

## 4.4 Greenhouse Gas Emissions

### 4.4.1 Methodology

This section describes the existing conditions of the Arroyo Seco Canyon Project (ASCP) Areas 2 and 3 (Project/proposed Project) site and vicinity, identifies associated regulatory requirements, evaluates potential environmental impacts, and identifies mitigation measures related to implementation of the proposed Project. The analysis of the Project impacts related to greenhouse gases (GHGs) is based on:

**Appendix C** CalEEMod Data, dated February 2020.

Comments received in response to the Notice of Preparation (NOP) are summarized in Table 1, Notice of Preparation and Scoping Comment Letters Summary, included in Section 1, Introduction of this Draft EIR. A copy of the NOP and Initial Study is included in Appendix A-1, the Appendices to the Initial Study are included in Appendix A-2, and the comment letters received in response to the NOP are included in Appendix A-3 of this Draft EIR.

Although not a part of the proposed Project, there are specific components in Area 2 that are approved to move forward without additional environmental review that are included in this EIR section and in the California Emissions Estimator Model (CalEEMod) construction assumptions. The improvements to be conducted in Area 2, which have been previously approved to proceed in accordance with the 2015 ASCP MND, include:

1. Removal of existing K-rails along an approximate 150-foot-long segment of the Gabrielino Trail/Access Road between Bridge No. 3 and the intake structure;
2. Stabilization and repaving of the Gabrielino Trail/Access Road with asphalt and would be sloped to direct surface runoff away from the stream towards the hillside; and,

These non-Project improvements are included in the CalEEMod assumptions because their construction is anticipated to occur simultaneously with the proposed Project improvements, likely using the same equipment. As such, it was determined to be unrealistic to parse out the short-term construction activities of the various Project components; therefore, the GHG impacts of constructing all improvements within Area 2 are considered in this section.

Similarly, although not a part of the proposed Project, there are specific components in Area 3 that are approved to move forward without additional environmental review that are included in this EIR section and in the CalEEMod construction assumptions. The improvements to be conducted in Area 3, which have been previously approved to proceed in accordance with the 2015 ASCP MND, include:

1. Demolition of various facilities, including inlet/outlet structures, dry vaults, woodsheds, utility light pole, pipes and valves, chainlink fencing, corrugated metal pipes, and other small appurtenant structures, to allow for the reconstructed basins;
2. Construction and operation of new pre-fabricated restroom, new sewer lift station, and associated pipelines, including a new 12-inch-diameter potable water pipeline and a new sewer line within the JPL Bridge;

3. Construction and operation of new pipelines, including a 12-inch-diameter well line, 16-inch-diameter utility service line, and 12-inch-diameter booster line;
4. Removal of the Behner WTP's influent and effluent lines and removal of the 8-inch-diameter sludge line from the Behner WTP;
5. Construction and operation of the recreational parking lot at the northern end of Area 3;
6. Construction/realignment and operation of Explorer Road; and
7. Construction of new fencing, gates, a roundabout, a guard station, a trail pathway, and signs at the northern end of the parking lot.

Additional details related to these non-Project components are included in Appendix A-4, 2015 ASCP Initial Study/Mitigated Negative Declaration.

The non-Project components within Areas 2 and 3 listed above were previously approved for both short-term construction and long-term operations. Only the short-term construction activities for these non-Project components are modeled in the CalEEMod analysis, as all operational aspects were approved through the 2015 IS/MND and there would be no changes associated with the long-term operations of the proposed Project when compared to the 2015 IS/MND, as further described in Section 3, Project Description, of this Draft EIR.

## 4.4.2 Existing Conditions

### Climate Change Overview

Climate change refers to any significant change in measures of climate, such as temperature, precipitation, or wind patterns, lasting for an extended period of time (decades or longer). The Earth's temperature depends on the balance between energy entering and leaving the planet's system. Many factors, both natural and human, can cause changes in Earth's energy balance, including variations in the sun's energy reaching Earth, changes in the reflectivity of Earth's atmosphere and surface, and changes in the greenhouse effect, which affects the amount of heat retained by Earth's atmosphere (EPA 2017a).

The greenhouse effect is the trapping and build-up of heat in the atmosphere (troposphere) near the Earth's surface. The greenhouse effect traps heat in the troposphere through a threefold process as follows: Short-wave radiation emitted by the Sun is absorbed by the Earth, the Earth emits a portion of this energy in the form of long-wave radiation, and GHGs in the upper atmosphere absorb this long-wave radiation and emit it into space and toward the Earth. The greenhouse effect is a natural process that contributes to regulating the Earth's temperature and creates a pleasant, livable environment on the Earth. Human activities that emit additional GHGs to the atmosphere increase the amount of infrared radiation that gets absorbed before escaping into space, thus enhancing the greenhouse effect and causing the Earth's surface temperature to rise.

The scientific record of the Earth's climate shows that the climate system varies naturally over a wide range of time scales and that, in general, climate changes prior to the Industrial Revolution in the 1700s can be explained by natural causes, such as changes in solar energy, volcanic eruptions, and natural changes in GHG concentrations. Recent climate changes, in particular the warming observed over the past century, however, cannot be explained by natural causes alone. Rather, it is extremely likely that human activities have been the dominant cause of that warming since the mid-twentieth century and is the most significant driver of observed

climate change (EPA 2017a; IPCC 2013). Human influence on the climate system is evident from the increasing GHG concentrations in the atmosphere, positive radiative forcing, observed warming, and improved understanding of the climate system (IPCC 2013). The atmospheric concentrations of GHGs have increased to levels unprecedented in the last 800,000 years, primarily from fossil fuel emissions and secondarily from emissions associated with land use changes (IPCC 2013).

### **Greenhouse Gases**

A GHG is any gas that absorbs infrared radiation in the atmosphere; in other words, GHGs trap heat in the atmosphere. As defined in California Health and Safety Code Section 38505(g), for purposes of administering many of the state’s primary GHG emissions reduction programs, GHGs include carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), nitrous oxide (N<sub>2</sub>O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulfur hexafluoride (SF<sub>6</sub>), and nitrogen trifluoride (NF<sub>3</sub>). (See also California Environmental Quality Act (CEQA) Guidelines Section 15364.5.)<sup>1</sup> Some GHGs, such as CO<sub>2</sub>, CH<sub>4</sub>, and N<sub>2</sub>O, occur naturally and are emitted into the atmosphere through natural processes and human activities. Of these gases, CO<sub>2</sub> and CH<sub>4</sub> are emitted in the greatest quantities from human activities. Manufactured GHGs, which have a much greater heat-absorption potential than CO<sub>2</sub>, include fluorinated gases, such as HFCs, PFCs, and SF<sub>6</sub>, which are associated with certain industrial products and processes. The following paragraphs provide a summary of the most common GHGs and their sources.<sup>2</sup>

#### ***Carbon Dioxide***

CO<sub>2</sub> is a naturally occurring gas and a by-product of human activities and is the principal anthropogenic GHG that affects the Earth’s radiative balance. Natural sources of CO<sub>2</sub> include respiration of bacteria, plants, animals, and fungus; evaporation from oceans; volcanic out-gassing; and decomposition of dead organic matter. Human activities that generate CO<sub>2</sub> are from the combustion of fuels such as coal, oil, natural gas, and wood and changes in land use.

#### ***Methane***

CH<sub>4</sub> is produced through both natural and human activities. CH<sub>4</sub> is a flammable gas and is the main component of natural gas. Methane is produced through anaerobic (without oxygen) decomposition of waste in landfills, flooded rice fields, animal digestion, decomposition of animal wastes, production and distribution of natural gas and petroleum, coal production, and incomplete fossil fuel combustion.

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- <sup>1</sup> Climate-forcing substances include GHGs and other substances such as black carbon and aerosols. This discussion focuses on the seven GHGs identified in California Health and Safety Code Section 38505 as impacts associated with other climate-forcing substances are not evaluated herein.
  - <sup>2</sup> The descriptions of GHGs are summarized from the Intergovernmental Panel on Climate Change’s (IPCC) Second Assessment Report (1995), IPCC’s Fourth Assessment Report (2007), CARB’s “Glossary of Climate Change Terms” (2016), and EPA’s “Glossary of Climate Change Terms” (2016).

### ***Nitrous Oxide***

N<sub>2</sub>O is produced through natural and human activities, mainly through agricultural activities and natural biological processes, although fuel burning and other processes also create N<sub>2</sub>O. Sources of N<sub>2</sub>O include soil cultivation practices (microbial processes in soil and water), especially the use of commercial and organic fertilizers, manure management, industrial processes (such as in nitric acid production, nylon production, and fossil-fuel-fired power plants), vehicle emissions, and using N<sub>2</sub>O as a propellant (e.g., rockets, racecars, and aerosol sprays).

