structure, CMS		$ 1,763,000	(2026-2035)	ITS	SHOPP
22	I-5, Various Locations, Upgrade and expand traffic data collection system		$ 4,992,000	(2026-2035)	ITS	SHOPP
23	SR 89, Start/End PM 0.4, Old Station, CMS FSBT - Model 510		$ 320,000	(2026-2035)	ITS	SHOPP
24	SR 299, Start/End PM 0.18, Buckhorn Summit, CCTV		$ 192,000	(2026-2035)	ITS	SHOPP
25	SR 299, Start/End PM 13.7, Whiskey Creek Bridge, CCTV EB Shldr at West end of Bridge		$ 192,000	(2026-2035)	ITS	SHOPP
26	SR 299, Start/End PM 26.5, Hawley Offramp, CMS FEBT - Model 500		$ 320,000	(2026-2035)	ITS	SHOPP
27	SR 299, Start/End PM 26.5, Old Oregon Trail, CCTV		$ 192,000	(2026-2035)	ITS	SHOPP
28	I-5, Start/End PM 1.1, Gas Point Road, CCTV SB Shldr		$ 192,000	(2026-2035)	ITS	SHOPP
29	I-5, Start/End PM 4.29, Deschutes Road UC (Anderson), CCTV To be relocated to ~ PM 4.30 BBS installed		$ 192,000	(2026-2035)	ITS	SHOPP
30	I-5, Start/End PM 9.33, Redding Area, TMS MVDS in median - Solar		$ 224,000	(2026-2035)	ITS	SHOPP
31	I-5, Start/End PM 14.44, Cypress Avenue, CCTV		$ 192,000	(2026-2035)	ITS	SHOPP
32	I-5, Start/End PM 21, Pine Grove OC (Shasta Lake City), HAR Flasher EMS FSBT - Upgrade to Flasher w/BBS or replace w/ CMS		$ 640,000	(2026-2035)	ITS	SHOPP
33	I-5, Start/End PM 24, Mountain Gate (Shasta Lake City), CCTV Fawndale Ops Truck Turnaround Site		$ 224,000	(2026-2035)	ITS	SHOPP
34	I-5, Start/End PM 30.5, Packers Bay S/B On Ramp, RWIS Packers Bay S/B Onramp at crest		$ 960,000	(2026-2035)	ITS	SHOPP
35	I-5, Start/End PM 32.3, O'Brien, RWIS O'Brien N/B Onramp at crest		$ 960,000	(2026-2035)	ITS	SHOPP
36	I-5, Start/End PM 36.1, Black Oak (South of Gilman Road OC), CMS #26 FNBT - Model 500 - Upgrade phone service		$ 64,000	(2026-2035)	ITS	SHOPP
37	I-5, Start/End PM 37.44, Salt Creek (Near Gillman Road), Curve Warning - Upgrade CCTV to Pan/Tilt/Zoom BBS installed		$ 64,000	(2026-2035)	ITS	SHOPP
38	I-5, Start/End PM 37.94, Antlers Summit OC, RWIS Upgrade w/BBS & connect comm to ITS Node LAN NB (1) Puck @ PM 37.93 SB (1) Puck @ PM 37.93 and (1) Subsurface Probe @ PM 37.93		$ 256,000	(2026-2035)	ITS	SHOPP
39	I-5, Start/End PM 45.8, Vollmers UC, RWIS Upgrade w/BBS & connect comm to ITS Node LAN NB (1)PUCK @ PM 45.85 and (1) Subsurface Probe @ PM 45.85 SB (1)PUCK @ PM 45.85		$ 256,000	(2026-2035)	ITS	SHOPP
40	I-5, Start/End PM 65.5, Castle Crags, CMS FNBT, for chain area		$ 960,000	(2026-2035)	ITS	SHOPP
41	SR 44, Start/End PM 1.3, Victor Avenue OC (Redding), CMS FWBT - Model 500		$ 960,000	(2026-2035)	ITS	SHOPP
42	SR 44, Start/End PM 1.56, Victor Avenue, HAR Flasher FEBT - Upgrade w/BBS		$ 128,000	(2026-2035)	ITS	SHOPP
43	SR 44, Start/End PM 2.77, Airport Road OC (Redding), CCTV Exist power/phone at nearby CMS		$ 256,000	(2026-2035)	ITS	SHOPP
44	SR 44, Start/End PM 7, Deschutes Road, CCTV NW Corner		$ 192,000	(2026-2035)	ITS	SHOPP
45	SR 44, Start/End PM 8, Silver Bridge Road, HAR Flasher FWBT - Upgrade w/BBS		$ 256,000	(2026-2035)	ITS	SHOPP
46	SR 44, Start/End PM 26, Shasta Forest Village, CCTV Southside of Hwy-44		$ 192,000	(2026-2035)	ITS	SHOPP
47	SR 44, Start/End PM 26.3, Shasta Forest Drive, RWIS WB lanes at top of luge for icy rds		$ 960,000	(2026-2035)	ITS	SHOPP
48	SR 44, Start/End PM 50.54, Eskimo Hill Summit, CCTV		$ 384,000	(2026-2035)	ITS	SHOPP
49	SR 44, Start/End PM 50.54, Eskimo Hill Summit, RWIS		$ 896,000	(2026-2035)	ITS	SHOPP
50	SR 44, Start/End PM 64, The Rim, RWIS		$ 384,000	(2026-2035)	ITS	SHOPP
51	SR 273, Start/End PM 4.44, Pinon Ave / Barney St., CCTV NE corner		$ 192,000	(2026-2035)	ITS	SHOPP
52	SR 273, Start PM 5/End PM 20.033, From Anderson to JCT I-5, Fiber Installation		$ 7,681,000	(2026-2035)	ITS	SHOPP
53	SR 273, Start/End PM 11.57, Girvan Rd., CCTV East side		$ 192,000	(2026-2035)	ITS	SHOPP
54	SR 273, Start/End PM 12, South Bonnyview Rd., CMS FNBT		$ 1,024,000	(2026-2035)	ITS	SHOPP
55	SR 273, Start/End PM 13.5, South Bonnyview Rd., CMS FSBT		$ 1,024,000	(2026-2035)	ITS	SHOPP
56	SR 273, Start/End PM 14.47, Buenaventura Blvd., CCTV NW corner - Power lines check for clearance		$ 192,000	(2026-2035)	ITS	SHOPP
57	SR 273, Start/End PM 14.96, Wyndham Ln., CCTV NE corner		$ 192,000	(2026-2035)	ITS	SHOPP
58	SR 273, Start/End PM 17.03, Riverside Dr., CCTV Possible Microwave Installation. Install Northwest corner near existing Cabinet.		$ 384,000	(2026-2035)	ITS	SHOPP
59	SR 299, Start/End PM 0.18, Buckhorn Summit, RWIS		$ 1,024,000	(2026-2035)	ITS	SHOPP
60	SR 299, Start/End PM 8.65, French Gulch Road Area, CCTV EB Shldr		$ 384,000	(2026-2035)	ITS	SHOPP
61	SR 299, Start/End PM 25.3, Hawley Road, CMS FWBT - Model 500		$ 960,000	(2026-2035)	ITS	SHOPP
62	SR 299, Start/End PM 28.38, Stillwater Way, HAR Flasher FWBT - Upgrade w/ BBS		$ 128,000	(2026-2035)	ITS	SHOPP
63	SR 299, Start/End PM 75.47, Mountain View Road, CCTV Downtown Intersection		$ 192,000	(2026-2035)	ITS	SHOPP
64	SR 299, Start/End PM 78.85, West of SR299-SR89 Jct, CMS FEBT - Model 510		$ 960,000	(2026-2035)	ITS	SHOPP
65	SR 299, Start/End PM 81.2, East of SR299-SR89 Jct, CMS FWBT - Model 510		$ 960,000	(2026-2035)	ITS	SHOPP
66	SR 299, Start/End PM 89.4, Pit One Grade-Fall River Area, CCTV Limited roadside for cabinets		$ 448,000	(2026-2035)	ITS	SHOPP
	Total Long Term Fundable Needs =		**$ 33,700,000**			

DESCRIPTION	Short (2016-2025)	Long (2026-2035)	Total
Funding Needed By Short and Long Range Bands	**$ 21,890,000**	**$ 33,700,000**	**$ 55,590,000**
Recap of Expected/Estimated/Unknown Resources			
State Highway Operations and Protection Program (SHOPP) =	**$ 21,890,000**	**$ 33,700,000**	**$ 55,590,000**
			$ -
			$ -
			$ -
			$ -
Total Funding Reasonably Available =	**$ 21,890,000**	**$ 33,700,000**	**$ 55,590,000**
Total Unfunded Needs (or Short Term Carryover) =	$ -	$ -	$ -
Note 1 : Green highlighted projects above can be funded in the constrained funding analysis			

Note 2 : Un-highlighted projects above cannot be funded. New funding sources will need to be identified or improvement will be developer funded.
Note 3 : Long term projects are escalated by 2.5%

TABLE
Shasta Regional Transportation Agency
Summary of Projects - Ramp Meters
CALTRANS

Project Number	REGIONAL TRANSPORTATION PROJECTS	SHORT TERM TOTAL EST COST OF PROJECT	LONG TERM TOTAL EST COST OF PROJECT	PROJECT BAND	PROJECT TYPE/(PROJECT INTENT)	EXPECTED FUNDING SOURCES
1	I-5, Start/End PM 14.76, Cypress, Ramp Meter - Northbound	$ 750,000		(2016-2025)	Ramp meter	SHOPP/Local
2	I-5, Start/End PM 14.28, Cypress, Ramp Meter - Southbound	$ 750,000		(2016-2025)	Ramp meter	SHOPP/Local
3	I-5, Start/End PM 11.96, S. Bonnyview, Ramp Meter - Southbound	$ 800,000		(2016-2025)	Ramp meter	SHOPP/Local
4	SR 44, Start/End PM 1.57, Dana, Ramp Meter - Westbound	$ 150,000		(2016-2025)	Ramp meter	SHOPP/Local
	Total Short Term Needs =	**$ 1,700,000**				
5	I-5, Start/End PM 0.78, Gas Point Road, Ramp Meter - Southbound		$ 960,000	(2026-2035)	Ramp meter	SHOPP/Local
6	I-5, Start/End PM 1.1, Gas Point Road, Ramp Meter - Northbound		$ 960,000	(2026-2035)	Ramp meter	SHOPP/Local
7	I-5, Start/End PM 9.65, Knighton Road, Ramp Meter - Southbound		$ 960,000	(2026-2035)	Ramp meter	SHOPP/Local
8	I-5, Start/End PM 9.9, Knighton Road, Ramp Meter - Northbound		$ 960,000	(2026-2035)	Ramp meter	SHOPP/Local
9	I-5, Start/End PM 12.26, S. Bonnyview, Ramp Meter - Northbound		$ 1,024,000	(2026-2035)	Ramp meter	SHOPP/Local
10	I-5, Start/End PM 17.05, Lake Blvd., Ramp Meter - Southbound		$ 768,000	(2026-2035)	Ramp meter	SHOPP/Local
11	I-5, Start/End PM 17.57, Lake Blvd., Ramp Meter - Northbound		$ 960,000	(2026-2035)	Ramp meter	SHOPP/Local
12	I-5, Start/End PM 17.92, Twin View Boulevard, Ramp Meter - Southbound		$ 960,000	(2026-2035)	Ramp meter	SHOPP/Local
13	I-5, Start/End PM 18.22, Twin View Boulevard, Ramp Meter - Northbound		$ 960,000	(2026-2035)	Ramp meter	SHOPP/Local
	Total Long Term Fundable Needs =		**$ 8,512,000**			

DESCRIPTION	Short (2016-2025)	Long (2026-2035)	Total
Funding Needed By Short and Long Range Bands	**$ 1,700,000**	**$ 8,512,000**	**$ 10,212,000**
Recap of Expected/Estimated/Unknown Resources			
State Highway Operations and Protection Program (SHOPP) =	**$ 425,000**	**$ 2,128,000**	**$ 2,553,000**
Local/Other =	**$ 1,275,000**	**$ 6,384,000**	**$ 7,659,000**
			$ -
			$ -
			$ -
Total Funding Reasonably Available =	**$ 1,700,000**	**$ 8,512,000**	**$ 10,212,000**
Total Unfunded Needs =	$ -	$ -	$ -
Note 1 : Green highlighted projects above can be funded in the constrained funding analysis			

Note 2 : Un-highlighted projects above cannot be funded. New funding sources will need to be identified or improvement will be developer funded.
Note 3 : Long term projects are escalated by 2.5%

TABLE
Shasta Regional Transportation Agency
Summary of Projects - Bridges
CALTRANS

Project Number	REGIONAL TRANSPORTATION PROJECTS	SHORT TERM TOTAL EST COST OF PROJECT	LONG TERM TOTAL EST COST OF PROJECT	PROJECT BAND	PROJECT TYPE/(PROJECT INTENT)	EXPECTED FUNDING SOURCES
1	Route 44, Begin PM 59.62, 06-0084 Hat Creek	$ 4,125,000		(2016-2025)	Replace Bridge	SHOPP
2	Route 5, Begin PM 66.8, 06-0095 Craig View Drive	$ 11,800,000		(2016-2025)	Replace Bridge	SHOPP
3	Route 5, Begin PM 57.41, 06-0111 Sims Road UC	$ 5,313,000		(2016-2025)	Replace Superstructure (or replace bridge)	SHOPP
4	SR 44, Start/End PM 7.4, 06-0152 Cow Creek	$ 3,841,000		(2016-2025)	Seismic Retrofit	SHOPP
5	SR 44, Start/End PM 4.55, 06-0151 Clough Creek	$ 2,650,000		(2016-2025)	Rehab	SHOPP
6	Route 5, Begin PM 28.14, Pit River Bridge	$ 20,000,000		(2016-2025)	Seismic and Paint	SHOPP
7	Route 89, Begin PM 25.3, End PM 31.7, Lake Britton, Replace Bridge and realign roadway	$ 80,000,000		(2016-2025)	Replace Bridge and realign roadway	SHOPP
8	SR 44, Start PM 0/ End PM 60, Bridges at various locations	$ 3,760,000		(2016-2025)	Deck rehab, paint, joints, etc	SHOPP
9	SR 299, various locations in Shasta County	$ 3,800,000		(2016-2025)	Deck rehab, paint and joint repair/replacement	SHOPP
	Total Short Term Needs =	**$ 135,289,000**				
10	Route 5, Begin PM 28.14, End PM 28.14, Pit River Bridge		$ 640,042,000	(2026-2035)	Replace Bridge	SHOPP
11	06-0015 UNION SCHOOL RD OC (FO, SR=58.2), Bridge Rehabilitation		$ 2,560,000	(2026-2035)	Bridge Rehabilitation	SHOPP
12	06-0035 REDDING OH (FO, SR=69), Bridge Rehabilitation		$ 2,560,000	(2026-2035)	Bridge Rehabilitation	SHOPP
13	06-0036 CLEAR CREEK (SD, SR=76), Bridge Rehabilitation		$ 2,560,000	(2026-2035)	Bridge Rehabilitation	SHOPP
14	06-0058 MONTGOMERY CK (SD, SR=76.1), Bridge Rehabilitation		$ 2,560,000	(2026-2035)	Bridge Rehabilitation	SHOPP
15	06-0113 CREEKSIDE UC (SD, SR=75), Bridge Rehabilitation		$ 2,560,000	(2026-2035)	Bridge Rehabilitation	SHOPP
16	06-0118 STATE PARK UC (FO, SR=73.5), Bridge Rehabilitation		$ 2,560,000	(2026-2035)	Bridge Rehabilitation	SHOPP
17	06-0126L E REDDING SEP (FO, SR=67.3), Bridge Rehabilitation		$ 2,560,000	(2026-2035)	Bridge Rehabilitation	SHOPP
18	06-0137G N273-N5 CONN OC (FO, SR=73.6), Bridge Rehabilitation		$ 2,560,000	(2026-2035)	Bridge Rehabilitation	SHOPP
19	06-0152 COW CREEK (SD, SR=72.2), Bridge Rehabilitation		$ 2,560,000	(2026-2035)	Bridge Rehabilitation	SHOPP
20	06-0154 MOUNTAIN GATE OC (FO, SR=56.3), Bridge Rehabilitation		$ 2,560,000	(2026-2035)	Bridge Rehabilitation	SHOPP
21	06-0155 OASIS ROAD OC (FO, SR=55), Bridge Rehabilitation		$ 2,560,000	(2026-2035)	Bridge Rehabilitation	SHOPP
22	06-0156 ROUTE 151/5 SEP (FO, SR=60.1), Bridge Rehabilitation		$ 2,560,000	(2026-2035)	Bridge Rehabilitation	SHOPP
23	Route 273, Begin PM 17.08, End PM 17.08, Sacramento River Bridge, Replace Bridge		$ 64,004,000	(2026-2035)	Replace Bridge	SHOPP
	Total Long Term Fundable Needs =		**$ -**			

DESCRIPTION	Short (2016-2025)	Long (2026-2035)	Total
Funding Needed By Short and Long Range Bands	**$ 135,289,000**	**$ 734,766,000**	**$ 870,055,000**
Recap of Expected/Estimated/Unknown Resources			
State Highway Operations and Protection Program (SHOPP) =	**135,289,000**	**$ -**	**$ 135,289,000**
			$ -
			$ -
			$ -
			$ -
Total Funding Reasonably Available =	**$ 135,289,000**	**$ -**	**$ 135,289,000**
Total Unfunded Needs (or Short Term Carryover) =	**$ -**	**$ (734,766,000)**	**$ (734,766,000)**
Note 1 : Green highlighted projects above can be funded in the constrained funding analysis			

Note 2 : Un-highlighted projects above cannot be funded. New funding sources will need to be identified or improvement will be developer funded.
Note 3 : Long term projects are escalated by 2.5%

TABLE
Shasta Regional Transportation Agency
Summary of Projects - Active Transportation

Project Number	REGIONAL TRANSPORTATION PROJECTS	SHORT TERM TOTAL EST COST OF PROJECT	LONG TERM TOTAL EST COST OF PROJECT	PROJECT BAND	PROJECT TYPE	EXPECTED FUNDING SOURCES
1	151, Begin PM 5.4, End PM 5.9, Shasta Lake City from 0.5 mile west to 0.4 mile east of Poplar Lane	$ 2,000,000		(2016-2025)	Construct curb ramps, reconstruct sidewalks and possibly add sidewalks and adjust traffic signal pedestrian buttons.	SHOPP
	Total Short Term Needs =	**$ 2,000,000**				
2	Lake Blvd (SR 299), between SR 273 and Interstate 5, Begin PM 24.238, End PM 24.822, Complete Streets gap closure for multimodal use facilities and aesthetic treatments		$ 2,560,000	(2026-2035)	Bicycle and pedestrian, complete streets	SHOPP/ATP
3	Route 299, Begin PM 16.5, End PM 18.3, From Old Shasta to Whiskeytown NRA, Provide westbound truck climbing lane and bike lane.		$ 1,536,000	(2026-2035)	Bicycle and pedestrian, truck climbing lane	SHOPP/ATP
4	Entire length of SR 273, Class II Bike Lane (including railroad crossing)		$ 15,361,000	(2026-2035)	construct bike lanes	SHOPP/ATP
5	Route 273, Begin PM 3.812, End PM 11.1, various locations in high pedestrian areas, Pedestrian Facilities - Consistent with ADA and Caltrans Design Standards		$ 8,961,000	(2026-2035)		SHOPP/ATP
	Total Long Term Fundable Needs =		**$ -**			

DESCRIPTION	Short (2016-2025)	Long (2026-2035)	Total
Funding Needed By Short and Long Range Bands	**$ 2,000,000**	**$ 28,418,000**	**$ 30,418,000**
Recap of Expected/Estimated/Unknown Resources			
Active Transportation Program (ATP) =	**200,000**	**$ -**	**$ 200,000**
State Highway Operations and Protection Program (SHOPP) =	**1,800,000**	**$ -**	**$ 1,800,000**
			$ -
			$ -
			$ -
Total Funding Reasonably Available =	**$ 2,000,000**	**$ -**	**$ 2,000,000**
Total Unfunded Needs (or Short Term Carryover) =	**$ -**	**$ (28,418,000)**	**$ (28,418,000)**

Note 1 : Green highlighted projects above can be funded in the constrained funding analysis

Note 2 : Un-highlighted projects above cannot be funded. New funding sources will need to be identified or improvement will be developer funded.

