

3. CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA) EVALUATION

3.1 Determining Significance Under CEQA

The proposed Project is a joint project by the California Department of Transportation (Department) and the Federal Highway Administration (FHWA) and is subject to state and federal environmental review requirements. Project documentation, therefore, has been prepared in compliance with both the California Environmental Quality Act (CEQA) and the National Environmental Policy Act (NEPA). FHWA's responsibility for environmental review, consultation, and any other actions required by applicable Federal environmental laws for this Project are being, or have been, carried out by Caltrans pursuant to 23 United States Code Section 327 (23 USC 327) and the Memorandum of Understanding dated December 23, 2016 and executed by FHWA and Caltrans. The Department is the lead agency under CEQA and NEPA.

One of the primary differences between NEPA and CEQA is the way significance is determined. Under NEPA, significance is used to determine whether an EIS, or a lower level of documentation, will be required. NEPA requires that an EIS be prepared when the proposed federal action (Project) *as a whole* has the potential to "significantly affect the quality of the human environment." The determination of significance is based on context and intensity. Some impacts determined to be significant under CEQA may not be of sufficient magnitude to be determined significant under NEPA. Under NEPA, once a decision is made regarding the need for an EIS, it is the magnitude of the impact that is evaluated and no judgment of its individual significance is deemed important for the text. NEPA does not require that a determination of significant impacts be stated in the environmental documents.

CEQA, on the other hand, does require the Department to identify each "significant effect on the environment" resulting from the Project and ways to mitigate each significant effect. If the Project may have a significant effect on any environmental resource, then an EIR must be prepared. Each and every significant effect on the environment must be disclosed in the EIR and mitigated if feasible. In addition, the CEQA Guidelines list a number of "mandatory findings of significance," which also require the preparation of an EIR. There are no types of actions under NEPA that parallel the findings of mandatory significance of CEQA. This chapter discusses the effects of this Project and CEQA significance.

3.2 CEQA Environmental Checklist

The CEQA Environmental Checklist evaluates physical, biological, social, and economic factors that might be affected by the proposed Project and the significance of those effects as defined under CEQA. In many cases, background studies performed in connection with the Project indicate that there are no impacts to a particular resource. A 'No Impact' answer in the last

column reflects this determination. The words “significant” and “significance” used throughout the following checklist are related to CEQA only impacts, not NEPA. The questions in this form are intended to encourage the thoughtful assessment of impacts and do not represent thresholds of significance.

Project features, which can include both design elements of the Project and Caltrans Standard Specifications that are applicable to the Project, are considered to be an integral part of the Project and have been considered prior to any significance determinations documented below; see Chapters 1 and 2 for a discussion of these features. The annotations to this checklist are summaries of information contained in Chapter 2 in order to provide the reader with the rationale for significance determinations; for a more detailed discussion of the nature and extent of impacts, see Chapter 2. This checklist incorporates by reference the information contained in Chapters 1 and 2.

AESTHETICS

Would the Project:	Significant and Unavoidable Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Have a substantial adverse effect on a scenic vista?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Substantially degrade the existing visual character or quality of the site and its surroundings?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

a) No Impact

As discussed in the Visual/Aesthetics section 2.1.7, the SR 57 Project is not within a scenic highway designation, is not designated as a view corridor, nor would it obstruct or alter views from or to other scenic vistas in the area. Therefore, the Project would not adversely impact scenic vistas.

b) No Impact

The freeway segment within the SR 57 Project site is not a designated State Scenic Highway, or identified as eligible to be designated as one, and is not part of local jurisdictions designated scenic routes.

c) Less than Significant Impact

The Project would have a less than significant impact on the existing visual character and quality of the site, as analyzed under the Visual/Aesthetics section 2.1.7, This is because the proposed Project would not change the existing character (surrounding land use, vegetation type, visual patterns such as form and scale of the highway, etc.) or the quality (vividness, intactness, and unity) of the site after landscaping is replaced in kind based on a Landscape Master Plan. Temporary changes to the quality and character of the site may occur during construction due to signage, lighting, and machinery presence. The Project would not change the scale or form of the existing highway, and would not obscure views of scenic resources such as the San Bernardino Mountains and Saddleback Mountain formation. Vegetation removed as part of the Project would be replaced in compliance with the Project's landscaping plan.

d) Less than Significant Impact

Temporary sources of light and glare from construction may occur and be visible from adjacent views of the area. New soffit lighting would be provided under the new bridge decking where needed to improve visibility and safety conditions. All lights would be directed towards the streets to minimize effect on nearby areas. Nighttime construction lighting would also be shielded to minimize ambient spillover to surrounding areas. New signage and sign poles would be installed as part of the Project. Metal signs and posts would be compatible with the existing conditions, and would not significantly increase light or glare.

The Project would not create substantial light and glare that would adversely affect day or night views in the area; therefore, it is anticipated that the Project would have less than significant impact due to light and glare. No mitigation measures are required.

AGRICULTURE AND FORESTRY RESOURCES

In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Dept. of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment Project; and the forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board.

Would the Project:	Significant and Unavoidable Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) 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 non-agricultural use?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Result in the loss of forest land or conversion of forest land to non-forest use?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

a) No Impact

No unique or prime farmlands exist within close proximity to the project site. No conversion of prime farmland, unique or farmland of local importance would result under the Project.

b) No Impact

The proposed Project would not conflict with existing zoning for agricultural use, or a Williamson Act contract. There are no parcels under a Williamson Act contract within the project limits.

c) No Impact

There are no forest or timberlands within the project limits.

d) No Impact

There are no forest or timberlands within the project limits.

e) No Impact

There are no other changes anticipated to farmland or forest land.

AIR QUALITY

Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations.

Would the Project:	Significant and Unavoidable Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Conflict with or obstruct implementation of the applicable air quality plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Violate any air quality standard or contribute substantially to an existing or Projected air quality violation?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non- attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d) Expose sensitive receptors to substantial pollutant concentrations?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
e) Create objectionable odors affecting a substantial number of people?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

a) No Impact

The project area lies in the South Coast Air Basin (SCAB), which includes all of Orange County as well as the non-desert portions of Los Angeles, Riverside and San Bernardino counties. The SR 57 Northbound Improvement Project was included in the regional emissions analysis conducted by the SCAG for the conforming 2012-2035 Regional Transportation Plan/Sustainable Communities Strategy. The SR57 Northbound Improvement Project is also included in the SCAG 2019 FTIP.

FHWA determined that the RTP conforms to the SIP on June 4, 2012, that Amendment #1 to the RTP conforms to the SIP on July 15, 2013, and that Amendment #2 to the RTP conforms to the SIP on December 15, 2014.

b) Less than Significant Impact

The Project's design concept and scope have not changed significantly from what was analyzed in the regional emission analysis. This analysis found that the plan, which takes into account regionally significant projects and financial constraint, will conform to the SIP(s) for attaining and maintaining the NAAQS as provided in Section 176(c) of the Clean Air Act.

The impact analyses provided in Section 2.2.6 demonstrate that the Project emissions during short-term construction and long-term operations would not violate any air quality standard or contribute substantially to any existing or projected air quality violation.

c) Less than Significant Impact

Cumulative impacts can result from individually minor but collectively significant projects taking place over a period of time. The Basin is the study area for cumulative effects on air quality. The Basin experiences chronic exceedances of state and federal ambient air quality standards as a consequence of past and present projects, and it is subject to continued nonattainment status by reasonably foreseeable future projects. These nonattainment conditions within the region are considered cumulatively significant. The SCAQMD has prepared and periodically updates the Basin's regional AQMP that sets forth a comprehensive and integrated program that would lead the Basin into compliance with the federal and state air quality standards. A project would be consistent with the AQMP, which is intended to bring the Basin into attainment for all criteria pollutants, if it is included within the AQMP emissions inventory. As discussed in the Air Quality section, the Project is in compliance with the goals of the 2012-2035 Regional Transportation Plan/Sustainable Communities Strategy which conforms to the SIP for attaining and maintaining the NAAQS and of which is included in the AQMP.

As discussion in the Air Quality section notes, emissions from construction equipment could temporarily generate enough PM₁₀, PM_{2.5}, and small amounts of CO, SO₂, NO_x, and VOCs to be of concern. Most of the construction impacts to air quality are short-term in duration and will comply with standard specifications from Caltrans and SCAQMD, therefore, will not result in long-term adverse conditions.

d) Less than Significant Impact

Land uses considered sensitive receptors include residences, schools, playgrounds, childcare centers, athletic facilities, long-term health care facilities, rehabilitation centers, convalescent centers, and retirement homes. Land uses within the project area include residential, schools, health care facilities, hotel, parks and playgrounds. The residential areas are located directly southeast of the project area.

During construction, short-term degradation of air quality may occur due to the release of particulate emissions (airborne dust) generated by excavation, grading, hauling, and other construction-related activities. Standard specifications and other project elements (as outlined in

Section 1.3.1.1) for construction activities would minimize the exposure of these pollutants to nearby sensitive receptors.

e) **Less Than Significant Impact**

Some phases of construction, particularly asphalt paving, may result in short-term odors in the immediate area of each paving site(s). Such odors would quickly disperse to below detectable levels as distance from the site(s) increases. Given mandatory compliance with SCAQMD rules, no construction activities or materials are proposed that would create a meaningful level of objectionable odors that would impact a substantial amount of people.

Biological Resources

Would the Project:	Significant and Unavoidable Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) 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?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) 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 US Fish and Wildlife Service?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) 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?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d) 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?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

a) Less Than Significant Impact

Habitat within project site was not considered suitable to support special status animal species. Nor did surveys detect special status animals within the project site. Therefore, there would be no impacts to special status species, either directly through habitat modification, or indirectly. However, OCTA and Caltrans have voluntarily elected to impose avoidance measures BIRD-1 and BIRD BAT-1 through BIRD BAT-3 to reduce the magnitude of the Project's potential effect on nesting birds and bats. See Chapter 2 Section 2.3.4.4 for the referenced measure.

b) No Impact

None of the vegetation communities and land cover types detected within the Project are characterized as sensitive or unique natural communities. It is worth noting that Natural Communities of Special Concern are those locales that include rare plant and animal species, or are habitats with unique biological functions and values.

c) Less than Significant with Mitigation Incorporated

No wetlands were identified in the BSA. However, excavation and grading from the required widening of the bridge piers below the Santa Ana River Bridge and within the Santa Ana Riverbed would result in unavoidable permanent loss of WoUS and WoS (i.e., Santa Ana River). In addition, the Project would temporally disturb WoUS and WoS. In order to mitigate impacts to WoUS and WoS, WET-1 will be implemented as compensatory mitigation to address permanent loss of streambed and jurisdictional waters (less than 0.1 acre). This measure requires any unavoidable permanent losses of streambeds and jurisdictional water (less than 0.1 acre) to be compensated at the pre-approved mitigation sites identified in Table E-1 of Appendix E of the OCTA M2 NCCP/HCP. Additionally, for temporary disturbances to streambeds, the impact areas will be restored to their pre-project conditions, when appropriate, to achieve the no-net-loss standards. See Chapter 2 Section 2.3.2.4 for the referenced measure.