### ***Fluorinated Gases***

Fluorinated gases (also referred to as F-gases) are synthetic powerful GHGs emitted from many industrial processes. Fluorinated gases are commonly used as substitutes for stratospheric ozone-depleting substances (e.g., chlorofluorocarbons (CFCs), hydrochlorofluorocarbons (HCFCs), and halons). The most prevalent fluorinated gases include the following:

- **Hydrofluorocarbons:** HFCs are compounds containing only hydrogen, fluorine, and carbon atoms. HFCs are synthetic chemicals used as alternatives to ozone-depleting substances in serving many industrial, commercial, and personal needs. HFCs are emitted as by-products of industrial processes and are used in manufacturing.
- **Perfluorocarbons:** PFCs are a group of human-made chemicals composed of carbon and fluorine only. These chemicals were introduced as alternatives, with HFCs, to the ozone depleting substances. The two main sources of PFCs are primary aluminum production and semiconductor manufacturing. Since PFCs have stable molecular structures and do not break down through the chemical processes in the lower atmosphere, these chemicals have long lifetimes, ranging between 10,000 and 50,000 years.
- **Sulfur Hexafluoride:** SF<sub>6</sub> is a colorless gas soluble in alcohol and ether and slightly soluble in water. SF<sub>6</sub> is used for insulation in electric power transmission and distribution equipment, semiconductor manufacturing, the magnesium industry, and as a tracer gas for leak detection.
- **Nitrogen Trifluoride:** NF<sub>3</sub> is used in the manufacture of a variety of electronics, including semiconductors and flat panel displays.

### **Global Warming Potential**

Gases in the atmosphere can contribute to climate change both directly and indirectly. Direct effects occur when the gas itself absorbs radiation. Indirect radiative forcing occurs when chemical transformations of the substance produce other GHGs, when a gas influences the atmospheric lifetimes of other gases, and/or when a gas affects atmospheric processes that alter the radiative balance of the Earth (e.g., affect cloud formation or albedo) (EPA 2016). The Intergovernmental Panel on Climate Change developed the global warming potential (GWP) concept to compare the ability of each GHG to trap heat in the atmosphere relative to another gas. The GWP of a GHG is defined as the ratio of the time-integrated radiative forcing from the instantaneous release of 1 kilogram of a trace substance relative to that of 1 kilogram of a reference gas (IPCC 2014). The reference gas used is CO<sub>2</sub>; therefore, GWP-weighted emissions are measured in metric tons (MT) of CO<sub>2</sub> equivalent (CO<sub>2</sub>e).

The current version of the California Emissions Estimator Model (CalEEMod) (Version 2016.3.2) assumes that the GWP for CH<sub>4</sub> is 25 (so emissions of 1 MT of CH<sub>4</sub> are equivalent to emissions of 25 MT of CO<sub>2</sub>), and the GWP for N<sub>2</sub>O is 298, based on the Intergovernmental Panel on Climate Change’s Fourth Assessment Report (IPCC 2007). The GWP values identified in CalEEMod were applied to the proposed Project.

### Sources of Greenhouse Gas Emissions

Per the U.S. Environmental Protection Agency’s (EPA) Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990–2016 (EPA 2018), total United States GHG emissions were approximately 6,511.3 million metric tons (MMT) CO<sub>2</sub>e in 2016. The primary GHG emitted by human activities in the United States was CO<sub>2</sub>, which represented approximately 81.6% of total GHG emissions (5,310.9 MMT CO<sub>2</sub>e). The largest source of CO<sub>2</sub>, and of overall GHG emissions, was fossil-fuel combustion, which accounted for approximately 93.5% of CO<sub>2</sub> emissions in 2016 (4,966.0 MMT CO<sub>2</sub>e). Relative to 1990, gross United States GHG emissions in 2016 are higher by 2.4%; down from a high of 15.7% above 1990 levels in 2007. GHG emissions decreased from 2015 to 2016 by 1.9% (126.8 MMT CO<sub>2</sub>e) and overall, net emissions in 2016 were 11.1% below 2005 levels (EPA 2018).

According to California’s 2000–2016 GHG emissions inventory (2018 edition), California emitted 429.4 MMT CO<sub>2</sub>e in 2016, including emissions resulting from out-of-state electrical generation (CARB 2018a). The sources of GHG emissions in California include transportation, industrial uses, electric power production from both in-state and out-of-state sources, commercial and residential uses, agriculture, high GWP substances, and recycling and waste. The California GHG emission source categories (as defined in California Air Resources Board’s (CARB) 2018 GHG emissions inventory) and their relative contributions in 2016 are presented in Table 4.4-1.

**Table 4.4-1. Greenhouse Gas Emissions Sources in California**

Source Category	Annual GHG Emissions (MMT CO <sub>2</sub> e)	Percent of Total <sup>a</sup>
Transportation	169.38	41%
Industrial	89.61	23%
Electricity generation <sup>b</sup>	68.58	16%
Residential and commercial uses	39.36	12%
Agriculture	33.84	8%
High GWP substances	19.78	4%
Recycling and waste	8.81	2%
<b>Totals</b>	<b>429.40</b>	<b>100%</b>

**Source:** CARB 2018a.

**Notes:** GHG = greenhouse gas; MMT CO<sub>2</sub>e = million metric tons of carbon dioxide equivalent; GWP = global warming potential.

Emissions reflect 2016 California GHG inventory.

<sup>a</sup> Percentage of total has been rounded and total may not sum due to rounding.

<sup>b</sup> Includes emissions associated with imported electricity, which account for 26.28 MMT CO<sub>2</sub>e.

Between 2000 and 2016, per-capita GHG emissions in California have dropped from a peak of 14.0 MT per person in 2001 to 10.8 MT per person in 2016, representing a 23% decrease. In addition, total GHG emissions in 2016 were approximately 12 MMT CO<sub>2</sub>e less than 2015 emissions. The declining trend in GHG emissions,

coupled with programs that will continue to provide additional GHG reductions going forward, demonstrates that California will continue to reduce emissions below the 2020 target of 431 MT CO<sub>2e</sub> (CARB 2018).

### Potential Effects of Climate Change

Globally, climate change has the potential to affect numerous environmental resources through uncertain impacts related to future air temperatures and precipitation patterns. The 2014 Intergovernmental Panel on Climate Change Synthesis Report (IPCC 2014) indicated that warming of the climate system is unequivocal, and since the 1950s, many of the observed changes are unprecedented over decades to millennia. Signs that global climate change has occurred include warming of the atmosphere and ocean, diminished amounts of snow and ice, and rising sea levels (IPCC 2014).

In California, climate change impacts have the potential to affect sea-level rise, agriculture, snowpack and water supply, forestry, wildfire risk, public health, and electricity demand and supply (CCCC 2012). The primary effect of global climate change has been a 0.2 degrees Celsius (°C) (0.36 degrees Fahrenheit (°F)) rise in average global tropospheric temperature per decade, determined from meteorological measurements worldwide between 1990 and 2005. Scientific modeling predicts that continued emissions of GHGs at or above current rates would induce more extreme climate changes during the twenty-first century than were observed during the twentieth century. A warming of about 0.2°C (0.36°F) per decade is projected, and there are identifiable signs that global warming could be taking place.

Although climate change is driven by global atmospheric conditions, climate change impacts are felt locally. A scientific consensus confirms that climate change is already affecting California. The average temperatures in California have increased, leading to more extreme hot days and fewer cold nights. Shifts in the water cycle have been observed, with less winter precipitation falling as snow, and both snowmelt and rainwater running off earlier in the year. Sea levels have risen, and wildland fires are becoming more frequent and intense due to dry seasons that start earlier and end later (CAT 2010).

An increase in annual average temperature is a reasonably foreseeable effect of climate change. Observed changes over the last several decades across the western United States reveal clear signals of climate change. Statewide average temperatures increased by about 1.7°F from 1895 to 2011, and warming has been greatest in the Sierra Nevada (CCCC 2012). By 2050, California is projected to warm by approximately 2.7°F above 2000 averages, a threefold increase in the rate of warming over the last century. By 2100, average temperatures could increase by 4.1°F to 8.6°F, depending on emissions levels. Springtime warming—a critical influence on snowmelt—will be particularly pronounced. Summer temperatures will rise more than winter temperatures, and the increases will be greater in inland California, compared to the coast. Heat waves will be more frequent, hotter, and longer. There will be fewer extremely cold nights (CCCC 2012). A decline of Sierra Nevada snowpack, which accounts for approximately half of the surface water storage in California, by 30% to as much as 90% is predicted over the next 100 years (CAT 2006).

Model projections for precipitation over California continue to show the Mediterranean pattern of wet winters and dry summers with seasonal, year-to-year, and decade-to-decade variability. For the first time, however, several of the improved climate models shift toward drier conditions by the mid-to-late twenty-first century in central, and most notably, Southern California. By the late century, all projections show

drying, and half of them suggest 30-year average precipitation will decline by more than 10% below the historical average (CCCC 2012).

A summary of current and future climate change impacts to resource areas in California, as discussed in the *Safeguarding California: Reducing Climate Risk* (CNRA 2014), is provided below.

**Agriculture.** Some of the specific challenges faced by the agricultural sector and farmers include more drastic and unpredictable precipitation and weather patterns; extreme weather events that range from severe flooding to extreme drought, to destructive storm events; significant shifts in water availability and water quality; changes in pollinator lifecycles; temperature fluctuations, including extreme heat stress and decreased chill hours; increased risks from invasive species and weeds, agricultural pests and plant diseases; and disruptions to the transportation and energy infrastructure supporting agricultural production.