Note 3 : Long term projects are escalated by 2.5%

TABLE
Shasta Regional Transportation Agency
Summary of Projects - Operations and Rehabilitation
CALTRANS

Project Number	REGIONAL TRANSPORTATION PROJECTS	SHORT TERM TOTAL EST COST OF PROJECT	LONG TERM TOTAL EST COST OF PROJECT	PROJECT BAND	PROJECT TYPE/(PROJECT INTENT)	EXPECTED FUNDING SOURCES
1	I-5, Start PM/End PM 15.43, 06-0126G NS-W44 Connector	$ 2,000,000		(2016-2025)	Increase VC	SHOPP
2	I-5, Start PM/End PM 15.43, 06-0126L East Redding Separation	$ 2,000,000		(2016-2025)	Increase VC	SHOPP
3	I-5, Start PM/End PM 15.43, 06-0126R East Redding Separation	$ 2,000,000		(2016-2025)	Increase VC	SHOPP
4	SR 44, At various locations	$ 2,000,000		(2016-2025)	Rumble strips	SHOPP
5	I-5, Start/End PM 31.1, North of Shasta Lake City - O'Brien SRRA	$ 3,100,000		(2016-2025)	Upgrade sewage system	SHOPP
6	Route 5, Begin PM Var, End PM Var, In Shasta County at various locations on Interstate 5	$ 2,300,000		(2016-2025)	Upgrade MBGR and possibly flatten some slopes	SHOPP
7	Route 299, Begin PM 7.6, End PM 18.3, 1.5 miles west of Crystal Creek Road to Buell Alley	$ 20,410,000		(2016-2025)	Rehabilitate Roadway	SHOPP
8	Route 299, Begin PM 77.8, End PM 79.6, Near Burney	$ 6,204,000		(2016-2025)	Rehabilitate Roadway	SHOPP
9	SR 299, Start PM 60/End PM 67.9, In Shasta County	$ 6,263,000		(2016-2025)	Hatchet Mtn CAP M	SHOPP
10	Route 273 GAPS - SR 273, Start PM 3.8/End PM7.1; Start PM 11.0/End PM12.7	$ 14,652,000		(2016-2025)	CAPM	SHOPP
11	Route 5, In Shasta County at various locations on Interstate 5, Relocate roadside facilities and install hardscaping in high exposure areas.	$ 2,600,000		(2016-2025)	Relocate roadside facilities and install hardscaping in high exposure areas.	SHOPP
12	Route 299, Begin PM 41.5, End PM 55.2, Safety Device Paving and Pullouts	$ 600,000		(2016-2025)	Safety Device Paving and Pullouts	SHOPP
13	SR 44, Start/End PM 34.7, Near the town of Shingletown - Shingletown SRRA	$ 1,800,000		(2016-2025)	Upgrade sewage system	SHOPP
14	SR 299, Start/End PM 60.6, Hillcrest	$ 4,200,000		(2016-2025)	Upgrade sewage system	SHOPP
15	I-5, Start/End PM 43.2, Lakehead	$ 4,200,000		(2016-2025)	Upgrade sewage system	SHOPP
16	SR 273, Start/End PM 14.77, RR U/P	$ 2,000,000		(2016-2025)	Vertical Clearance / Horizontal Clearance	SHOPP
17	I-5, Start/End PM 29.32, 06-0130R Turntable Bay Road OC	$ 766,000		(2016-2025)	Rail Upgrade	SHOPP
18	SR 44, Start PM 65.4/End PM 71.4, Plum Valley Rehab	$ 7,273,000		(2016-2025)	Plum Valley Rehab	SHOPP
19	Route 5, Begin PM R 5.1, End PM R 5.9, Anderson, Upgrade Landscaping - Highway Planting Restoration	$ 1,800,000		(2016-2025)	Upgrade Landscaping - Highway Planting Restoration	SHOPP
20	Route 5, Begin PM R 18, End PM R 22.5, North Redding/Shasta Lake City, Freeway Maintenance Access Roads and Pullouts	$ 600,000		(2016-2025)	Freeway Maintenance Access Roads and Pullouts	SHOPP
21	Route 5, Begin PM R 12.3, End PM R 12.6, I-5 in Redding, Extend NB South Bonneyview on ramp and SB off ramp	$ 3,600,000		(2016-2025)	Ramps	SHOPP
22	Routte 5, Begin PM R 16.1, End PM R 17.1, I-5 in Redding, Construct auxiliary lane on NB I-5 from Hilltop Drive OC to Lake Blvd.	$ 3,900,000		(2016-2025)	Auxiliary lane	SHOPP
23	Route 44, Begin PM 1.4, End PM 1.9, Redding, Construct ramp auxiliary lane from EB Victor on-ramp to EB Shasta View off-ramp	$ 2,000,000		(2016-2025)	Auxiliary lane	SHOPP
	Total Short Term Needs =	**$ 96,268,000**				
24	Route 5, Begin PM R 13.8, End PM R 16.1, Central Redding Interchange, Highway Planting Restoration		$ 1,280,000	(2026-2035)	Highway Planting Restoration	SHOPP
25	Route 44, Begin PM 15.43, End PM 15.43, Central Redding Interchange, Correct Vertical Clearance		$ 10,241,000	(2026-2035)	Correct Vertical Clearance	SHOPP
26	Route 5, Begin PM R 21.2, End PM R 22, Pine Grove to Shasta Lake City, Highway Planting Restoration		$ 1,280,000	(2026-2035)	Highway Planting Restoration	SHOPP
27	Route 5, Begin PM R 5.9, End PM R 11.9, North Anderson to South Redding, New Highway Planting		$ 2,048,000	(2026-2035)	New Highway Planting	SHOPP
28	Route 44, Begin PM 1.5, End PM 3.9, Victor to Old Oregon Trail, New Highway Planting		$ 1,920,000	(2026-2035)	New Highway Planting	SHOPP
29	Route 44, Begin PM 7, End PM 62, Drainage Restoration, Drainage Restoration		$ 2,048,000	(2026-2035)	Drainage Restoration	SHOPP
30	Route 299, Begin PM 24.8, End PM 27.2, 299/5 interchange to Stillwater Bridge, New Highway Planting		$ 2,048,000	(2026-2035)	New Highway Planting	SHOPP
31	Route 5, Begin PM VAR, End PM VAR, Various Locations, Rehabilitate Roadway		$ 128,008,000	(2026-2035)	Rehabilitate Roadway	SHOPP
32	Route 44, Begin PM VAR, End PM VAR, Various Locations, Rehabilitate Roadway		$ 89,606,000	(2026-2035)	Rehabilitate Roadway	SHOPP
33	Route 299, Begin PM VAR, End PM VAR, Various Locations, Rehabilitate Roadway		$ 89,606,000	(2026-2035)	Rehabilitate Roadway	SHOPP
34	Route I-5, Postmile R 7.45 - R 7.67, Direction Southbound, .75 mile north of Ox Yoke Road		$ 785,000	(2026-2035)	Sound wall for sound attenuation	SHOPP
35	Route I-5, Postmile R 8.06- R 8.99, Direction Southbound, 1.25 miles north of Ox Yoke Road		$ 6,080,000	(2026-2035)	Sound wall for sound attenuation	SHOPP
36	Route I-5, Postmile R 8.48 - R 8.9, Direction Northbound, 1.75 miles north of Ox Yoke Road		$ 941,000	(2026-2035)	Sound wall for sound attenuation	SHOPP
37	Route I-5, Postmile R 14.81- R 14.96, Direction Northbound, .5 mile south of Cypress Avenue interchange		$ 561,000	(2026-2035)	Sound wall for sound attenuation	SHOPP
38	Route I-5, Postmile R 15.8 - R 16.0, Direction Northbound, .25 mile south of Hilltop overcrossing		$ 768,000	(2026-2035)	Sound wall for sound attenuation	SHOPP
39	Route 5, Begin PM R 16.1, End PM R 18, Hilltop OC, New Highway Planting		$ 1,280,000	(2026-2035)	New Highway Planting	SHOPP
40	Route 89, Begin PM 29.337, End PM 29.337, Lake Britton R/R UP, Improve clearances		$ 3,840,000	(2026-2035)	Improve clearances	SHOPP
41	Route 89, Begin PM 42.8, End PM 42.8, Pondosa, Proposed Safety Roadside Rest Area from 2000 Master Plan		$ 10,241,000	(2026-2035)	Proposed Safety Roadside Rest Area from 2000 Master Plan	SHOPP
42	Route 89, Begin PM VAR, End PM VAR, Various Locations, Rehabilitate Roadway		$ 83,205,000	(2026-2035)	Rehabilitate Roadway	SHOPP
43	Route 273, Begin PM VAR, End PM VAR, Various Locations, Rehabilitate Roadway		$ 38,403,000	(2026-2035)	Rehabilitate Roadway	SHOPP
44	Route 151, Begin PM VAR, End PM VAR, Various Locations, Rehabilitate Roadway		$ 23,042,000	(2026-2035)	Rehabilitate Roadway	SHOPP
45	Route I-5, Postmile 1.43-1.69, Direction Northbound, .5 mile north of Gas Point interchange		$ 768,000	(2026-2035)	Sound wall for sound attenuation	SHOPP
46	Route I-5, Postmile R 12.1-R 14.5, Direction Northbound, Just north of Churn Creek interchange		$ 7,681,000	(2026-2035)	Sound wall for sound attenuation	SHOPP
47	Route I-5, Postmile R 13.95 - R 14.5, Direction Southbound, Near Hartnell Avenue overcrossing		$ 1,664,000	(2026-2035)	Sound wall for sound attenuation	SHOPP
48	Route 5, Begin PM 42, End PM 66.9, Sacramento River Canyon, Chain on Area Freeway Maintenance Access		$ 4,096,000	(2026-2035)		SHOPP
49	Route 5, various locations in Canyon, Curve improvements at Sidehill Viaduct		$ 25,602,000	(2026-2035)		SHOPP
50	Route 44, Begin PM L 0.8, End PM L 1.3, Redding, Extend #3 auxiliary lane through Sundial Bridge Drive		$ 6,784,000	(2026-2035)		SHOPP
51	Route 44, Begin PM R 10.0, End PM R 13, Millville Horizontal and Vertical Alignment Improvements		$ 11,265,000	(2026-2035)		SHOPP
52	Route 44, Begin PM R 21.4, End PM 32.1, Shingletown, Passing lanes		$ 5,120,000	(2026-2035)		SHOPP
53	Route 273, Begin PM 12.68, End PM 12.68, South Bonneyview Road at 273, Grade separation		$ 3,840,000	(2026-2035)		SHOPP
54	Route 5, Begin PM R 26.27, End PM R 27.46, Extend NB truck climbing lane		$ 3,840,000	(2026-2035)		SHOPP
55	Route 5, Begin PM R 28.9, End PM R 26, Add Southbound Truck Climbing Lane		$ 2,816,000	(2026-2035)		SHOPP
56	Route 5, Begin PM R 31.224, End PM R 32.48, Extend northbound truck climbing lane		$ 4,480,000	(2026-2035)		SHOPP
57	Route 5, Begin PM R 31.968, End PM R 30.606, Extend southbound truck climbing lane		$ 5,120,000	(2026-2035)		SHOPP
58	Route 5, Begin PM R 36.787, End PM R 34.202, Extend southbound truck climbing lane		$ 8,321,000	(2026-2035)		SHOPP
59	Route 5, Begin PM R 37.3, End PM R 38.7, Extend northbound truck climbing lane		$ 4,480,000	(2026-2035)		SHOPP
60	Route 5, Begin PM R 49.213, End PM R 49.754, Extend northbound truck climbing lane		$ 1,920,000	(2026-2035)		SHOPP
61	Route 36, Begin PM 0.0, End PM 3.5, at various locations, Shoulder widenings and curve improvements		$ 8,961,000	(2026-2035)	shoulder widening; curve improvements	SHOPP
62	Route 44, Begin PM 0.0, End PM 71.39, at various locations, Achieve concepts shoulders		$ 25,602,000	(2026-2035)		SHOPP
63	Route 44, Begin PM R 14.8, End PM R 15.9, Passing lanes		$ 4,480,000	(2026-2035)		SHOPP
64	Route 44, Begin PM 52.7, End PM 53.3, Passing lane		$ 1,920,000	(2026-2035)		SHOPP
65	Route 44, Begin PM 65.2, End PM 66.2, Passing lane		$ 3,840,000	(2026-2035)		SHOPP
66	Route 89 various locations along route, establish eight-foot (or greater) treated shoulders		$ 35,842,000	(2026-2035)		SHOPP
67	Route 89, Begin PM 21.719, End PM 21.719, SR 89/SR 299 Intersection, signalize intersection (conventional signal)		$ 1,920,000	(2026-2035)		SHOPP
68	Route 89, Begin PM 25.3, End PM 31.7, Near Britton Bridge - Locations TBD, Add northbound and southbound passing lanes		$ 4,480,000	(2026-2035)		SHOPP
69	Route 273, Begin PM 15.92, End PM 16.83, Cypress Avenue to Market Street/Eureka Way, open road linkages through the Promenade (TBD)		$ 9,601,000	(2026-2035)		SHOPP
70	Route 273, Begin PM 15.92, End PM 16.83, Cypress Avenue to Market Street/Eureka Way, Implement adaptive signal control technology		$ 3,200,000	(2026-2035)		SHOPP
71	Route 299, Route PM 0.0, End PM 24.09, various locations, Achieve concept shoulders		$ 6,400,000	(2026-2035)		SHOPP
72	Route 299, Begin PM 20.5, End PM 21.7, in Old Shasta, Construct two-way left turn lane		$ 1,536,000	(2026-2035)		SHOPP
73	Route 299, Begin PM 27.9, End PM 32, Bella Vista, Two-Way Left Turn Lane		$ 5,120,000	(2026-2035)		SHOPP
74	Route 299, Begin PM 37.5, End PM 38.5, West of Javelina Road, Eastbound and westbound passing lanes		$ 4,480,000	(2026-2035)		SHOPP
75	Route 299, Begin PM 41, End PM 57, Near Diddy Wells, Round Mountain and Montgomery Creek, Turnouts or Truck Climbing Lanes along steep grades		$ 3,840,000	(2026-2035)		SHOPP
76	Route 299, Begin PM R 51.51, End PM 57.219, Near Dubois Road and Woodhill Drive, Extend Passing Lanes		$ 1,920,000	(2026-2035)		SHOPP
77	Route 299, Begin PM 53, End PM 59, Round Mountain and Montgomery Creek, Traffic Calming		$ 3,200,000	(2026-2035)		SHOPP
78	Route 299, Begin PM 80.09, End PM 99.36, Pit 1 Grade and Rocky Ledge, Shoulder and Lane Widening		$ 21,761,000	(2026-2035)		SHOPP
79	Route 299, Begin PM 88.4, End PM 90.4, Pit 1 Grade, Turnouts or Truck Climbing Lanes		$ 6,400,000	(2026-2035)		SHOPP
80	Route 5, Begin PM R 14.5, End PM R 16.2, I-5/44 Interchange, Reconfigure interchange: Direct Connector Flyover Ramp		$ 65,284,000	(2026-2035)	reconfigure interchange	SHOPP
	Total Long Term Fundable Needs =		**$ 328,085,000**			

DESCRIPTION	Short (2016-2025)	Long (2026-2035)	Total
Funding Needed By Short and Long Range Bands	**$ 96,268,000**	**$ 814,815,000**	**$ 911,083,000**
Recap of Expected/Estimated/Unknown Resources			
State Highway Operations and Protection Program (SHOPP) =	**$ 96,268,000**	**$ 360,985,000**	**$ 457,253,000**
Total Funding Reasonably Available =	**$ 96,268,000**	**$ 360,985,000**	**$ 457,253,000**
Total Unfunded Needs (or Short Term Carryover) =	**$ -**	**$ (453,830,000)**	**$ (453,830,000)**
Note 1 : Green highlighted projects above can be funded in the constrained funding analysis			

Note 2 : Un-highlighted projects above cannot be funded. New funding sources will need to be identified or improvement will be developer funded.
Note 3 : Long term projects are escalated by 2.5%

TABLE
Shasta Regional Transportation Agency
Summary of Projects - Regional Capacity

Project Count	REGIONAL TRANSPORTATION PROJECTS	SHORT TERM TOTAL EST COST OF PROJECT	LONG TERM TOTAL EST COST OF PROJECT	PROJECT BAND	PROJECT TYPE/(PROJECT INTENT)	EXPECTED FUNDING SOURCES
1	Route 5, Begin PM R 9.2, End PM, R 11.7, .6 mile south of Knighton Road Overcrossing to 0.4 mile south of Churn Creek Road Overcrossing, Redding to Anderson 6-Lane Phase 1	$ 13,108,000		(2016-2025)	add capacity, fills a gap	STIP
	Total Short Term Needs =	**$ 13,108,000**				
2	Route 5, Begin PM R 3.8, End PM R 9.7 0.2 mile south of North Street to Knighton Road Overcrossing, Redding to Anderson 6-Lane Phase 2		$ 34,367,000	(2026-2035)	add capacity, fills a gap	STIP/ Other
3	Route 5, Deschutes Road to south of North Street, Redding to Anderson 6-Lane Phase 3		$ 54,590,000	(2026-2035)	add capacity, fills a gap	Local/ RIP/STIP
4	Route 5, Begin SB PM R 15.4, End SB PM R 18.5, Begin NB PM 17.5, End NB PM 18.5, 0.2 mile north of Route 5/299 separation to N Redding Interchange, Expand freeway to six lanes		$ 43,894,000	(2026-2035)	add capacity	STIP
5	Route 5, Begin PM R 22.1, End PM R 27.46, SR 151 to Mtn Gate Overcrossing, Expand freeway to six lanes		$ 29,263,000	(2026-2035)	add capacity	STIP
6	Route 44, Begin PM 2.6/, End PM 7, Highway 44 - Stillwater Project: Airport Road to Deschutes Road. Expand facility from 2E to 4F.		$ 81,925,000	(2026-2035)	add capacity	unknown
	Total Long Term Fundable Needs =		**$ 34,367,000**			

DESCRIPTION	Short (2016-2025)	Long (2026-2035)	Total
Funding Needed By Short and Long Range Bands	**$ 13,108,000**	**$ 244,039,000**	**$ 257,147,000**
Recap of Expected/Estimated/Unknown Resources			
State Transportation Improvement Program (STIP) =	**13,108,000**	**$ 34,367,000**	**$ 47,475,000**
			$ -
			$ -
			$ -
			$ -
Total Funding Reasonably Available =	**$ 13,108,000**	**$ 34,367,000**	**$ 47,475,000**
Total Unfunded Needs (or Short Term Carryover) =	**$ -**	**$ (209,672,000)**	**$ (209,672,000)**

Note 1 : Green highlighted projects above can be funded in the constrained funding analysis

Note 2 : Un-highlighted projects above cannot be funded. New funding sources will need to be identified or improvement will be developer funded.

