

4.5 Greenhouse Gas Emissions

This section evaluates the potential for impacts relating to greenhouse gas (GHG) emissions resulting from implementation of the OC River Walk Project (project).

4.5.1 Environmental Setting

4.5.1.1 Regulatory Setting

This section describes the federal, state, and local regulatory framework adopted to address GHG emissions.

Federal

U.S. Environmental Protection Agency

The U.S. Environmental Agency (USEPA) is responsible for implementing federal policy to address global climate change. In 2009, the USEPA issued a Final Rule for mandatory reporting of GHG emissions, which applies to fossil fuel and industrial gas suppliers, direct GHG emitters, and manufacturers of heavy-duty and off-road vehicles and requires annual emissions reporting. This rule does not regulate the emission of GHGs; it only requires the monitoring and reporting of GHG emissions for those sources above certain thresholds.

State

Executive Order S-3-05

On June 1, 2005, California's Governor announced, through Executive Order (EO) S-3-05, the following GHG emissions reduction targets:

- By 2010, California shall reduce GHG emissions to 2000 levels.
- By 2020, California shall reduce GHG emissions to 1990 levels.
- By 2050, California shall reduce GHG emissions to 80 percent below 1990 levels.

EO S-3-05 directed the Secretary of the California Environmental Protection Agency to coordinate efforts to meet the targets with the heads of other state agencies (the Secretary of the California Business, Transportation and Housing Agency; Secretary of the California Department of Food and Agriculture; Secretary of the California Resources Agency; Chairperson of the California Air Resources Board (CARB); Chairperson of the California Energy Commission; and the President of the California Public Utilities Commission). This group became the California Climate Action Team. In 2006, the state Legislature passed the California Global Warming Solutions Act of 2006 (Assembly Bill [AB] 32), which created a comprehensive, multiyear program to reduce GHG emissions in California, as described below. In 2016, the state Legislature passed Senate Bill (SB) 32, which codifies a 2030 GHG emissions reduction target of 40 percent below 1990 levels.

Assembly Bill 32, the California Global Warming Solutions Act of 2006

In September 2006, the state Legislature adopted AB 32, the California Global Warming Solutions Act of 2006. AB 32 focuses on reducing GHG emissions in California. GHGs as defined under AB 32 include carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), chlorofluorocarbons, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride (SF₆). Under AB 32, CARB has the primary responsibility for reducing GHG emissions and continues with the Climate Change Action Team to coordinate statewide efforts and promote strategies that can be undertaken by many other California agencies. AB 32 required CARB to adopt rules and regulations that would achieve GHG emissions equal to statewide levels in 1990 by 2020.

In general, AB 32 directed CARB to do the following:

- Prepare and approve a Scoping Plan for achieving the maximum technologically feasible and cost-effective reductions in GHG emissions from sources or categories of sources of GHGs by 2020 and update the Scoping Plan every 5 years
- Maintain and continue reductions in emissions of GHG beyond 2020
- Identify the statewide level of GHG emissions in 1990 to serve as the emissions limit to be achieved by 2020
- Identify and adopt regulations for discrete early actions that could be enforceable on or before January 1, 2010
- Adopt a regulation that establishes a system of market-based declining annual aggregate emission limits for sources or categories of sources that emit GHG emissions
- Convene an Environmental Justice Advisory Committee to advise CARB in developing and updating the Scoping Plan and any other pertinent matter in implementing AB 32
- Appoint an Economic and Technology Advancement Advisory Committee to provide recommendations for technologies, research, and GHG emissions reduction measures

Regarding the first bulleted item above, the most recent update to the Scoping Plan, the 2022 Scoping Plan, was adopted by CARB in December 2022. The 2022 Scoping Plan assesses progress toward the statutory 2030 target and identifies a path to achieving carbon neutrality by 2045 (CARB 2022).

Senate Bill 32

Effective January 1, 2017, SB 32 (Stats. 2016, Ch. 249) added a new Section 38566 to the California Health and Safety Code. It directs CARB to ensure that statewide GHG emissions are reduced to at least 40 percent below the statewide GHG emissions limit (levels than occurred in 1990) no later than December 31, 2030.