**Biodiversity and Habitat.** Specific climate change challenges to biodiversity and habitat include species migration in response to climatic changes, range shift and novel combinations of species; pathogens, parasites and disease; invasive species; extinction risks; changes in the timing of seasonal life-cycle events; food web disruptions; threshold effects (i.e., a change in the ecosystem that results in a “tipping point” beyond which irreversible damage or loss has occurred).

**Energy.** Specific climate change challenges for the energy sector include temperature, fluctuating precipitation patterns, increasing extreme weather events, and sea-level rise.

**Forestry.** The most significant climate change related risk to forests is accelerated risk of wildfire and more frequent and severe droughts. Droughts have resulted in more large-scale mortalities and combined with increasing temperatures have led to an overall increase in wildfire risks. Increased wildfire intensity subsequently increases public safety risks, property damage, fire suppression and emergency response costs, watershed and water quality impacts, and vegetation conversions.

**Ocean and Coastal Ecosystems and Resources.** Sea-level rise, changing ocean conditions, and other climate change stressors are likely to exacerbate long-standing challenges related to ocean and coastal ecosystems in addition to threatening people and infrastructure located along the California coastline and in coastal communities. Sea-level rise, in addition to more frequent and severe coastal storms and erosion, are threatening vital infrastructure such as roads, bridges, power plants, ports and airports, gasoline pipes, and emergency facilities, as well as negatively impacting the coastal recreational assets such as beaches and tidal wetlands.

**Public Health.** Climate change can impact public health through various environmental changes and is the largest threat to human health in the twenty-first century. Changes in precipitation patterns affect public health primarily through potential for altered water supplies, and extreme events such as heat, floods, droughts, and wildfires. Increased frequency, intensity, and duration of extreme heat and heat waves are likely to increase the risk of mortality due to heat-related illness, as well as exacerbate existing chronic health conditions. Other extreme weather events are likely to negatively impact air quality and increase or intensify respiratory illness, such as asthma and allergies.

**Transportation.** Although the transportation industry is a source of GHG emissions, it is also vulnerable to climate change risks. Increasing temperatures and extended periods of extreme heat threaten the integrity of the roadways and rail lines. High temperatures cause the road surfaces to expand, which leads to increased pressure and pavement buckling. High temperatures can also cause rail breakages, which could lead to train derailment. Other forms of extreme weather events, such as extreme storm events, can negatively impact infrastructure, which can impair movement of peoples and goods, or potentially block evacuation routes and emergency access roads. Increased wildfires, flooding, erosion risks, landslides, mudslides, and rockslides can all profoundly impact the transportation system and pose a serious risk to public safety.

**Water.** Climate change could seriously impact the timing, form, amount of precipitation, runoff patterns, and frequency and severity of precipitation events. Higher temperatures reduce the amount of snowpack and lead to earlier snowmelt, which can impact water supply availability, natural ecosystems, and winter recreation. Water supply availability during the intense dry summer months is heavily dependent on the snowpack accumulated during the winter time. Increased risk of flooding has a variety of public health concerns, including water quality, public safety, property damage, displacement, and post-disaster mental health problems. Prolonged and intensified droughts can also negatively groundwater reserves and result in increased overdraft and subsidence. The higher risk of wildfires can lead to increased erosion, which can negatively impact watersheds and result in poor water quality.

In March 2016, the California Natural Resources Agency (CNRA) released Safeguarding California: Implementation Action Plans, a document that shows how California is acting to convert the recommendations contained in the 2014 Safeguarding California plan into action (CNRA 2016). Additionally, in May 2017, the CNRA released the draft Safeguarding California Plan: 2017 Update, which is a survey of current programmatic responses for climate change and contains recommendations for further actions (CNRA 2017).

The CNRA released Safeguarding California Plan: 2018 Update in January 2018, which provides a roadmap for state agencies to protect communities, infrastructure, services, and the natural environment from climate change impacts. The 2018 Safeguarding California Plan includes 69 recommendations across 11 sectors and more than 1,000 ongoing actions and next steps developed by scientific and policy experts across 38 state agencies (CNRA 2018). As with previous state adaptation plans, the 2018 Update addresses acceleration of warming across the state; more intense and frequent heat waves; greater riverine flows; accelerating sea-level rise; more intense and frequent drought; more severe and frequent wildfires; more severe storms and extreme weather events; shrinking snowpack and less overall precipitation; and ocean acidification, hypoxia, and warming.



### 4.4.3 Relevant Plans, Policies, and Ordinances

#### Federal

##### *Massachusetts v. EPA*

In *Massachusetts v. EPA* (April 2007), the U.S. Supreme Court directed the EPA administrator to determine whether GHG emissions from new motor vehicles cause or contribute to air pollution that may reasonably be anticipated to endanger public health or welfare, or whether the science is too uncertain to make a reasoned decision. In December 2009, the administrator signed a final rule with the following two distinct findings regarding GHGs under Section 202(a) of the federal Clean Air Act:

- The Administrator found that elevated concentrations of GHGs—CO<sub>2</sub>, CH<sub>4</sub>, N<sub>2</sub>O, HFCs, PFCs, and SF<sub>6</sub>—in the atmosphere threaten the public health and welfare of current and future generations. This is the “endangerment finding.”
- The Administrator further found the combined emissions of GHGs—CO<sub>2</sub>, CH<sub>4</sub>, N<sub>2</sub>O, and HFCs—from new motor vehicles and new motor vehicle engines contribute to the GHG air pollution that endangers public health and welfare. This is the “cause or contribute finding.”

These two findings were necessary to establish the foundation for regulation of GHGs from new motor vehicles as air pollutants under the Clean Air Act.

##### *Energy Independence and Security Act of 2007*

The Energy Independence and Security Act of 2007 (December 2007), among other key measures, would do the following, which would aid in the reduction of national GHG emissions (EPA 2007):

- Increase the supply of alternative fuel sources by setting a mandatory Renewable Fuel Standard requiring fuel producers to use at least 36 billion gallons of biofuel in 2022.
- Set a target of 35 miles per gallon for the combined fleet of cars and light trucks by model year 2020 and directs National Highway Traffic Safety Administration (NHTSA) to establish a fuel economy program for medium- and heavy-duty trucks and create a separate fuel economy standard for work trucks.
- Prescribe or revise standards affecting regional efficiency for heating and cooling products and procedures for new or amended standards, energy conservation, energy-efficiency labeling for consumer electronic products, residential boiler efficiency, electric motor efficiency, and home appliances.

##### *Federal Vehicle Standards*

In response to the U.S. Supreme Court ruling previously discussed, the Bush Administration issued Executive Order (EO) 13432 in 2007 directing the EPA, the Department of Transportation, and the Department of Energy to establish regulations that reduce GHG emissions from motor vehicles, non-road vehicles, and non-road engines by 2008. In 2009, the NHTSA issued a final rule regulating fuel efficiency and GHG emissions from cars and light-duty trucks for model year 2011, and in 2010, the EPA and NHTSA issued a final rule regulating cars and light-duty trucks for model years 2012–2016 (75 FR 25324–25728).

In 2010, President Barack Obama issued a memorandum directing the Department of Transportation, Department of Energy, EPA, and NHTSA to establish additional standards regarding fuel efficiency and GHG reduction, clean fuels, and advanced vehicle infrastructure. In response to this directive, EPA and NHTSA proposed stringent, coordinated federal GHG and fuel economy standards for model years 2017–2025 light-duty vehicles. The proposed standards projected to achieve 163 grams per mile of CO<sub>2</sub> in model year 2025, on an average industry fleet-wide basis, which is equivalent to 54.5 miles per gallon if this level were achieved solely through fuel efficiency. The final rule was adopted in 2012 for model years 2017–2021 (77 FR 62624–63200). On January 12, 2017, the EPA finalized its decision to maintain the current GHG emissions standards for model years 2022–2025 cars and light trucks (EPA 2017b).

In addition to the regulations applicable to cars and light-duty trucks described above, in 2011, the EPA and NHTSA announced fuel economy and GHG standards for medium- and heavy-duty trucks for model years 2014–2018 (76 FR 57106–57513). The standards for CO<sub>2</sub> emissions and fuel consumption are tailored to three main vehicle categories: combination tractors, heavy-duty pickup trucks and vans, and vocational vehicles. According to the EPA, this regulatory program will reduce GHG emissions and fuel consumption for the affected vehicles by 6%–23% over the 2010 baselines.

In August 2016, the EPA and NHTSA announced the adoption of the phase two program related to the fuel economy and GHG standards for medium- and heavy-duty trucks. The phase two program will apply to vehicles with model year 2018 through 2027 for certain trailers, and model years 2021 through 2027 for semi-trucks, large pickup trucks, vans, and all types and sizes of buses and work trucks. The final standards are expected to lower CO<sub>2</sub> emissions by approximately 1.1 billion MT and reduce oil consumption by up to 2 billion barrels over the lifetime of the vehicles sold under the program (EPA and NHTSA 2016).