Note 3 : Long term projects are escalated by 2.5%

TABLE
Shasta Regional Transportation Agency
Summary of Projects - Regional ITS

Project Count	REGIONAL TRANSPORTATION PROJECTS	SHORT TERM TOTAL EST COST OF PROJECT	LONG TERM TOTAL EST COST OF PROJECT	PROJECT BAND	PROJECT TYPE/(PROJECT INTENT)	EXPECTED FUNDING SOURCES
1	I-5, south of Fawndale Road and north of Bowman Road; Bluetooth Pilot Test at urban area Gateways	$ 20,000		(2016-2025)	ITS	SHOPP
2	I-5, south of Fawndale Road and north of Bowman Road; Install O-D stations at I-5 Urban Gateways	$ 196,000		(2016-2025)	ITS	SHOPP
3	CA-299, west of French Gulch Rd and east of Dry Creek Rd.; CA-44, east of Deschutes Rd.; Install O-D stations at CA-299 and CA-44 Urban Gateways	$ 294,000		(2016-2025)	ITS	SHOPP
4	I-5 from CA-44 to Knighton Road, Install new permanent mainline station and new permanent on and off-ramp station along I-5. **(Detector Project 1)**	$ 567,000		(2016-2025)	ITS	SHOPP
5	CA-44/I-5 interchange, Install new permanent mainline station and new permanent on and off-ramp station along CA-44. **(Detector Project 1)**	$ 284,000		(2016-2025)	ITS	SHOPP
6	I-5, Ox Yoke Road to Gas Point Road (South Gateway), Install new permanent mainline station and new permanent on and off-ramp station along I-5 **(Detector Project 2)**	$ 496,000		(2016-2025)	ITS	SHOPP
	Total Short Term Needs =	**$ 1,857,000**				
7	I-5, Oasis Road to CA-299, Install new permanent mainline station and new permanent on and off-ramp station along I-5 **(Detector Project 3)**		$ 544,000	(2026-2035)	ITS	SHOPP
8	CA-299/Interstate 5 Interchange, Upgrade existing mainline station to a permanent station and install new permanent on and off-ramp station along CA-299 **(Detector Project 3)**		$ 84,000	(2026-2035)	ITS	SHOPP
9	CA-299/Interstate 5 Interchange, Install new permanent mainline station and new permanent on and off-ramp station along CA-299 **(Detector Project 3)**		$ 91,000	(2026-2035)	ITS	SHOPP
10	I-5, Fawndale Road (North Gateway) to Pine Grove Avenue, Install new permanent mainline station and new permanent on and off-ramp station along I-5 **(Detector Project 4)**		$ 635,000	(2026-2035)	ITS	SHOPP
11	I-5, Fawndale Road (North Gateway) to Pine Grove Avenue, Upgrade existing mainline station to a permanent station and install new permanent on and off-ramp station along I-5 **(Detector Project 4)**		$ 84,000	(2026-2035)	ITS	SHOPP
12	CA-44, Shasta View Drive to Airport Drive, Install new permanent mainline station and new permanent on and off-ramp station along CA-44 **(Detector Project 5)**		$ 364,000	(2026-2035)	ITS	SHOPP
13	CA-299, Churn Creek Road to Old Oregon Trail, Install new permanent mainline station and new permanent on and off-ramp station along CA-299 **(Detector Project 6)**		$ 182,000	(2026-2035)	ITS	SHOPP
14	CA-299 at Deschutes Road, Upgrade existing profile station to a permanent profile station **(Detector Project 7)**		$ 84,000	(2026-2035)	ITS	SHOPP
15	CA-44 at Deschutes Road, Upgrade existing mainline station to a permanent station and install new permanent on and off-ramp station along CA-44 **(Detector Project 7)**		$ 170,000	(2026-2035)	ITS	SHOPP
16	I-5: CA-44 to Knighton Road; CA-44: CA-44/I-5 Interchange, Convert stations to TMS		$ 101,000	(2026-2035)	ITS	SHOPP
17	I-5: Ox Yoke Road to Gas Point Road, Convert stations to TMS		$ 59,000	(2026-2035)	ITS	SHOPP
18	I-5: Oasis Road to CA-299, CA-299: CA-299/I-5 Interchange, Convert stations to TMS		$ 68,000	(2026-2035)	ITS	SHOPP
19	I-5: Fawndale Road to Pine Grove Avenue, Convert stations to TMS		$ 68,000	(2026-2035)	ITS	SHOPP
20	CA-44: Shasta View Drive to Airport Drive, Convert stations to TMS		$ 33,000	(2026-2035)	ITS	SHOPP
21	CA-299: Churn Creek Road to Old Oregon Trail, Convert stations to TMS		$ 17,000	(2026-2035)	ITS	SHOPP
22	CA-299 at Deschutes Road, CA-44 at Deschutes Road, Convert stations to TMS		$ 26,000	(2026-2035)	ITS	SHOPP
	Total Long Term Fundable Needs =		**$ 2,238,000**			

DESCRIPTION	Short (2016-2025)	Long (2026-2035)	Total
Funding Needed By Short and Long Range Bands	**$ 1,857,000**	**$ 2,610,000**	**$ 4,467,000**
Recap of Expected/Estimated/Unknown Resources			
State Highway Operations and Protection Program (SHOPP) =	**1,857,000**	**$ 2,238,000**	**$ 4,095,000**
			$ -
			$ -
			$ -
			$ -
Total Funding Reasonably Available =	**$ 1,857,000**	**$ 2,238,000**	**$ 4,095,000**
Total Unfunded Needs (or Short Term Carryover) =	**$ -**	**$ (372,000)**	**$ (372,000)**
Note 1 : Green highlighted projects above can be funded in the constrained funding analysis			

Note 2 : Un-highlighted projects above cannot be funded. New funding sources will need to be identified or improvement will be developer funded.
Note 3 : Long term projects are escalated by 2.5%

TABLE
Shasta Regional Transportation Agency
Summary of Projects - Interchanges
SHASTA COUNTY

Project Number	REGIONAL TRANSPORTATION PROJECTS	SHORT TERM TOTAL EST COST OF PROJECT	LONG TERM TOTAL EST COST OF PROJECT	FUNDABLE PROJECT BAND	PROJECT TYPE/INTENT	EXPECTED FUNDING SOURCES
1	Route 44, Postmile 5.8, Stillwater Road - New interchange	$ 22,000,000		(2016-2025)	Interchange	SHOPP/Local/Other
	Total Short Term Needs =	**$ 22,000,000**				
2	I-5 Main St Interchange Exit 665 - Connect to Rhonda, add roundabouts		$ 21,955,000	(2026-2035)	Interchange	SHOPP/Local/Other
3	Reconfigure Knighton Road Over-Crossing at Interchange Exit 673		$ 51,627,000	(2026-2035)	Interchange	Unfunded or Developer
4	I-5 Gas Point Interchange Improvements exit 664		$ 27,463,000	(2026-2035)	Interchange	Unfunded or Developer
5	Improve SR 299 Old Oregon Trail Interchange - Exit 143		$ 3,200,000	(2026-2035)	Interchange	Unfunded or Developer
	Total Long Term Fundable Needs =		**$ 21,955,000**			

DESCRIPTION	Short (2016-2025)	Long (2026-2035)	Total
Funding Needed By Short and Long Range Bands	**$ 22,000,000**	**$ 104,245,000**	**$ 126,245,000**
Recap of Expected/Estimated/Unknown Resources			
Local/Other =	**9,400,000**	**10,977,500**	**$ 20,377,500**
State Highway Operations and Protection Program (SHOPP) =	**9,400,000**	**10,977,500**	**$ 20,377,500**
High Priority Projects (HPP) =	**3,200,000**		**$ 3,200,000**
			$ -
			$ -
Total Funding Reasonably Available =	**$ 22,000,000**	**$ 21,955,000**	**$ 43,955,000**
Total Unfunded Needs (or Short Term Carryover) =	**$ -**	**$ (82,290,000)**	**$ (82,290,000)**
Note 1 : Green highlighted projects above can be funded in the constrained funding analysis			

Note 2 : Un-highlighted projects above cannot be funded. New funding sources will need to be identified or improvement will be developer funded.
Note 3 : Long term projects are escalated by 2.5%

TABLE
Shasta Regional Transportation Agency
Summary of Projects - Capacity Increasing
SHASTA COUNTY

Project Number	REGIONAL TRANSPORTATION PROJECTS	SHORT TERM TOTAL EST COST OF PROJECT	LONG TERM TOTAL EST COST OF PROJECT	FUNDABLE PROJECT BAND	PROJECT TYPE/INTENT	EXPECTED FUNDING SOURCES
1	Gas Point Road from New N-S to Rhonda - Widen to 4 lanes	$ 4,789,000		(2021-2025)	Capacity Increase	Local/Other
	Total Short Term Needs =	$ 4,789,000.00				
2	Rhonda Road Gas Point - I-5 Main New realigned 3 lane road		$ 8,799,000	(2026-2035)	Capacity Increase	Local/Other
3	New N-S Road - First St to New E-W Construct to 3 lanes		$ 6,001,000	(2026-2035)	Capacity Increase	Local/Other
4	New E-W Road -New N-S to Rhonda Construct 3 lane road		$ 3,017,000	(2026-2035)	Capacity Increase	Local/Other
5	Churn Ck Rd, Hartmeyer to Huntington, Widen, Realign		$ 4,096,000	(2026-2035)	Capacity Increase	Local/Other
6	Deschutes Road Widen to 3-Lanes, Old 44 Drive to Boyle Road		$ 3,603,000	(2026-2035)	Capacity Increase	Local/Other
7	First Street Widen from 2 to 5 lanes, N/S Arterial to Overcrossing		$ 720,000	(2026-2035)	Capacity Increase	Local/Other
8	New N-S Road - New E-W to Rhonda		$ 16,330,000	(2026-2035)	Capacity Increase	Unfunded or Developer
9	Deschutes Road Widen to 3-Lanes, Palo Cedro to Dersch Road		$ 6,400,000	(2026-2035)	Capacity/Safety	Unfunded or Developer
10	Dry Creek Road Shoulder Widening, Deschutes Rd to Bear Mtn Rd		$ 5,440,000	(2026-2035)	Capacity Increase	Unfunded or Developer
11	Oasis Road Widen to 4-Lanes, Randolph to Old Oasis		$ 1,216,000	(2026-2035)	Capacity Increase	Unfunded or Developer
12	Black Ranch Road Extension		$ 3,008,000	(2026-2035)	New Facility	Unfunded or Developer
13	Cottonwood - Front, Magnolia, Pine and Chestnut St Roundabouts		$ 1,123,000	(2026-2035)	Capacity Increase	Unfunded or Developer
14	Knighton Road West		$ 37,122,000	(2026-2035)	New Facility	Unfunded or Developer
15	Intermountain Road, SR 299 to Bear Mtn Road		$ 9,076,000	(2026-2035)	New Facility	Unfunded or Developer
16	East Stillwater Way, Shoulder Widen and Extend to Bear Mtn Road		$ 6,477,000	(2026-2035)	New Facility	Unfunded or Developer
	Total Long Term Fundable Needs =		**$ 26,236,000**			

DESCRIPTION	Short (2016-2025)	Long (2026-2035)	Total
Funding Needed By Short and Long Range Bands	**$ 4,789,000**	**$ 112,428,000**	**$ 117,217,000**
Recap of Expected/Estimated/Unknown Resources			
Local/Other =	**4,789,000**	**26,236,000**	**$ 31,025,000**
			$ -
			$ -
			$ -
			$ -
Total Funding Reasonably Available =	**$ 4,789,000**	**$ 26,236,000**	**$ 31,025,000**
Total Unfunded Needs (or Short Term Carryover) =	**$ -**	**$ (86,192,000)**	**$ (86,192,000)**
Note 1 : Green highlighted projects above can be funded in the constrained funding analysis			

Note 2 : Un-highlighted projects above cannot be funded. New funding sources will need to be identified or improvement will be developer funded.
Note 3 : Long term projects are escalated by 2.5%

TABLE
Shasta Regional Transportation Agency
Summary of Projects - Safety
SHASTA COUNTY

Project Number	REGIONAL TRANSPORTATION PROJECTS	SHORT TERM TOTAL EST COST OF PROJECT	LONG TERM TOTAL EST COST OF PROJECT	FUNDABLE PROJECT BAND	PROJECT TYPE/INTENT	EXPECTED FUNDING SOURCES
1	Olinda Road Shoulder Widening, Sammy Lane to Red Leaf Lane	$ 1,100,000		(2016-2025)	Safety	HSIP/Local/Other
2	Hawthorne Ave Shoulder Widening, Happy Valley Rd to Dixieland Lane	$ 750,000		(2016-2025)	Safety	HSIP/Local/Other
3	Deschutes Road Shoulder Widening, Brundage Rd. to Balls Ferry Rd.	$ 2,000,000		(2016-2025)	Safety	HSIP/Local/Other
4	Canyon Road Bike Lanes, Valley View Rd to China Gulch	$ 600,000		(2016-2025)	Safety	HSIP/Local/Other/ATP
5	Canyon Road Bike Lanes, SR 273 to Valley View Rd	$ 650,000		(2016-2025)	Safety	HSIP/Local/Other/ATP
6	Lake Boulevard Roundabout/Signal at Pine Grove Avenue	$ 500,000		(2016-2025)	Intersection	HSIP/Local/Other
7	Happy Valley Road Shoulder Widening and Realign, Palm Avenue to Warwick St	$ 1,875,000		(2016-2025)	Safety	HSIP/Local/Other
8	Placer Road, Shoulder Widening and Realign, Muletown Rd to Leaning Pine Rd	$ 650,000		(2016-2025)	Safety	HSIP/Local/Other
9	Churn Creek Road, Shoulder Widening from Rancho to Knighton	$ 1,500,000		(2016-2025)	Safety	HSIP/Local/Other
10	4th Street Median Lane, Main Street to Balls Ferry Road	$ 1,500,000		(2016-2025)	Capacity/Safety	HSIP/Local/Other
11	Bear Mountain Road - Shoulder Widening and Improve Alignment	$ 1,500,000		(2016-2025)	Safety	HSIP/Local/Other
12	Old Alturas Road, Shoulder Widening and Realign, Old Oregon Tr to Stillwater Ck	$ 490,000		(2016-2025)	Safety	HSIP/Local/Other
13	Old Alturas/Boyle Roads, Shoulder Widening, Stillwater Ck to Deschutes Rd	$ 1,500,000		(2016-2025)	Safety	HSIP/Local/Other
14	Placer Road at Swasey Drive, Roundabout	$ 500,000		(2016-2025)	Safety	Unfunded or Developer
	Total Short Term Needs =	**$ 15,115,000**				
15	Canyon Road at China Gulch Drive Roundabout/Signal		$ 640,000	(2026-2035)	Intersection	HSIP/Local/Other
16	Old Oregon Trail at Old Alturas Roundabout/Signal		$ 640,000	(2026-2035)	Intersection	HSIP/Local/Other
17	Churn Creek Road, Shoulder Widening from Knighton to Airport		$ 1,920,000	(2026-2035)	Safety	HSIP/Local/Other
18	Clear Creek Road Shoulder Widening, 273 to Honey Bee		$ 1,920,000	(2026-2035)	Safety	HSIP/Local/Other
19	Old 44 Drive Shoulder Widening, COR to Deschutes Road		$ 1,920,000	(2026-2035)	Safety	HSIP/Local/Other
20	Old 44 Drive Shoulder Widening and Realignment, Silver Bridge Rd to Oak Run Rd		$ 1,920,000	(2026-2035)	Safety	HSIP/Local/Other
21	Swasey Drive Shoulder Widening, SH 299 to Placer		$ 3,955,000	(2026-2035)	Safety	HSIP/Local/Other
22	Lower Springs Road Shoulder Widening, SH 299 to Swasey Drive		$ 1,920,000	(2026-2035)	Safety	HSIP/Local/Other
23	Deschutes Road at Boyle and Old Deschutes Rd Roundabout/Signal		$ 640,000	(2026-2035)	Intersection	HSIP/Local/Other
24	Cottonwood - Fourth Street and Locust Street Roundabout/Signal		$ 640,000	(2026-2035)	Intersection	HSIP/Local/Other
25	Quartz Hill and Keswick Dam Roads, Roundabout/Signal		$ 640,000	(2026-2035)	Intersection	HSIP/Local/Other
26	Cottonwood - Happy Valley at Gas Point Road Roundabout/Signal		$ 640,000	(2026-2035)	Intersection	HSIP/Local/Other
27	Deschutes Rd @ SR 44 Ramps and Old 44 Dr, Roundabouts/Signals		$ 2,560,000	(2026-2035)	Intersection	HSIP/Local/Other
	Total Long Term Fundable Needs =		**$ 19,955,000**			

DESCRIPTION	Short (2016-2025)	Long (2026-2035)	Total
Funding Needed By Short and Long Range Bands	**$ 15,115,000**	**$ 19,955,000**	**$ 35,070,000**
Recap of Expected/Estimated/Unknown Resources			
Highway Safety Improvement Program (HSIP) =	**12,847,750**	**$ 16,961,750**	**$ 29,809,500**
Local/Other =	**1,511,500**	**2,993,250**	**$ 4,504,750**
Active Transportation Program (ATP) =	**755,750**	**$ -**	**$ 755,750**
			$ -
			$ -
			$ -
Total Funding Reasonably Available =	**$ 15,115,000**	**$ 19,955,000**	**$ 35,070,000**
Total Unfunded Needs (or Short Term Carryover) =	**$ -**	**$ -**	**$ -**

Note 1 : Green highlighted projects above can be funded in the constrained funding analysis

Note 2 : Un-highlighted projects above cannot be funded. New funding sources will need to be identified or improvement will be developer funded.

