# 3.6 Greenhouse Gas Emissions

This section describes the applicable laws and regulations, existing conditions, and impact analysis for greenhouse gas (GHG) emissions. As noted below, construction and operation of the Venice Auxiliary Pumping Plant (VAPP; Proposed Project) would generate both short- and long-term emissions, but these would be less than significant and no mitigation measures are required.

## 3.6.1 Regulatory Setting

### 3.6.1.1 Federal

Although federal legislation related to GHG emissions has been introduced and regulations have been promulgated, there is currently no comprehensive policy regarding GHG emissions at the federal level.

#### Massachusetts et al. v. U.S. Environmental Protection Agency (2007)

Twelve U.S. states and cities, including California, in conjunction with several environmental organizations, sued the U.S. Environmental Protection Agency (EPA) to regulate GHGs as a pollutant, pursuant to the federal Clean Air Act (CAA). The Supreme Court ruled that the plaintiffs had standing to sue, finding that GHGs fit within the CAA's definition of a pollutant, and EPA's reasons for not regulating GHGs were insufficiently grounded.

As a result of the Supreme Court's ruling, on December 7, 2009, the EPA signed the Endangerment and Cause or Contribute Findings for Greenhouse Gases under Section 202(a) of the CAA.

- Under the Endangerment Finding, the EPA found that the current and projected concentrations of the six key well-mixed GHGs, $CO_2$, methane ($CH_4$), nitrous oxide ($N_2O$), perfluorinated carbons (PFCs), sulfur hexafluoride ($SF_6$), and hydrofluorocarbons (HFCs), in the atmosphere threaten the public health and welfare of current and future generations.
- Under the Cause or Contribute Findings, EPA found that the combined emissions of these well-mixed GHGs from new motor vehicles and new motor vehicle engines contribute to the GHG pollution that threatens public health and welfare.

Although EPA has yet to issue specific regulations regulating GHG emissions, the EPA Administrator's findings were the first step toward future regulations that are currently under development.

#### EPA Clean Power Plan (2014)

On June 2, 2014, the EPA, under President Obama's Climate Action Plan, proposed a Clean Power Plan, which would be the first to establish national GHG limits for the electric power industry. The proposed rule contains state-specific emission-reduction goals and will help cut carbon pollution from the power sector by 30% from 2005 levels by 2030.

### 3.6.1.2 State

California has adopted statewide legislation to address issues related to various aspects of climate change and GHG emissions mitigation. Much of this establishes a broad framework for the state's long-term GHG emissions-reduction and climate change adaptation program. The governor of California has also issued several executive orders (EO) related to the state's evolving climate change policy. Of particular importance to local governments is the direction provided by the 2008 California Assembly Bill (AB) 32 Scoping Plan, which recommends that local governments should reduce their GHG emissions to a level consistent with state goals (i.e., 15% below current levels).

In the absence of federal regulations, GHG emissions are generally regulated at the state level and typically approached by setting emissions-reduction targets for existing sources of GHG emissions, establishing policies to promote renewable energy and increase energy efficiency, and developing statewide action plans. Summaries of key policies, legal cases, regulations, and legislation at the state level relevant to the Proposed Project are provided below. Key statewide GHG regulations that are directly applicable to the Proposed Project are also included below.

#### Assembly Bill 32, the Global Warming Solutions Act of 2006/2011

AB 32 codified the state's GHG emissions target by requiring California's global warming emissions to be reduced to 1990 levels by 2020. Since being adopted, the California Air Resources Board (ARB), the California Energy Commission, the California Public Utilities Commission, and the California Building Standards Commission have been developing regulations that will help the state meet the goals of AB 32 and EO S-03-05. The scoping plan for AB 32 identifies specific measures to reduce GHG emissions to 1990 levels by 2020 and requires ARB and other state agencies to develop and enforce regulations and other initiatives to reduce GHG emissions. Specifically, the scoping plan articulates a key role for local governments by recommending that they establish GHG emissions-reduction goals for both their municipal operations and the community that are consistent with those of the state (i.e., approximately 15 percent below current levels (ARB 2008).

#### Executive Order S-03-05 (2005)

The goal of EO S-03-05 is to reduce California's GHG emissions to (1) 2000 levels by 2010, (2) 1990 levels by 2020, and (3) 80 percent below 1990 levels by 2050. In 2006, this goal was further reinforced with the passage of AB 32.

#### Executive Order B-30-15

Signed on April 29, 2015, EO B-30-15 set a goal of reducing GHG emissions to 40 percent below 1990 levels by 2030. The intent is for the state to achieve this interim goal in advance of AB 32's emissions target of 80 percent below 1990 levels by 2050.