Assembly Bill 1279

AB 1279, the California Climate Crisis Act, enacted in September 2022, updates the goals of AB 32. The bill established a statewide goal to achieve net-zero GHG emissions by 2045 and achieve

and maintain net-negative GHG emissions thereafter. Additionally, the bill established a specific target for statewide anthropogenic GHG emissions to be reduced to at least 85 percent below the 1990 levels by 2045. The bill requires CARB to work with relevant state agencies to ensure that updates to the Scoping Plan identify and recommend measures to achieve these policy goals and to identify and implement a variety of policies and strategies that enable CO₂ removal solutions and carbon capture, utilization, and storage technologies in California, as specified. The bill also requires CARB to submit an annual progress report.

Senate Bill 375: Sustainable Communities Strategy

SB 375 was adopted in 2008 and provides a new planning process that coordinates land use planning, Regional Transportation Plans, and funding priorities to help California meet the GHG reduction goals established in AB 32. SB 375 requires Regional Transportation Plans, developed by Metropolitan Planning Organizations, to incorporate a Sustainable Communities Strategy in their Regional Transportation Plans. The goal of the Sustainable Communities Strategy is to reduce regional vehicle miles traveled through land use planning and consequent transportation patterns. SB 375 also includes provisions for streamlined California Environmental Quality Act (CEQA) review for some infill projects, such as transit-oriented development.

Regional

South Coast Air Quality Management District

The South Coast Air Quality Management District (SCAQMD) has been evaluating GHG significance thresholds since April 2008. On December 5, 2008, the SCAQMD Governing Board adopted an interim GHG significance threshold of 10,000 metric tons carbon dioxide equivalent (MTCO_{2e}) for stationary sources, rules, and plans where the SCAQMD is lead agency (SCAQMD permit threshold). For non-industrial development, the interim thresholds establish a screening level of 3,000 MTCO_{2e} for annual emissions. The screening level is intended to capture 90 percent of GHG emissions from new development projects in the residential/commercial sectors. Additionally, construction emissions are to be amortized over the life of the project, defined as 30 years.

SCAQMD is not the lead agency for the project. However, in the absence of other thresholds of significance promulgated by the SCAQMD, and because the City of Anaheim nor City of Orange do not presently have their own thresholds of significance, the Cities have been using the SCAQMD's 3,000 MTCO_{2e} threshold for non-industrial projects. This approach is consistent with CEQA Guidelines, Section 15064.7(b), which states that "a lead agency may consider thresholds of significance previously adopted or recommended by other public agencies or recommended by experts, provided the decision of the lead agency to adopt such thresholds is supported by substantial evidence." The SCAQMD is the regional authority on air emissions and has published documentation for threshold development (SCAQMD 2008). Although the AB 32 target of reducing statewide emissions to 1990 levels by 2020 was the primary state goal at the time of

SCAQMD threshold development, SCAQMD also determined that the interim thresholds would contribute to achieving the Executive Order S-3-05 goal of reducing emissions to 80 percent below 1990 levels by 2050. SB 32 adopted an interim threshold of 40 percent reduction from 1990 levels by 2030 to put the state on track to achieve the S-3-05 2050 target. The EO S-3-05 target has been superseded by the AB 1279 goal of an 85 percent reduction in anthropogenic emissions from 1990 levels by 2045. However, the 2022 Scoping Plan states that the SB 32 2030 reduction target remains a critical step to achieving the AB 1279 target. Additionally, the Scoping Plan acknowledges that new technologies and statewide policies would be required to achieve the AB 1279 target beyond 2030, such as increased emissions reduction standards and increased use of zero-emissions vehicles. As such, a goal of 85 percent reduction from 1990 levels or net-zero GHG emissions is not prescribed as a local target or threshold. The 2030 interim target remains an appropriate threshold for local agencies to achieve a fair share reduction toward statewide emissions reduction goals. As such, the City of Anaheim and other lead agencies throughout the basin continue to apply the SCAQMD interim thresholds.