d) Less Than Significant Impact

A majority of the project area that would be disturbed (over 80%) would be confined to developed land containing public infrastructure and non-native habitat for wildlife. However, the Project includes a portion of the Santa Ana River, which is a well-known wildlife movement and migration corridor within Orange County. Wildlife movement and migration corridors are used by individual species for refuge or dispersal purposes to transfer into other more expansive open-spaces that can facilitate breeding, foraging, or population-level movements. The Santa Ana River links areas of wildlife habitat that are otherwise separated by rugged terrain, changes in vegetation, or human disturbance. Within the project limits the Santa Ana River is primarily used as a flood control channel and supports minimal vegetation. The existing bridge structure that spans the Santa Ana River is very large and open potentially supporting wildlife movement. The Project proposes extending the pier walls within the Santa Ana River to support the widened bridge deck. The alignment of the bridge in relation to the river would not change. Extending the

pier walls would slightly reduce the openness index of the bridge structure; however, it would still be more than sufficient to accommodate wildlife. Therefore, the Project is not expected to reduce the functionality of the crossing. After construction, wildlife would continue to be able to use the bridge undercrossing as a movement/migration corridor. The Project will not result in the permanent loss of any migration corridors or landscape linkages. There are no native wildlife nurseries within the BSA.

e) No Impact

This Project would not conflict with any local policies or ordinances protecting biological resources. Avoidance measure BIRD 1 – Nesting Birds Policy would be implemented to conform to the OCTA Conservation Plan. See Chapter 2 Section 2.3.4.4 for the referenced measure.

f) No Impact

The proposed project is a Covered Activity under the OCTA M2 Natural Community Conservation Plan/Habitat Conservation Plan (NCCP/HCP). A Certificate of Inclusion was executed for Caltrans for the proposed project at OCTA's request on July 12, 2018. On July 16, 2018, Caltrans sent a letter to USFWS and CDFW, collectively referred to as the Wildlife Agencies, requesting concurrence that the project is consistent with the NCCP/HCP. Written concurrence from USFWS and CDFW was received by Caltrans on August 21, 2018.

Cultural Resources

Would the Project:	Significant and Unavoidable Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Cause a substantial adverse change in the significance of a historical resource as defined in § 15064.5?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to § 15064.5?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d) Disturb any human remains, including those interred outside of dedicated cemeteries?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

a) No Impact

The only built historic resource located within the APE is the former BNSF Railroad, now owned by OCTA. Widening the overhead bridge will consist of crane-placed precast girders over the railroad within the OCTA right of way at the existing pedestrian platforms. This activity will span over the railroad and thus will not impact the railroad's integrity as a historic resource. The four bridge structures within the APE are listed as Category 5 (Not Eligible for the NRHP) in Caltrans Historic Bridge Inventory and were not found eligible for listing on the California Register of Historical Resources (CRHR).

b) Less than Significant Impact

The Project would require some excavation ranging from 2 to 3 feet to a maximum depth of 10 to 12 feet. Most of the sediments within the APE are artificial fill extending to a depth of about 20 feet. Excavation within these fill soils would be no deeper than 5 feet and therefore, has no potential for encountering archaeological resources. Excavation required to extend the pier walls within the Santa Ana River would be to a maximum depth of about 12 feet. Soils within the river include native materials known to have medium to high potential for buried resources. However, due to past scouring from flood events, on-going ground disturbance activities related to OCFCD water re-charge management, and deepening of the riverbed as a flood control measure below levels where prehistoric sites are likely to occur, the Project is unlikely to encounter any deeply buried deposits. During pedestrian surveys no archaeological resources were observed and no

archaeological resources have been previously recorded within the APE. Therefore, the potential for subsurface archaeological deposits within the project segment of the river was determined to be low.

It is Caltrans's policy to halt work should unidentified cultural materials be unearthed during construction and be redirected until the find can be assessed for significance. Based on the above analysis and with the addition of Caltrans standard measures, the Project is expected to have a less than significant potential for impacts to archaeological resources.

c) Less than Significant Impact

Results of record searches indicate no previous fossil localities recorded within the project APE or within five miles of the Project. Field surveys showed visible sediments were primarily artificial fill and surface sediments were young alluvial fans. However, much of the natural ground surface (soils) within the study area could not be surveyed due to existing hardscape or landscaping. No fossils were found during the survey. The maximum depth for project excavation would be about 12 feet for the pier walls within the Santa Ana River. Excavation for retaining walls and surface paving outside of the river would not exceed five feet in depth and would be within areas covered by artificial fill extending 20 feet in depth. Auguring and pile driving may rotate up fragmentary fossils, but they would lack context, formation identification and other elements that are critical to scientific significance; therefore, auguring and pile driving activities are exempt from monitoring. Based on the records search, field surveys and limited excavation within native soils it is considered unlikely that fossils meeting significance criteria would be encountered during project construction. In addition, Caltrans standard specification requiring work to be halted within 60 feet of an unanticipated discovery until the find can be evaluated by a qualified paleontologist would reduce the potential for impacts to less than significant.

d) Less Than Significant Impact

The Project is not within, adjacent to or within 2,000 feet of a known cemetery or other facility supporting the internment of human remains. Should undiscovered human remains be encountered during project construction, Caltrans standard specifications requires that work be stopped in the area, the area be secured, and the resident engineer notified. Additionally, State Health and Safety Code Section 7050.5 states that further disturbance and activities shall cease in any area or nearby area suspected to overlie remains, and the County Coroner shall be contacted. Pursuant to Public Resources Code (PRC) Section 5097.98, if the remains are thought to be Native American, the Coroner will notify the NAHC, which will then notify the Most Likely Descendant (MLD). At this time, the person who discovered the remains will contact the California Department of Transportation, District 12 Environmental Analysis - Specialist Branch, so that they may work with the MLD on the respectful treatment and deposition of the remains. Further provisions of PRC 5097.98 are to be followed as applicable. Based on the above analysis and standard measures, the Project is not expected to disturb any human remains, including those interred outside of dedicated cemeteries.

Geology and Soils

Would the Project:	Significant and Unavoidable Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
ii) Strong seismic ground shaking?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
iii) Seismic-related ground failure, including liquefaction?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
iv) Landslides?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Result in substantial soil erosion or the loss of topsoil?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) 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?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

a) Less than Significant

i) Less than Significant

The site is located in the seismically active region of Southern California; however, the project site is not located within an APEFZ (i.e. is not on or near the surface traces of active faults). Therefore, potential for surface rupture is considered low.

ii) Less than Significant

Seismic activity from nearby and distant faults may cause those in and around the project site to experience strong ground motion in the event of an earthquake. Active fault zones lie outside of the City of Anaheim, and the site could be subjected to strong ground motion due to these fault zones. The improvements to the project site would not impact this seismic activity's intensity, and the structures to be built and added would be designed or retrofitted to seismic standards.

iii) Less than Significant

The project site includes areas located within a designated liquefaction hazard zone mapped by California Geological Survey (CGS). In these areas, loose to medium-dense sands are present below groundwater and could result in liquefaction during a seismic event. To reduce risks from potential liquefaction, OCTA and Caltrans have voluntarily elected to impose measure GEO-1. During the design phase of the Project, in depth engineering studies will be performed to assess liquefaction potential in greater detail.

iv) Less than Significant

The local topography of the site also characterizes the project site to have a low landslide and rockfall potential. The project area is not within a designated landslide hazard zone mapped by the California Geological Survey which decreases the chances of landslides triggered by an earthquake.

b) Less than Significant

Excavation activities during construction, including in areas of cut and fill, may increase the potential for soil erosion within the project area. According to the Water Quality and Storm Water section of Chapter 2 in this document, temporary effects of construction on soil erosion would be addressed through the implementation of erosion control BMPs. No substantial adverse impacts related to soil erosion or loss of topsoil are expected as a result of the Project. It is anticipated that the Project would have less than significant impacts on erosion or loss of topsoil.

c) Less than Significant Impact

The Project is not located on a geological unit or soil that can become unstable or expansive due to the Project. As mentioned in the response to question a, only in the event of seismic activity would liquefaction and lateral spreading potentially occur due to the Project being located in loose to medium dense sands. According to the preliminary geotechnical screening, these soils

are located beneath the groundwater and thus have potential for liquefaction and lateral spreading during a seismic event. Any fill soils would be reviewed and approved by the Geotechnical Engineer of Record in accordance with Caltrans standards. Further geotechnical study on liquefaction potential in the project area will be conducted during the design phase of the Project.

d) No Impact

The majority of the subsurface soils encountered is classified as coarse-grained soils and, therefore, are not anticipated to have potential for expansion. Soil sampling and laboratory testing will be required during final design to confirm expansion, swell, and collapse potential.

e) No Impact

The Project does not include the construction of septic tanks or alternative waste water systems, nor does it require any wastewater disposal.

Greenhouse Gas Emissions

Would the Project:	Significant and Unavoidable Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	Caltrans has used the best available information based to the extent possible on scientific and factual information, to describe, calculate, or estimate the amount of greenhouse gas emissions that may occur related to this Project. The analysis included in the climate change section of this document provides the public and decision-makers as much information about the Project as possible. It is Caltrans' determination that in the absence of statewide-adopted thresholds or GHG emissions limits, it is too speculative to make a significance determination regarding an individual project's direct and indirect impacts with respect to global climate change. Caltrans remains committed to implementing measures to reduce the potential effects of the Project. These measures are outlined in the climate change section that follows the CEQA checklist and related discussions.			
b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?				

See Chapter 2.2.6 Climate Change for discussion of greenhouse gas (GHG) emissions and climate change.

Hazards and Hazardous Materials

Would the Project:	Significant and Unavoidable Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the Project result in a safety hazard for people residing or working in the project area?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
f) For a Project within the vicinity of a private airstrip, would the Project result in a safety hazard for people residing or working in the project area?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
h) Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

a) Less than Significant Impact

The proposed Project would not routinely use, generate, or transport hazardous material or waste. The Project may encounter contaminants such as yellow thermoplastic pavement marking, aerially deposited lead, polychlorinated biphenyls in the corridor, due to its potential to travel to the site through groundwater, soil, or leakage. With the implementation of measures HAZ-1 through HAZ-3 it is anticipated that there would be minimal impacts to the public due to disposal of hazardous material.

b) Less than Significant Impact

Potential sources of hazardous waste/materials that may be encountered during construction include yellow thermoplastic pavement marking, aerially deposited lead, polychlorinated biphenyls that may be contained within the structures and highway paint and any potentially undiscovered sources of contamination. The standard measures described in Section 2.2.5.3, as well as measures HAZ-1 through HAZ-3 would be implemented to avoid and minimize the potential for hazard to workers and the public. The Project would have a less than significant impact to the public or the environment as a result of conditions involving the release of hazardous materials into the environment.

c) No Impact

No schools exist in the project area or within a half mile from the Project. Thus, it is not anticipated that the Project would have an impact on schools due to hazardous material.

d) No Impact

The project is not located on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5.

e) No Impact

The Project is not located within an airport land use plan, and is not located within two miles of a public use airport. Therefore, the Project would not result in a safety hazard for people residing or working in the project area.

f) No Impact

The Project is not located within a private airstrip. Therefore, the Project would not result in a safety hazard for people residing or working in the project area.

g) Less than Significant Impact

The Project would improve travel conditions on SR 57 within the project area. Due to partial freeway and partial and full ramp closures for the construction of the Build Alternatives, emergency services providers could experience travel delays to/from emergency scenes during ramps closures and partial freeway closures. All temporary partial freeway, full and partial ramp closures and detour plans would be coordinated with law enforcement, fire protection, and

emergency medical service providers to minimize temporary delays in emergency response times as described in Section 2.1.6, Traffic and Transportation.