Note 3 : Long term projects are escalated by 2.5%

TABLE
Shasta Regional Transportation Agency
Summary of Projects - Bridge
SHASTA COUNTY

Project Number	REGIONAL TRANSPORTATION PROJECTS	SHORT TERM TOTAL EST COST OF PROJECT	LONG TERM TOTAL EST COST OF PROJECT	PROJECT BAND	PROJECT TYPE/INTENT	EXPECTED FUNDING SOURCES
1	Spring Creek Road @ Fall River - Replace Bridge	$ 2,122,000		(2016-2025)	Bridge Replacement	HBP/Local/Other
2	Cassel Fall River Road @ Pit River - Replace Bridge	$ 6,238,000		(2016-2025)	Bridge Replacement	HBP/Local/Other
3	Soda Creek Road @ Soda Creek - Replace Bridge	$ 1,255,000		(2016-2025)	Bridge Replacement	HBP/Local/Other
4	Gas Point Road at No Name Ditch - Replace Bridge	$ 1,500,000		(2016-2025)	Bridge Replacement	HBP/Local/Other
5	Lower Gas Pt Road @ NFk Cottonwood Creek - Replace Bridge	$ 2,344,000		(2016-2025)	Bridge Replacement	HBP/Local/Other
6	Ash Creek Road @ Sacramento River overflow - Replace Bridge	$ 1,399,000		(2016-2025)	Bridge Replacement	HBP/Local/Other
7	Parkville Road @ Ash Creek - Replace Bridge	$ 1,280,000		(2016-2025)	Bridge Replacement	HBP/Local/Other
8	Inwood Road @ South Fork Bear Creek - Replace Bridge	$ 1,066,000		(2016-2025)	Bridge Replacement	HBP/Local/Other
9	Island Road @ Little Tule River - Replace Bridge	$ 520,000		(2016-2025)	Bridge Replacement	HBP/Local/Other
10	Ponderosa Way @ NFk Bear Creek - Replace Bridge	$ 860,000		(2016-2025)	Bridge Replacement	HBP/Local/Other
11	White House Road @ ACID Canal - Replace Bridge	$ 440,000		(2016-2025)	Bridge Replacement	HBP/Local/Other
12	Soda Creek Road @ SFk Soda Creek - Replace Bridge	$ 640,000		(2016-2025)	Bridge Replacement	HBP/Local/Other
13	Ponderosa Way @ Snow Creek - Replace Bridge	$ 730,000		(2016-2025)	Bridge Replacement	HBP/Local/Other
14	Bear Mtn. Road @ Deep Hole Creek - Replace Bridge	$ 950,000		(2016-2025)	Bridge Replacement	HBP/Local/Other
15	Holiday Rd @ Spr. Branch Stillwater Crk - Replace Bridge	$ 640,000		(2016-2025)	Bridge Replacement	HBP/Local/Other
16	Adobe Road @ Anderson Creek - Replace Bridge	$ 2,460,000		(2016-2025)	Bridge Replacement	HBP/Local/Other
17	Oak Run Road @ Oak Run Crk - 6C-188 - Replace Bridge	$ 2,380,000		(2016-2025)	Bridge Replacement	HBP/Local/Other
18	Lakeshore Road @ Doney Crk - Replace Bridge	$ 7,830,000		(2016-2025)	Bridge Replacement	HBP/Local/Other
19	Lakeshore Road @ Charley Crk - Replace Bridge	$ 6,480,000		(2016-2025)	Bridge Replacement	HBP/Local/Other
20	Ponderosa Way @ Snow Creek - Replace Bridge	$ 830,000		(2016-2025)	Bridge Replacement	HBP/Local/Other
	Total Short Term Needs =	**$ 41,964,000**				
21	Main Street @ Castle Creek - Replace Bridge		$ 2,637,000	(2016-2025)	Bridge Replacement	HBP/Local/Other
22	Pittville Road @ Pit River - Replace Bridge		$ 4,660,000	(2016-2025)	Bridge Replacement	HBP/Local/Other
23	Riverside Road @ Sacramento River - Replace Bridge		$ 2,714,000	(2016-2025)	Bridge Replacement	HBP/Local/Other
24	Park Avenue at Burney Creek - Replace Bridge		$ 896,000	(2016-2025)	Bridge Replacement	HBP/Local/Other
25	La Moine Road @ Slate Creek - Replace Bridge		$ 3,008,000	(2026-2035)	Bridge Replacement	HBP/Local/Other
26	Platina Road @ Arbuckle Gulch - Replace Bridge		$ 1,216,000	(2026-2035)	Bridge Replacement	HBP/Local/Other
27	Gibson Road @ Boulder Creek - Replace Bridge		$ 3,328,000	(2026-2035)	Bridge Replacement	HBP/Local/Other
28	Jackrabbit Flat Rd @ Burney Creek - Replace Bridge		$ 1,446,000	(2026-2035)	Bridge Replacement	HBP/Local/Other
29	Churn Creek Rd @ Churn Creek 6C-86 - Replace Bridge		$ 4,839,000	(2026-2035)	Bridge Replacement	HBP/Local/Other
30	Bland Road @ NF Wilson Creek - Replace Bridge		$ 870,000	(2026-2035)	Bridge Replacement	HBP/Local/Other
31	Westside Road @ Squaw Creek - Replace Bridge		$ 1,946,000	(2026-2035)	Bridge Replacement	HBP/Local/Other
32	Platina Road @ Huling Creek - Replace Bridge		$ 691,000	(2026-2035)	Bridge Replacement	HBP/Local/Other
33	Bland Road @ SF Wilson Creek - Replace Bridge		$ 1,216,000	(2026-2035)	Bridge Replacement	HBP/Local/Other
34	Mineral Road @ Bailey Creek - Replace Bridge		$ 627,000	(2026-2035)	Bridge Replacement	HBP/Local/Other
35	Phillips Road @ Little Cow Crk - Replace Bridge		$ 1,549,000	(2026-2035)	Bridge Replacement	HBP/Local/Other
36	Rock Creek Road @ Bailey Creek - Replace Bridge		$ 1,165,000	(2026-2035)	Bridge Replacement	HBP/Local/Other
37	Sunny Hill Road @ Ducket Creek - Replace Bridge		$ 922,000	(2026-2035)	Bridge Replacement	HBP/Local/Other
38	Trinity Mountain Road @ French Gulch - Replace Bridge		$ 858,000	(2026-2035)	Bridge Replacement	HBP/Local/Other
39	Ponderosa Way @ SFk Cow Creek - Replace Bridge		$ 2,087,000	(2026-2035)	Bridge Replacement	HBP/Local/Other
40	Dersch Road @ Lack Creek - 6C-131 - Replace Bridge		$ 2,266,000	(2026-2035)	Bridge Replacement	HBP
41	Mountain Meadow Road @ Battle Creek - Replace Bridge		$ 947,000	(2026-2035)	Bridge Replacement	HBP
42	Clark Creek Road @ Burney Creek - Replace Bridge		$ 973,000	(2026-2035)	Bridge Replacement	HBP
43	Statton Road @ Salt Creek - Replace Bridge		$ 1,370,000	(2026-2035)	Bridge Replacement	HBP
44	Churn Creek Rd @ Churn Creek 6C-128 - Replace Bridge		$ 8,564,000	(2026-2035)	Bridge Replacement	HBP
45	Gas Point Road @ Antelope Creek - Replace Bridge		$ 2,419,000	(2026-2035)	Bridge Replacement	HBP
46	Tamarack Road @ Burney Creek - Replace Bridge		$ 2,010,000	(2026-2035)	Bridge Replacement	HBP
47	Mears Ridge Road @ Mears Creek - Replace Bridge		$ 3,187,000	(2026-2035)	Bridge Replacement	HBP
48	Nelson Creek Road @ Nelson Creek - Replace Bridge		$ 2,355,000	(2026-2035)	Bridge Replacement	HBP
49	Meyers Road @ Dry Creek - Replace Bridge		$ 1,895,000	(2026-2035)	Bridge Replacement	HBP
50	Soda Creek Road @ Soda Creek, 6C-139 - Replace Bridge		$ 1,510,000	(2026-2035)	Bridge Replacement	HBP
51	Platina Road @ NFk Cottonwood Creek - Replace Bridge		$ 2,035,000	(2026-2035)	Bridge Replacement	HBP
52	Gas Point Road @ Dry Creek - Replace Bridge		$ 2,202,000	(2026-2035)	Bridge Replacement	HBP
53	Soda Creek Road @ Sacramento River - Replace Bridge		$ 4,493,000	(2026-2035)	Bridge Replacement	HBP
54	Cline Gulch @ Clear Creek - Replace Bridge		$ 4,442,000	(2026-2035)	Bridge Replacement	HBP
55	Deer Flat Road @ NF Battle Creek - Replace Bridge		$ 973,000	(2026-2035)	Bridge Replacement	HBP
56	Big Bend Road @ Roaring Creek - Replace Bridge		$ 934,000	(2026-2035)	Bridge Replacement	HBP
57	Middle Creek Road at Middle Creek - Replace Bridge		unknown	beyond 2035	Bridge Replacement	HBP
58	Ash Creek Road at Ash Creek Tributary - Replace Bridge		unknown	beyond 2035	Bridge Replacement	HBP
59	Fenders Ferry Road at Snow Creek - Replace Bridge		unknown	beyond 2035	Bridge Replacement	HBP
60	Rock Creek Road at Rock Creek - Replace Bridge		unknown	beyond 2035	Bridge Replacement	HBP
61	Highland Lakes Road at Boulder Creek - Replace Bridge		unknown	beyond 2035	Bridge Replacement	HBP
62	Placer Road at Dry Creek - Replace Bridge		unknown	beyond 2035	Bridge Replacement	HBP
63	Cline Gulch Road at Cline Gulch - Replace Bridge		unknown	beyond 2035	Bridge Replacement	HBP
64	Tamarack Road at Old Cow Creek - Replace Bridge		unknown	beyond 2035	Bridge Replacement	HBP
	Total Long Term Fundable Needs =		**$ 36,675,000**			

DESCRIPTION	Short (2016-2025)	Long (2026-2035)	Total
Funding Needed By Short and Long Range Bands	**$ 41,964,000**	**$ 79,250,000**	**$ 121,214,000**
Recap of Expected/Estimated/Unknown Resources			
Highway Bridge Program (HBP) =	**$ 39,865,800**	**$ 34,841,250**	**$ 74,707,050**
Local/Other =	**$ 2,098,200**	**1,833,750**	**$ 3,931,950**
			$ -
			$ -
			$ -
Total Funding Reasonably Available =	**$ 41,964,000**	**$ 36,675,000**	**$ 78,639,000**
Total Unfunded Needs (or Short Term Carryover) =	**$ -**	**$ (42,575,000)**	**$ (42,575,000)**

Note 1 : Green highlighted projects above can be funded in the constrained funding analysis

Note 2 : Un-highlighted projects above cannot be funded. New funding sources will need to be identified or improvement will be developer funded.

Note 3 : Long term projects are escalated by 2.5%

TABLE
Shasta Regional Transportation Agency
Summary of Projects - Active Transportation
SHASTA COUNTY

Notes:

Project Number	REGIONAL TRANSPORTATION PROJECTS	SHORT TERM TOTAL EST COST OF PROJECT	LONG TERM TOTAL EST COST OF PROJECT	PROJECT BAND	PROJECT TYPE/INTENT	EXPECTED FUNDING SOURCES
1	Burney - Tamarack Ave. and Park Ave., class ii bike lane	$ 420,000		(2016-2025)	Safety/SRTS	2% LTF
2	Burney - Mountain View Drive, Quebec St., Sugar Pine, Safe Routes to School	$ 500,000		(2016-2025)	Safety	Local/Other
3	Burney - Park Avenue, between Tamarack Avenue and Burney Creek, Construct shoulders	$ 101,500		(2016-2025)	Safety	ATP/Local/Other
4	Burney - Erie Street, Construct sidewalks	$ 359,848		(2016-2025)	Safety	ATP/Local/Other
5	Burney - Quebec Street, Construct sidewalks	$ 359,848		(2016-2025)	Safety	ATP/Local/Other
6	Burney - Toronto Avenue, between Erie and Quebec Streets, Construct sidewalks	$ 359,848		(2016-2025)	Safety	ATP/Local/Other
7	Old Oregon Trail from College View to Collyer Drive, class ii bike lane and interchange improvements	$ 500,000		(2016-2025)	Safety	ATP/Local/Other
	Total Short Term Needs =	**$ 2,601,045**				
8	Road segment Gas Point Road, From I-5/Cottonwood, To Happy Valley Road, class ii bike lane		$ 4,990,000	(2026-2035)	Safety	ATP/Local/Other
9	Road segment Happy Valley Road, From Gas Point Road, To Hawthorne Avenue, class ii bike lane		$ 5,206,000	(2026-2035)	Safety	ATP/Local/Other
10	Road segment Canyon Road, From Hawthorne Avenue, To Highway 273, class ii bike lane		$ 1,618,000	(2026-2035)	Safety	ATP/Local/Other
11	Road segment Balls Ferry Road, From Anderson city limit, To Deschutes Road, class ii bike lane		$ 834,000	(2026-2035)	Safety	Unfunded or Developer
12	Road segment Deschutes Road, From Balls Ferry Road, To Highway 299 East, class ii bike lane		$ 10,860,000	(2026-2035)	Safety	Unfunded or Developer
13	Road segment Placer Road, From Redding city limit, To Cloverdale Road, class ii bike lane		$ 5,588,000	(2026-2035)	Safety	Unfunded or Developer
14	Road segment Texas Springs Road, From Placer Road, To Branstetter Road, class ii bike lane		$ 5,008,000	(2026-2035)	Safety	Unfunded or Developer
15	Road segment Oasis Road, From I-5/Redding, To Old Oregon Trail, class ii bike lane		$ 1,233,000	(2026-2035)	Safety	Unfunded or Developer
16	Road segment Old Oregon Trail, From I-5/Mountain Gate, To Highway 299 East, class ii bike lane		$ 5,381,000	(2026-2035)	Safety	Unfunded or Developer
17	Road segment Old Oregon Trail, From Highway 299 East, To Highway 44, class ii bike lane		$ 3,452,000	(2026-2035)	Safety	Unfunded or Developer
18	Road segment Cloverdale Road, From Placer Road, To Oak Street, class ii bike lane		$ 3,162,000	(2026-2035)	Safety	Unfunded or Developer
19	Road segment Dersch Road, From Airport Road, To Deschutes Road, class ii bike lane		$ 2,234,000	(2026-2035)	Safety	Unfunded or Developer
20	Road segment Swasey Drive , From Highway 299 West, To Placer Road, class ii bike lane		$ 3,077,000	(2026-2035)	Safety	Unfunded or Developer
21	Burney - Tamarack Avenue, between convenience store and Main Street, Construct sidewalks		$ 369,000	(2026-2035)	Safety	Unfunded or Developer
22	Burney - Main Street gap closures, at various locations, Construct sidewalks		$ 2,303,000	(2026-2035)	Safety/Gap closure	Unfunded or Developer
23	Road segment Airport Road, From Highway 44, To Anderson city limit, class ii bike lane		$ 5,069,000	(2026-2035)	Safety	Unfunded or Developer
24	Road segment Oak Street, From Cloverdale Road, To Palm Avenue, class ii bike lane		$ 1,270,000	(2026-2035)	Safety	Unfunded or Developer
25	Road segment Palm Avenue, From Oak Street , To Happy Valley Road, class ii bike lane		$ 2,023,000	(2026-2035)	Safety	Unfunded or Developer
26	Burney - Mountain View Road, between Main and Carberry Streets, Construct sidewalks		$ 2,948,000	(2026-2035)	Safety	Unfunded or Developer
27	Burney - Ash Avenue, between Hudson and Marquette Streets, Widen shoulders		$ 162,000	(2026-2035)	Safety	Unfunded or Developer
28	Burney - Park Avenue, between Burney Creek and Hudson Street, Widen shoulders		$ 425,000	(2026-2035)	Safety	Unfunded or Developer
29	Burney - Hudson Street, between Park Avenue and Main Street, Widen shoulders		$ 317,000	(2026-2035)	Safety	Unfunded or Developer
30	Burney - Huron Avenue, between Hudson and Erie Streets, Widen shoulders		$ 261,000	(2026-2035)	Safety	Unfunded or Developer
31	Burney - Marquette Street, between Cypress Avenue and Main Street, Widen shoulders		$ 398,000	(2026-2035)	Safety	Unfunded or Developer
32	Burney - Extension of Tall Timber Lane between schools, Construct 'Class I' bike path		$ 45,000	(2026-2035)	Safety/SRTS	Unfunded or Developer
33	Burney - From Elementary to Junior/Senior High Schools, Construct 'Class I' bike path		$ 56,000	(2026-2035)	Safety/SRTS	Unfunded or Developer
34	Burney - Formalize bike path from Junior/Senior High Schools to Main Street, Construct 'Class I' bike path		$ 41,000	(2026-2035)	Safety/SRTS	Unfunded or Developer
35	Burney - From Washburn Bue Park to Burney Creek Trail, Construct trail		$ 355,000	(2026-2035)	Safety	Unfunded or Developer
36	Burney - Burney Creek Trail, Construct trail		$ 192,000	(2026-2035)	Safety	Unfunded or Developer
37	Burney - Bailey Avenue, between Marquette Street and Tall Timber Lane, Construct 'Class II' bike lanes		$ 247,000	(2026-2035)	Safety	Unfunded or Developer
38	Burney - Hudson Street, Marquette Street, Ash Avenue, Park Avenue, Traffic calming measures		$ 67,000	(2026-2035)	Safety/Traffic calming	Unfunded or Developer
39	Burney - Main Street/City Limits, Gateway treatments		$ 50,000	(2026-2035)	Safety	Unfunded or Developer
	Total Long Term Fundable Needs =		**$ 11,814,000**			

DESCRIPTION	Short (2016-2025)	Long (2026-2035)	Total
Funding Needed By Short and Long Range Bands	**$ 2,601,045**	**$ 69,241,000**	**$ 71,842,045**
Recap of Expected/Estimated/Unknown Resources			
Active Transportation Program (ATP) =	**$ 962,387**	**$ 4,371,180**	**$ 5,333,567**
Local/Other =	**$ 130,052**	**$ 590,700**	**$ 720,752**
2% LTF =	**$ 130,052**	**$ 590,700**	**$ 720,752**
Highway Safety Improvement Program (HSIP) =	**$ 1,378,554**	**$ 6,261,420**	**$ 7,639,974**
			$ -
Total Funding Reasonably Available =	**$ 2,601,045**	**$ 11,814,000**	**$ 14,415,045**
Total Unfunded Needs (or Short Term Carryover) =	**$ -**	**$ (57,427,000)**	**$ (57,427,000)**
Note 1 : Green highlighted projects above can be funded in the constrained funding analysis			

Note 2 : Un-highlighted projects above cannot be funded. New funding sources will need to be identified or improvement will be developer funded.
Note 3 : Long term projects are escalated by 2.5%