Connect SoCal 2024

On April 4, 2024, the Southern California Association of Government (SCAG) Regional Council adopted the Connect SoCal 2024–2050 Regional Transportation Plan/ Sustainable Communities Strategy project (SCAG 2024). Connect SoCal 2024 charts a course for closely integrating land use and transportation so that the region can grow smartly and sustainably. The SCAG region must achieve specific federal air quality standards and is required by state law to lower regional GHG emissions (SCAG 2024). Connect SoCal 2024 transportation projects include highway improvements, railroad grade separations, bicycle lanes, new transit hubs and replacement bridges. Providing new active transportation facilities is identified as a critical component of the plan.

Local

City of Anaheim General Plan

The City of Anaheim General Plan’s Circulation Element and Green Element, adopted in 2004, contain goals that focus on the reduction of vehicle trips and vehicle emissions (City of Anaheim 2004). Goals and policies from the Circulation Element and Green Elements related to air quality that are applicable to the project are listed below:

Circulation Element

- **Goal 8.1:** Encourage Pedestrian Travel
 - **Policy 8.1-1.** Encourage and improve pedestrian facilities that link development to the circulation network and that serve as a transition between other modes of travel.
 - **Policy 8.1-2.** Improve pedestrian and bicycle connections from residential neighborhoods to retail activity centers, employment centers, schools, parks, open space areas and community centers.

- **Policy 8.1-3.** Encourage barrier free accessibility for all handicapped residents, employees and visitors throughout the City’s circulation system.
- **Policy 8.1-4.** Support the planning of sidewalks of appropriate width to allow the provision of buffers to shield non-motorized traffic from vehicles.
- **Policy 8.1-5.** Add raised, landscaped medians and bulbouts, where appropriate, to reduce exposure to cross traffic at street crossings.
- **Policy 8.1-6.** When appropriate, walkways should include pedestrian amenities such as shade trees and/or plantings, trash bins, benches, shelters, and directional kiosks.
- **Policy 8.1-7.** Ensure that streets and intersections are designed to provide visibility and safety for pedestrians.
- **Policy 8.1-8.** Improve pedestrian amenities adjacent to Metrolink and Amtrak stations.
- **Policy 8.1-9.** Enhance and encourage pedestrian amenities and recreation, retail and employment opportunities in mixed-use areas to enhance non-motorized transportation.
- **Policy 8.1-10.** Require commercial developments to provide specific pedestrian access points independent from auto entrances.
- **Policy 8.1-11.** Coordinate with appropriate agencies to ensure that transit stops are accessible to pedestrians.

Green Element

- **Goal 8.1:** Reduce locally generated emissions through improved traffic flows and construction management practices.
 - **Policy 8.1-1.** Reduce vehicle emissions through traffic flow improvements, such as traffic signal synchronization, Intelligent Transportation Systems, the Scoot Adaptive Traffic Control System, and related capital improvements.
 - **Policy 8.1-2.** Regulate construction practices, including grading, dust suppression, chemical management, and encourage pre-determined construction routes that minimize dust and particulate matter pollution.
- **Goal 9.1:** Reduce single-occupancy vehicle trips.
 - **Policy 9.1-2.** Encourage development of new commercial and industrial projects that provide on-site amenities that help to lesson vehicle trips such as on-site day care facilities, cafeterias, automated teller machines and bicycle storage facilities.
 - **Policy 9.1-3.** Encourage use of vanpools and carpools by providing priority parking through the project design process.
 - **Policy 9.1-4.** Encourage bicycle and pedestrian travel by improving the City’s trail and bikeway master plan and by providing convenient links between the trail system and desired destinations.

Anaheim Public Utilities Greenhouse Gas Reduction Plan

The Anaheim Public Utilities' (APU) Greenhouse Gas Reduction Plan (GHG Plan) outlines the utility's vision for developing sustainable and environmentally friendly electric and water resources while maintaining affordability and reliability for customers. Created in 2015 and updated in 2020, the plan establishes baseline metrics, tracks progress, and sets new targets for 2030 and 2045, aligning with California's goal of 100 percent clean energy by 2045. The plan focuses on reducing greenhouse gas emissions through various initiatives including renewable power transition, energy efficiency, water conservation, and electric transportation, while incorporating community feedback and designing programs specifically for Anaheim's needs.