#### ***Clean Power Plan and New Source Performance Standards for Electric Generating Units.***

On October 23, 2015, the EPA published a final rule (effective December 22, 2015) establishing the Carbon Pollution Emission Guidelines for Existing Stationary Sources: Electric Utility Generating Units (80 FR 64510–64660), also known as the Clean Power Plan. These guidelines prescribe how states must develop plans to reduce GHG emissions from existing fossil-fuel-fired electric generating units. The guidelines establish CO<sub>2</sub> emission performance rates representing the best system of emission reduction for two subcategories of existing fossil-fuel-fired electric generating units: (1) fossil-fuel-fired electric utility steam-generating units, and (2) stationary combustion turbines. Concurrently, the EPA published a final rule (effective October 23, 2015) establishing Standards of Performance for Greenhouse Gas Emissions from New, Modified, and Reconstructed Stationary Sources: Electric Utility Generating Units (80 FR 64661–65120). The rule prescribes CO<sub>2</sub> emission standards for newly constructed, modified, and reconstructed affected fossil-fuel-fired electric utility generating units. The U.S. Supreme Court stayed implementation of the Clean Power Plan pending resolution of several lawsuits.

#### **State/Regional**

The statewide GHG emissions regulatory framework is summarized below by category: state climate change targets, building energy, renewable energy and energy procurement, mobile sources, solid waste, water, and other state regulations and goals. The following text describes EOs, legislation, regulations, and other plans and policies that would directly or indirectly reduce GHG emissions and/or address climate change issues

## ***State Climate Change Targets***

### **EO S-3-05**

EO S-3-05 (June 2005) established California’s GHG emissions reduction targets and laid out responsibilities among the state agencies for implementing the EO and for reporting on progress toward the targets. This EO established the following targets:

- By 2010, reduce GHG emissions to 2000 levels
- By 2020, reduce GHG emissions to 1990 levels
- By 2050, reduce GHG emissions to 80% below 1990 levels

EO S-3-05 also directed the California Environmental Protection Agency to report biannually on progress made toward meeting the GHG targets and the impacts to California due to global warming, including impacts to water supply, public health, agriculture, the coastline, and forestry. The Climate Action Team was formed, which subsequently issued reports from 2006 to 2010 (CAT 2016).

### **Assembly Bill 32**

In furtherance of the goals established in EO S-3-05, the Legislature enacted Assembly Bill (AB) 32 (Núñez and Pavley). The bill is referred to as the California Global Warming Solutions Act of 2006 (September 27, 2006). AB 32 provided initial direction on creating a comprehensive multiyear program to limit California’s GHG emissions at 1990 levels by 2020 and initiate the transformations required to achieve the state’s long-range climate objectives.

### **Senate Bill 32 and AB 197.**

Senate Bill (SB) 32 and AB 197 (enacted in 2016) are companion bills. SB 32 codified the 2030 emissions reduction goal of EO B-30-15 by requiring CARB to ensure that statewide GHG emissions are reduced to 40% below 1990 levels by 2030. AB 197 established the Joint Legislative Committee on Climate Change Policies, consisting of at least three members of the Senate and three members of the Assembly, to provide ongoing oversight over implementation of the state’s climate policies. AB 197 also added two members of the Legislature to CARB as nonvoting members; requires CARB to make available and update (at least annually via its website) emissions data for GHGs, criteria air pollutants, and TACs from reporting facilities; and requires CARB to identify specific information for GHG emissions reduction measures when updating the Scoping Plan.

### **CARB’s 2007 Statewide Limit.**

In 2007, in accordance with California Health and Safety Code Section 38550, CARB approved a statewide limit on the GHG emissions level for 2020, consistent with the determined 1990 baseline (427 MMT CO<sub>2e</sub>).

### **CARB’s Climate Change Scoping Plan**

One specific requirement of AB 32 is for CARB to prepare a “scoping plan” for achieving the maximum technologically feasible and cost-effective GHG emission reductions by 2020 (Health and Safety Code Section 38561(a)), and to update the plan at least once every 5 years. In 2008, CARB approved the first Scoping Plan. The Climate Change Scoping Plan: A Framework for Change (Scoping Plan) included a mix of recommended

strategies that combined direct regulations, market-based approaches, voluntary measures, policies, and other emission reduction programs calculated to meet the 2020 statewide GHG emission limit and initiate the transformations needed to achieve the state’s long-range climate objectives. The key elements of the Scoping Plan include the following (CARB 2008):

1. Expanding and strengthening existing energy efficiency programs as well as building and appliance standards
2. Achieving a statewide renewable energy mix of 33%
3. Developing a California cap-and-trade program that links with other Western Climate Initiative partner programs to create a regional market system and caps sources contributing 85% of California’s GHG emissions
4. Establishing targets for transportation-related GHG emissions for regions throughout California, and pursuing policies and incentives to achieve those targets
5. Adopting and implementing measures pursuant to existing state laws and policies, including California’s clean car standards, goods movement measures, and the Low Carbon Fuel Standard (LCFS) (17 CCR, Section 95480 et seq.)
6. Creating targeted fees, including a public goods charge on water use, fees on high GWP gases, and a fee to fund the administrative costs of the State of California’s long-term commitment to AB 32 implementation

The Scoping Plan also identified local governments as essential partners in achieving California’s goals to reduce GHG emissions because they have broad influence and, in some cases, exclusive authority over activities that contribute to significant direct and indirect GHG emissions through their planning and permitting processes, local ordinances, outreach and education efforts, and municipal operations. Specifically, the Scoping Plan encouraged local governments to adopt a reduction goal for municipal operations and for community emissions to reduce GHGs by approximately 15% from then levels (2008) by 2020. Many local governments developed community-scale local GHG reduction plans based on this Scoping Plan recommendation.

In 2014, CARB approved the first update to the Scoping Plan. The First Update to the Climate Change Scoping Plan: Building on the Framework (First Update) defined the state’s GHG emission reduction priorities for the next 5 years and laid the groundwork to start the transition to the post-2020 goals set forth in EOs S-3-05 and B-16-2012. The First Update concluded that California is on track to meet the 2020 target, but recommended a 2030 mid-term GHG reduction target be established to ensure a continuum of action to reduce emissions. The First Update recommended a mix of technologies in key economic sectors to reduce emissions through 2050, including energy demand reduction through efficiency and activity changes; large-scale electrification of on-road vehicles, buildings, and industrial machinery; decarbonizing electricity and fuel supplies; and the rapid market penetration of efficient and clean energy technologies. As part of the First Update, CARB recalculated the state’s 1990 emissions level using more recent GWPs identified by the Intergovernmental Panel on Climate Change, from 427 MMT CO<sub>2e</sub> to 431 MMT CO<sub>2e</sub> (CARB 2014).

In 2015, as directed by EO B-30-15, CARB began working on an update to the Scoping Plan to incorporate the 2030 target of 40% below 1990 levels by 2030 to keep California on its trajectory toward meeting or exceeding the long-term goal of reducing GHG emissions to 80% below 1990 levels by 2050 as set forth in S-3-05. The Governor called on California to pursue a new and ambitious set of strategies, in line with the five climate

change pillars from his inaugural address, to reduce GHG emissions and prepare for the unavoidable impacts of climate change. In the summer of 2016, the Legislature affirmed the importance of addressing climate change through passage of SB 32 (Pavley, Chapter 249, Statutes of 2016).

In January 2017, CARB released the 2017 Climate Change Scoping Plan Update (2030 Scoping Plan) for public review and comment (CARB 2017). The 2030 Scoping Plan builds on the successful framework established in the initial Scoping Plan and First Update while identifying new, technologically feasible and cost-effective strategies that will serve as the framework to achieve the 2030 GHG target and define the state's climate change priorities to 2030 and beyond. The strategies' "known commitments" include implementing renewable energy and energy efficiency (including the mandates of SB 350), increased stringency of the LCFS, measures identified in the Mobile Source and Freight Strategies, measures identified in the proposed Short-Lived Climate Pollutant Plan, and increased stringency of SB 375 targets. To fill the gap in additional reductions needed to achieve the 2030 target, it recommends continuing the Cap-and-Trade Program and a measure to reduce GHGs from refineries by 20%.

For local governments, the 2030 Scoping Plan replaced the initial Scoping Plan's 15% reduction goal with a recommendation to aim for a community-wide goal of no more than 6 MT CO<sub>2e</sub> per capita by 2030 and no more than 2 MT CO<sub>2e</sub> per capita by 2050, which are consistent with the state's long-term goals. These goals are also consistent with the Global Climate Leadership Memorandum of Understanding (Under 2 MOU) (Under 2 2016) and the Paris Agreement, which were developed around the scientifically based levels necessary to limit global warming below 2°C. The 2030 Scoping Plan recognized the benefits of local government GHG planning (e.g., through Climate Action Plans (CAPs)) and provide more information regarding tools CARB is working on to support those efforts. It also recognizes the CEQA streamlining provisions for project-level review where there is a legally adequate CAP.<sup>3</sup> The Second Update was approved by CARB's Governing Board on December 14, 2017.