TABLE

Shasta Regional Transportation Agency

Summary of Projects - Interchanges

CITY OF REDDING

Notes:

Project Number	REGIONAL TRANSPORTATION PROJECTS	SHORT TERM TOTAL EST COST OF PROJECT	LONG TERM TOTAL EST COST OF PROJECT	PROJECT BAND	PROJECT TYPE/INTENT	EXPECTED FUNDING SOURCES
1	Signal: SR44 and Shasta View Dr (WB Ramp)	$ 400,000		(2016-2025)	Intersection	Developer
	Total Short Term Needs =	$ 400,000				
2	Hilltop Drive Overcrossing - over I-5, Build second structure to the north		$ 6,759,000	(2026-2035)	Capacity Increase	TIF
3	Oasis Road & I-5 Interchange Exit 682 - Reconstruction and Widening		$ 26,498,000	(2026-2035)	Interchange	NRTBD/Developer
4	Route 299, Postmile 25.35, Exit #141, Churn Creek Interchange		$ 3,840,000	(2026-2035)	Interchange	Future Need
5	Route I-5, Postmile 17.32, Exit #680, SR 299E Interchange		$ 3,840,000	(2026-2035)	Interchange	Future Need
6	Route I-5, Postmile 18.48, State Route 273/I-5 Interchange		$ 15,361,000	(2026-2035)	Interchange	Unfunded or Developer
7	South Bonnyview & I-5 Interchange Exit 675 - Improvements		$ 12,801,000	(2026-2035)	Interchange	Unfunded or Developer
8	Twin View Blvd & I-5 Interchange Exit 681 - Improvements		$ 5,120,000	(2026-2035)	Interchange	Unfunded or Developer
9	Airport Road & SR44 Interchange Exit 5 - Improvements		$ 19,201,000	(2026-2035)	Interchange	Unfunded or Developer
10	Cypress Ave and Bechelli Lane to Industrial Street & I-5 Interchange Exit 677 - Reconstruction		$ 16,677,000	(2026-2035)	Interchange	Unfunded or Developer
	Total Long Term Fundable Needs =		**$ 33,257,000**			

DESCRIPTION	Short (2016-2025)	Long (2026-2035)	Total
Funding Needed By Short and Long Range Bands	**$ 400,000**	**$ 110,097,000**	**$ 110,497,000**
Recap of Expected/Estimated/Unknown Resources			
Local/Other =	**200,000**	**$ 16,628,500**	**$ 16,828,500**
State Highway Operations and Protection Program (SHOPP) =	**200,000**	**16,628,500**	**$ 16,828,500**
			$ -
			$ -
			$ -
Total Funding Reasonably Available =	**$ 400,000**	**$ 33,257,000**	**$ 33,657,000**
Total Unfunded Needs (or Short Term Carryover) =	**$ -**	**$ (76,840,000)**	**$ (76,840,000)**
Note 1 : Green highlighted projects above can be funded in the constrained funding analysis			

Note 2 : Un-highlighted projects above cannot be funded. New funding sources will need to be identified or improvement will be developer funded.

Note 3 : Long term projects are escalated by 2.5%

TABLE
Shasta Regional Transportation Agency
Summary of Projects - Capacity Increasing
CITY OF REDDING

Project Number	REGIONAL TRANSPORTATION PROJECTS	SHORT TERM TOTAL EST COST OF PROJECT	LONG TERM TOTAL EST COST OF PROJECT	PROJECT BAND	PROJECT TYPE/INTENT	EXPECTED FUNDING SOURCES
1	Placer Street Widening - Airpark Drive to Buenaventura Blvd	$ 1,800,000		(2016-2025)	Capacity Increase	Local/Other
2	Placer Street Widening - Buenaventura Blvd to Boston Ave	$ 2,000,000		(2016-2025)	Capacity Increase	Local/Other
3	Quartz Hill Road Widening - Snow Lane to Top of the Hill	$ 1,600,000		(2016-2025)	Capacity Increase	Local/Other
4	Hilltop Drive Widening - Lake Boulevard to I-5	$ 1,400,000		(2016-2025)	Capacity Increase	Local/Other
5	Churn Creek Road Widening - Browning St. to Boulder Creek	$ 3,468,000		(2016-2025)	Capacity Increase	Local/Other
6	Old Alturas Road Widening - Victor Avenue to Shasta View Drive	$ 6,430,000		(2026-2035)	Capacity Increase	Local/Other
7	Victor Avenue Widening - Hartnell Avenue to E. Cypress Avenue	$ 1,993,000		(2026-2035)	Capacity Increase	Local/Other
8	Oasis Road Widening - Northbound I-5 Ramps to Gold Hills Drive	$ 11,608,800		(2026-2035)	Interchange	Local/Other
9	Twin View Road Realignment - North and South of Oasis Road	$ 6,483,064		(2026-2035)	Capacity Increase	Local/Other
	Total Short Term Needs =	**$ 36,782,864**				
10	Railroad Avenue Widening (including class II bike lanes) - Sheridan Street to Grandview Avenue		$ 2,308,000	(2026-2035)	Capacity Increase	Local/Other
11	Victor Avenue Widening - E.Cypress Avenue to Mistletoe Lane		$ 5,472,000	(2026-2035)	Capacity Increase	Local/Other
12	Victor Avenue Widening - SR44 to Old Alturas Road		$ 3,584,000	(2026-2035)	Capacity Increase	Local/Other
13	Browning Street Reconfigure to 4 Lane - Hilltop Drive to Old Alturas		$ 5,120,000	(2026-2035)	Capacity Increase	Local/Other
14	Shasta View Drive Widening - Atrium Way to Old Alturas		$ 512,000	(2026-2035)	Capacity Increase	Local/Other
15	Victor Avenue Widening - Vega Street to Hartnell		$ 6,080,000	(2026-2035)	Capacity Increase	Unfunded or Developer
16	Bechelli Lane Widening- 3rd Street to Loma Vista		$ 2,061,000	(2026-2035)	Capacity Increase	Unfunded or Developer
17	Churn Creek Rd, Rancho Rd, and Victor Avenue Roundabout		$ 3,817,000	(2026-2035)	Capacity Increase	Unfunded or Developer
18	Hartnell Avenue Widening - Victor Avenue to Alta Mesa Drive		$ 6,966,000	(2026-2035)	Capacity Increase	Unfunded or Developer
19	Churn Creek Road Widening - Boulder Creek to SR 299E		$ 3,994,000	(2026-2035)	Capacity Increase	Unfunded or Developer
20	Hartnell Avenue Widening - Alta Mesa to Shasta View		$ 2,432,000	(2026-2035)	Widening	Unfunded or Developer
21	Oasis Road Widening - Randolph Road to Old Oasis Road		$ 4,480,000	(2026-2035)	Capacity Increase	Unfunded or Developer
22	Cascade Blvd Realignment- North and South of Oasis Road		$ 11,154,000	(2026-2035)	Capacity Increase	Unfunded or Developer
23	Caterpillar Road - George Drive to SR273 Widen Roadway and Signal		$ 2,176,000	(2026-2035)	Capacity Increase	Unfunded or Developer
24	Shasta View Drive Extension - 2 Lane Widening - Collyer Drive to Manzanoaks Drive		$ 7,681,000	(2026-2035)	New Facility	Unfunded or Developer
25	Quartz Hill Road Widening - Top of Hill to City Limits		$ 5,376,000	(2026-2035)	Capacity Increase	Unfunded or Developer
26	Shasta View Drive Widening - College View to Inspiration Place		$ 3,200,000	(2026-2035)	Capacity Increase	Unfunded or Developer
27	Airport Road Widening - SR 44 to Rancho Rd.		$ 7,835,000	(2026-2035)	Capacity Increase	Unfunded or Developer
28	Cypress Ave Connection - Victor Avenue to Shasta View Drive		$ 21,761,000	(2026-2035)	New Facility	Unfunded or Developer
29	Hilltop Drive Extension - Lake Boulevard to Twin View		$ 1,280,000	(2026-2035)	New Facility	Unfunded or Developer
30	Palacio Drive Connection - Churn Creek to Cornell Place		$ 10,881,000	(2026-2035)	New Facility	Unfunded or Developer
31	Shasta View Drive Widening - Hartnell Avenue to Goodwater Drive		$ 7,449,000	(2026-2035)	Capacity Increase	Unfunded or Developer
32	Airport Road Widening - Sacramento River to Rancho Road		$ 44,803,000	(2026-2035)	Capacity Increase	Unfunded or Developer
33	Buenaventura Blvd Reconfigure to 4 lane - Summit Drive to Railroad Avenue		$ 1,920,000	(2026-2035)	Capacity Increase	Unfunded or Developer
34	Buenaventura Blvd Widening - Starlight Boulevard to Placer Road		$ 1,920,000	(2026-2035)	Capacity Increase	Unfunded or Developer
35	Court Street Widening - 11th Street to Riverside Drive		$ 640,000	(2026-2035)	Capacity Increase	Unfunded or Developer
36	Hartnell Avenue at Airport Road Widening and Realignment		$ 10,145,000	(2026-2035)	Capacity Increase	Unfunded or Developer
37	Oak Mesa Lane Extension - Tarmac Road to Candlewood Drive		$ 1,441,000	(2026-2035)	New Facility	Unfunded or Developer
38	Oasis Road Widening - Gold Hills Drive to Shasta View Drive		$ 2,560,000	(2026-2035)	Capacity Increase	Unfunded or Developer
39	Old Alturas Road Widening - Shasta View Drive to City Limits		$ 5,869,000	(2026-2035)	Capacity Increase	Unfunded or Developer
40	Old Oregon Trail Widening - Old Highway 44 to Viking Way		$ 5,120,000	(2026-2035)	Capacity Increase	Unfunded or Developer
41	Parkview Ave Widening - ACID Canal to Park Marina		$ 1,184,000	(2026-2035)	Capacity Increase	Unfunded or Developer
42	Rancho Road Widening - Goodwater to Airport Road		$ 8,641,000	(2026-2035)	Capacity Increase	Unfunded or Developer
43	Shasta View Drive Extension - Manzanoaks Drive to Oasis Road		$ 5,120,000	(2026-2035)	New Facility	Unfunded or Developer
44	Shasta View Drive Extension - Rancho Road to Airport Road		$ 6,400,000	(2026-2035)	New Facility	Unfunded or Developer
45	Stillwater Business Park Improvements - Phase 3		$ 6,400,000	(2026-2035)	New Facility	Unfunded or Developer
46	Tarmac Road Extension to Old Oregon Trail		$ 7,647,000	(2026-2035)	New Facility	Unfunded or Developer
47	Westside Road Frontage Extension - Glengary Drive to Clear Creek Road		$ 1,669,000	(2026-2035)	New Facility	Unfunded or Developer
48	Beltline Road Extension - Oasis Rd to Ashby Rd		$ 6,048,000	(2026-2035)	New Facility	Unfunded or Developer
49	Buenaventura Blvd Extension - Eureka Way to Keswick Dam Road		$ 12,801,000	(2026-2035)	New Facility	Unfunded or Developer
50	Cedars Road Extension - El Reno Lane to Buenaventura Boulevard		$ 1,152,000	(2026-2035)	New Facility	Unfunded or Developer
51	Creekside Drive Extension - Sacramento Drive to South Bonnyview Road		$ 1,280,000	(2026-2035)	New Facility	Unfunded or Developer
52	Cypress Avenue Reliever Project - Industrial Street Extension Over crossing of I-5		$ 7,345,000	(2026-2035)	Capacity Increase	Unfunded or Developer
53	Eastside Road Extension - Girvan Road to Southern City Limits		$ 7,232,000	(2026-2035)	New Facility	Unfunded or Developer
54	George Drive Extension - North Terminus to Oasis Road		$ 1,280,000	(2026-2035)	New Facility	Unfunded or Developer
55	Kenyon Drive Extension - West Terminus to Placer Road		$ 12,801,000	(2026-2035)	New Facility	Unfunded or Developer
56	Loma Vista Drive Extension - Churn Creek Road to Victor Avenue		$ 7,681,000	(2026-2035)	New Facility	Unfunded or Developer
57	Palacio Drive Extension - Shasta View Drive to Old Oregon Trail		$ 4,480,000	(2026-2035)	New Facility	Unfunded or Developer
58	S. Bonnyview Road @ SR273 - Grade Separation		$ 38,403,000	(2026-2035)	Intersection	Unfunded or Developer
59	Santa Rosa Avenue Extension - Quartz Hill Road to Lake Boulevard		$ 2,560,000	(2026-2035)	New Facility	Unfunded or Developer
60	Shasta View Drive Extension - 4 Lane Widening - Collyer Drive to Manzanoaks Drive		$ 8,961,000	(2026-2035)	Capacity Increase	Unfunded or Developer
61	Shasta View Drive Extension - College View Drive to Collyer Drive - SR299 OC		$ 12,801,000	(2026-2035)	New Facility	Unfunded or Developer
62	Shasta View Drive Extension - Oasis Road to North City Limits		$ 5,120,000	(2026-2035)	New Facility	Unfunded or Developer
63	South Street Railroad Crossing- Grade Separation		$ 12,097,000	(2026-2035)	Intersection	Unfunded or Developer
	Total Long Term Fundable Needs =		**$ 16,996,000**			

DESCRIPTION	Short (2016-2025)	Long (2026-2035)	Total
Funding Needed By Short and Long Range Bands	**$ 36,782,864**	**$ 379,140,000**	**$ 415,922,864**
Recap of Expected/Estimated/Unknown Resources			
Local/Other =	**36,782,864**	**$ 16,996,000**	**$ 53,778,864**
			$ -
			$ -
			$ -
			$ -
Total Funding Reasonably Available =	**$ 36,782,864**	**$ 16,996,000**	**$ 53,778,864**
Total Unfunded Needs (or Short Term Carryover) =	**$ -**	**$ (362,144,000)**	**$ (362,144,000)**

Note 1 : Green highlighted projects above can be funded in the constrained funding analysis

Note 2 : Un-highlighted projects above cannot be funded. New funding sources will need to be identified or improvement will be developer funded.

Note 3 : Long term projects are escalated by 2.5%

TABLE
Shasta Regional Transportation Agency
Summary of Projects - Safety
CITY OF REDDING

Project Number	REGIONAL TRANSPORTATION PROJECTS	SHORT TERM TOTAL EST COST OF PROJECT	LONG TERM TOTAL EST COST OF PROJECT	PROJECT BAND	PROJECT TYPE/INTENT	EXPECTED FUNDING SOURCES
1	Roundabout: Victor Avenue - Old Alturas	$ 1,500,000		(2016-2025)	Intersection	HSIP/Local/Other
2	Restripe and improvements: Court Street - Schley Avenue	$ 400,000		(2016-2025)	Intersection	HSIP/Local/Other
3	2 lane Realignment and Widening: Old Oregon Trail - Midland Drive to Frontier Roa	$ 1,800,000		(2016-2025)	Safety	HSIP/Local/Other
4	Shoulder widening: Churn Creek Road - Bodenhammer to Boulder Creek	$ 1,200,000		(2016-2025)	Safety	HSIP/Local/Other
5	Shoulder widening: Buenaventura - Placer to Lakeside	$ 1,200,000		(2016-2025)	Safety	HSIP/Local/Other
6	Victor Avenue Safety Improvements - Enterprise Park to Churn Creek Bridge	$ 1,416,200		(2016-2025)	Safety	HSIP/Local/Other
7	Signal: West Street - Placer Street	$ 400,000		(2016-2025)	Intersection	HSIP/Local/Other
8	Signal: Lake Blvd - Keswick Dam Road	$ 350,000		(2016-2025)	Intersection	HSIP/Local/Other
9	Signal: Churn Creek - Maraglia Street	$ 400,000		(2016-2025)	Intersection	HSIP/Local/Other
10	Signal: Victor Avenue - Vega Street	$ 400,000		(2026-2035)	Intersection	HSIP/Local/Other
11	Signal: Victor Avenue - Galaxy Way	$ 400,000		(2016-2025)	Intersection	HSIP/Local/Other
12	Signal: East Street - South Street	$ 400,000		(2016-2025)	Intersection	HSIP/Local/Other
13	Signal: Alta Mesa Drive - Hartnell Avenue	$ 400,000		(2016-2025)	Intersection	HSIP/Local/Other
14	Signal: Shasta View Drive - Simpson Blvd	$ 400,000		(2016-2025)	Intersection	HSIP/Local/Other
15	Signal: Placer Road - Cumberland	$ 400,000		(2016-2025)	Intersection	HSIP/Local/Other
16	Signal: Placer Road - Wisconsin Avenue	$ 400,000		(2016-2025)	Intersection	HSIP/Local/Other
17	Signal: Court Street - Riverside Drive	$ 400,000		(2016-2025)	Intersection	HSIP/Local/Other
18	Signal: Park Marina Drive - Locust Street	$ 400,000		(2016-2025)	Intersection	HSIP/Local/Other
19	Signal: Airport Road - Meadowview Drive	$ 400,000		(2016-2025)	Intersection	HSIP/Local/Other
	Total Short Term Needs =	**$ 12,666,200**				
20	Signal: Victor Avenue - Marlene Avenue		$ 512,000	(2026-2035)	Intersection	HSIP/Local/Other
21	Signal: Lake Boulevard - Panorama Drive		$ 512,000	(2026-2035)	Intersection	HSIP/Local/Other
22	Signal: Placer - O'conner Avenue		$ 512,000	(2026-2035)	Intersection	HSIP/Local/Other
23	Signal: Twin View - Caterpillar		$ 512,000	(2026-2035)	Intersection	HSIP/Local/Other
24	Signal: Hilltop Drive - Sand Point Drive		$ 512,000	(2026-2035)	Intersection	HSIP/Local/Other
25	Signal: Churn Creek/Hawley Road - Collyer Drive		$ 512,000	(2026-2035)	Intersection	HSIP/Local/Other
26	Signal: Churn Creek Road - Palacio Drive		$ 512,000	(2026-2035)	Intersection	HSIP/Local/Other
27	Signal: Shasta View Drive - College View		$ 512,000	(2026-2035)	Intersection	HSIP/Local/Other
28	Signal: Victor Ave - El Vista Street		$ 512,000	(2026-2035)	Intersection	HSIP/Local/Other
29	Signal: Lake Boulevard - Santa Rosa Way		$ 512,000	(2026-2035)	Intersection	HSIP/Local/Other
30	Signal: Hartnell Avenue - Lawrence Road		$ 512,000	(2026-2035)	Intersection	HSIP/Local/Other
	Total Long Term Fundable Needs =		**$ 5,632,000**			

DESCRIPTION	Short (2016-2025)	Long (2026-2035)	Total
Funding Needed By Short and Long Range Bands	**$ 12,666,200**	**$ 5,632,000**	**$ 18,298,200**
Recap of Expected/Estimated/Unknown Resources			
Highway Safety Improvement Program (HSIP) =	**6,333,100**	**$ 2,816,000**	**$ 9,149,100**
Local/Other =	**6,333,100**	**2,816,000**	**$ 9,149,100**
			$ -
			$ -
			$ -
Total Funding Reasonably Available =	**$ 12,666,200**	**$ 5,632,000**	**$ 18,298,200**
Total Unfunded Needs (or Short Term Carryover) =	**$ -**	**$ -**	**$ -**
Note 1 : Green highlighted projects above can be funded in the constrained funding analysis			