City of Orange General Plan Natural Resources Element

The City of Orange General Plan Natural Resources Element, adopted in 2010, contains goals that focus on the reduction of GHG emissions (City of Orange 2010a). Relevant goals and policies are listed below:

- **Goal 2.0:** Protect air, water, and energy resources from pollution and overuse.
 - **Policy 2.2.** Support alternative transportation modes, alternative technologies, and bicycle- and pedestrian-friendly neighborhoods to reduce emissions related to vehicular travel.
 - **Policy 2.10.** Work toward replacing existing City vehicles with ultra-low or zero emission vehicles. At a minimum, new City vehicles shall be low emission vehicles as defined by the California Air Resources Board, except if certain vehicle types are not available in the marketplace. Public safety vehicles are exempted from this requirement.
- **Goal 3.0:** Prepare for and adapt to the effects of climate change and promote practices that decrease the City's contribution to climate change.
 - **Policy 3.1.** Evaluate the potential effects of climate change on the City's human and natural systems and prepare strategies that allow the City to appropriately respond and adapt.
 - **Policy 3.2.** Develop and adopt a comprehensive strategy to reduce greenhouse gasses (GHGs) within Orange by at least 15 percent from current levels by 2020.

4.5.1.2 Existing Conditions

Global Climate Change Overview

Climate change refers to any substantial change in measures of climate (such as temperature, precipitation, or wind) lasting for decades or longer. According to the USEPA, Earth's climate has changed many times during the planet's history, including events ranging from ice ages to long periods of warmth. Historically, natural factors such as volcanic eruptions, changes in Earth's orbit, and the amount of energy released from the sun have affected Earth's climate. Some GHGs,

such as water vapor, occur naturally and are emitted to the atmosphere through natural processes, while others are emitted through human activities. Since the late 18th century, human activities associated with the Industrial Revolution have changed the composition of the atmosphere and, therefore, are very likely influencing Earth's climate. For more than 200 years, the burning of fossil fuels, such as coal and oil, and deforestation have caused concentrations of heat-trapping GHG to increase substantially in the atmosphere.

The accumulation of GHGs in the atmosphere regulates Earth's temperature. Without it, the temperature of Earth would be about zero degrees Fahrenheit (°F) instead of its current 57°F (NOAA 2023). Global climate change concerns focus on if human activities are leading to an enhancement of the greenhouse effect.

Greenhouse Gases

GHGs include but are not limited to CO₂, CH₄, N₂O, ozone (O₃), water vapor, fluorinated gases (hydrofluorocarbons, perfluorocarbons, SF₆, and nitrogen trifluoride [NF₃]), chlorofluorocarbons, and hydrochlorofluorocarbons. Some GHGs, such as CO₂, CH₄, and N₂O, occur naturally and are emitted into the atmosphere through natural processes and human activities. Of these gases, CO₂ and CH₄ are emitted in the greatest quantities from human activities. Manufactured GHGs, which have a much greater heat-absorption potential than CO₂, include fluorinated gases, such as hydrofluorocarbons, perfluorocarbons, and SF₆, which are associated with certain industrial products and processes.

CO₂ enters the atmosphere through the burning of fossil fuels, solid waste, trees, and wood products and other chemical reactions, such as those that occur in cement manufacturing. Globally, the largest source of anthropogenic CO₂ emissions is the combustion of fossil fuels in power plants, automobiles, industrial facilities, and other similar sources. CH₄ is emitted from a variety of both natural and human-related sources, including fossil fuel production, animal husbandry, and waste management. N₂O is emitted during agricultural and industrial activities, during combustion of fossil fuels and solid waste, and wastewater treatment (USEPA 2025). Hydrofluorocarbons, perfluorocarbons, and SF₆ are synthetic, powerful GHGs emitted from a variety of industrial processes and the production of chlorodifluoromethane. Construction and operation of the project would not include any industrial processes, and chlorodifluoromethane has been mostly phased out of use in the United States (USEPA 2025); therefore, these GHGs are not discussed further in this analysis.