Construction impacts are anticipated to be temporary and for short terms occurring during off peak, nighttime and weekends. These impacts would be further reduced with implementation of the project TMP.

h) No Impact

The Project is located in an urbanized area and does not include wildlands. It is not anticipated that the Project would bring traffic any closer to forestland, and would not result in increasing the risk of fire to nearby residences or business. No mitigation measures are required.

Hydrology and Water Quality

Would the Project:	Significant and Unavoidable Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Violate any water quality standards or waste discharge requirements?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) 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 (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) 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?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d) 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?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
e) 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?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
f) Otherwise substantially degrade water quality?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
g) Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Would the Project:	Significant and Unavoidable Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
h) Place within a 100-year flood hazard area structures which would impede or redirect flood flows?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
i) 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?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
j) Inundation by seiche, tsunami, or mudflow	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

a) Less than Significant

Construction and operation of this Project has the potential to discharge pollutants into the receiving waters of the Santa Ana River as identified in Section 2.2.2 Water Quality and Storm Water Runoff. Reduction of impacts would be through implementation of a SWPPP, SWMP, and various BMP's to decrease the likelihood of violating water quality and discharge standards. It is anticipated that the Project would have less than significant impact on water quality and waste discharge requirements.

b) Less than Significant

As discussed in Section 2.2.2 Water Quality and Storm Water Runoff, the nearest recharge basin into the OCGB is 1.3 miles upstream of the project site. The Santa Ana River in the project boundary has an unlined channel bed and slopes and provides an opportunity for water to percolate into the underground aquifers. The Project would increase impervious surfaces, but will not significantly impact the recharge of groundwater within the Santa Ana River or project area due to the size of the Orange County Ground Basin. Nor would the Project result in uses of the groundwater. Dewatering during construction has the potential to lower groundwater levels minimally.

c) Less than Significant

Modifications to existing drainage features and new drainage improvements would be required to collect and convey the additional runoff generated by the proposed widening and increase in impervious surfaces. Drainage facilities such as slotted corrugated steel pipe, storm drain pipelines and inlets would be constructed so that runoff would be intercepted and conveyed while minimizing erosion potential. The goal of the project drainage design would be to maintain existing drainage patterns; however, during construction, temporary drainage facilities may be

required to redirect runoff from work areas. Impact reduction associated with erosion included within the BMPs, SWPPP, and SWMP would reduce erosion impacts to less than significant.

Roughly 6.5-hectares (16.22-acres) of non-wetland WoUS and WoS have been mapped within the BSA. The Project will result in less than 0.04 hectares (0.1 acres) of permanent loss of WoUS and WoS (i.e., Santa Ana River).

Due to the less than 1 acre loss from the extension of the pier walls in the river that support the freeway bridge structure, it is anticipated that no permanent impacts will result to drainage patterns due to the minimal area impacted by the pier wall extensions. This is because the Project will extend the existing pier walls, and not add additional piers that may result in a change to drainage of the site or the alteration of the river.

d) Less than Significant

As described in c) above, additional runoff generated by the proposed widening and increase in impervious surfaces would be intercepted and conveyed by proposed construction of new drainage facilities. The increase in impervious surfaces would not significantly increase the amount of runoff in the area as to result in flooding. Although the Project would increase the impervious area of the project site, all bridges that are proposed to be improved would be elevated above the floodplain and therefore will have no effect on hydraulic conditions, such as runoff.

The drainage pattern of the site will not be impacted by the impacts to WoS/WoUS in the SAR. This then would not result in the alteration of the river's course or increase the amount of runoff that may cause flooding on or off site.

e) Less than Significant

The Project would not create or contribute a significant amount of runoff water that would exceed the capacity of existing or planned storm water drainage facilities. Due to the less than 1 acre loss of WoS/WoUS from the extension of the pier walls in the river that support the freeway bridge structure, it is also anticipated that no permanent will result to runoff due to this improvement. This is because the Project will extend the existing pier walls, and not add additional piers that may result in a change to the runoff patterns or add an extensive amount of impervious surfaces that would impact runoff volumes.

f) Less than Significant

Construction within the river has the potential to temporarily affect water quality, through dredging and filling which could result in a change to the hydrology of the river. This change in the hydrology of the river resulting from construction activities could result in sedimentation and impact water quality. However, BMPs and SWPPPs will minimize the potential for this disturbance.

Impacts would be mitigated via the discretionary permitting processes at the state and federal levels to safeguard no net loss of special aquatic resource quantity, function, or value.

g) No Impact

No housing additions are associated with this Project and therefore would not place housing within a 100-year flood hazard area.

h) No Impact

As shown in Section 2.2.1 Hydrology and Floodplain's **Figure 2-16: FIRM Map**, all 100-year floodplains within the project limits are within the channel of the Santa Ana River. Additions to the Santa Ana River bridge piers would be in line with existing piers, no impediments or redirection of flows would result.

i) No Impact

The implementation of the proposed improvements associated with this Project are not anticipated to impact flood zones of the Santa Ana River and would not result in risk to people or to property as a result of failure of a levee or dam.

j) No Impact

The Project is not located in an area prone to inundation by seiche, tsunami, or mudflow.

Land Use and Planning

Would the Project:	Significant and Unavoidable Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Physically divide an established community?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) 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?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Conflict with any applicable habitat conservation plan or natural community conservation plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

a) No Impact

The proposed Project's improvements would be constructed primarily within Caltrans right of way. TCEs for access to a maintenance road and for temporary construction-related activities within the Santa Ana River, and a revised highway easement with OCTA for widening and operation of the freeway, would be associated with the Project. The proposed improvements, TCEs and easement would not physically divide an established community.

b) No Impact

The Build Alternative would not conflict with any applicable federal, state, regional, or local programs, plans, or policies. No avoidance, minimization, and/or mitigation measures are required.

c) No Impact

The Project would not conflict with any applicable habitat conservation plan or natural community conservation plan.

Mineral Resources

Would the Project:	Significant and Unavoidable Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

a, b) No Impact

There are no mineral resources available in the project area. Fill material for the Project would be acquired from approved borrow sites. The Project would not result in the loss of important local mineral resources recovery sites, or mineral resources of value for the region and the state; therefore, the Project has no impacts on mineral resources.

Noise

Would the Project result in:	Significant and Unavoidable Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) 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?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the Project?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the Project?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the Project expose people residing or working in the project area to excessive noise levels?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
f) For a project within the vicinity of a private airstrip, would the Project expose people residing or working in the project area to excessive noise levels?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

a) Less than Significant Impact

Construction equipment can generate noise levels ranging from 70 to 90 dB at a distance of 50 feet. Noise produced by construction equipment is reduced over distance at a rate of about 6 dB per doubling of distance. Construction noise varies greatly depending on the construction process, type, and condition of the equipment used and layout of the construction site. During construction, noise sensitive receptors (residences) may experience intermittent increases in noise levels associated with the use of construction equipment. These short-term, temporary

effects would be minimized through compliance with standard noise reduction measures. In addition, construction operations may be required to adhere to local noise control ordinances.

Based on the noise modeling conducted for the Project, predicted noise levels over No Build and existing condition would increase ≤ 1.5 and 2.3 dBA respectively. The increase would not be in excess of standards established in local general plans, noise ordinances or applicable standards of other agencies.

b) Less than Significant Impact

During construction, some activities and or equipment (e.g. pile driving, jackhammers) may produce some ground borne noise and vibration. Ground borne noise or vibration would be limited to the construction period and would be short in duration. These effects would be temporary and intermittent. In addition, the effects of vibration decrease rapidly with distance from the source. It is anticipated that existing sources of vibration (heavy truck passages, freeway traffic, etc.) would continue after project construction. The project would not include new sources of ground borne vibration or noise. Compliance with local jurisdiction noise restrictions and Caltrans' Standard Specifications would minimize the effects of ground borne noise and vibration.

c) Less than Significant Impact

Noise analysis focuses on a comparison of existing noise level at the time of the NOP's existing conditions of the site and the future build noise level. The noise analysis entails looking at the setting of the noise impact and then how large or perceptible any noise increase would be in the given area. Key conditions include the uniqueness of the setting the sensitive nature of the noise receptors, the magnitude of the noise increase, the number of residences affected and the absolute noise level. Based on the noise modeling conducted for the Project, noise levels over No Build and existing conditions are predicted to increase ≤ 1.5 and 2.3 dBA respectively, at noise sensitive receptors. Therefore, the Project would not result in a substantial permanent increase in ambient noise levels above existing.

d) Less than Significant Impact

During construction, noise sensitive receptors (residences) may experience intermittent increases in noise levels associated with the use of construction equipment. These short-term, temporary effects would be minimized through compliance with standard noise reduction measures.

e), f) No Impact

The Project is not located within an airport land use plan, within two miles of a public airport or public use airport or within the vicinity of a private airstrip; therefore, it would not expose people residing or working in the project area to excessive noise levels.

Population and Housing

Would the Project:	Significant and Unavoidable Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

a, b, c) No Impact

The Project would not induce population growth, would not displace people or any number of existing housing, and would not necessitate the construction of replacement housing anywhere.

Public Services

a) Would the Project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:	Significant and Unavoidable Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Fire protection?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Police protection?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Schools?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Parks?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Other public facilities?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

a) Less than Significant Impact

The Project would not result in the need to increase public services and would not require altering or expanding any of the listed facilities. No new schools, parks, or other public facilities would need to be created, and their current service ratios and performance objectives would not be impacted by the Project.

Partial freeway and partial and full ramp closures for construction of the Build Alternatives, could result in delays for emergency services providers (fire, police) to/from emergency scenes. All temporary partial freeway, full and partial ramp closures and detour plans would be coordinated with law enforcement, fire protection, and emergency medical service providers per the project TMP to minimize temporary delays in emergency response times as described in Section 2.1.6, Traffic and Transportation. Other than these potential impacts to response times, services would not be necessary to expand.

Recreation

	Significant and Unavoidable Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Would the Project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Does the Project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

a) Less than Significant Impact

The proposed Project would not directly increase the use of existing neighborhood parks or regional parks by the community such that substantial physical deterioration of the facility would occur or be accelerated.

The Project will be using the Santa Ana River Trail (SART) /Bicycle Path for construction purposes, which may result in deterioration of the facility. Details of the use of this trail is included in Section 4(f) analysis in Appendix A and detailed in Section 2.1.2 Parks and Recreation. It is anticipated that a de minimis use of the trail will result, which implies that impact to the recreational facility's activities, features, or attributes is minor in nature after taking into account the measures that would be implemented to avoid, reduce, or minimize impacts of the Project's use. Therefore, with this de minimis designation after a Section 4(f) analysis, the Project would have less than significant impacts to the SART/Bicycle Path.

b) No Impact

The proposed Project does not include or require construction or expansion of a recreational facility.