The Scoping Plan recommends strategies for implementation at the statewide level to meet the goals of AB 32, SB 32, and the EOs, and establishes an overall framework for the measures that will be adopted to reduce California's GHG emissions. A project is considered consistent with the statutes and EOs if it meets the general policies in reducing GHG emissions to facilitate the achievement of the state's goals and does not impede attainment of those goals. As discussed in several cases, a given project need not be in perfect conformity with each and every planning policy or goals to be consistent. A project would be consistent if it will further the objectives and not obstruct their attainment.

#### **CARB's Regulations for the Mandatory Reporting of Greenhouse Gas Emissions.**

CARB's Regulation for the Mandatory Reporting of Greenhouse Gas Emissions (17 CCR 95100–95157) incorporated by reference certain requirements that the EPA promulgated in its Final Rule on Mandatory Reporting of Greenhouse Gases (Title 40, CFR, Part 98). Specifically, Section 95100(c) of the Mandatory

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<sup>3</sup> *Sierra Club v. County of Napa* (2004) 121 Cal.App.4th 1490; *San Francisco Tomorrow et al. v. City and County of San Francisco* (2015) 229 Cal.App.4th 498; *San Franciscans Upholding the Downtown Specific Plan v. City and County of San Francisco* (2002) 102 Cal.App.4th 656; *Sequoyah Hills Homeowners Assn. v. City of Oakland* (1993) 23 Cal.App.4th 704, 719.

Reporting Regulation incorporated those requirements that the EPA promulgated in the Federal Register on October 30, 2009; July 12, 2010; September 22, 2010; October 28, 2010; November 30, 2010; December 17, 2010; and April 25, 2011. In general, entities subject to the Mandatory Reporting Regulation that emit more than 10,000 MT CO<sub>2e</sub> per year are required to report annual GHGs through the California Electronic GHG Reporting Tool. Certain sectors, such as refineries and cement plants, are required to report regardless of emission levels. Entities that emit more than the 25,000 MT CO<sub>2e</sub> per year threshold are required to have their GHG emissions report verified by a CARB-accredited third party.

### **Executive Order B-18-12**

EO B-18-12 (April 2012) directed state agencies, departments, and other entities under the governor’s executive authority to take action to reduce entity-wide GHG emissions by at least 10% by 2015 and 20% by 2020, as measured against a 2010 baseline. EO B-18-12 also established goals for existing state buildings for reducing grid-based energy purchases and water use.

### **Executive Order B-30-15**

EO B-30-15 (April 2015) identified an interim GHG reduction target in support of targets previously identified under S-3-05 and AB 32. EO B-30-15 set an interim target goal of reducing GHG emissions to 40% below 1990 levels by 2030 to keep California on its trajectory toward meeting or exceeding the long-term goal of reducing GHG emissions to 80% below 1990 levels by 2050 as set forth in S-3-05. To facilitate achieving this goal, EO B-30-15 called for CARB to update the Scoping Plan to express the 2030 target in terms of MMT CO<sub>2e</sub>. The EO also called for state agencies to continue to develop and implement GHG emission reduction programs in support of the reduction targets.

### **Senate Bill (SB) 605 and SB 1383**

SB 605 (2014) requires CARB to complete a comprehensive strategy to reduce emissions of short-lived climate pollutants in the state, and SB 1383 (2016) requires CARB to approve and implement that strategy by January 1, 2018. SB 1383 also establishes specific targets for the reduction of short-lived climate pollutants (40% below 2013 levels by 2030 for methane and HFCs, and 50% below 2013 levels by 2030 for anthropogenic black carbon), and provides direction for reductions from dairy and livestock operations and landfills. Accordingly, and as mentioned above, CARB adopted its Short-Lived Climate Pollutant Reduction Strategy in March 2017. The Short-Lived Climate Pollutant Reduction Strategy establishes a framework for the statewide reduction of emissions of black carbon, methane, and fluorinated gases.

### **Executive Order B-55-18**

EO B-55-18 (September 2018) establishes a statewide policy for the state to achieve carbon neutrality no later than 2045 and achieve and maintain net negative emissions thereafter. The goal is an addition to the existing statewide targets of reducing the state’s GHG emissions. CARB will work with relevant state agencies to ensure that future Scoping Plans identify and recommend measures to achieve the carbon neutrality goal.

## **Mobile Sources**

### **Assembly Bill 1493**

AB 1493 (Pavley) (July 2002) was enacted in a response to the transportation sector accounting for more than half of California's CO<sub>2</sub> emissions. AB 1493 required CARB to set GHG emission standards for passenger vehicles, light-duty trucks, and other vehicles determined by the state board to be vehicles that are primarily used for noncommercial personal transportation in the state. The bill required that CARB set GHG emission standards for motor vehicles manufactured in 2009 and all subsequent model years. CARB adopted the standards in September 2004. The near-term (2009–2012) standards resulted in a reduction of approximately 22% in GHG emissions compared to the emissions from the 2002 fleet, and the mid-term (2013–2016) standards resulted in a reduction of approximately 30%.

### **Heavy Duty Diesel**

CARB adopted the final Heavy Duty Truck and Bus Regulation, Title 13, Division 3, Chapter 1, Section 2025, on December 31, 2014, to reduce particulate matter and nitrogen oxides emissions from heavy-duty diesel vehicles. The rule requires particulate matter filters be applied to newer heavier trucks and buses by January 1, 2012, with older vehicles required to comply by January 1, 2015. The rule will require nearly all diesel trucks and buses to be compliant with the 2010 model year engine requirement by January 1, 2023. CARB also adopted an Airborne Toxic Control Measure to limit idling of diesel-fueled commercial vehicles on December 12, 2013. This rule requires diesel-fueled vehicles with gross vehicle weights greater than 10,000 pounds to idle no more than 5 minutes at any location (13 CCR 2485).

### **Executive Order S-1-07**

EO S-1-07 (January 2007, implementing regulation adopted in April 2009) sets a declining LCFS for GHG emissions measured in CO<sub>2</sub>e grams per unit of fuel energy sold in California. The target of the LCFS is to reduce the carbon intensity of California passenger vehicle fuels by at least 10% by 2020 (17 CCR 95480 et seq.). The carbon intensity measures the amount of GHG emissions in the lifecycle of a fuel, including extraction/feedstock production, processing, transportation, and final consumption, per unit of energy delivered.

### **Senate Bill 375**

SB 375 (Steinberg) (September 2008) addresses GHG emissions associated with the transportation sector through regional transportation and sustainability plans. SB 375 requires CARB to adopt regional GHG reduction targets for the automobile and light-truck sector for 2020 and 2035 and to update those targets every 8 years. SB 375 requires the state's 18 regional metropolitan planning organizations to prepare a Sustainable Communities Strategy (SCS) as part of their Regional Transportation Plan (RTP) that will achieve the GHG reduction targets set by CARB. If a metropolitan planning organization is unable to devise an SCS to achieve the GHG reduction target, the metropolitan planning organization must prepare an Alternative Planning Strategy demonstrating how the GHG reduction target would be achieved through alternative development patterns, infrastructure, or additional transportation measures or policies.

Pursuant to Government Code, Section 65080(b)(2)(K), an SCS does not (i) regulate the use of land; (ii) supersede the land use authority of cities and counties; or (iii) require that a city's or county's land use policies and regulations, including those in a general plan, be consistent with it. Nonetheless, SB 375 makes regional and local planning agencies responsible for developing those strategies as part of the federally required metropolitan transportation planning process and the state-mandated housing element process.

In September 2010, CARB adopted the first SB 375 targets for the regional metropolitan planning organizations. The targets for the Southern California Association of Governments (SCAG) are an 8% reduction in emissions per capita by 2020 and a 13% reduction by 2035. Achieving these goals through adoption of an SCS is the responsibility of the metropolitan planning organizations. SCAG adopted its first RTP/SCS in April 2012. The plan quantified a 9% reduction by 2020 and a 16% reduction by 2035 (SCAG 2012). In June 2012, CARB accepted SCAG's quantification of GHG reductions and its determination the SCS, if implemented, would achieve SCAG targets. On April 4, 2016, the SCAG Regional Council adopted the 2016 RTP/SCS. The 2016 RTP/SCS quantified an 8% reduction by 2020 and an 18% reduction by 2030 (SCAG 2016). In June 2016, CARB accepted SCAG's quantification of GHG reductions and its determination that the SCS would achieve SCAG targets. On May 7, 2020, the SCAG Regional Council Adopted the 2020 RTP/SCS, which continues the progress made on previous plans and quantified a 19% reduction by 2035. At the time of writing CARB's approval of the GHG reduction quantitation is pending (SCAG 2020).