Note 2 : Un-highlighted projects above cannot be funded. New funding sources will need to be identified or improvement will be developer funded.
Note 3 : Long term projects are escalated by 2.5%

Shasta Regional Transportation Agency
Summary of Projects - Bridge
CITY OF REDDING

Notes:

Project Number	REGIONAL TRANSPORTATION PROJECTS	SHORT TERM TOTAL EST COST OF PROJECT	LONG TERM TOTAL EST COST OF PROJECT	PROJECT BAND	PROJECT TYPE/INTENT	EXPECTED FUNDING SOURCES
1	State Bridge #06C0340, Sacramento Drive @ Olney Creek - Bridge Replacement	$ 2,499,000		(2016-2025)	Bridge Replacement	HBP/Local
2	State Bridge #06C0344, Sharon Ave over ACID Canal - Bridge Replacement	$ 916,000		(2016-2025)	Bridge Replacement	HBP/Local
3	State Bridge #06C0104, Old Alturas Road @ Churn Creek - Bridge Replacement	$ 3,000,000		(2016-2025)	Bridge Replacement	HBP/Local
4	State Bridge #06C0335, Eastside Road @ Olney Creek - Bridge Replacement	$ 1,900,000		(2016-2025)	Bridge Replacement	HBP/Local
5	State Bridge #06C0341, Girvan Road @ Olney Creek - Bridge Replacement	$ 2,239,000		(2016-2025)	Bridge Replacement	HBP/Local
6	State Bridge # 06C0071, Railroad Ave over Canyon Hollow - Bridge Rehabilitation	$ 1,635,000		(2016-2025)	Bridge Rehabilitation	HBP/Local
7	State Bridge # 06C0078, Westside Rd @ ACID Canal - Bridge Replacement	$ 1,000,000		(2016-2025)	Bridge Replacement	HBP/Local
8	State Bridge # 06C0085, Eastside Rd @ Canyon Hollow - Bridge Replacement	$ 1,731,000		(2016-2025)	Bridge Replacement	HBP/Local
	Total Short Term Needs =	$ 14,920,000				
9	State Bridge # 06C0088, Old Oregon Trail @ W. Fork Stillwater Creek - Bridge Replacement		$ 6,400,000	(2026-2035)	Bridge Replacement	HBP/Local
10	State Bridge #06C0307, Canyon Road @ ACID Canal - Bridge Replacement		$ 2,683,000	(2026-2035)	Bridge Replacement	HBP/Local
11	State Bridge # 06C0033, Lake Blvd @ SPRR - Bridge Rehabilitation		$ 6,400,000	(2026-2035)	Bridge Rehabilitation	HBP/Local
12	State Bridge # 06C0047, Locust St @ ACID Canal - Bridge Rehabilitation		$ 1,280,000	(2026-2035)	Bridge Rehabilitation	HBP/Local
13	State Bridge # 06C0057, Twin View Blvd @ Boulder Creek - Bridge Rehabilitation		$ 6,400,000	(2026-2035)	Bridge Rehabilitation	HBP/Local
14	State Bridge # 06C0106, Hartnell Ave @ Churn Court - Bridge Rehabilitation		$ 6,400,000	(2026-2035)	Bridge Rehabilitation	HBP/Local
15	State Bridge # 06C0070, Westside Rd @ Oregon Gulch - Bridge Rehabilitation		$ 1,280,000	(2026-2035)	Bridge Rehabilitation	HBP/Local
16	State Bridge # 06C0106, Hilltop Dr @ I-5 - Bridge Rehabilitation (South Replacement)		$ 3,417,000	(2026-2035)	Bridge Rehabilitation	HBP/Local
	Total Long Term Fundable Needs =		$ 34,260,000			

DESCRIPTION	Short (2016-2025)	Long (2026-2035)	Total
Funding Needed By Short and Long Range Bands	**$ 14,920,000**	**$ 34,260,000**	**$ 49,180,000**
Recap of Expected/Estimated/Unknown Resources			
Highway Bridge Program (HBP) =	**14,174,000**	**$ 32,547,000**	**$ 46,721,000**
Local/Other =	**746,000**	**1,713,000**	**$ 2,459,000**
			$ -
			$ -
			$ -
Total Funding Reasonably Available =	**$ 14,920,000**	**$ 34,260,000**	**$ 49,180,000**
Total Unfunded Needs (or Short Term Carryover) =	**$ -**	**$ -**	**$ -**

Note 1 : Green highlighted projects above can be funded in the constrained funding analysis

Note 2 : Un-highlighted projects above cannot be funded. New funding sources will need to be identified or improvement will be developer funded.

Note 3 : Long term projects are escalated by 2.5%

TABLE
Shasta Regional Transportation Agency
Summary of Projects - Active Transportation
CITY OF REDDING

Notes:

Project Number	REGIONAL TRANSPORTATION PROJECTS	SHORT TERM TOTAL EST COST OF PROJECT	LONG TERM TOTAL EST COST OF PROJECT	PROJECT BAND	PROJECT TYPE/INTENT	EXPECTED FUNDING SOURCES
1	Shoulder Widening: Browning Street - Hilltop Drive to Churn Creek	$ 1,000,000		(2016-2025)	Safety/Shoulder Recovery	STIP/Other
2	Multi-use trail, pedestrian/bike improvements: Riverside Trail, From Sacramento River Trail, To Center St	$ 1,500,000		(2016-2025)	Safety	STIP/Other
3	Placer Street Pedestrian/Bike Improvements: Pleasant Street to Boston	$ 5,004,000		(2016-2025)	Safety	ATP/TIF/Streets/Water
4	Shoulder Widening: Old Alturas Road - Shasta View to Edgewood	$ 1,200,000		(2016-2025)	Safety	BTA/TIF/Prop 1B/Streets
	Total Short Term Needs =	**$ 8,704,000**				
5	Multi-use trail: Candlewood Trail, From Highway 44, To Candlewood Dr		$ 256,000	(2026-2035)	Recreation/Safety	unknown
6	Multi-use trail: Kapusta		$ 160,000	(2026-2035)	Recreation/Safety	unknown
7	Multi-use trail: Clear Creek Trail, Lower Clear Creek Greenway, To Cascade Park		$ 832,000	(2026-2035)	Recreation/Safety	unknown
8	Multi-use trail: Jenny Creek Trail, From Eureka Way, To Mary Lake		$ 160,000	(2026-2035)	Recreation/Safety	unknown
9	Multi-use trail: Linden Creek Trail, From Placer St, To MLK, Jr. Park		$ 512,000	(2026-2035)	Recreation/Safety	unknown
10	Multi-use trail: Manzanita Trail, From Manzanita Hills Av, To Almond Av		$ 192,000	(2026-2035)	Recreation/Safety	unknown
11	Dirt trail: Salt Creek Trail, From Highway 299 West, To Sacramento River Trail		$ 448,000	(2026-2035)	Recreation/Safety	unknown
12	Crushed granite: Widen Buenaventura Trail, from Sunflower to Sacramento River Trail		$ 288,000	(2026-2035)	Recreation/Safety	unknown
13	class ii bike lane: Route N Market St, From Lake Blvd, To Quartz Hill Rd		$ 64,000	(2026-2035)	Safety	unknown
14	class ii bike lane: Route Tarmac Rd, From Shasta View Dr, To Abernathy Ln		$ 192,000	(2026-2035)	Safety	unknown
15	class ii bike lane: Route Buenaventura Blvd, From Buenaventura Trailhead, To Railroad Av		$ 96,000	(2026-2035)	Safety	unknown
16	class ii bike lane: Route Hilltop Dr, From State Route 299, To E Cypress Av		$ 1,536,000	(2026-2035)	Safety	unknown
17	class ii bike lane: Route Lake Blvd, From Pine Grove Av, To N Market St		$ 64,000	(2026-2035)	Safety	unknown
18	class ii bike lane: Route Old Alturas Rd, From Churn Creek Rd, To Old Oregon Trail		$ 448,000	(2026-2035)	Safety	unknown
19	class ii bike lane: Route Shasta View Dr, From College View Dr, To Rancho Rd		$ 6,400,000	(2026-2035)	Safety	unknown
20	class ii bike lane: Route Victor Av, From Old Alturas Rd, To Rancho Rd		$ 7,681,000	(2026-2035)	Safety	unknown
21	class ii bike lane: Route Bechelli Ln, From Bechelli River Access, To South Bonnyview Rd		$ 640,000	(2026-2035)	Safety	unknown
22	class ii bike lane: Route Browning St, From Hilltop Dr, To Old Alturas Rd		$ 576,000	(2026-2035)	Safety	unknown
23	class ii bike lane: Route Churn Creek Rd, From State Route 299, To Knighton Rd		$ 7,040,000	(2026-2035)	Safety	unknown
24	class ii bike lane: Route Hartnell Av, From Cypress Av, To Airport Rd		$ 2,560,000	(2026-2035)	Safety	unknown
25	class ii bike lane: Route Benton Dr, From Quartz Hill Rd, To Sacramento River		$ 64,000	(2026-2035)	Safety	unknown
26	class ii bike lane: Route Butte St, From Continental St, To Park Marina Dr		$ 51,000	(2026-2035)	Safety	unknown
27	class ii bike lane: Route Center St, From Riverside Dr, To Trinity St		$ 960,000	(2026-2035)	Safety	unknown
28	class ii bike lane: Route College View Dr, From Bodenhamer Blvd (Future), To Old Alturas Rd		$ 3,200,000	(2026-2035)	Safety	unknown
29	class ii bike lane: Route Continental St, From Trinity St, To Butte		$ 64,000	(2026-2035)	Safety	unknown
30	class ii bike lane: Route Court St, From Sacramento River, To Schley Av / Railroad Av		$ 1,280,000	(2026-2035)	Safety	unknown
31	class ii bike lane: Route Cypress Av, From Civic Center Dr, To Ishi Dr		$ 3,840,000	(2026-2035)	Safety	unknown
32	class ii bike lane: Route East St, From Trinity St, To South St		$ 192,000	(2026-2035)	Safety	unknown
33	class ii bike lane: Route Keswick Dam Rd, From Buenaventura Blvd, To Lake Blvd		$ 512,000	(2026-2035)	Safety	unknown
34	class ii bike lane: Route Oasis Rd, From Lake Blvd, To Old Oregon Trail		$ 3,200,000	(2026-2035)	Safety	unknown
35	class ii bike lane: Route Old Oregon Trail, From Oasis Rd, To State Route 44		$ 640,000	(2026-2035)	Safety	unknown
36	Multi-use Trail: SR 273: Girvan to Redding Rancheria		$ 832,000	(2026-2035)	Safety	unknown
37	class ii bike lane: Route Trinity St, From Center St, To Continental St		$ 960,000	(2026-2035)	Safety	unknown
38	class ii bike lane: Route Quartz Hill Rd, From Keswick Dam Rd, To N Market St		$ 4,480,000	(2026-2035)	Safety	unknown
39	class ii bike lane: Route Westside Rd, From Buenaventura Blvd, To Cedars Rd		$ 3,840,000	(2026-2035)	Safety	unknown
40	class ii bike lane: Route Boulder Dr, From State Route 299 Bikeway, To State Route 299 Bikeway		$ 2,560,000	(2026-2035)	Safety	unknown
41	class ii bike lane: Route Hawley St, From State Route 299, To Proposed Future Trailhead		$ 4,480,000	(2026-2035)	Safety	unknown
42	class ii bike lane: Route Rancho Rd, From Churn Creek Rd, To Venture		$ 6,400,000	(2026-2035)	Safety	unknown
43	class ii bike lane: Route Airport Rd, From Hartnell Av, To Sacramento River		$ 10,241,000	(2026-2035)	Safety	unknown
44	class ii bike lane: Route Future Rd, From Future Trailhead, To Tanglewood		$ 2,560,000	(2026-2035)	Safety	unknown
45	class ii bike lane: Route Loma Vista, From Bechelli Ln, To Churn Creek Rd		$ 192,000	(2026-2035)	Safety	unknown
46	class ii bike lane: Route Palisades Av, From Hilltop Dr, To Dana-to-Downtown Bikeway		$ 448,000	(2026-2035)	Safety	unknown
47	class ii bike lane: Route Radio Ln / East Bonnyview Rd, From Eastside Rd, To South Bonnyview Rd		$ 3,840,000	(2026-2035)	Safety	unknown
48	class ii bike lane: Route South St, From Court St, To Park Marina Dr		$ 320,000	(2026-2035)	Safety	unknown
49	class ii bike lane: Route Venture St, From Rancho Rd, To Unforgettable Ln		$ 2,560,000	(2026-2035)	Safety	unknown
50	Multi-use trail: Boulder Creek Trail, From SR 299E Bikeway, To Churn Creek		$ 1,920,000	(2026-2035)	Recreation/Safety	unknown
51	Multi-use trail: Canyon Creek Trail Extension, From Placer St, To Blazingwood Dr		$ 1,920,000	(2026-2035)	Recreation/Safety	unknown
52	Multi-use trail: Churn Creek Trail, From Minder Park, To Churn Creek Rd		$ 1,920,000	(2026-2035)	Recreation/Safety	unknown
53	Multi-use trail: Clover Creek Trail, From Sports Park, To Sacramento River		$ 3,840,000	(2026-2035)	Recreation/Safety	unknown
54	Multi-use trail: Little Churn Creek Trail, From Hartnell Av, To Churn Creek		$ 3,200,000	(2026-2035)	Recreation/Safety	unknown
55	Existing gravel; to be paved in future: Old 99 Spur Trail*, From Lake Blvd, To North Market St		$ 1,920,000	(2026-2035)	Recreation/Safety	unknown
56	Multi-use trail: Sac. River Trail - Hatchcover Spur, From Hemstead Dr, To Cypress Av		$ 1,536,000	(2026-2035)	Recreation/Safety	unknown
57	Multi-use trail: Sulphur Creek Trail -South, From North Market St, To Arboretum Perimeter Trail		$ 1,536,000	(2026-2035)	Recreation/Safety	unknown
58	Dirt trail: Olney Creek Trail, From Texas Springs Rd, To Cascade Park		$ 2,560,000	(2026-2035)	Recreation/Safety	unknown
59	Dirt trail: Ridgeview Trail, From Ridgeview Park, To Blue Gravel Mine Trail		$ 1,920,000	(2026-2035)	Recreation/Safety	unknown
60	Dirt trail: Sulphur Creek Trail - North, From Quartz Hill Rd, To North Market St		$ 2,304,000	(2026-2035)	Recreation/Safety	unknown
61	Dirt trail: Greenwood Trail, From Almond/Airpark, To Sonoma St		$ 2,560,000	(2026-2035)	Recreation/Safety	unknown
62	Dirt trail: Avalon Trail, From future Shasta View Dr, To Old Oregon Trail		$ 3,840,000	(2026-2035)	Recreation/Safety	unknown
63	Multi-use trail: Lema - Nash Trail, From Shasta View Dr, To Old Oregon Trail		$ 1,920,000	(2026-2035)	Recreation/Safety	unknown
64	Multi-use trail: Sac. River Trail - Future Expansion, From Cypress Av, To Anderson River Park		$ 19,201,000	(2026-2035)	Recreation/Safety	unknown
65	Multi-use trail: Upper Churn Creek Trail, From Pine Grove Av, To Oasis Rd		$ 1,920,000	(2026-2035)	Recreation/Safety	unknown
66	Multi-use trail: Wentz Creek Trail, From Mistletoe School, To Cypress Av		$ 1,536,000	(2026-2035)	Recreation/Safety	unknown
67	Dirt trail: China Dam Trail, From Placer Rd, To Texas Springs Rd		$ 1,280,000	(2026-2035)	Recreation/Safety	unknown
68	Multi-use trail: Sac. River Trail - Park Marina Trail, From State Route 44, To Cypress Av		$ 3,840,000	(2026-2035)	Improve bike access, Recreation	unknown
69	Multi-use trail: Stillwater Creek Trail, From Old Oregon Trail, To Sacramento River		$ 2,560,000	(2026-2035)	Improve bike access, Recreation	unknown
70	Multi-use trail: Stillwater Plant Trail, From State Route 44, To Dersch Rd		$ 5,120,000	(2026-2035)	Improve bike access, Recreation	unknown
	Total Long Term Fundable Needs =		**$ 45,940,000**			

DESCRIPTION	Short (2016-2025)	Long (2026-2035)	Total
Funding Needed By Short and Long Range Bands	**$ 8,704,000**	**$ 156,214,000**	**$ 164,918,000**
Recap of Expected/Estimated/Unknown Resources			
State Transportation Improvement Program (STIP) =	**$ 675,000**	**$ -**	**$ 675,000**
Active Transportation Program (ATP) =	**$ 1,605,800**	**$ 9,188,000**	**$ 10,793,800**
Local/Other =	**$ 2,408,700**	**$ 13,782,000**	**$ 16,190,700**
2% LTF =	**$ 401,450**	**$ 2,297,000**	**$ 2,698,450**
Highway Safety Improvement Program (HSIP) =	**$ 3,613,050**	**$ 20,673,000**	**$ 21,074,450**
	$ 8,704,000	**$ 45,940,000**	**$ 54,644,000**
Total Unfunded Needs (or Short Term Carryover) =	**$ -**	**$ (110,274,000)**	**$ (110,274,000)**
Note 1 : Green highlighted projects above can be funded in the constrained funding analysis			

Note 2 : Un-highlighted projects above cannot be funded. New funding sources will need to be identified or improvement will be developer funded.
Note 3 : Long term projects are escalated by 2.5%

TABLE
Shasta Regional Transportation Agency
Summary of Projects - Interchanges

CITY OF ANDERSON

Project Number	REGIONAL TRANSPORTATION PROJECTS	SHORT TERM TOTAL EST COST OF PROJECT	LONG TERM TOTAL EST COST OF PROJECT	PROJECT BAND	PROJECT TYPE/INTENT	EXPECTED FUNDING SOURCES
	NO SHORT RANGE PROJECTS					
	Total Short Term Fundable =	**$ -**				
1	Reconfigure I-5 Riverside Interchange, Postmile 6.74, Exit #670		$ 22,017,000	(2026-2035)	Interchange	Safety, TIF, SHOPP
2	Reconfigure I-5 Central Anderson Interchange (Balls Ferry/North Street) Postmile 5.64, Exit #668		$ 3,968,000	(2026-2035)	Interchange	Unfunded or Developer
3	Deschutes/I-5 Interchange phase 2		$ 13,441,000	(2026-2035)	Interchange	Unfunded or Developer
	Total Long Term Fundable Needs =		**$ 22,017,000**			

DESCRIPTION	Short (2016-2025)	Long (2026-2035)	Total
Funding Needed By Short and Long Range Bands	**$ -**	**$ 39,426,000**	**$ 39,426,000**
Recap of Expected/Estimated/Unknown Resources			
Local/Other =	-	**$ 11,008,500**	**$ 11,008,500**
State Highway Operations and Protection Program (SHOPP) =	-	**11,008,500**	**$ 11,008,500**
			$ -
			$ -
			$ -
Total Funding Reasonably Available =	**$ -**	**$ 22,017,000**	**$ 22,017,000**
Total Unfunded Needs (or Short Term Carryover) =	**$ -**	**$ (17,409,000)**	**$ (17,409,000)**

Note 1 : Green highlighted projects above can be funded in the constrained funding analysis

Note 2 : Un-highlighted projects above cannot be funded. New funding sources will need to be identified or improvement will be developer funded.