Transportation/Traffic

Would the Project:	Significant and Unavoidable Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) 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?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) 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?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) 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?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e) Result in inadequate emergency access?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
f) Conflict with adopted policies, plans or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

a) Less than Significant Impact

As identified in Section 2.1.1 Land Use, the Project was found to be consistent with regional and local plans in the area that establish measures for acceptable levels of performance for the circulation system. The Project will not permanently impact the service levels of transportation modes such as mass transit and non-motorized travel, but may temporarily impact their accessibility during construction. Temporary delays and detours would be anticipated on bike lanes, the Santa Ana River trail, freeway ramps, and mainline lanes, but do not conflict with applicable plans, ordinances, or policies due to the project TMP as detailed in Section 2.1.6 Traffic and Transportation.

The TMP would be updated as needed during the design and construction phases of the Project. Bicycle and pedestrian access would be maintained during construction except during temporary short-term closures, most or all of which would happen at night. Transit routes would not be impacted.

b) No Impact

The proposed Project is the last of the four-phased Project G improvements contained in the locally adopted Measure 2 (M2) freeway improvement plan. M2, which was rebranded in July 2018 as Orange County Go (OC Go), is a local half-cent sales tax funding program to fund transportation improvements in Orange County. The purpose of OC Go Project G is to relieve congestion and improve operational nonstandard design features on SR 57. The OCTA 2014 *Long Range Transportation Plan* (September 12, 2014) and the locally approved OC Go funding for freeway improvements identify the need to make improvements to SR 57. The *Orange County SR-57 Final Report* (August 2010) comprehensively evaluated transportation issues along a 12-mile segment on SR 57 from the I-5/SR 55 Interchange north to the Los Angeles County Line. The report identified congestion northbound as substantially greater than southbound. The report identified the northbound segment between the I-5/SR 22 and Orangethorpe Avenue, including the Orangewood Avenue to Katella Avenue segment, as a bottleneck condition where traffic demand exceeds the effective carrying capacity of the roadway.

The proposed 1-mile Project would improve congestion and mobility on the northbound SR 57 and its adjacent intersections within the project area. The proposed improvements are listed in the SCAG's 2016-2040 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS) Amendment 2, and in SCAG 2019 Federal Transportation Improvement Program (FTIP) 19-00 under ID 2M0735A and ORA131303 respectively. The SCAG 2016-2040 RTP/SCS Amendment 2 was found to be conforming by the Federal Highway Administration (FHWA) in March 2018.

c) No Impact

The Project would not have any impact on air traffic patterns or air travel patterns and locations.

d) No impact

The Project proposes to widen the existing freeway, which would substantially improve freeway operations within this segment of the freeway, as well as remedy nonstandard design features. Restriping the HOV lane and GP lanes following widening of the freeway would remedy nonstandard median width and horizontal curve sight distance. The Project also proposes to add a second lane to the Katella Avenue off-ramp. This second lane would increase the storage capacity of the off-ramp and minimize potential back-ups onto the freeway. The Preferred Alternative would move the existing westbound on-ramp at Orangewood Avenue east of its current location to reduce the curvature of the on-ramp and increase the weaving length between the on-ramp and Katella Avenue off-ramp. The weaving distance would improve from 1,310 feet to 1,580 feet, but would remain non-standard (standard length is 2,000 feet). Alternatives 2A and 2B would remove the westbound on-ramp improving the weave length between the Orangewood on-ramp and Katella Avenue off-ramp from 1,310 feet to 2,000 and 2,475 feet, respectively. The Project includes construction of a full, signal-controlled intersection on Orangewood Avenue, which would enhance pedestrian and bicycle safety

e) Less than Significant

The Project would result in less than significant impacts to emergency services. See Hazards and Hazardous Materials question g) for details.

f) Less than Significant

The Project would not conflict with adopted policies, plans or programs for public transit, bicycle, or pedestrian facilities, and would not decrease the performance of these plans. The Project would replace in-kind any affected pedestrian facilities resulting from the project improvements. Therefore, the Project would not decrease the performance or safety of such facilities.

Tribal Cultural Resources

Would the Project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:	Significant and Unavoidable Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k), or	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

a, b) No Impact

No specific tribal resources were identified within the APE through the tribal consultation effort for the proposed Project, thus the Project would have no impact.

Utilities and Service Systems

Would the Project:	Significant and Unavoidable Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d) Have sufficient water supplies available to serve the Project from existing entitlements and resources, or are new or expanded entitlements needed?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e) Result in a determination by the wastewater treatment provider which serves or may serve the Project that it has adequate capacity to serve the Project's projected demand in addition to the provider's existing commitments?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
f) Be served by a landfill with sufficient permitted capacity to accommodate the Project's solid waste disposal needs?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
g) Comply with federal, state, and local statutes and regulations related to solid waste?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

a) No Impact

The proposed Project would not result in any changes that would affect the waste water treatment requirements. During construction, BMPs would be implemented to treat storm water and non-storm water discharges to the maximum extent practicable and therefore runoff from the construction area would not likely create any surface water quality impacts.

b) No Impact

The proposed Project would not require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities.

c) Less than Significant Impact

All of the Build Alternatives would preserve existing surface drainage at each offsite discharge location. Modifications to existing drainage features and new drainage improvements would be required to collect and convey the additional runoff generated by the proposed widening.

d) No Impact

Project construction would utilize available water supplies. No new resources and entitlements would be expanded or new entitlements are needed to serve the Project.

e) No Impact

The Project would not create additional need for wastewater or sewer services.

f) Less than Significant Impact

The Project has the potential of generating concrete debris. The Project would conform to all local, state and federal requirements on the disposal and recycling of excess construction materials. It is anticipated that the disposal of this Project's generated debris has no potential to exceed the capacity of area landfills.

g) No Impact

According to Hazardous Waste and Material Section 2.2.5, all disposal of solid waste including any potential hazardous material would comply with federal, state, and local statutes and regulations. The Project will have no impact on solid waste.

Mandatory Findings of Significance

	Significant and Unavoidable Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Does the Project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Does the Project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) Does the Project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

a) Less than Significant Impact with Mitigation Incorporated

With implementation of standard specifications and mitigation measures, downstream nursery sites for fish in the Santa Ana River would be protected from upstream impacts from the Project. Lands temporarily affected by the Project will be restored to pre-project conditions.

The Project will result in less than 0.1 acres of permanent loss of WoUS and WoS (i.e., Santa Ana River). In addition, the Project would temporally disturb WoUS and WoS. Compliance with applicable codes, ordinances, laws, and other required regulations will safeguard no net loss of WoUS and WoS. No special status species, suitable habitat for special status species, or natural communities were found in the project site. Wildlife found in the site include species adapted to the urban environment which would be anticipated to adapt to conditions created by the Project.

The Project would not eliminate important examples of the major periods of California history or prehistory, and would not cause a substantial adverse change in the significance of a historical resource as defined in § 15064.5.

b) Less than Significant

The Project does not have an adverse impact on the environment when reviewed in connection with the effects of past projects, current projects, and probable future projects.

c) Less than Significant

With implementation of standard design specifications and BMPs, and other measures identified in Chapter 2, it is anticipated that the proposed Project improvements would have a less than significant impact on the environment such that it would cause substantial adverse effects on human beings, either directly or indirectly.

3.3 Climate Change

Climate change refers to long-term changes in temperature, precipitation, wind patterns, and other elements of the earth's climate system. An ever-increasing body of scientific research attributes these climatological changes to greenhouse gas (GHG) emissions, particularly those generated from the production and use of fossil fuels.

While climate change has been a concern for several decades, the establishment of the Intergovernmental Panel on Climate Change (IPCC) by the United Nations and World Meteorological Organization in 1988 has led to increased efforts devoted to GHG emissions reduction and climate change research and policy. These efforts are primarily concerned with the emissions of GHGs generated by human activity, including carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), tetrafluoromethane, hexafluoroethane, sulfur hexafluoride (SF₆), HFC-23 (fluoroform), HFC-134a (1,1,1,2-tetrafluoroethane), and HFC-152a (difluoroethane).

In the U.S., the main source of GHG emissions is electricity generation, followed by transportation.³⁴ In California, however, transportation sources (including passenger cars, light-duty trucks, other trucks, buses, and motorcycles) are the largest contributors of GHG emissions.³⁵ The dominant GHG emitted is CO₂, mostly from fossil fuel combustion.

Two terms are typically used when discussing how we address the impacts of climate change: “greenhouse gas mitigation” and “adaptation.” Greenhouse gas mitigation covers the activities and policies aimed at reducing GHG emissions to limit or “mitigate” the impacts of climate change. Adaptation, on the other hand, is concerned with planning for and responding to impacts resulting from climate change (such as adjusting transportation design standards to withstand more intense storms and higher sea levels).

3.3.1 Regulatory Setting

This section outlines federal and state efforts to comprehensively reduce GHG emissions from transportation sources.

3.3.1.1 Federal

To date, no national standards have been established for nationwide mobile-source GHG reduction targets, nor have any regulations or legislation been enacted specifically to address climate change and GHG emissions reduction at the Project level.

The National Environmental Policy Act (NEPA) (42 United States Code [USC] Part 4332) requires federal agencies to assess the environmental effects of their proposed actions prior to making a decision on the action or Project.

³⁴ <https://www.epa.gov/ghgemissions/us-greenhouse-gas-inventory-report-1990-2014>

³⁵ <https://www.arb.ca.gov/cc/inventory/data/data.htm>

The Federal Highway Administration (FHWA) recognizes the threats that extreme weather, sea-level change, and other changes in environmental conditions pose to valuable transportation infrastructure and those who depend on it. FHWA therefore supports a sustainability approach that assesses vulnerability to climate risks and incorporates resilience into planning, asset management, Project development and design, and operations and maintenance practices.³⁶ This approach encourages planning for sustainable highways by addressing climate risks while balancing environmental, economic, and social values—“the triple bottom line of sustainability.”³⁷ Program and Project elements that foster sustainability and resilience also support economic vitality and global efficiency, increase safety and mobility, enhance the environment, promote energy conservation, and improve the quality of life. Addressing these factors up front in the planning process will assist in decision-making and improve efficiency at the program level, and will inform the analysis and stewardship needs of Project-level decision-making.

Various efforts have been promulgated at the federal level to improve fuel economy and energy efficiency to address climate change and its associated effects.

The Energy Policy Act of 1992 (EPACT92, 102nd Congress H.R.776.ENR): With this act, Congress set goals, created mandates, and amended utility laws to increase clean energy use and improve overall energy efficiency in the United States. EPACT92 consists of 27 titles detailing various measures designed to lessen the nation’s dependence on imported energy, provide incentives for clean and renewable energy, and promote energy conservation in buildings. Title III of EPACT92 addresses alternative fuels. It gave the U.S. Department of Energy administrative power to regulate the minimum number of light-duty alternative fuel vehicles required in certain federal fleets beginning in fiscal year 1993. The primary goal of the Program is to cut petroleum use in the United States by 2.5 billion gallons per year by 2020.

Energy Policy Act of 2005 (109th Congress H.R.6 (2005–2006): This act sets forth an energy research and development program covering: (1) energy efficiency; (2) renewable energy; (3) oil and gas; (4) coal; (5) Indian energy; (6) nuclear matters and security; (7) vehicles and motor fuels, including ethanol; (8) hydrogen; (9) electricity; (10) energy tax incentives; (11) hydropower and geothermal energy; and (12) climate change technology.