#### **Advanced Clean Cars Program and Zero-Emissions Vehicle Program**

The Advanced Clean Cars program (January 2012) is a new emissions-control program for model years 2015 through 2025. The program combines the control of smog- and soot-causing pollutants and GHG emissions into a single coordinated package. The package includes elements to reduce smog-forming pollution, reduce GHG emissions, promote clean cars, and provide the fuels for clean cars (CARB 2012). To improve air quality, CARB implemented new emission standards to reduce smog-forming emissions beginning with 2015 model year vehicles. It is estimated that, by 2025, cars will emit 75% less smog-forming pollution than the average new car sold today. To reduce GHG emissions, CARB, in conjunction with the EPA and the NHTSA, adopted new GHG standards for model year 2017 to 2025 vehicles; the new standards are estimated to reduce GHG emissions by 34% in 2025. The zero-emission vehicle program will act as the focused technology of the Advanced Clean Cars program by requiring manufacturers to produce increasing numbers of zero-emission vehicles and plug-in hybrid electric vehicles in the 2018 to 2025 model years.

#### **Executive Order B-16-12**

EO B-16-12 (March 2012) required that state entities under the governor's direction and control support and facilitate the rapid commercialization of zero-emission vehicles. It ordered CARB, CEC, the California Public Utilities Commission, and other relevant agencies to work with the Plug-in Electric Vehicle Collaborative and the California Fuel Cell Partnership to establish benchmarks to help achieve benchmark goals by 2015, 2020, and 2025. On a statewide basis, EO B-16-12 established a target reduction of GHG emissions from the transportation sector equaling 80% less than 1990 levels by 2050. This directive did not apply to vehicles that have special performance requirements necessary for the protection of the public safety and welfare.



## **Water**

### **Executive Order B-29-15**

In response to the ongoing drought in California, EO B-29-15 (April 2015) set a goal of achieving a statewide reduction in potable urban water usage of 25% relative to water use in 2013. The term of the EO extended through February 28, 2016, although many of the directives have become permanent water-efficiency standards and requirements. The EO includes specific directives that set strict limits on water usage in the state. In response to EO B-29-15, the California Department of Water Resources modified and adopted a revised version of the Model Water Efficient Landscape Ordinance that, among other changes, significantly increases the requirements for landscape water use efficiency and broadens its applicability to include new development projects with smaller landscape areas.

## **Solid Waste**

### **Assembly Bill (AB) 939 and AB 341**

In 1989, AB 939, known as the Integrated Waste Management Act (PRC Sections 40000 et seq.), was passed because of the increase in waste stream and the decrease in landfill capacity. The statute established the California Integrated Waste Management Board, which oversees a disposal reporting system. AB 939 mandated a reduction of waste being disposed where jurisdictions were required to meet diversion goals of all solid waste through source reduction, recycling, and composting activities of 25% by 1995 and 50% by 2000.

AB 341 (Chapter 476, Statutes of 2011 (Chesbro)) amended the California Integrated Waste Management Act of 1989 to include a provision declaring that it is the policy goal of the state that not less than 75% of solid waste generated be source-reduced, recycled, or composted by 2020, and annually thereafter. In addition, AB 341 required the California Department of Resources Recycling and Recovery (CalRecycle) to develop strategies to achieve the state's policy goal. CalRecycle conducted several general stakeholder workshops and several focused workshops, and in August 2015 published a discussion document titled AB 341 Report to the Legislature, which identifies five priority strategies that CalRecycle believes would assist the state in reaching the 75% goal by 2020, legislative and regulatory recommendations, and an evaluation of program effectiveness (CalRecycle 2012).

## **Local**

### **City of Pasadena Climate Action Plan.**

The City's Final Climate Action Plan (CAP) was adopted on March 5, 2018. The City's CAP quantifies existing GHG emissions as well as projected emissions for the years 2020, 2030, 2035 and 2050 resulting from activities within the City's jurisdiction. The CAP also identifies City target emissions levels, below which Citywide GHG impacts would be less than significant. The CAP and the accompanying adopted Initial Study/Negative Declaration (IS/ND) also identify and analyze the GHG emissions that would result from the BAU scenario for the years 2020, 2030, 2035 and 2050. The CAP includes a monitoring and reporting program to ensure its progress toward achieving the specified GHG emissions reductions, and specifies 21 measures that, if implemented, would achieve the specified GHG emissions reductions targets. The CAP was adopted in a public process following adoption of the IS/ND. Subsequent to the adoption of the CAP, the City has also established additional specific measures that if implemented on a project-by-project basis, would further ensure that the City as a whole achieves the specified GHG emissions reduction targets in the CAP (City of Pasadena 2018a).

#### 4.4.4 Thresholds of Significance

The significance criteria used to evaluate the Project impacts related to greenhouse gas emissions are based on Appendix G of the CEQA Guidelines. According to Appendix G of the CEQA Guidelines, a significant impact related to greenhouse gas emissions would occur if the project would:

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

Through the analysis in the Initial Study (see Appendix A-1), it was determined that the proposed project would not generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment, or conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gasses (i.e., Thresholds a and b). However, both of these thresholds are re-evaluated in this EIR using the latest construction assumptions and modeling methods.

As discussed in Section 4.4.3, the CAP was adopted in a public process following adoption of the IS/ND. Along with the adoption of the CAP, the City has also established additional specific measures that if implemented on a project-by-project basis, would further ensure that the City as a whole achieves the specified GHG emissions reduction targets in the CAP. The CAP Consistency Checklist is the primary document used by the City of Pasadena to verify project-by-project consistency with the underlying assumptions in the CAP and ensure that the City would achieve its emissions reduction targets. The CAP Checklist includes a three-step process to determine project consistency (City of Pasadena 2018b). Step 1 consists of a Master Land Use Application form, which provides relevant information about the proposed project. Step 2 consists of an evaluation to determine the project's consistency with existing General Plan. If the proposed project is able to answer "yes" to Step 2 and demonstrate the proposed project would be consistent with existing General Plan, for the site, or the proposed project can demonstrate consistency with existing land uses by comparing the proposed project's GHG emissions with those that would be generated under existing land uses, then the proposed project may proceed to Step 3. Step 3 provides three options to evaluate consistency of with the CAP:

- **Option A:** Sustainable Development Actions–Demonstrate that the proposed project is consistent with the Pasadena CAP by incorporating applicable actions intended to ensure that the project contributes its fair share to the City's cumulative GHG reduction goals
- **Option B:** GHG Efficiency -Demonstrate that the proposed project is consistent with Pasadena's per person GHG efficiency threshold
- **Option C:** Net Zero GHG Emissions–Demonstrate that the proposed project would not result in a net increase in GHG emissions

As the proposed Project is construction-focused in nature and would not include residential, commercial or industrial land uses that would generate a service population, Option A was selected to determine consistency with City's CAP and the significance of impacts related to GHG emissions.

## 4.4.5 Environmental Impacts Analysis

**Threshold 4.4a.** Would the project generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?

### Short-Term Construction Impacts

CalEEMod Version 2016.3.2 was used to estimate potential Project-generated GHG emissions during construction. Construction of the proposed Project would result in GHG emissions primarily associated with use of off-road construction equipment, on-road hauling and vendor (material delivery) trucks, and worker vehicles. All details for construction criteria air pollutants discussed in Section 4.1, Air Quality are also applicable for the estimation of construction-related GHG emissions. As such, see Section 4.1 of this Draft EIR for a discussion of construction emissions calculation methodology and assumptions.

Construction of the proposed Project would result in GHG emissions, primarily associated with the use of off-road construction equipment, haul trucks, on-road vendor trucks, and worker vehicles. SCAQMD’s Draft Guidance Document – Interim CEQA Greenhouse Gas Significance Threshold (SCAQMD 2008) recommends that “construction emissions be amortized over a 30-year Project lifetime, so that GHG reduction measures will address construction GHG emissions as part of the operational GHG reduction strategies.” Thus, the total construction GHG emissions were calculated, amortized over 30 years, and added to the total operational emissions.

Table 4.4-2 shows the estimated annual GHG construction emissions associated with the proposed Project, as well as the amortized construction emissions over a 30-year Project life.

**Table 4.4-2. Estimated Annual Construction GHG Emissions**

	CO <sub>2</sub>	CH <sub>4</sub>	N <sub>2</sub> O	CO <sub>2</sub> e
Year	<i>Metric Tons per Year</i>			
2021	148.91	0.03	0.00	149.65
2022	371.26	0.06	0.00	372.86
Total				522.51
<b>Amortized Emissions</b>				<b>17.41</b>

**Notes:** CO<sub>2</sub> = carbon dioxide; CH<sub>4</sub> = methane; N<sub>2</sub>O = nitrous oxide; CO<sub>2</sub>e = carbon dioxide equivalent.

See Appendix C for complete results.

As shown in Table 4.4-2, total construction emissions for the proposed Project were estimated to be 523 MT CO<sub>2</sub>e. Estimated amortized Project-generated construction emissions over 30 years would be approximately 17 MT CO<sub>2</sub>e per year. As with Project-generated construction air quality pollutant emissions, GHG emissions generated during construction of the proposed Project would be short-term in nature, lasting only for the duration of the construction period for each phase, and would not represent a long-term source of GHG emissions. Because there is no separate GHG threshold for construction, the evaluation of significance is discussed in the operational emissions analysis below.