Note 3 : Long term projects are escalated by 2.5%

TABLE
Shasta Regional Transportation Agency
Summary of Projects - Capacity Increasing

CITY OF ANDERSON

Project Number	REGIONAL TRANSPORTATION PROJECTS	SHORT TERM TOTAL EST COST OF PROJECT	LONG TERM TOTAL EST COST OF PROJECT	PROJECT BAND	PROJECT TYPE/INTENT	EXPECTED FUNDING SOURCES
1	Gateway Drive - Balls Ferry to Deschutes - construct 2 lane road	$ 6,500,000		(2016-2025)	New Facility	Local/Other
	Total Short Term Fundable =	**$ 6,500,000**				
2	Auto Mall - Extend to North Street - Extension		$ 4,864,000	(2026-2035)	Capacity Increase	Local/Other
3	McMurray Drive - North of Ganyon Drive - Widening		$ 640,000	(2026-2035)	Capacity Increase	Unfunded or Developer
4	Gateway Drive - From Balls Ferry South - Widening		$ 1,528,000	(2026-2035)	New Facility	Unfunded or Developer
5	East Street - North of Willow Glen Dr. - Extension		$ 2,128,000	(2026-2035)	New Facility	Unfunded or Developer
6	Pleasant Hills SR 273 Vineyards - construct 2 lane road extension		$ 4,255,000	(2026-2035)	New Facility	Unfunded or Developer
7	Rhonda Road - Factory Outlets Drive to Pleasant Hills - Intersection Reconstruction		$ 2,927,000	(2026-2035)	New Facility	Unfunded or Developer
8	Anderson Hills Parkway -W of Pleasant Hills - Construct 4 lane road		$ 6,375,000	(2026-2035)	New Facility	Unfunded or Developer
9	Anderson Hills Parkway Pleasant to Rhonda - Construct 4 lane road		$ 3,840,000	(2026-2035)	New Facility	Unfunded or Developer
10	Anderson Hills Parkway - Rhonda to Locust - Construct 4 lane road		$ 3,404,000	(2026-2035)	New Facility	Unfunded or Developer
11	Emily Drive - Widening		$ 945,000	(2026-2035)	Capacity Increase	Unfunded or Developer
12	Ox Yoke Rd. - SR 273 to Riverside Av - Widening to 5 lanes		$ 2,560,000	(2026-2035)	Capacity Increase	Unfunded or Developer
13	Riverside Avenue - Ox Yoke to North St. - Widening to 5 lanes		$ 8,961,000	(2026-2035)	Capacity Increase	Unfunded or Developer
14	Balls Ferry Rd. - From Stingy Lane to the City Limits - Widening		$ 1,528,000	(2026-2035)	Capacity Increase	Unfunded or Developer
15	South Street - SR 273 west to City Limits - Widening		$ 4,800,000	(2026-2035)	Capacity Increase	Unfunded or Developer
16	Stingy Lane - North St. to Balls Ferry - Widening		$ 17,281,000	(2026-2035)	Capacity Increase	Unfunded or Developer
17	Gateway Drive - From Existing Improvements to Deschutes - Widen		$ 7,196,000	(2026-2035)	New Facility	Unfunded or Developer
18	Fairgrounds Drive - 1st St. to 3rd St. -Widening		$ 1,408,000	(2026-2035)	Capacity Increase	Unfunded or Developer
19	Third Street - SR 273 to Fairgrounds Dr. - Widening		$ 2,304,000	(2026-2035)	Capacity Increase	Unfunded or Developer
20	South County Extension - Ronda Rd to Anderson Hills - Extension		$ 7,040,000	(2026-2035)	New Facility	Unfunded or Developer
	Total Long Term Fundable Needs =		**$ 4,864,000**			

DESCRIPTION	Short (2016-2025)	Long (2026-2035)	Total
Funding Needed By Short and Long Range Bands	**$ 6,500,000**	**$ 83,984,000**	**$ 90,484,000**
Recap of Expected/Estimated/Unknown Resources			
Local/Other =	**6,500,000**	**$ 4,864,000**	**$ 11,364,000**
			$ -
			$ -
			$ -
			$ -
Total Funding Reasonably Available =	**$ 6,500,000**	**$ 4,864,000**	**$ 11,364,000**
Total Unfunded Needs (or Short Term Carryover) =	**$ -**	**$ (79,120,000)**	**$ (79,120,000)**

Note 1 : Green highlighted projects above can be funded in the constrained funding analysis

Note 2 : Un-highlighted projects above cannot be funded. New funding sources will need to be identified or improvement will be developer funded.

Note 3 : Long term projects are escalated by 2.5%

TABLE
Shasta Regional Transportation Agency
Summary of Projects - Safety
CITY OF ANDERSON

Project Number	REGIONAL TRANSPORTATION PROJECTS	SHORT TERM TOTAL EST COST OF PROJECT	LONG TERM TOTAL EST COST OF PROJECT	PROJECT BAND	PROJECT TYPE (INTENT)	EXPECTED FUNDING SOURCES
1	SR 273 @ North Street - Intersection Improvements	$ 1,500,000		(2016-2025)	Safety	HSIP/Local/Other
	Total Short Term Needs =	**$ 1,500,000**				
2	SR 273 @ South Street - Intersection Improvements		$ 1,920,000	(2026-2035)	Safety	HSIP/Local/Other
3	Little Street - Realignment		$ 896,000	(2026-2035)	Safety	HSIP/Local/Other
4	Alexander St - Widening		$ 640,000	(2026-2035)	Safety	HSIP/Local/Other
	Total Long Term Fundable Needs =		**$ 3,456,000**			

DESCRIPTION	Short (2016-2025)	Long (2026-2035)	Total
Funding Needed By Short and Long Range Bands	**$ 1,500,000**	**$ 3,456,000**	**$ 4,956,000**
Recap of Expected/Estimated/Unknown Resources			
Highway Safety Improvement Program (HSIP) =	**$ 1,350,000**	**$ 3,110,400**	**$ 4,460,400**
Local/Other =	**$ 150,000**	**$ 345,600**	**$ 495,600**
Total Funding Reasonably Available =	**$ 1,500,000**	**$ 3,456,000**	**$ 4,956,000**
Total Unfunded Needs (or Short Term Carryover) =	**$ -**	**$ -**	**$ -**

Note 1 : Green highlighted projects above can be funded in the constrained funding analysis
Note 2 : Un-highlighted projects above cannot be funded. New funding sources will need to be identified or improvement will be developer funded.
Note 3 : Long term projects are escalated by 2.5%

TABLE
Shasta Regional Transportation Agency
Summary of Projects - Active Transportation
CITY OF ANDERSON

Notes:

Project Number	REGIONAL TRANSPORTATION PROJECTS	SHORT TERM TOTAL EST COST OF PROJECT	LONG TERM TOTAL EST COST OF PROJECT	PROJECT BAND	PROJECT TYPE/INTENT	EXPECTED FUNDING SOURCES
1	Route North Street, class ii bike lane	$ 250,000		(2016-2025)	Safety	unknown
2	Route Balls Ferry Road, From South Street, To SE city limit, class ii bike lane	$ 300,000		(2016-2025)	Safety	unknown
	Total Short Term Needs =	**$ 550,000.00**				
3	Route SR 273, From South Street, To South city limit, class i bike path		$ 640,000	(2026-2035)	Safety	unknown
4	Route South Street, From SW city limit, To SR 273, class ii bike lane		$ 576,000	(2026-2035)	Safety	unknown
5	Route East Street, From Alexander Ave., To Balls Ferry Road, class ii bike lane		$ 256,000	(2026-2035)	Safety	unknown
6	Route Dodson Lane, From Balls Ferry Road, To Rupert Road, class ii bike lane		$ 64,000	(2026-2035)	Safety	unknown
7	Route Stingy Lane, From North Street, To Balls Ferry Road, class ii bike lane		$ 1,536,000	(2026-2035)	Safety	unknown
8	Route Riverside Avenue, From North Street, To Ox Yoke Road, class ii bike lane		$ 576,000	(2026-2035)	Safety	unknown
9	Route McMurray Drive, From North Street, To Balls Ferry Road, class ii bike lane		$ 192,000	(2026-2035)	Safety	unknown
10	Route Ventura Street, From North Street, To Balls Ferry Road, class ii bike lane		$ 128,000	(2026-2035)	Safety	unknown
11	Route Freeman Street, From North Street, To South Street, class ii bike lane		$ 26,000	(2026-2035)	Safety	unknown
12	Route Fairgrounds Drive, From 1st Street, To 3rd Street, class ii bike lane		$ 64,000	(2026-2035)	Safety	unknown
13	Route 3rd Street, From Fairgrounds Drive, To SR 273, class ii bike lane		$ 256,000	(2026-2035)	Safety	unknown
14	Route Marx Way, From SR 273, To Barney Road, class ii bike lane		$ 26,000	(2026-2035)	Safety	unknown
15	Route Pinon Avenue, From SR 273, To the west, class ii bike lane		$ 1,600,000	(2026-2035)	Safety	unknown
16	Route Ferry Street, From ACID canal, To Ventura Atreet, class iii bike route		$ 13,000	(2026-2035)	Safety	unknown
17	Route Barney Road, From South Street, To SR 273, class iii bike route		$ 13,000	(2026-2035)	Safety	unknown
18	Route Alexander Avenue & Little Street, From SR 273, To Riverside Avenue, class iii bike route		$ 13,000	(2026-2035)	Safety	unknown
19	Route 1st Street & Briggs Street, From Fairgrounds Drive, To SR 273, class iii bike route		$ 13,000	(2026-2035)	Safety	unknown
	Total Long Term Fundable Needs =		**$ 640,000**			

DESCRIPTION	Short (2016-2025)	Long (2026-2035)	Total
Funding Needed By Short and Long Range Bands	**$ 550,000**	**$ 5,992,000**	**$ 6,542,000**
Recap of Expected/Estimated/Unknown Resources			
Active Transportation Program (ATP) =	**165,000**	**$ 192,000**	**$ 357,000**
Local/Other =	**165,000**	**192,000**	**$ 357,000**
2% LTF =	**27,500**	**$ 32,000**	**$ 59,500**
Highway Safety Improvement Program (HSIP) =	**$ 192,500**	**$ 224,000**	**$ 416,500**
			$ -
Total Funding Reasonably Available =	**$ 550,000**	**$ 640,000**	**$ 1,190,000**
Total Unfunded Needs (or Short Term Carryover) =	**$ -**	**$ (5,352,000)**	**$ (5,352,000)**
Note 1 : Green highlighted projects above can be funded in the constrained funding analysis			

Note 2 : Un-highlighted projects above cannot be funded. New funding sources will need to be identified or improvement will be developer funded.
Note 3 : Long term projects are escalated by 2.5%

TABLE
Shasta Regional Transportation Agency
Summary of Projects - Interchanges
CITY OF SHASTA LAKE

Project Number	REGIONAL TRANSPORTATION PROJECTS	SHORT TERM TOTAL EST COST OF PROJECT	LONG TERM TOTAL EST COST OF PROJECT	PROJECT BAND	PROJECT TYPE / PROJECT INTENT	EXPECTED FUNDING SOURCES
	NO SHORT RANGE PROJECTS					
	Total Short Term Needs =	$ -				
1	Improve Mountain Gate Interchange Exit 687		$ 2,560,000	(2026-2035)	Interchange	Unfunded or Developer
2	Reconfigure Pine Grove Interchange East Exit 684		$ 4,960,000	(2026-2035)	Interchange	Unfunded or Developer
3	Improve Shasta Dam Blvd Interchange Exit 685		$ 5,120,000	(2026-2035)	Interchange	Unfunded or Developer
	Total Long Term Fundable Needs =		**$ -**			

DESCRIPTION	Short (2016-2025)	Long (2026-2035)	Total
Funding Needed By Short and Long Range Bands	**$ -**	**$ 12,640,000**	**$ 12,640,000**
Recap of Expected/Estimated/Unknown Resources			
Local/Other =	-	$ -	$ -
State Highway Operations and Protection Program (SHOPP) =	-	-	$ -
			$ -
			$ -
			$ -
Total Funding Reasonably Available =	$ -	$ -	$ -
Total Unfunded Needs (or Short Term Carryover) =	$ -	$ (12,640,000)	$ (12,640,000)

Note 1 : Green highlighted projects above can be funded in the constrained funding analysis

Note 2 : Un-highlighted projects above cannot be funded. New funding sources will need to be identified or improvement will be developer funded.

Note 3 : Long term projects are escalated by 2.5%

TABLE
Shasta Regional Transportation Agency
Summary of Projects - Capacity and Safety
CITY OF SHASTA LAKE

Project Number	REGIONAL TRANSPORTATION PROJECTS	SHORT TERM TOTAL EST COST OF PROJECT	LONG TERM TOTAL EST COST OF PROJECT	PROJECT BAND	PROJECT TYPE / PROJECT INTENT	EXPECTED FUNDING SOURCES
	NO SHORT RANGE PROJECTS					
	Total Short Term Needs =	**$ -**				
1	Cascade Boulevard Reconstruction including bike/ped		$ 6,400,000	(2016-2025)	Capacity and Safety	Unfunded
2	North/South Road between Wonderland Boulevard and Cascade Boulevard		$ 5,120,000	(2026-2035)	New Facility	Unfunded or Developer
3	Ashby Rd. widening, sidewalks, separated bike(Class 1) - SR 151 to Pine Grove Ave.		$ 8,961,000	(2026-2035)	Capacity Increase and Safety	Unfunded or Developer
4	Pine Grove Reconstruction		$ 5,120,000	(2026-2035)	Capacity and Safety	Unfunded
5	Shasta Gateway Dr. Extension to Cascade Blvd.		$ 14,337,000	(2026-2035)	New Facility	Unfunded or Developer
6	Cabello Extension - Vallecito to Pine Grove Ave.		$ 2,592,000	(2026-2035)	New Facility	Unfunded or Developer
7	Pine Grove Avenue Extension to Akrich		$ 5,760,000	(2026-2035)	New Facility	Unfunded or Developer
8	Reconstruct Lake Blvd. N/O SR 151		$ 3,840,000	(2026-2035)	Capacity and Safety	Unfunded or Developer (see BOR,BLM,NFS)
9	Cascade Blvd Realignment, SR 151 N of Trinity to Arrowhead(South City Limit) D/N include Pine Grove to creek)		$ 3,392,000	(2026-2035)	Capacity Increase	Unfunded or Developer
	Total Long Term Fundable Needs =		**$ 6,400,000**			

DESCRIPTION	Short (2016-2025)	Long (2026-2035)	Total
Funding Needed By Short and Long Range Bands	**$ -**	**$ 55,522,000**	**$ 55,522,000**
Recap of Expected/Estimated/Unknown Resources			
Local/Other =	**$ -**	**$ 3,200,000**	**$ 3,200,000**
Highway Safety Improvement Program (HSIP) =	**-**	**3,200,000**	**$ 3,200,000**
			$ -
			$ -
			$ -
Total Funding Reasonably Available =	**$ -**	**$ 6,400,000**	**$ 6,400,000**
Total Unfunded Needs (or Short Term Carryover) =	**$ -**	**$ (49,122,000)**	**$ (49,122,000)**

Note 1 : Green highlighted projects above can be funded in the constrained funding analysis

Note 2 : Un-highlighted projects above cannot be funded. New funding sources will need to be identified or improvement will be developer funded.

Note 3 : Long term projects are escalated by 2.5%

TABLE
Shasta Regional Transportation Agency
Summary of Projects - Active Transportation
CITY OF SHASTA LAKE

Notes:

Project Number	REGIONAL TRANSPORTATION PROJECTS	SHORT TERM TOTAL EST COST OF PROJECT	LONG TERM TOTAL EST COST OF PROJECT	PROJECT BAND	PROJECT TYPE/INTENT	EXPECTED FUNDING SOURCES
	NO SHORT RANGE PROJECTS					
	Total Short Term Needs =	**$ -**				
1	Class I Bikeway + Regional Trail - Churn Creek		$ 1,262,000	2026- 2035	Safety	ATP
2	Deer Creek Ave - SR151 to Vallecito - Safe Routes To School		$ 1,930,000	2026- 2035	Safety / Shoulder	ATP
3	Shasta Way - SR 151 to Grand Avenue - Safe Routes To School		$ 1,485,000	2026- 2035	Safety / Shoulder	ATP
4	Class II Bikeway - Cascade Blvd Bike Lanes (Union School to S. City Limit)		$ 1,485,000	2026- 2035	Safety / Shoulder	ATP
5	Class I Bikeway - Ashby Road Bike Path		$ 1,485,000	2026- 2035	Safety / Shoulder	ATP
6	Loop Trail North of Margaret Polf Park		$ 74,000	2026- 2035	Recreation	ATP
7	Class I Bikeway - Pine Grove Avenue Bike Path		$ 2,227,000	2026- 2035	Safety	ATP
8	Class II Bikeway - La Mesa Ave		$ 371,000	2026- 2035	Safety /School Access	ATP
9	Beltline Trail		$ 148,000	2026- 2035	Recreation	ATP
10	Class III Bikeway - Toyon Ave Bike Route (Lake Blvd to Margaret Polf Park)		$ 15,000	2026- 2035	Safety	ATP
11	Class II Bikeway - Shasta Gateway Drive Bike Lanes (Internal to Industrial Park)		$ 15,000	2026- 2035	Safety	ATP
12	Class II Bikeway - Shasta Street Bike Lanes (SR 151 to Grand Coulee)		$ 186,000	2026- 2035	Safety	ATP
13	Class II Bikeway - Grand Coulee Blvd Bike Lanes (SR151 to Cascade Blvd.)		$ 148,000	2026- 2035	Safety	ATP
14	Class III Bikeway - Twin View Blvd Bike Route (Pine Grove to S City Limit)		$ 119,000	2026- 2035	Safety	ATP
15	Class II Bikeway - Black Canyon Road Bike Lanes (Red Bluff to end on N)		$ 742,000	2026- 2035	Safety	ATP
16	Class I Bikeway - Cascade Blvd Extention to Mt. Gate Bike Path		$ 2,969,000	2026- 2035	Safety	ATP
17	Class I Bikeway - Black Canyon extension to Mt. Gate at Shasta Bike Path		$ 742,000	2026- 2035	Safety	ATP
18	Class III Bikeway - Lake Blvd Bike Route (N/O Hwy 151)		$ 134,000	2026- 2035	Recreation	ATP
19	Class III Bikeway - Hwy 151 Bike Route (W/O Lake Blvd)		$ 89,000	2026- 2035	Recreation	ATP
20	Northeast (Mountain Gate) Trail		$ 1,485,000	2026- 2035	Recreation	ATP
21	Churn Creek Regional Trail (Phase II)(Pine Grove N to SR 151)		$ 1,262,000	2026- 2035	Recreation	ATP
	Total Long Term Fundable Needs =		**$ 1,262,000**			