Individual GHGs have varying heat-trapping properties and atmospheric lifetimes. The CO₂e is a consistent methodology for comparing GHG emissions because it normalizes various GHG emissions to a consistent measure based on their global warming potential. Each GHG is compared to CO₂ with respect to its ability to trap infrared radiation, its atmospheric lifetime, and its chemical structure. For example, the global warming potential for CH₄ is 25 (which means that emissions of 1 metric ton of CH₄ are equal to emissions of 25 MTCO₂e) and for N₂O is 298 (CAPCOA 2022).

Greenhouse Gas Emissions Inventories

To evaluate and reduce the potential adverse impact of climate change, federal, state, and local organizations conducted GHG inventories to estimate levels of and trends in GHG emissions and removals. The following summarizes these GHG inventories.

Federal

In 2022, the United States emitted approximately 6.3 billion MTCO₂e. Total U.S. emissions in 2022 decreased by 17 percent from 2005 levels, and emissions increased from 2021 to 2022 by one percent. The increase in GHG emissions was largely attributable to an increase in fossil fuel combustion. This increase in fossil fuel consumption emissions was from increased energy use, due in part to the continued rebound in economic activity after the height of the COVID-19 pandemic (USEPA 2024).

State of California Emissions

CARB is responsible for developing the state GHG emission inventory. This inventory estimates the amount of GHGs emitted to and removed from the atmosphere by human activities in the state and supports the AB 32 Climate Change Program. CARB's current GHG emission inventory covers the years 2000–2022 and is based on fuel use, equipment activity, industrial processes, and other relevant data (e.g., housing, landfill activity, and agricultural lands).

According to CARB emission inventory estimates, the state emitted approximately 371.1 million MTCO₂e emissions in 2022. This is a decrease of 9.3 million MTCO₂e from 2021. The 2022 emissions data shows that the state is continuing its established long-term trend of GHG emissions declines, despite the anomalous emissions trends from 2019 through 2021, due in large part to the impacts of the COVID-19 pandemic. CARB estimates that transportation was the source of approximately 39 percent of the state's GHG emissions in 2022, followed by industrial sources at 23 percent and electricity generation at 11 percent. The largest emissions category in the transportation sector is On-Road Transportation, which consists of passenger vehicles (cars, motorcycles, and light-duty trucks) and heavy-duty vehicles. The remaining sources of GHG emissions were residential activities at 8 percent, commercial activities at 6 percent, agriculture at 8 percent, and electricity imports at 5 percent (CARB 2024).

Regional

The City of Anaheim prepared a community emissions inventory as part the Program Environmental Impact Report for the City of Anaheim General Plan Focused Update. Community emissions for Year 2021 were calculated to be 4,030,359 MTCO₂e (City of Anaheim 2024). Similarly, the Program Environmental Impact Report prepared for the City of Orange General Plan included an inventory of GHG emissions in the City of Orange. Year 2004 emissions were calculated to be 2,072,493 MTCO₂e, and were forecast to reach 3,159,568 in 2030 (City of Orange

2010b). Additionally, SCAG prepared an inventory of transportation emissions in the SCAG region, including Orange County, for the Program Environmental Impact Report prepared for the Connect SoCal 2024. In 2019, total transportation emissions for the SCAG region were calculated to be 66.42 million MTCO_{2e} (SCAG 2024).

4.5.2 Thresholds of Significance

According to Appendix G of the CEQA Guidelines, the project would have a significant impact on GHG emissions if it would:

- **Threshold GHG-1:** Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment.
- **Threshold GHG-2:** Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases.

The Initial Study (Appendix A to this Environmental Impact Report [EIR]) determined that the following thresholds would have less than significant or no impact, and these environmental topics will not be addressed further in this section of the Draft EIR:

- Threshold GHG-1 (operation impact only)
- Threshold GHG-2

4.5.3 Plans, Programs, and Policies

This section addresses plans, programs, and policies relevant to the project.