### Long-Term Operational Impacts

As described in Section 3, Project Description, PWP’s future schedule of operation and maintenance activities for Project-related facilities would not substantively differ from the current maintenance routine and procedures. No new employees are required for the long-term operation of the Project components; therefore, no long-term operational GHG emissions from mobile sources would result. However, the project would include new hydraulic motors and winches as part of the design for Area 2, which would be electrically powered. Energy demand for the hydraulic motors and winches are estimated to be 4,800 kilowatt hours per year. Table 4.4-3 shows the estimated annual GHG operational emissions associated with the proposed Project, as well as the amortized construction emissions over a 30-year Project life.

**Table 4.4-3. Estimated Annual Construction GHG Emissions**

	CO <sub>2</sub>	CH <sub>4</sub>	N <sub>2</sub> O	CO <sub>2</sub> e
Source	<i>Metric Tons per Year</i>			
Area	0	0	0	0
Energy	3.68	<0.01	<0.01	3.69
Mobile	0	0	0	0
Amortized Construction Emissions				17.41
<b>Total</b>				<b>21.10</b>

**Notes:** CO<sub>2</sub> = carbon dioxide; CH<sub>4</sub> = methane; N<sub>2</sub>O = nitrous oxide; CO<sub>2</sub>e = carbon dioxide equivalent.

See Appendix C for complete results.

As shown in Table 4.4-3, the total proposed Project emissions during operation were estimated to be approximately 3 MT CO<sub>2</sub>e per year which includes amortized construction emissions of 20 MT CO<sub>2</sub>e per year. As discussed in Section 4.4.4, the significance determination is based on consistency with the City’s CAP using its CAP Consistency Checklist. This CAP Consistency Checklist and the proposed Project’s GHG impacts are discussed in Threshold GHG-2.

Although not quantified, the proposed Project would further reduce City’s reliance upon purchased imported water supplies from the Metropolitan Water District of Southern California (MWD). The City is a member agency of MWD, which serves wholesale treated water to the City imported from the Colorado River Aqueduct and the State Water Project (SWP). Because the Project would increase the supply of local groundwater in replacement of imported water, there would be a reduction in electricity associated with the water source. For imported water, electricity is needed to supply and transport the water from sources in other parts of California, which is a very energy-intensive process to pump the water across the State through topographical elevation changes. However, for local groundwater, electricity is only needed for pumping. Accordingly, electricity associated with supply of water from MWD is avoided as a result of replacing some of the City’s reliance on imported water source with local groundwater supplies.

**Threshold 4.4b** Would the project conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases?

**Consistency with the City’s CAP**

As discussed in Section 4.4.4, the City of Pasadena evaluates GHG significance based on a Project’s consistency with the City’s CAP using the CAP Consistency Checklist. Step 2 of the Checklist determines the Project’s consistency with the land use assumptions used in the CAP. The proposed Project is currently designated as Open Space. As the Project proposed would continue to serve as open space once construction is complete, it is consistent with the existing land use designation. Therefore, the Project would respond Yes to Step 2 of the CAP Checklist and can proceed to Step 3 of the Cap Checklist. Step 3 of the checklist provides 3 options to determine consistency with the CAP. Given that the Project is primarily a construction project, Option A: Sustainable Development Actions was used to determine consistency with the CAP. Table 4.4-4 shows the Project’s consistency with each action within the CAP Consistency Checklist.

**Table 4.4-4. Climate Action Plan Consistency Checklist**

GHG Reduction Strategy	Sustainable Development Actions	Project Compliance
<b>Mandatory Actions</b>		
T-1.2: Continue to improve bicycle and pedestrian safety	<i>Bicycle Storage:</i> Does the project provide bicycle storage lockers, racks, or other bicycle storage facilities for residents/employees?	<b>Not Applicable.</b> The Project is construction focused and result in water utility infrastructure surrounded by open space. Therefore, the Project would not result in new employees or residents
T-3.1: Decrease annual commuter miles traveled by single occupancy vehicles	<i>Transportation Demand Management (TDM):</i> Does the project include a TDM plan? A TDM plan is required for the following projects: multifamily residential development that are 100 or more units; mixed-use developments with 50 or more residential units or 50,000 square feet or more of non-residential development; or non-residential projects which exceed 75,000 square feet. If applicable, please submit the TDM plan for review.	<b>Not Applicable.</b> The Project is construction focused and result in water utility infrastructure surrounded by open space similar to existing conditions. Employee trips to and from the Project from maintenance activities would be similar to existing conditions.
T-4.1: Expand the availability and use of alternative fuel vehicles and fueling infrastructure	<i>Alternative Vehicle Fueling Wiring:</i> For projects with more than three parking spaces, does the project provide wiring for at least one 240V Type II electric car charger?	<b>Not Applicable.</b> The Project is construction focused and would result in water utility infrastructure surrounded by open space and would not add new parking.
E-1.2: Encourage the use of energy conservation devices and passive design concepts that make use of the natural climate to increase energy efficiency	<i>Passive Design Features:</i> Does the project utilize passive design techniques such as awnings or overhangs on the east, west, and south facing windows which block the high summer sun but allow in lower winter sun?	<b>Not Applicable.</b> The Project is construction focused and would result in water utility infrastructure surrounded by open space after completion of construction activities. Residential or commercial structures would not be built as part of the Project.

Table 4.4-4. Climate Action Plan Consistency Checklist

GHG Reduction Strategy	Sustainable Development Actions	Project Compliance
WC-1.1: Reduce potable water usage throughout Pasadena	<i>Irrigation Efficiency:</i> Will the project utilize drought tolerant landscaping and/or drip irrigation and/or weather controllers to reduce outdoor water use?	<b>Not Applicable.</b> The Project is construction focused and would result in water utility infrastructure surrounded by open space after completion of construction activities. The Project site would not require irrigation.
WR-1.1: Continue to reduce solid waste and landfill GHG emissions	<i>Facilitate Recycling:</i> Does the project include a space for separate trash and recycling bins as well as provide informational signage/handouts for residents/employees outlining materials to be recycled?	<b>Not Applicable.</b> The Project is construction focused and would result in water utility infrastructure surrounded by open space after completion of construction activities.
<b>Selective Actions</b>		
WC-2.1: Increase access to and use of non-potable water	<i>Rainwater Capture and Reuse:</i> Does the project utilize a rainwater capture and reuse system to reduce the amount of potable water consumed on site?	<b>Consistent.</b> The Project is a water utility infrastructure that would add approximately 1,035 acre-ft/yr of diverted flows into the spreading basins for the beneficial use of the City's water rights.
WC-3.1: Improve storm water to slow, sink, and treat water run-off, recharge groundwater, and improve water quality	<i>Permeable Surfaces:</i> Is at least 30% of the hardscape (e.g., surface parking lots, walkways, patios, etc.) permeable to allow infiltration? Please include these specifications on the project plans	<b>Consistent.</b> The Project would replace existing utility infrastructure. Construction of the streambed shoulder and bank, including the roughened channel, downstream of the new diversion structure and operable weir would be with permeable engineered streambed material (ESM). The ESM selected for the Project would consist of a well-graded mixture of rock, gravel and sand similar to natural streambed material, and would not add any new impervious surfaces within the Arroyo Seco streambed.
WC-3.1: Improve storm water to slow, sink, and treat water run-off, recharge groundwater, and improve water quality	<i>Stormwater Capture:</i> Is the project designed to retain stormwater resulting from the 95 <sup>th</sup> percentile, 24-hour rain event as defined by the Los Angeles County 95 <sup>th</sup> percentile precipitation isohyetal map?	<b>Consistent.</b> The Project is a water utility infrastructure that would add approximately 1,035 acre-ft/yr of diverted flows into the spreading groundwater basins from the capture of stormwater events within the Arroyo Seco.
UG-1.1: Continue to preserve, enhance, and acquire additional green space throughout Pasadena to improve carbon sequestration, reduce the urban heat-island effect, and increase opportunities for active recreation	<i>Greenspace:</i> Does the project include at least 500 sq. ft. of public use greenspace (landscaped yards, parklets, rooftop garden, etc.)? At a minimum, 50% of the required greenspace must include softscape landscaping (e.g., trees, plants, grass, etc.).	<b>Consistent.</b> The Project would result in water utility infrastructure surrounded by open space after completion of construction activities. Areas currently available for public use would not be permanently impacted by the Project implementation.

**Table 4.4-4. Climate Action Plan Consistency Checklist**

GHG Reduction Strategy	Sustainable Development Actions	Project Compliance
UG-2.1: Continue to protect existing trees and plant new ones to improve and ensure viability of Pasadena’s urban forest	<i>Trees:</i> Does the project result in a net gain of trees?	<b>Consistent.</b> As discussed in Section 4.2, Biological Resources, the Project would result in the removal of 19 protected trees in total, of which all are located in Area 2. A total of 15 protected trees are expected to be encroached upon. The City’s replacement requirements range from 2:1 to 12:1, depending on the diameter of the removed tree.