Energy Policy and Conservation Act of 1975 (42 USC Section 6201) and Corporate Average Fuel Standards: This act establishes fuel economy standards for on-road motor vehicles sold in the United States. Compliance with federal fuel economy standards is determined through the Corporate Average Fuel Economy (CAFE) program on the basis of each manufacturer’s average fuel economy for the portion of its vehicles produced for sale in the United States.

³⁶ <https://www.fhwa.dot.gov/environment/sustainability/resilience/>

³⁷ <https://www.sustainablehighways.dot.gov/overview.aspx>

U.S. EPA's authority to regulate GHG emissions stems from the U.S. Supreme Court decision in *Massachusetts v. EPA* (2007). The Supreme Court ruled that GHGs meet the definition of air pollutants under the existing Clean Air Act and must be regulated if these gases could be reasonably anticipated to endanger public health or welfare. Responding to the Court's ruling, U.S. EPA finalized an endangerment finding in December 2009. Based on scientific evidence it found that six GHGs constitute a threat to public health and welfare. Thus, it is the Supreme Court's interpretation of the existing Act and EPA's assessment of the scientific evidence that form the basis for EPA's regulatory actions.

U.S. EPA in conjunction with the National Highway Traffic Safety Administration (NHTSA) issued the first of a series of GHG emission standards for new cars and light-duty vehicles in April 2010³⁸ and significantly increased the fuel economy of all new passenger cars and light trucks sold in the United States. The standards required these vehicles to meet an average fuel economy of 34.1 miles per gallon by 2016. In August 2012, the federal government adopted the second rule that increases fuel economy for the fleet of passenger cars, light-duty trucks, and medium-duty passenger vehicles for model years 2017 and beyond to average fuel economy of 54.5 miles per gallon by 2025. Because NHTSA cannot set standards beyond model year 2021 due to statutory obligations and the rules' long timeframe, a mid-term evaluation is included in the rule. The Mid-Term Evaluation is the overarching process by which NHTSA, EPA, and ARB will decide on CAFE and GHG emissions standard stringency for model years 2022–2025. NHTSA has not formally adopted standards for model years 2022 through 2025. However, the EPA finalized its mid-term review in January 2017, affirming that the target fleet average of at least 54.5 miles per gallon by 2025 was appropriate. In March 2017, President Trump ordered EPA to reopen the review and reconsider the mileage target.³⁹

NHTSA and EPA issued a Final Rule for "Phase 2" for medium- and heavy-duty vehicles to improve fuel efficiency and cut carbon pollution in October 2016. The agencies estimate that the standards will save up to 2 billion barrels of oil and reduce CO₂ emissions by up to 1.1 billion metric tons over the lifetimes of model year 2018–2027 vehicles.

3.3.1.2 State

With the passage of legislation including State Senate and Assembly bills and executive orders, California has been innovative and proactive in addressing GHG emissions and climate change.

Assembly Bill 1493, Pavley Vehicular Emissions: Greenhouse Gases, 2002: This bill requires the California Air Resources Board (ARB) to develop and implement regulations to reduce automobile and light truck GHG emissions. These stricter emissions standards were designed to apply to automobiles and light trucks beginning with the 2009-model year.

³⁹ <http://www.nbcnews.com/business/autos/trump-rolls-back-obama-era-fuel-economy-standards-n734256> and <https://www.federalregister.gov/documents/2017/03/22/2017-05316/notice-of-intention-to-reconsider-the-final-determination-of-the-mid-term-evaluation-of-greenhouse>

Executive Order S-3-05 (June 1, 2005): The goal of this executive order (EO) is to reduce California's GHG emissions to: (1) year 2000 levels by 2010, (2) year 1990 levels by 2020, and (3) 80 percent below year 1990 levels by 2050. This goal was further reinforced with the passage of Assembly Bill 32 in 2006 and SB 32 in 2016.

Assembly Bill 32 (AB 32), Chapter 488, 2006: Núñez and Pavley, The Global Warming Solutions Act of 2006: AB 32 codified the 2020 GHG emissions reduction goals as outlined in EO S-3-05, while further mandating that ARB create a scoping plan and implement rules to achieve "real, quantifiable, cost-effective reductions of greenhouse gases." The Legislature also intended that the statewide GHG emissions limit continue in existence and be used to maintain and continue reductions in emissions of GHGs beyond 2020 (Health and Safety Code Section 38551(b)). The law requires ARB to adopt rules and regulations in an open public process to achieve the maximum technologically feasible and cost-effective GHG reductions.

Executive Order S-01-07 (January 18, 2007): This order sets forth the low carbon fuel standard (LCFS) for California. Under this EO, the carbon intensity of California's transportation fuels is to be reduced by at least 10 percent by the year 2020. ARB re-adopted the LCFS regulation in September 2015, and the changes went into effect on January 1, 2016. The program establishes a strong framework to promote the low-carbon fuel adoption necessary to achieve the Governor's 2030 and 2050 GHG reduction goals.

Senate Bill 97 (SB 97), Chapter 185, 2007, Greenhouse Gas Emissions: This bill requires the Governor's Office of Planning and Research (OPR) to develop recommended amendments to the California Environmental Quality Act (CEQA) Guidelines for addressing GHG emissions. The amendments became effective on March 18, 2010.

Senate Bill 375 (SB 375), Chapter 728, 2008, Sustainable Communities and Climate Protection: This bill requires ARB to set regional emissions reduction targets for passenger vehicles. The Metropolitan Planning Organization (MPO) for each region must then develop a "Sustainable Communities Strategy" (SCS) that integrates transportation, land-use, and housing policies to plan how it will achieve the emissions target for its region.

Senate Bill 391 (SB 391), Chapter 585, 2009, California Transportation Plan: This bill requires the State's long-range transportation plan to meet California's climate change goals under AB 32.

Executive Order B-16-12 (March 2012) orders State entities under the direction of the Governor, including ARB, the California Energy Commission, and the Public Utilities Commission, to support the rapid commercialization of zero-emission vehicles. It directs these entities to achieve various benchmarks related to zero-emission vehicles.

Executive Order B-30-15 (April 2015) establishes an interim statewide GHG emission reduction target of 40 percent below 1990 levels by 2030 in order to ensure California meets its target of reducing GHG emissions to 80 percent below 1990 levels by 2050. It further orders all state agencies with jurisdiction over sources of GHG emissions to implement measures, pursuant to

statutory authority, to achieve reductions of GHG emissions to meet the 2030 and 2050 GHG emissions reductions targets. It also directs ARB to update the Climate Change Scoping Plan to express the 2030 target in terms of million metric tons of carbon dioxide equivalent (MMTCO₂e). Finally, it requires the Natural Resources Agency to update the state's climate adaptation strategy, *Safeguarding California*, every 3 years, and to ensure that its provisions are fully implemented.

Senate Bill 32, (SB 32) Chapter 249, 2016, codifies the GHG reduction targets established in EO B-30-15 to achieve a mid-range goal of 40 percent below 1990 levels by 2030.

3.3.2 Environmental Setting

In 2006, the Legislature passed the California Global Warming Solutions Act of 2006 ([AB 32](#)), which created a comprehensive, multi-year program to reduce GHG emissions in California. AB 32 required ARB to develop a Scoping Plan that describes the approach California will take to achieve the goal of reducing GHG emissions to 1990 levels by 2020. The Scoping Plan was first approved by ARB in 2008 and must be updated every 5 years. The second updated plan, *California's 2017 Climate Change Scoping Plan*, adopted on December 14, 2017, reflects the 2030 target established in EO B-30-15 and SB 32.

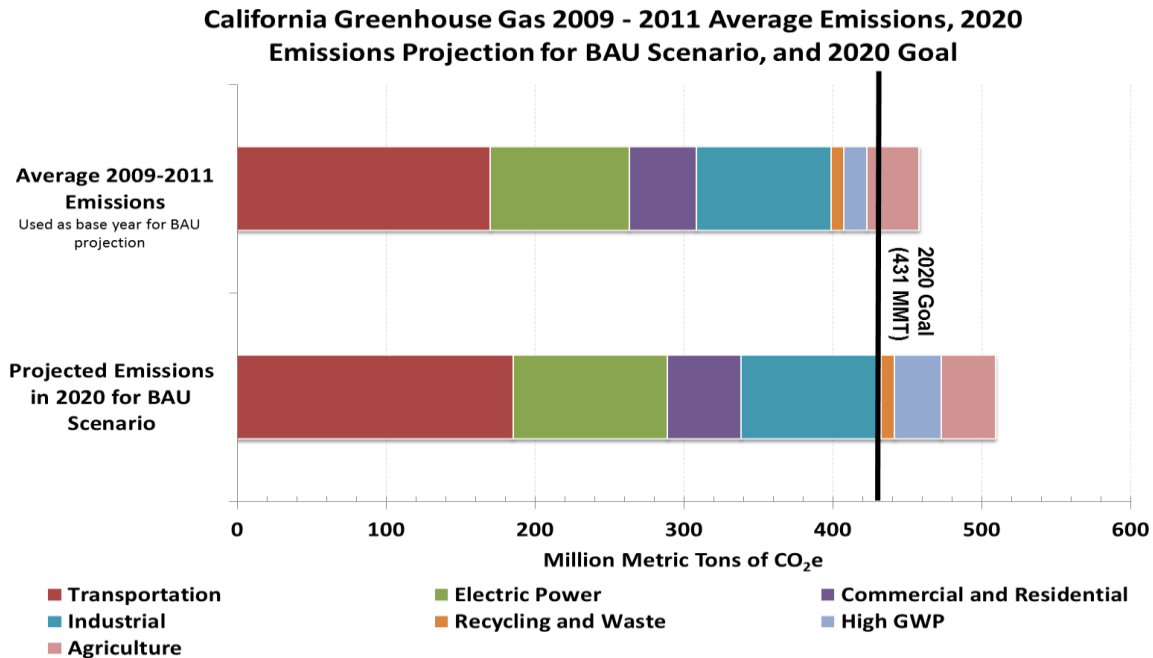
The AB 32 Scoping Plan and the subsequent updates contain the main strategies California will use to reduce GHG emissions. As part of its supporting documentation for the updated Scoping Plan, ARB released the GHG inventory for California.⁴⁰ ARB is responsible for maintaining and updating California's GHG Inventory per H&SC Section 39607.4. The associated forecast/projection is an estimate of the emissions anticipated to occur in the year 2020 if none of the foreseeable measures included in the Scoping Plan were implemented.

An emissions projection estimates future emissions based on current emissions, expected regulatory implementation, and other technological, social, economic, and behavioral patterns. The projected 2020 emissions provided in **Figure 3-1: 2020 Business as Usual (BAU) Emissions Projection 2014 Edition** represent a business-as-usual (BAU) scenario assuming none of the Scoping Plan measures are implemented. The 2020 BAU emissions estimate assists ARB in demonstrating progress toward meeting the 2020 goal of 431 MMTCO₂e⁴¹. The 2018 edition of the GHG emissions inventory ([released July 2018](#)) found total California emissions of 429 MMTCO₂e for 2016.