DESCRIPTION	Short (2016-2025)	Long (2026-2035)	Total
Funding Needed By Short and Long Range Bands	**$ -**	**$ 18,373,000**	**$ 18,373,000**
Recap of Expected/Estimated/Unknown Resources			
Active Transportation Program (ATP) =	**$ -**	**$ 441,700**	**$ 441,700**
Local/Other =	**$ -**	**$ 189,300**	**$ 189,300**
2% LTF =	**-**	**$ 126,200**	**$ 126,200**
Highway Safety Improvement Program (HSIP) =	**$ -**	**$ 504,800**	**$ 504,800**
			$ -
Total Funding Reasonably Available =	**$ -**	**$ 1,262,000**	**$ 1,262,000**
Total Unfunded Needs (or Short Term Carryover) =	**$ -**	**$ (17,111,000)**	**$ (17,111,000)**
Note 1 : Green highlighted projects above can be funded in the constrained funding analysis			

Note 2 : Un-highlighted projects above cannot be funded. New funding sources will need to be identified or improvement will be developer funded.
Note 3 : Long term projects are escalated by 2.5%

TABLE
Shasta Regional Transportation Agency
Summary of Projects
TRANSIT

Project Number	REGIONAL TRANSPORTATION PROJECTS	SHORT TERM TOTAL EST COST OF PROJECT	LONG TERM TOTAL EST COST OF PROJECT	PROJECT BAND	PROJECT TYPE / PROJECT INTENT	EXPECTED FUNDING SOURCES
1	RABA - Replacemet Buses, purchase 7 replacemet buses	$ 3,503,000		(2016-2025)	Transit	FTA
2	RABA - Passenger Loading Improvements	$ 1,578,423		(2016-2025)	Transit	FTA
3	RABA - Replacement Vans, purchase 22 replacements vans	$ 1,982,648		(2016-2025)	Transit	FTA
4	RABA - Replacement Vans, purchase 2 replacements vans (Burney)	$ 180,000		(2016-2025)	Transit	FTA
5	RABA - Maintenance Facility/Equipment	$ 250,000		(2016-2025)	Transit	Prop 1B Funds
6	RABA - Radio/ITS Communication Equipment	$ 512,400		(2016-2025)	Transit	Prop 1B Funds
7	RABA - Fare Equipment, fare equipment	$ 265,000		(2016-2025)	Transit	FTA
8	RABA - Computer Equipment	$ 96,000		(2016-2025)	Transit	FTA
9	RABA - Security Upgrades	$ 612,000		(2016-2025)	Tranist/Safety	Prop 1B Safety Security
10	RABA - Transfer Facilities	$ 200,000		(2016-2025)	Transit	Prop 1B Funds
11	RABA - Support Vehicles	$ 76,000		(2016-2025)	Transit	FTA
12	RABA - Miscellaneous Capital Projects	$ 75,000		(2016-2025)	Transit	FTA
13	RABA - Grant Administration	$ 140,000		(2016-2025)	Transit	FTA
14	CTSA - Vehicle Replacement, Update Fleet/Passenger Safety	$ 140,000		(2016-2025)	Transit	FTA
15	CTSA - Dispatch System, Efficiency of routing/dispatching	$ 40,000		(2016-2025)	Transit	FTA
16	Private or Non-Profit - Grant Vans, Acquisition of 4 vans through grant	$ 280,000		(2016-2025)	Tranist/Fills a gap	FTA
	Total Short Term Needs =	**$ 9,930,471**				
17	Private or Non-Profit - Grant Vans, Acquisition of 2 vans through grant		$ 179,000	(2026-2035)	Tranist/Fills a gap	FTA
	Total Long Term Fundable Needs =		**$ 179,000**			

DESCRIPTION	Short (2016-2025)	Long (2026-2035)	Total
Funding Needed By Short and Long Range Bands	**$ 9,930,471**	**$ 179,000**	**$ 10,109,471**
Recap of Expected/Estimated/Unknown Resources			
Federal Transit Administratio (FTA) Grants =	**8,356,071**	**$ 179,000**	**$ 8,535,071**
Proposition 1B Funds =	**962,400**	**-**	**$ 962,400**
Proposition 1B Funds - Safety Security =	**612,000**		**$ 612,000**
			$ -
			$ -
Total Funding Reasonably Available =	**$ 9,930,471**	**$ 179,000**	**$ 10,109,471**
Total Unfunded Needs (or Short Term Carryover) =	$ -	$ -	$ -

Note 1 : Green highlighted projects above can be funded in the constrained funding analysis
Note 2 : Un-highlighted projects above cannot be funded. New funding sources will need to be identified or improvement will be developer funded.
Note 3 : $$ = Project is Partially funded at this time

TABLE
Shasta Regional Transportation Agency
Summary of Projects
AVIATION

Project Number	REGIONAL TRANSPORTATION PROJECTS	SHORT TERM TOTAL EST COST OF PROJECT	LONG TERM TOTAL EST COST OF PROJECT	PROJECT BAND	PROJECT TYPE / PROJECT INTENT	EXPECTED FUNDING SOURCES
1	Fall River Mills Airport - Runway 2-20 Rehabilitation, Runway pavement maintenance	$ 500,000		(2016-2025)	pavement maintenance	FAA - AIP
2	Fall River Mills Airport - Taxiway Rehabilitation, Taxiway pavement maintenance	$ 225,000		(2016-2025)	pavement maintenance	FAA - AIP
3	Fall River Mills Airport - Apron Rehabilitation, Apron pavement maintenance	$ 150,000		(2016-2025)	pavement maintenance	FAA - AIP
4	Redding Municipal Airport - 16-1, Parallel runway (Environmental assessment)	$ 350,000		(2016-2025)		
5	Redding Municipal Airport - 16-2, Air Shasta west apron reconstruction (400'x200') (construction)	$ 1,600,000		(2016-2025)		
6	Redding Municipal Airport - 16-3, T-hangar taxilane reconstruction (construction)	$ 850,000		(2016-2025)		
7	Redding Municipal Airport - 17-1, Parallel runway/taxiway (design only)	$ 500,000		(2016-2025)		
8	Redding Municipal Airport - 18-1, Parallel runway, Environmental - Phase 2 (CEQA reimbursement)	$ 300,000		(2016-2025)		
9	Redding Municipal Airport - 18-2, Parallel runway/taxiway (construction)	$ 4,000,000		(2016-2025)		
10	Redding Municipal Airport - 19-1, Eastside cargo apron expansion (design only)	$ 120,000		(2016-2025)		
11	Redding Municipal Airport - 19-2, New aircraft parking apron (design only)	$ 120,000		(2016-2025)		
12	Redding Municipal Airport - 19-3, All-weather perimeter road - RSAP recommendation (design only)	$ 90,000		(2016-2025)		
13	Redding Municipal Airport - 19-4, Upgrade airfield electrical system (design only)	$ 150,000		(2016-2025)		
14	Redding Municipal Airport - 19-5, Security fencing (design only)	$ 55,000		(2016-2025)		
15	Redding Municipal Airport - 20-1, Eastside cargo apron expansion	$ 1,200,000		(2016-2025)		
16	Redding Municipal Airport - 20-2, New aircraft parking apron	$ 1,200,000		(2016-2025)		
17	Redding Municipal Airport - 20-3, All-weather perimeter road - RSAP recommendation	$ 600,000		(2016-2025)		
18	Redding Municipal Airport - 20-4, Upgrade airfield electrical system	$ 1,250,000		(2016-2025)		
19	Redding Municipal Airport - 20-5, Security fencing	$ 480,000		(2016-2025)		
20	Benton Airpark - 16-1, AWOS	$ 250,000		(2016-2025)		
21	Benton Airpark - 16-2, Rehabilitate parallel taxiway "B" (design only)	$ 55,000		(2016-2025)		
22	Benton Airpark - 17-1, Rehabilitate parallel taxiway "B"	$ 360,000		(2016-2025)		
23	Benton Airpark - 17-2, Eastside T-hangar taxilane reconstruction (design only)	$ 72,000		(2016-2025)		
24	Benton Airpark - 18-1, Eastside T-hangar taxilane reconstruction	$ 820,000		(2016-2025)		
25	Benton Airpark - 18-2, Security fencing - North RPZ (design only)	$ 14,000		(2016-2025)		
26	Benton Airpark - 19-1, Security fencing - North RPZ	$ 90,000		(2016-2025)		
27	Benton Airpark - 19-2, Rehabilitate parallel taxiway "A" (design only)	$ 55,000		(2016-2025)		
28	Benton Airpark - 20-1, Rehabilitate parallel taxiway "A"	$ 420,000		(2016-2025)		
29	Benton Airpark - 20-2, Westside T-hangar taxilane reconstruction (design only)	$ 80,000		(2016-2025)		
30	Redding Municipal Airport - 21-1, Pavement preservation (East apron) - Seal coat (design only)	$ 18,000		(2016-2025)		
31	Redding Municipal Airport - 21-2, Pavement preservation (Runway 12/30, apron, and taxiways) (design only)	$ 120,000		(2016-2025)		
32	Redding Municipal Airport - 21-3, Install MITL (Taxiway "M", "C", and "H") (design only)	$ 68,000		(2016-2025)		
33	Redding Municipal Airport - 21-4, Eastside apron expansion (300'x450') (design only)	$ 165,000		(2016-2025)		
34	Redding Municipal Airport - 22-1, Pavement preservation (East apron) - Seal coat	$ 120,000		(2016-2025)		
35	Redding Municipal Airport - 22-2, Pavement preservation (Runway 12/30, apron, and taxiways)	$ 800,000		(2016-2025)		
36	Redding Municipal Airport - 22-3, Install MITL (Taxiway "M", "C", and "H")	$ 450,000		(2016-2025)		
37	Redding Municipal Airport - 22-4, Eastside apron expansion (300'x450')	$ 1,100,000		(2016-2025)		
38	Benton Airpark - 21-1, Westside T-hangar taxilane reconstruction	$ 900,000		(2016-2025)		
39	Benton Airpark - 21-2, East apron pavement rehabilitation (design only)	$ 95,000		(2016-2025)		
40	Benton Airpark - 22-1, East apron pavement rehabilitation	$ 950,000		(2016-2025)		
41	Benton Airpark - 22-2, Construct T-hangar taxilane (design only)	$ 36,000		(2016-2025)		
42	Benton Airpark - 23-1, Construct T-hangar taxilane	$ 237,000		(2016-2025)		
43	Benton Airpark - 23-2, Construct 10 unit T-hangar (design only)	$ 135,000		(2016-2025)		
44	Benton Airpark - 24-1, Construct 10 unit T-hangar	$ 900,000		(2016-2025)		
	Total Short Term Needs =	**$ 22,050,000**				
45	Fall River Mills Airport - PAPI, Install Precision Approach Path Indicator (PAPI) system		$ 89,000	(2026-2035)	safety improvement	FAA - AIP
46	Fall River Mills Airport - IFR, Install Instrument Flight Approach (IFR) system		$ 22,000	(2026-2035)	safety improvement	FAA - AIP
	Total Long Term Fundable Needs =		**$ 111,000**			

DESCRIPTION	Short (2016-2025)	Long (2026-2035)	Total
Funding Needed By Short and Long Range Bands	**$ 22,050,000**	**$ 111,000**	**$ 22,161,000**
Recap of Expected/Estimated/Unknown Resources			
Federal Aviation Administration (FAA) - Airport Improvement Program (AIP) =	**$ 19,948,660**	**$ 99,900**	**$ 20,048,560**
CA State Division of Aeronautics =	**$ 285,480**	**$ 4,995**	**$ 290,475**
Local Share =	**$ 1,815,860**	**$ 6,105**	**$ 1,821,965**
			$ -
			$ -
Total Funding Reasonably Available =	**$ 22,050,000**	**$ 111,000**	**$ 22,161,000**
Total Unfunded Needs =	**$ -**	**$ -**	**$ -**
Note 1 : Green highlighted projects above can be funded in the constrained funding analysis			

Note 2 : Un-highlighted projects above cannot be funded. New funding sources will need to be identified or improvement will be developer funded.
Note 3 : Long term projects are escalated by 2.5%

TABLE
Shasta Regional Transportation Agency
Summary of Projects
RECREATION

Project Number	REGIONAL TRANSPORTATION PROJECTS	SHORT TERM TOTAL EST COST OF PROJECT	LONG TERM TOTAL EST COST OF PROJECT	PROJECT BAND	PROJECT TYPE / PROJECT INTENT	EXPECTED FUNDING SOURCES
1	Great Shasta Rail Trail Association - Black Ranch Road in Burney, Stage two buildout of primary trailhead in Burney	$ 25,000		(2016-2025)	Recreation, safety	ATP
2	Great Shasta Rail Trail Association - Clark Creek Road (north of Lake Britton), Stage two buildout of primary trailhead on Clark Creek Road	$ 25,000		(2016-2025)	Recreation, safety	EEMP
3	Great Shasta Rail Trail Association - Rail banked right-of-way between Burney and McCloud, Tread improvement on Great Shasta Rail Trail	$ 100,000		(2016-2025)	Recreation	ATP
4	Great Shasta Rail Trail Association - Highway 89 just north of intersection with Hwy 299, Improve Highway 89 crossing on Great Shasta Rail Trail	$ 20,000		(2016-2025)	Safety	ATP
5	Great Shasta Rail Trail Association - North of Clark Creek Road on rail banked right-of-way, Culvert replacement along Great Shasta Rail Trail	$ 72,000		(2016-2025)	Drainage, property safety	Sierra Nevada Conservancy
6	Great Shasta Rail Trail Association - Lake Britton, Lake Britton Trestle Rehabilitation	$ 300,000		(2016-2025)	Safety	RTP
7	Great Shasta Rail Trail Association - Just south of Lake Britton, Establish pedestrian access between Great Shasta Rail Trail and McArthur Burney Falls State Park	$ 100,000		(2016-2025)	Safety, recreation	RTP
8	Great Shasta Rail Trail Association - Black Ranch Road, just north of Burney, Stage two buildout of primary trailhead at Berry Wye	$ 25,000		(2016-2025)	Recreation, safety	EEMP
9	Great Shasta Rail Trail Association - re-decking of Lake Britton Bridge to accommodate trail users	$ 800,000		(2016-2025)	Recreation, safety	unknown
10	Great Shasta Rail Trail Association - abatement of red lead paint on Lake Britton Bridge	$ 200,000		(2016-2025)	Recreation, safety	unknown
11	National Park Service - Whiskeytown Recreation Area, New entrance stations on Kennedy Memorial Drive near Whiskeytown Headquarters and on Oak Bottom Road near the campground store.	$ 10,000,000		(2016-2025)	Gateway	NPS
12	National Park Service - Whiskeytown Recreation Area, Up to four designated parking areas adjacent to the lake to allow for entrance and exit lanes to resolve safety concerns.	$ 200,000		(2016-2025)	Parking	unknown
13	California State Parks - Shasta State Historic Park, Construct parking lot for day use visitors and school busses. (This project will alleviate some of the parking that occurs on Highway 299.)	$ 200,000		(2016-2025)	Parking	unknown
14	Bureau of Land Management - Redding Field Office, Improve vehicle access to Chappie-Shasta Off-Highway Vehicle Area, Copley Mt. Staging Area to Chappie-Shasta OHVS Area.	$ 1,000,000		(2016-2025)	Recreation	unknown
15	Great Shasta Rail Trail Association - Just nouth of Lake Britton, Replace railroad overpass to allow safe passage by pedestrians on the Great Shasta Rail Trail	$ 125,000		(2016-2025)	Safety	EEMP
16	National Park Service - Whiskeytown Recreation Area, West Boundary entrance pull-out at Whiskeytown boundary on Hwy 299. Develop entrance pull-out similar to the one completed at the east boundary.	$ 250,000		(2016-2025)	Gateway	unknown
17	Shasta County - Road segment Abandoned McCloud Railway Company railbed, From Burney, To TBD, class ii bike lane	$ 250,000		(2016-2025)	Recreation	HSIP/ATP
	Total Short Term Needs =	**$ 13,692,000**				
18	National Park Service - Whiskeytown Recreation Area, Multiuse trail. Tower House Historic District to Lewiston Turnpike.		$ 5,000,000	(2026-2035)	Recreation	unknown
19	California State Parks - McArthur-Burney Falls Memorial State Park, New park entrance road, entrance kiosk and parking lot for day use vehicles and buses. Redesign of abandoned section of Highway 89 into park perimeter road.		$ 200,000	(2026-2035)		unknown
	Total Long Term Fundable Needs =		**$ 5,200,000**			

DESCRIPTION	Short (2016-2025)	Long (2026-2035)	Total
Funding Needed By Short and Long Range Bands	**$ 13,692,000**	**$ 5,200,000**	**$ 18,892,000**
Recap of Expected/Estimated/Unknown Resources			
Environmental Enhancement and Mitigation Program (EEMP) =			**$ -**
Active Transportation Program (ATP) =			**$ -**
Recreational Trails Program (RTP) =			**$ -**
National Park Service (NPS) =			**$ -**
SNC =			**$ -**
Total Funding Reasonably Available =	**$ -**	**$ -**	**$ -**
Total Unfunded Needs =	**$ (13,692,000)**	**$ (5,200,000)**	**$ (18,892,000)**
Note 1 : Green highlighted projects above can be funded in the constrained funding analysis			

Note 2 : Un-highlighted projects above cannot be funded. New funding sources will need to be identified or improvement will be developer funded.

TABLE
Shasta Regional Transportation Agency
Summary of Projects
PIT RIVER TRIBE AND REDDING RANCHERIA (did not report)

Project Number	REGIONAL TRANSPORTATION PROJECTS	SHORT TERM TOTAL EST COST OF PROJECT	LONG TERM TOTAL EST COST OF PROJECT	PROJECT BAND	PROJECT TYPE / PROJECT INTENT	EXPECTED FUNDING SOURCES
1	Wamari Way, New road with two bridges (Burney Creek and Burney Creek Overflow)	unknown		(2016-2025)	New Facility	IRR
	Total Short Term Needs =	$ -				
	Total Long Term Fundable Needs =		$ -			

DESCRIPTION	Short (2016-2025)	Long (2026-2035)	Total
Funding Needed By Short and Long Range Bands	$ -	$ -	$ -
Recap of Expected/Estimated/Unknown Resources			
			$ -
			$ -
			$ -
			$ -
	$ -	$ -	$ -
Total Funding Reasonably Available =	$ -	$ -	$ -
Total Unfunded Needs =	$ -	$ -	$ -
Note 1 : Green highlighted projects above can be funded in the constrained funding analysis			

Note 2 : Un-highlighted projects above cannot be funded. New funding sources will need to be identified or improvement will be developer funded.