PPP GHG-1 Materials generated from construction of the project will be recycled as required by the California Green Building Codes and Cities of Anaheim and Orange, which require 65 percent of all debris to be diverted from the landfill.

4.5.4 Environmental Impacts

The following sections address various potential impacts relating to GHG emissions that could result from implementation of the project.

4.5.4.1 Threshold GHG-1: Generation of Greenhouse Gas Emissions (Construction)

Impact Analysis

As described in Section 4.5.1.1, Regulatory Setting, under South Coast Air Quality Management District, the significance of project GHG emissions is determined based on the SCAQMD screening threshold of 3,000 MTCO_{2e} per year for non-industrial uses. Project GHG emissions are quantified for the construction effort and amortized over a 30-year project lifetime. Project construction would result in GHG emissions from use of fossil fuels for construction equipment,

haul trucks, and worker vehicle trips. Construction emissions were modeled for the project using CalEEMod Version 2022.1.1.29 based on assumptions consistent with the air quality modeling outlined in Section 4.1, Air Quality. Refer to Appendix C, Air Quality/GHG Data, of the Draft EIR for detailed modeling input and output.

Project construction is anticipated to require approximately 24 to 36 months. Based on the 24-month construction schedule assumed for the air quality analysis, project construction is calculated to result in total emissions of 3,862 MTCO_{2e}. The 24-month construction schedule is conservative for the air quality analysis because the applicable thresholds are concerned with maximum daily emissions. The reduced construction schedule assumes more intense daily construction activity to complete the same total construction effort in less time. However, for GHG emissions, the longer three-year construction schedule is more conservative because it assumes an additional year of equipment operation and worker vehicle trips. To estimate GHG emissions for a 36-month schedule, the worst-case GHG emissions in a single year modeled for the air quality analysis (2,380 MTCO_{2e}) are added to the total emissions for the 24-month construction schedule (3,862 MTCO_{2e}). Total construction emissions from project construction over 36 months would be approximately 6,242 MTCO_{2e}. Therefore, amortized construction emissions would be 208 MTCO_{2e} over a 30-year period. As stated in Section 4.9, Transportation, during operation, the project would provide new active transportation facilities (new pedestrian/bicycle bridges and trails) and would not lead to a substantial or measurable increase in vehicle travel. As such, amortized construction emissions represent the project's ongoing GHG emissions for comparison to the SCAQMD screening threshold. The project would result in amortized construction emissions of 208 MTCO_{2e} and would not exceed the SCAQMD threshold of 3,000 MTCO_{2e} per year for non-industrial uses. The project would not generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment.

Level of Significance Before Mitigation: Less than significant.

Mitigation Measures: No mitigation measures are required.

4.5.5 Cumulative Impacts

This section addresses various potential cumulative impacts relating to GHG emissions that could result from implementation of the project.

4.5.5.1 Cumulative Threshold GHG-1: Generation of Greenhouse Gas Emissions (Construction)

The geographic scope of consideration for GHG emissions is on a global scale as such emissions contribute, on a cumulative basis, to global climate change. Given the nature of environmental consequences from GHG emissions, CEQA requires that lead agencies evaluate the cumulative impacts of GHGs, even relatively small additions, on a global basis. By nature, GHG evaluations are

a cumulative study, and a significant cumulative impact exists. As described in Section 4.5.4.1, Threshold GHG-1: Generation of Greenhouse Gas Emissions (Construction), implementation of the project would not result in short-term GHG emissions above the applicable SCAQMD screening threshold individually, as such, implementation of the project would not be cumulatively considerable.

4.5.6 Level of Significance Before Mitigation

Upon implementation of the plans, programs, and policies, the following threshold would be less than significant:

- **Threshold GHG-1:** Implementation of the project would not generate GHG emissions during construction, either directly or indirectly, that may have a significant impact on the environment.

4.5.7 Mitigation Measures

No mitigation measures are required.

4.5.8 Level of Significance After Mitigation

Not applicable.

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