⁴⁰ 2016 Edition of the GHG Emission Inventory Released (June 2016): <https://www.arb.ca.gov/cc/inventory/data/data.htm>

⁴¹ The revised target using Global Warming Potentials (GWP) from the IPCC Fourth Assessment Report (AR4)

Figure 3-1: 2020 Business as Usual (BAU) Emissions Projection 2014 Edition



Source: ARB, 2020 Business-as-Usual (BAU) Emissions Projection 2014 Edition 2014. <https://www.arb.ca.gov/cc/inventory/data/bau.htm>

The 2020 BAU emissions projection was revisited in support of the First Update to the Scoping Plan (2014). This projection accounts for updates to the economic forecasts of fuel and energy demand as well as other factors. It also accounts for the effects of the 2008 economic recession and the projected recovery. The total emissions expected in the 2020 BAU scenario include reductions anticipated from Pavley I and the Renewable Electricity Standard (30 MMTCO₂e total). With these reductions in the baseline, estimated 2020 statewide BAU emissions are 509 MMTCO₂e.

3.3.3 Project Analysis

An individual project does not generate enough GHG emissions to significantly influence global climate change. Rather, global climate change is a cumulative impact. This means that a project may contribute to a potential impact through its *incremental* change in emissions when combined with the contributions of all other sources of GHG.⁴² In assessing cumulative impacts, it must be determined if a project's incremental effect is "cumulatively considerable" (CEQA Guidelines Sections 15064(h)(1) and 15130). To make this determination, the incremental impacts of the Project must be compared with the effects of past, current, and probable future projects. To

⁴² This approach is supported by the AEP: Recommendations by the Association of Environmental Professionals on How to Analyze GHG Emissions and Global Climate Change in CEQA Documents (March 5, 2007), as well as the South Coast Air Quality Management District (Chapter 6: The CEQA Guide, April 2011) and the US Forest Service (Climate Change Considerations in project Level NEPA Analysis, July 13, 2009).

gather sufficient information on a global scale of all past, current, and future projects to make this determination is a difficult, if not impossible, task.

GHG emissions for transportation projects can be divided into those produced during operations and those produced during construction. The following represents a best faith effort to describe the potential GHG emissions related to the proposed Project.

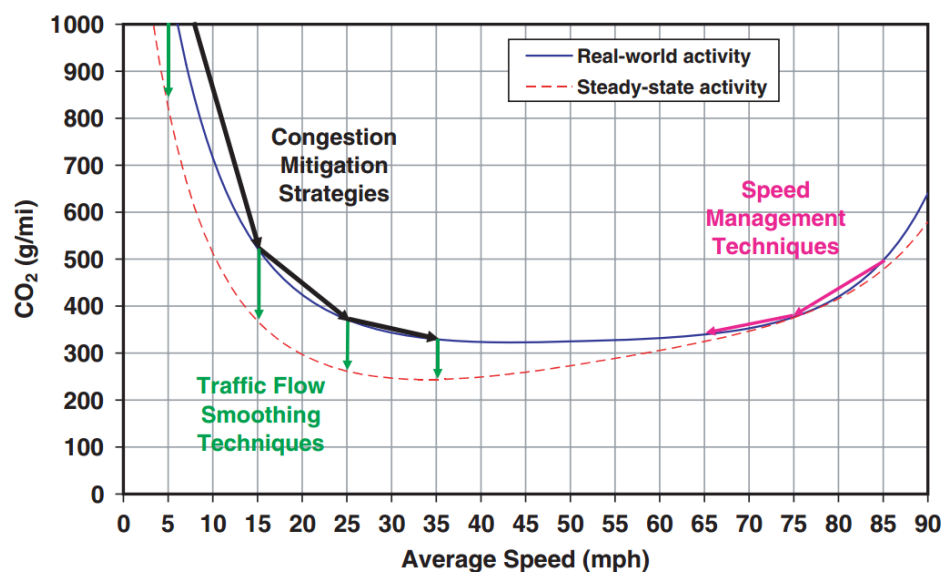
3.3.3.1 Operational Emissions

Four primary strategies can reduce GHG emissions from transportation sources: (1) improving the transportation system and operational efficiencies, (2) reducing travel activity), (3) transitioning to lower GHG-emitting fuels, and (4) improving vehicle technologies/efficiency. To be most effective all four strategies should be pursued concurrently.

FHWA supports these strategies to lessen climate change impacts, which correlate with efforts that the state of California is undertaking to reduce GHG emissions from the transportation sector.

The highest levels of CO₂ from mobile sources such as automobiles occur at stop-and-go speeds (0–25 miles per hour) and speeds over 55 miles per hour; the most severe emissions occur from 0–25 miles per hour (see **Figure 3-2: Possible Use of Traffic Operation Strategies In Reducing On-Road CO₂ Emissions**). To the extent that a project relieves congestion by enhancing operations and improving travel times in high-congestion travel corridors, GHG emissions, particularly CO₂, may be reduced.

Figure 3-2: Possible Use of Traffic Operation Strategies In Reducing On-Road CO₂ Emissions



Source: Matthew Barth and Kanok Boriboonsomsin, University of California, Riverside, Real World Carbon Dioxide Impacts of Traffic Congestion 2010
https://www.researchgate.net/publication/46438207_May_2010Real-World_Carbon_Dioxide_Impacts_of_Traffic_Congestion

The proposed Project is included in the SCAG 2016-2040 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS). Pursuant to Senate Bill 375, ARB set per capita greenhouse gas emissions reduction targets from passenger vehicles for each of the state's 18 MPOs. For the SCAG region, the targets are set at eight percent below 2005 per capita emissions levels by 2020 and 13 percent below 2005 per capita emissions levels by 2035. e, the 2016 RTP/SCS achieves per capita greenhouse gas emissions reductions relative to 2005 of eight percent in 2020, 18 percent in 2035, and 21 percent in 2040—exceeding the reductions that ARB currently requires.

The proposed Project contributes to the RTP/SCS goals for region-wide GHG emission reductions by reducing congestion and improving mobility. The proposed Project would close the gap in the fifth lane of SR 57 northbound between Orangewood Avenue and Katella Avenue that causes bottlenecks. Other changes, such as increasing sight distance and merge lengths would substantially improve freeway operations and lessen peak period congestion that contributes to GHG emissions. TSM strategies to improve operations and traffic flow include ramp metering, modifying or expanding on ramps, coordinating signals and ramp meters to control congestion, and creating a continuous auxiliary lane between Orangewood Avenue and Katella Avenue. These proposed Project features also support Orange County's SCS Sustainability Strategy I: *Eliminate bottlenecks and reduce delay on freeways, toll roads, and arterials* (OCTA and Orange County Council of Governments 2011).

Quantitative Analysis

On the project-scale, operational emissions were estimated using Caltrans' CT-EMFAC2014 model. CT-EMFAC is a California-specific project-level analysis tool that models on-road vehicle emissions based on the CARB EMFAC model. With inputs of project-level travel activity data, CT-EMFAC can be used to estimate on-road vehicle emissions of CO₂ for an existing or proposed transportation project.

Two segments were included in the CO₂ emissions calculation: Northbound SR-57 from Chapman Avenue loop on-ramp to Orangewood Avenue loop on-ramp and Northbound SR-57 from Orangewood Avenue loop on-ramp to Katella loop on-ramp. Emissions were estimated for existing conditions and design year build and no build. The model was run with daily VMT, average speed, and truck percentage specific to the two segments, and all other Orange County defaults. The results in **Table 3-1: Project CO₂ Emissions** show that CO₂ emissions from the Build scenario are expected to decrease by 19% as compared to existing conditions. CO₂ emissions from the Build scenario are expected to increase by 7% as compared to the No Build scenario.

Table 3-1: Project CO₂ Emissions

Scenario	Daily Vehicle Miles Traveled (VMT)	Daily CO ₂ Emissions (tons/day)
2016 Existing	123,898	207
2045 No Build	145,336	157
2045 Build ¹	147,655	168

¹ Alternative represents Build Alternatives 2 (Preferred Alternative), 2A, and 2B

² % Change from Existing = (2045 Build – 2016 Existing) / 2016 Existing * 100

Sample calculation: CO % change from existing = (168 ton/day – 207 ton/day) / 207 ton/day * 100 = -19%

³ % Change from No Build = (2045 Build – 2045 No Build) / 2045 No Build * 100

Sample calculation: CO % change from no build = (168 ton/day – 157 ton/day) / 157 ton/day * 100 = 7%

Source: AQR 2018.

While EMFAC has a rigorous scientific foundation and has been vetted through multiple stakeholder reviews, its emission rates are based on tailpipe emission test data. The numbers are estimates of CO₂ emissions and not necessarily the actual CO₂ emissions. The model does not account for factors such as the rate of acceleration and the vehicles' aerodynamics, which would influence CO₂ emissions. To account for CO₂ emissions, ARB's GHG Inventory follows the IPCC guideline by assuming complete fuel combustion, while still using EMFAC data to calculate CH₄ and N₂O emissions. Though EMFAC is currently the best available tool for use in calculating GHG emissions, it is important to note that the CO₂ numbers provided are only useful for a comparison of alternatives.

Limitations and Uncertainties with Modeling

EMFAC

Although EMFAC can calculate CO₂ emissions from mobile sources, the model does have limitations when it comes to accurately reflecting changes in CO₂ emissions due to impacts on traffic. According to the National Cooperative Highway Research Program report, *Development of a Comprehensive Modal Emission Model* (April 2008) and a 2009 University of California study⁴³, brief but rapid accelerations, such as those occurring during congestion, can contribute significantly to a vehicle's CO₂ emissions during a typical urban trip. Current emission-factor models do not distinguish the emission of such modal events (i.e., acceleration, deceleration) in the operation of a vehicle and instead estimate emissions by average trip speed. It is difficult to model this because the frequency and rate of acceleration or deceleration that drivers chose to operate their vehicles depend on each individual's human behavior, their reaction to other vehicles' movements around them, and their acceptable safety margins. Currently, the EPA and the CARB have not approved a modal emissions model that is capable of conducting such

⁴³ Matthew Barth, Kanok Boriboonsomsin. 2009. *Energy and emissions impacts of a freeway-based dynamic eco-driving system*. Transportation Research Part D: Transport and Environment Volume 14, Issue 6, August 2009, Pages 400–410

detailed modeling. This limitation is a factor to consider when comparing the model’s estimated emissions for various project alternatives against a baseline value to determine impacts.

Other Variables

With the current understanding, project-level analysis of greenhouse gas emissions has limitations. Although a GHG analysis is included for this Project, there are numerous external variables that could change during the design life of the proposed Project and would thus change the projected CO₂ emissions.

First, vehicle fuel economy is increasing. The EPA’s annual report, “Light-Duty Automotive Technology and Fuel Economy Trends: 1975 through 2016,”⁴⁴ which provides data on the fuel economy and technology characteristics of new light-duty vehicles including cars, minivans, sport utility vehicles, and pickup trucks, confirms that average fuel economy improves each year with a noticeable rate of change beginning in 2005. Corporate Average Fuel Economy (CAFE) standards remained the same between model years 1995 and 2003, subsequently increasing to higher fuel economy standards for future vehicle model years. The EPA estimates that light duty fuel economy rose by 29% from model year 2004 to 2015, attributed to new technology that improved fuel economy while keeping vehicle weight relatively constant. **Table 3-2: Average Required Fuel Economy (mpg)** shows the increases in required fuel economy standards for cars and trucks between Model Years 2012 and 2025, from the National Highway Traffic Safety Administration for the 2012–2016 and 2017–2025 CAFE Standards.