**Source:** City of Pasadena 2018b

As shown in Table 4.4-4 above, the Project would be consistent with the necessary applicable GHG reduction actions found within the CAP Consistency Checklist. Additionally, the Project would not result in a change in land use that would generate GHG emissions in excess of the Project site’s existing land use designation (CAP Checklist Step 2). Therefore, the Project would be consistent with the City’s CAP.

#### **Consistency with CARB’s Scoping Plan**

The CARB Scoping Plan, approved by CARB in 2008 and updated in 2014 and 2017, provides a framework for actions to reduce California’s GHG emissions and requires CARB and other state agencies to adopt regulations and other initiatives to reduce GHGs. The Scoping Plan is not directly applicable to specific Projects, nor is it intended to be used for Project-level evaluations.<sup>4</sup> Under the Scoping Plan, however, there are several state regulatory measures aimed at the identification and reduction of GHG emissions. CARB and other state agencies have adopted many of the measures identified in the Scoping Plan. Most of these measures focus on area source emissions (e.g., energy usage, high-GWP GHGs in consumer products) and changes to the vehicle fleet (i.e., hybrid, electric, and more fuel-efficient vehicles) and associated fuels (e.g., Low Carbon Fuel Standard), among others. The proposed Project would not conflict with implementation of the measures identified in the Scoping Plan.

#### **Consistency with the Southern California Association of Governments 2020–2045 Regional Transportation Plan/Sustainable Communities Strategy**

On May 7, 2020, SCAG’s Regional Council adopted Connect SoCal (2020 - 2045 Regional Transportation Plan/Sustainable Communities Strategy) for federal transportation conformity purposes only. In light of the COVID-19 pandemic, the Regional Council will consider approval of Connect SoCal in its entirety and for all other purposes within 120 days from May 7, 2020.

<sup>4</sup> The Final Statement of Reasons for the amendments to the CEQA Guidelines reiterates the statement in the Initial Statement of Reasons that “[t]he Scoping Plan may not be appropriate for use in determining the significance of individual projects because it is conceptual at this stage and relies on the future development of regulations to implement the strategies identified in the Scoping Plan” (CNRA 2009b).

Connect SoCal is a long-range visioning plan that builds upon and expands land use and transportation strategies established over several planning cycles to increase mobility options and achieve a more sustainable growth pattern. It charts a path toward a more mobile, sustainable and prosperous region by making connections between transportation networks, between planning strategies and between the people whose collaboration can improve the quality of life for Southern Californians. Because the Project is not growth inducing, this type of consistency analysis does not apply. However, the major goals of the Connect SoCal are outlined in Table 4.4-5, along with the Project's consistency with them.

**Table 4.4-5 Project Consistency with the SCAG Connect SoCal RTP/SCS**

RTP/SCS Measure	Proposed Project Consistency
Encourage regional economic prosperity and global competitiveness.	<i>Not applicable.</i> The Project would not inhibit SCAG from encouraging regional economic prosperity and global competitiveness.
Improve mobility, accessibility, reliability, and travel safety for people and goods.	<i>Not applicable.</i> The Project would not inhibit SCAG from strengthening the regional transportation network for goods movement.
Enhance the preservation, security, and resilience of the regional transportation system.	<i>Not applicable.</i> The Project would not inhibit SCAG from enhancing the resilience of the regional transportation system.
Increase person and goods movement and travel choices within the transportation system.	<i>Not applicable.</i> The Project would not inhibit SCAG from increasing person and goods movement and travel choices within the transportation system.
Reduce greenhouse gas emissions and improve air quality.	<i>Consistent.</i> The Project would result in criteria air pollutant and GHG emissions during construction and operation. However, emissions would not exceed the SCAQMD significance thresholds and would be consistent with the City's CAP. The project would also support the use of local water supplies in place of more energy intensive imported water.
Support healthy and equitable communities.	<i>Not applicable.</i> The Project would not inhibit SCAG from supporting healthy and equitable communities.
Adapt to a changing climate and support an integrated regional development pattern and transportation network.	<i>Consistent.</i> The Project would facilitate adaption to climate change and would allow for increased utilization of the City's surface water rights from the Arroyo Seco and maximize the beneficial uses of this important local water resource. The Project would reducing reliance upon imported water supplies from the Metropolitan Water District of Southern California (MWD).
Leverage new transportation technologies and data-driven solutions that result in more efficient travel.	<i>Not applicable.</i> The Project would not inhibit SCAG from leveraging technology for the transportation system.
Encourage development of diverse housing types in areas that are supported by multiple transportation options.	<i>Not applicable.</i> The Project would not inhibit SCAG from encouraging development of diverse housing types.
Promote conservation of natural and agricultural lands and restoration of habitats.	<i>Consistent.</i> The Project would provide opportunities for increased aquatic biological functions within the Arroyo Seco by: (1) protecting fish and eliminating the unimpeded passage of stream flows that could carry aquatic animals into the conveyance system, and (2) reducing existing impediments to fish passage at the diversion weir structure.

Source: SCAG 2020.



As shown in Table 4-4.5, the project would be consistent with all applicable measures within the SCAG Connect SoCal RTP/SCS.

#### **Consistency with Senate Bill 32 and Executive Order S-3-05**

The Project would not impede the attainment of the GHG reduction goals for 2030 or 2050 identified in Senate Bill (SB) 32 and Executive Order S-3-05, respectively. Executive Order S-3-05 establishes the following goals: GHG emissions should be reduced to 2000 levels by 2010, to 1990 levels by 2020, and to 80% below 1990 levels by 2050. SB 32 establishes a statewide GHG emissions reduction target whereby CARB, in adopting rules and regulations to achieve the maximum technologically feasible and cost-effective GHG emissions reductions, shall ensure that statewide GHG emissions are reduced to at least 40% below 1990 levels by December 31, 2030. While there are no established protocols or thresholds of significance for that future year analysis, CARB forecasts that compliance with the current Scoping Plan puts the state on a trajectory of meeting these long-term GHG goals, although the specific path to compliance is unknown (CARB 2014).

CARB has expressed optimism with regard to both the 2030 and 2050 goals. It states in the First Update to the Climate Change Scoping Plan that “California is on track to meet the near-term 2020 GHG emissions limit and is well positioned to maintain and continue reductions beyond 2020 as required by AB 32” (CARB 2014). With regard to the 2050 target for reducing GHG emissions to 80% below 1990 levels, the First Update to the Climate Change Scoping Plan states that the level of reduction is achievable in California (CARB 2014). CARB believes that the state is on a trajectory to meet the 2030 and 2050 GHG reduction targets set forth in AB 32, SB 32, and Executive Order S-3-05. This is confirmed in the *2017 Scoping Plan*, which states (CARB 2017):

The Scoping Plan builds upon the successful framework established by the Initial Scoping Plan and First Update, while identifying new, technologically feasible and cost-effective strategies to ensure that California meets its GHG reduction targets in a way that promotes and rewards innovation, continues to foster economic growth, and delivers improvements to the environment and public health, including in disadvantaged communities.

The Project would not interfere with implementation of any of the previously described GHG reduction goals for 2030 or 2050 because the Project would be consistent with the City’s CAP. Because the Project would be consistent with the City’s CAP, this analysis provides support for the conclusion that the Project would not impede the state’s trajectory toward the previously described statewide GHG reduction goals for 2030 or 2050.

The Project’s consistency with the state’s Scoping Plan would assist in meeting the City’s contribution to GHG emission reduction targets in California. With respect to future GHG targets under SB 32 and Executive Order S-3-05, CARB has also made clear its legal interpretation that it has the requisite authority to adopt whatever regulations are necessary, beyond the AB 32 horizon year of 2020, to meet the SB 32 40% reduction target by 2030 and the Executive Order S-3-05 80% reduction target by 2050. This legal interpretation by an expert agency provides evidence that future regulations will be adopted to continue the trajectory toward meeting these future GHG targets.

Based on the considerations previously outlined, the Project would not conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs. This impact would be less than significant.

## 4.4.6 Cumulative Impacts

As explained earlier, the analysis of a Project's GHG emissions is inherently a cumulative analysis because climate change is a global issue and the emissions from individual Projects are negligible in a global context. Accordingly, the analysis above takes into account the potential for the proposed Project to contribute to a cumulative impact of global climate change, which was determined to be less than significant. The analysis shows that the proposed Project is consistent with the City's CAP reduction measures and SCAG RTP/SCS goals to reduce regional GHG emissions from the land use and transportation sectors by 2020 and 2035. The proposed Project is also consistent with CARB's Scoping Plan. Given the proposed Project's consistency with local, statewide and regional plans adopted for the purpose of reducing GHG emissions, it is concluded that the proposed Project's incremental contribution to GHG emissions and their effects on climate change would not be cumulatively considerable. For these reasons, the proposed Project's cumulative contribution to global climate change is less than significant.

## 4.4.7 Mitigation Measures

No mitigation measures are required.

## 4.4.8 Level of Significance After Mitigation

The proposed Project would not result in any potentially significant impacts related to GHG, and all impacts would be less than significant with Project implementation.

## 4.4.9 References

- 14 CCR 15000–15387 and Appendices A–L. Guidelines for Implementation of the California Environmental Quality Act, as amended.
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