Table 3-2: Average Required Fuel Economy (mpg)

	2012	2013	2014	2015	2016	2017	2018	2020	2025
Passenger Cars	33.3	34.2	34.9	36.2	37.8	39.6-40.1	41.1-41.6	44.2-44.8	55.3-56.2
Light Trucks	25.4	26	26.6	27.5	28.8	29.1-29.4	29.6-30.0	30.6-31.2	39.3-40.3
Combined	29.7	30.5	31.3	32.6	34.1	35.1-35.4	36.1-36.5	38.3-38.9	48.7-49.7

Sources: EPA 2013, <http://www.epa.gov/fueleconomy/fetrends/1975-2012/420r13001.pdf>;

EPA 2012, <https://www.epa.gov/regulations-emissions-vehicles-and-engines/final-rule-model-year-2017-and-later-light-duty-vehicle#rule-summary>

Second, new lower-emission and zero-emission vehicles will come into the market within the expected design life of this Project. According to the 2013 Annual Energy Outlook (AEO 2013):

“LDVs that use diesel, other alternative fuels, hybrid-electric, or all-electric systems play a significant role in meeting more stringent GHG emissions and CAFE standards over the projection period. Sales of such vehicles increase from 20 percent of all new LDV sales in 2011 to 49 percent in 2040 in the AEO2013 Reference case.”⁴⁵

⁴⁴ <https://www.epa.gov/fueleconomy/light-duty-automotive-technology-carbon-dioxide-emissions-and-fuel-economy-trends-1975-1>

⁴⁵ [http://www.eia.gov/forecasts/aeo/pdf/0383\(2013\).pdf](http://www.eia.gov/forecasts/aeo/pdf/0383(2013).pdf)

The greater percentage of lower-emissions and zero-emissions vehicles on the road in the future will reduce overall GHG emissions as compared to scenarios in which vehicle technologies and fuel efficiencies do not change.

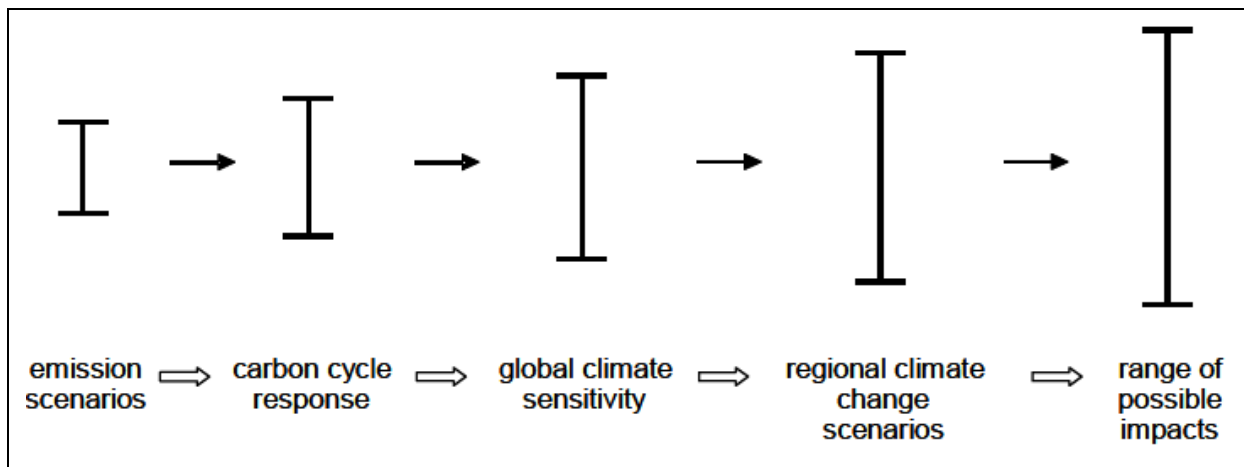
Third, California adopted a low-carbon transportation fuel standard in 2009 to reduce the carbon intensity of transportation fuels by 10 percent by 2020. The regulation became effective on January 12, 2010 (codified in title 17, California Code of Regulations, sections 95480-95490). Beginning January 1, 2011, transportation fuel producers and importers must meet specified average carbon intensity requirements for fuel in each calendar year.

Limitations and Uncertainties with Impact Assessment

Figure 3-3: Cascade of Uncertainty in Climate Change Simulations illustrates how the range of uncertainties in assessing greenhouse gas impacts grows with each step of the analysis, as noted in the *National Highway Traffic Safety Administration Final EIS for MY2017–2025 CAFE Standards* (NHTSA 2012):

“Moss and Schneider (2000) characterize the ‘cascade of uncertainty’ in climate change simulations (**Figure 3-3: Cascade of Uncertainty in Climate Change Simulations**). As indicated in **Figure 3-3**, the emission estimates ... have narrower bands of uncertainty than the global climate effects, which are less uncertain than regional climate change effects. The effects on climate are, in turn, less uncertain than the impacts of climate change on affected resources (such as terrestrial and coastal ecosystems, human health, and other resources ...). Although the uncertainty bands broaden with each successive step in the analytic chain, all values within the bands are not equally likely; the mid-range values have the highest likelihood.”⁴⁶

Figure 3-3: Cascade of Uncertainty in Climate Change Simulations



Source: National Highway Traffic Safety Administration Final EIS for MY2017-2025 CAFE Standards (July 2012). Page 5-22.

⁴⁶ http://www.nhtsa.gov/staticfiles/rulemaking/pdf/cafe/FINAL_EIS.pdf, page 5-21

Much of the uncertainty in assessing an individual project's impact on climate change surrounds the global nature of the climate change. Even assuming that the target of meeting the 1990 levels of emissions is met, there is no regulatory or other framework in place that would allow for a ready assessment of what any modeled increase in CO₂ emissions would mean for climate change given the overall California GHG emissions inventory of approximately 430 million tons of CO₂ equivalent. This uncertainty only increases when viewed globally. The IPCC has created multiple scenarios to project potential future global greenhouse gas emissions as well as to evaluate potential changes in global temperature

ure, other climate changes, and their effect on human and natural systems. These scenarios vary in terms of the type of economic development, the amount of overall growth, and the steps taken to reduce greenhouse gas emissions. Non-mitigation IPCC scenarios project an increase in global greenhouse gas emissions by 9.7 up to 36.7 billion metric tons CO₂ from 2000 to 2030, which represents an increase of between 25 and 90%.⁴⁷

The assessment is further complicated by the fact that changes in GHG emissions can be difficult to attribute to a particular project because the projects often cause shifts in the locale for some type of GHG emissions, rather than causing "new" GHG emissions. It is difficult to assess the extent to which any project-level increase in CO₂ emissions represents a net global increase, reduction, or no change; there are no models approved by regulatory agencies that operate at the global or even statewide scale.

3.3.3.2 Construction Emissions

Construction GHG emissions would result from material processing, on-site construction equipment, and traffic delays due to construction. These emissions will be produced at different levels throughout the construction phase; their frequency and occurrence can be reduced through innovations in plans and specifications and by implementing better traffic management during construction phases.

In addition, with innovations such as longer pavement lives, improved traffic management plans, and changes in materials, the GHG emissions produced during construction can be offset to some degree by longer intervals between maintenance and rehabilitation activities.

Construction-related emissions were estimated using a typical phasing schedule and defaults included in the California Emissions Estimator Model (CalEEMod). CalEEMod is a statewide land use emissions computer model designed to quantify potential criteria pollutant and greenhouse gas emissions associated with both construction and operations from a variety of land use projects. CalEEMod was run assuming the land use type option "Other Asphalt Surfaces" with a size of 14.29 acres, and all other recommended defaults.

⁴⁷ Intergovernmental Panel on Climate Change (IPCC). February 2007. *Climate Change 2007: The Physical Science Basis: Summary for Policy Makers*. https://www.ipcc.ch/publications_and_data/ar4/wg1/en/spm.html

The main sources of GHG emissions during construction are exhaust emissions from vehicles and equipment powered by gasoline and diesel engines. Construction activities will last for approximately 24 months. The estimated GHG emissions for each year of construction are summarized in **Table 3-3: Estimated Short-Term Construction Emissions**. The maximum estimated emissions of carbon dioxide equivalent (CO₂e) are 861 metric tons per year (MT/year), and a total of 1,240 metric tons of CO₂e are expected to be emitted during the construction period.

Table 3-3: Estimated Short-Term Construction Emissions

Year	CO ₂ e in MT/year
2021	861.2501
2022	379.1094
Total	1240.36

Source: AQR 2018.
MT/Year: metric tons per year

Caltrans Standard Specification, Section 14-9.02, specifically requires compliance by the contractor with all applicable laws and regulations related to air quality, including air pollution control district and air quality management district regulations and local ordinances. Regulations such as idling restrictions and requiring construction equipment and vehicles to be properly tuned and maintained help reduce construction GHG emissions.

A TMP will be implemented that includes strategies and measures to avoid and minimize disruption to local access, roadways, and bike and pedestrian facilities during construction.

3.3.4 CEQA Conclusion

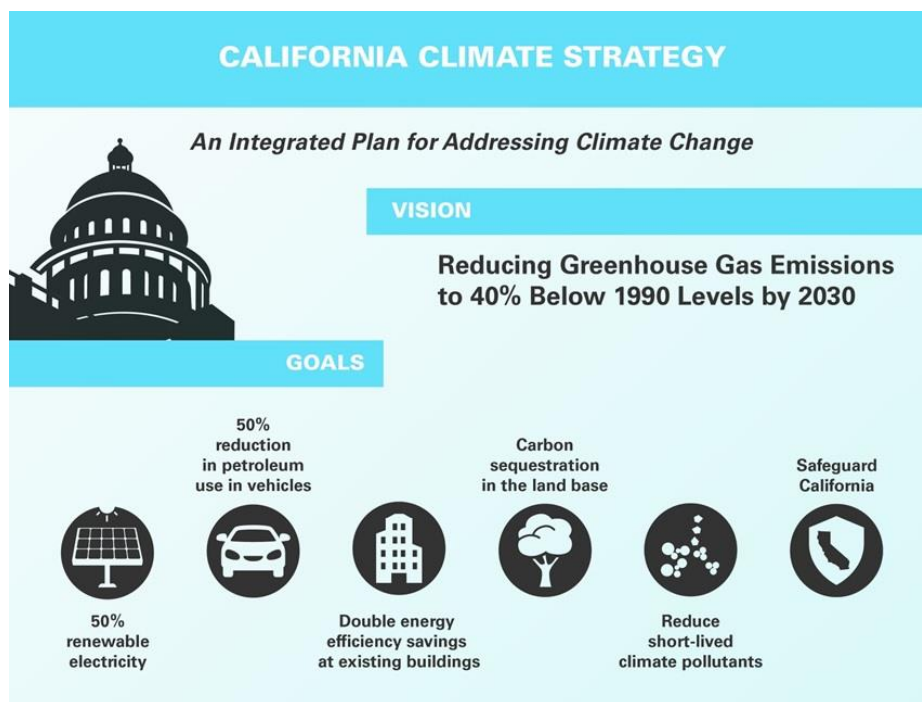
As discussed above, both the future with project and future no build show a decrease in CO₂ emissions compared to the existing level; however, the future build CO₂ emissions are higher than the future no-build emissions. In addition, as discussed above, there are also limitations with EMFAC and with assessing what a given CO₂ emissions increase means for climate change. Therefore, it is Caltrans' determination that in the absence of further regulatory or scientific information related to GHG emissions and CEQA significance, it is too speculative to make a determination regarding significance of the Project's direct impact and its contribution on the cumulative scale to climate change. However, Caltrans is firmly committed to implementing measures to help reduce the potential effects of the Project. These measures are outlined in the following section.

3.3.5 Greenhouse Gas Reduction Strategies

3.3.5.1 Statewide Efforts

In an effort to further the vision of California's GHG reduction targets outlined in AB 32 and SB 32, Governor Brown identified key climate change strategy pillars (concepts). These pillars highlight the idea that several major areas of the California economy will need to reduce emissions to meet the 2030 GHG emissions target (see **Figure 3-4: The Governor's Climate Change Pillars: 2030 Greenhouse Gas Reduction Goals**). These pillars are (1) reducing today's petroleum use in cars and trucks by up to 50 percent; (2) increasing from one-third to 50 percent our electricity derived from renewable sources; (3) doubling the energy efficiency savings achieved at existing buildings and making heating fuels cleaner; (4) reducing the release of methane, black carbon, and other short-lived climate pollutants; (5) managing farm and rangelands, forests, and wetlands so they can store carbon; and (6) periodically updating the state's climate adaptation strategy, *Safeguarding California*.

Figure 3-4: The Governor's Climate Change Pillars: 2030 Greenhouse Gas Reduction Goals



Source: Caltrans, SER 2017.

The transportation sector is integral to the people and economy of California. To achieve GHG emission reduction goals, it is vital that we build on our past successes in reducing criteria and toxic air pollutants from transportation and goods movement activities. GHG emission reductions will come from cleaner vehicle technologies, lower-carbon fuels, and reduction of vehicle miles traveled. One of Governor Brown's key pillars set the ambitious goal of reducing today's petroleum use in cars and trucks by up to 50 percent by 2030.

Governor Brown called for support to manage natural and working lands, including forests, rangelands, farms, wetlands, and soils, so they can store carbon. These lands have the ability to remove carbon dioxide from the atmosphere through biological processes, and to then sequester carbon in above- and below-ground matter.

3.3.5.2 Caltrans Activities

Caltrans continues to be involved on the Governor's Climate Action Team as the ARB works to implement EOs S-3-05 and S-01-07 and help achieve the targets set forth in AB 32. EO B-30-15, issued in April 2015, and SB 32 (2016), set a new interim target to cut GHG emissions to 40 percent below 1990 levels by 2030. The following major initiatives are underway at Caltrans to help meet these targets.

California Transportation Plan (CTP 2040)

The California Transportation Plan (CTP) is a statewide, long-range transportation plan to meet our future mobility needs and reduce GHG emissions. The CTP defines performance-based goals, policies, and strategies to achieve our collective vision for California's future statewide, integrated, multimodal transportation system. It serves as an umbrella document for all of the other statewide transportation planning documents.

SB 391(Liu 2009) requires the CTP to meet California's climate change goals under AB 32. Accordingly, the CTP 2040 identifies the statewide transportation system needed to achieve maximum feasible GHG emission reductions while meeting the state's transportation needs. While MPOs have primary responsibility for identifying land use patterns to help reduce GHG emissions, CTP 2040 identifies additional strategies in Pricing, Transportation Alternatives, Mode Shift, and Operational Efficiency.

Caltrans Strategic Management Plan

The Strategic Management Plan, released in 2015, creates a performance-based framework to preserve the environment and reduce GHG emissions, among other goals. Specific performance targets in the plan that will help to reduce GHG emissions include:

- Increasing percentage of non-auto mode share
- Reducing VMT per capita
- Reducing Caltrans' internal operational (buildings, facilities, and fuel) GHG emissions

Funding and Technical Assistance Programs

In addition to developing plans and performance targets to reduce GHG emissions, Caltrans also administers several funding and technical assistance programs that have GHG reduction benefits. These include the Bicycle Transportation Program, Safe Routes to School, Transportation Enhancement Funds, and Transit Planning Grants. A more extensive description of these programs can be found in Caltrans Activities to Address Climate Change (2013).

Caltrans Director's Policy 30 (DP-30) Climate Change (June 22, 2012) is intended to establish a department policy that will ensure coordinated efforts to incorporate climate change into departmental decisions and activities.

Caltrans Activities to Address Climate Change (April 2013) provides a comprehensive overview of activities undertaken by Caltrans statewide to reduce GHG emissions resulting from agency operations.

3.3.5.3 Project-Level GHG Reduction Strategies

The following measures will also be implemented in the Project to reduce GHG emissions and potential climate change impacts from the Project.

- Caltrans Standard Specification, Section 14-9.02, specifically requires compliance by the contractor with all applicable laws and regulations related to air quality, including air pollution control district and air quality management district regulations and local ordinances. Regulations such as idling restrictions and requiring construction equipment and vehicles to be properly tuned and maintained help reduce construction GHG emissions.
- Project features include a Landscape Master Plan, intended to retain as much existing vegetation as possible, particularly mature trees. Mature trees absorb CO₂.
- Bicycle and pedestrian access will be maintained during construction except during temporary short-term closures, most or all of which would happen at night.
- The arterial road signal would prevent on-ramp backups onto the arterial and would improve pedestrian and bicycle safety, supporting the use of non-motorized modes of transportation.

3.3.6 Adaptation Strategies

“Adaptation strategies” refer to how Caltrans and others can plan for the effects of climate change on the state's transportation infrastructure and strengthen or protect the facilities from damage—or, put another way, planning and design for resilience. Climate change is expected to produce increased variability in precipitation, rising temperatures, rising sea levels, variability in storm surges and their intensity, and the frequency and intensity of wildfires. These changes may affect the transportation infrastructure in various ways, such as damage to roadbeds from longer

periods of intense heat; increasing storm damage from flooding and erosion; and inundation from rising sea levels. These effects will vary by location and may, in the most extreme cases, require that a facility be relocated or redesigned. These types of impacts to the transportation infrastructure may also have economic and strategic ramifications.

3.3.6.1 Federal Efforts

At the federal level, the Climate Change Adaptation Task Force, co-chaired by the CEQ, the Office of Science and Technology Policy (OSTP), and the National Oceanic and Atmospheric Administration (NOAA), released its interagency task force progress report on October 28, 2011⁴⁸, outlining the federal government's progress in expanding and strengthening the nation's capacity to better understand, prepare for, and respond to extreme events and other climate change impacts. The report provided an update on actions in key areas of federal adaptation, including: building resilience in local communities, safeguarding critical natural resources such as fresh water, and providing accessible climate information and tools to help decision-makers manage climate risks.

The federal Department of Transportation issued *U.S. DOT Policy Statement on Climate Adaptation* in June 2011, committing to “integrate consideration of climate change impacts and adaptation into the planning, operations, policies, and programs of DOT in order to ensure that taxpayer resources are invested wisely and that transportation infrastructure, services and operations remain effective in current and future climate conditions.”⁴⁹

To further the DOT Policy Statement, in December 15, 2014, FHWA issued order 5520 (*Transportation System Preparedness and Resilience to Climate Change and Extreme Weather Events*).⁵⁰ This directive established FHWA policy to strive to identify the risks of climate change and extreme weather events to current and planned transportation systems. The FHWA will work to integrate consideration of these risks into its planning, operations, policies, and programs in order to promote preparedness and resilience; safeguard federal investments; and ensure the safety, reliability, and sustainability of the nation's transportation systems.

FHWA has developed guidance and tools for transportation planning that fosters resilience to climate effects and sustainability at the federal, state, and local levels.⁵¹

3.3.6.2 State Efforts

On November 14, 2008, then-Governor Arnold Schwarzenegger signed EO S-13-08, which directed a number of state agencies to address California's vulnerability to sea-level rise caused by climate change. This EO set in motion several agencies and actions to address the concern of sea-level rise and directed all state agencies planning to construct projects in areas vulnerable to

⁴⁸ <https://obamawhitehouse.archives.gov/administration/eop/ceq/initiatives/resilience>

⁴⁹ https://www.fhwa.dot.gov/environment/sustainability/resilience/policy_and_guidance/usdot.cfm

⁵⁰ <https://www.fhwa.dot.gov/legisregs/directives/orders/5520.cfm>

⁵¹ <https://www.fhwa.dot.gov/environment/sustainability/resilience/>

future sea-level rise to consider a range of sea-level rise scenarios for the years 2050 and 2100, assess project vulnerability and, to the extent feasible, reduce expected risks and increase resiliency to sea-level rise. Sea-level rise estimates should also be used in conjunction with information on local uplift and subsidence, coastal erosion rates, predicted higher high-water levels, and storm surge and storm wave data.

Governor Schwarzenegger also requested the National Academy of Sciences to prepare an assessment report to recommend how California should plan for future sea-level rise. The final report, *Sea-Level Rise for the Coasts of California, Oregon, and Washington* (Sea-Level Rise Assessment Report)⁵² was released in June 2012 and included relative sea-level rise projections for the three states, taking into account coastal erosion rates, tidal impacts, El Niño and La Niña events, storm surge, and land subsidence rates; and the range of uncertainty in selected sea-level rise projections. It provided a synthesis of existing information on projected sea-level rise impacts to state infrastructure (such as roads, public facilities and beaches), natural areas, and coastal and marine ecosystems; and a discussion of future research needs regarding sea-level rise.

In response to EO S-13-08, the California Natural Resources Agency (Resources Agency), in coordination with local, regional, state, federal, and public and private entities, developed *The California Climate Adaptation Strategy* (Dec 2009), which summarized the best available science on climate change impacts to California, assessed California's vulnerability to the identified impacts, and outlined solutions that can be implemented within and across state agencies to promote resiliency. The adaptation strategy was updated and rebranded in 2014 as *Safeguarding California: Reducing Climate Risk* (Safeguarding California Plan).

Governor Jerry Brown enhanced the overall adaptation planning effort by signing EO B-30-15 on April 2015, requiring state agencies to factor climate change into all planning and investment decisions. In March 2016, sector-specific Implementation Action Plans that demonstrate how state agencies are implementing EO B-30-15 were added to the Safeguarding California Plan. This effort represents a multi-agency, cross-sector approach to addressing adaptation to climate change-related events statewide.

EO S-13-08 also gave rise to the *State of California Sea-Level Rise Interim Guidance Document* (SLR Guidance), produced by the Coastal and Ocean Working Group of the California Climate Action Team (CO-CAT), of which Caltrans is a member. First published in 2010, the document provided "guidance for incorporating sea-level rise (SLR) projections into planning and decision making for projects in California," specifically, "information and recommendations to enhance consistency across agencies in their development of approaches to SLR."

Climate change adaptation for transportation infrastructure involves long-term planning and risk management to address vulnerabilities in the transportation system from increased precipitation, and flooding; the increased frequency and intensity of storms and wildfires; rising temperatures;

⁵² *Sea Level Rise for the Coasts of California, Oregon, and Washington: Past, Present, and Future* (2012) is available at: http://www.nap.edu/catalog.php?record_id=13389.

and rising sea levels. Caltrans is actively engaged in working towards identifying these risks throughout the state and will work to incorporate this information into all planning and investment decisions as directed in EO B-30-15.

The proposed Project is outside the coastal zone and not in an area subject to sea-level rise. Accordingly, direct impacts to transportation facilities due to projected sea-level rise are not expected.