#### California Senate Bill 97

California Senate Bill (SB) 97 required the Governor's Office of Planning and Research (OPR) to develop recommended amendments to the California Environmental Quality Act (CEQA) Guidelines for addressing GHG emissions (OPR 2008). The amendments became effective on March 18, 2010, and included amendments to the CEQA Guidelines addressing the analysis and mitigation of GHG emissions. Those CEQA Guidelines amendments clarified several points, including the following:

- Lead agencies must analyze the greenhouse gas emissions of proposed projects and reach a conclusion regarding the significance of those emissions. (See CEQA Guidelines § 15064.4.)
- When a project's greenhouse gas emissions may be significant, lead agencies must consider a range of potential mitigation measures to reduce those emissions. (See CEQA Guidelines § 15126.4(c).)
- Lead agencies must analyze potentially significant impacts associated with placing projects in hazardous locations, including locations potentially affected by climate change. (See CEQA Guidelines § 15126.2(a).)
- Lead agencies may significantly streamline the analysis of greenhouse gases on a project level by using a programmatic greenhouse gas emissions reduction plan meeting certain criteria. (See CEQA Guidelines § 15183.5(b).)
- CEQA mandates analysis of a proposed project's potential energy use (including transportation-related energy), sources of energy supply, and ways to reduce energy demand, including through the use of efficient transportation alternatives. (See CEQA Guidelines, Appendix F.)

## California Senate Bill (SB) 375, Sustainable Communities and Climate Protection Act of 2008

SB 375 requires metropolitan planning organizations (MPOs) to incorporate a "sustainable communities strategy" (SCS) in their regional transportation plans (RTPs) that will achieve the GHG emissions-reduction targets that were set by ARB in February 2011. SB 375 also includes provisions for streamlined CEQA review for some infill projects, such as transit-oriented development. However, those provisions will not become effective until an SCS is adopted. The final targets require the Southern California Association of Governments (SCAG) to identify strategies to reduce per capital GHG emissions from passenger vehicles by approximately 8 percent by 2020, 18 percent by 2035, and 21% by 2040 compared with base-year (i.e., 2005) emissions.

## California Green Building Standards Code and Title 24 (2010)

The Green Building Standards Code (CALGreen) applies to the planning, design, operation, construction, use, and occupancy of newly constructed buildings and requires the installation of energy- and water-efficient indoor infrastructure for all new projects beginning after January 1, 2011. CALGreen also requires newly constructed buildings develop a waste management plan and divert at least 50 percent of the construction materials generated during project construction.

Administrative regulations to CALGreen Part 11 and the California Building Energy Efficiency Standards were adopted in 2013 and took effect on January 1, 2014. The 2013 Building Energy Efficiency Standards are 25 percent more efficient than previous standards for residential construction. Part 11 also established voluntary standards that became mandatory in the 2010 edition of the code, including planning and design for sustainable site development, energy efficiency, water conservation, material conservation, and internal air contaminants. The standards offer builders better windows, insulation, lighting, ventilation systems, and other features that reduce energy consumption in homes and businesses.

The next set of energy efficiency standards will be the 2016 Building Energy Efficiency Standards, which are currently going through the rule-making process. These are expected to be adopted in 2016 and take effect on January 1, 2017. According to the California Energy Commission (CEC), single-family homes built to the 2016 standards will use about 28 percent less energy for lighting,

heating, cooling, ventilation, and water heating than those built to the 2013 standards. While the 2016 standards do not require zero net energy (ZNE) buildings, the 2019 standards are expected to take the final step toward achieving ZNE for newly constructed residential buildings throughout California. Later standards are expected to require ZNE for newly constructed commercial buildings.

### Cap and Trade (2012)

On October 20, 2011, ARB adopted the final cap-and-trade program for California. The California cap-and-trade program is a market-based system with an overall emissions limit for affected sectors. Examples of affected entities include carbon dioxide suppliers, in-state electricity-generators, hydrogen production, petroleum refining, and other large-scale manufacturers and fuel suppliers. The cap-and-trade program is currently regulating more than 85% of California's emissions. Compliance requirements began according to the following schedule: (1) electricity generation and large industrial sources (2012); (2) fuel combustion and transportation (2015). Cap-and-trade allowance auction proceeds are used to fund a variety of investments. The first 3-year investment plan prioritizes (1) sustainable communities and clean transportation (including low-carbon freight equipment with specific emphasis on efforts that would be beneficial for disadvantaged communities located near ports, railyards, freeways, and distribution centers), (2) energy efficiency and clean energy, and (3) natural resources and waste diversion (ARB 2013a).

### California Senate Bill (SB) 350 (2015)

SB 350 (De Leon, also known as the "Clean Energy and Pollution Reduction Act of 2015") was approved in 2015 and includes key provisions to require the following by 2030: (1) a renewable portfolio standard of 50% and (2) a doubling of efficiency for existing buildings.

## 3.6.1.3 Local

### South Coast Air Quality Management District

The South Coast Air Quality Management District (SCAQMD) is responsible for comprehensive air pollution control in the greater Los Angeles area. To provide guidance to local lead agencies on determining significance for GHG emissions in their CEQA documents, the SCAQMD staff is convening an ongoing GHG CEQA Significance Threshold Working Group. Members of the working group include government agencies implementing CEQA and representatives from various stakeholder groups that provide input to the SCAQMD staff on developing GHG CEQA significance thresholds.

On December 5, 2008, the SCAQMD Governing Board adopted the staff proposal for an interim GHG significance threshold for projects where the SCAQMD is lead agency. At present, SCAQMD offers no regulations or thresholds for non-SCAQMD lead agency projects; however, many agencies have used the interim GHG significance threshold identified by SCAQMD in their CEQA documents.

### Southern California Associated Governments (SCAG)

#### Regional Transportation Plan/Sustainable Communities Strategy

SCAG is required by federal law to prepare and update a 20-year long-range Regional Transportation Plan/Sustainable Communities Strategy. Key laws and requirements drive the plan including the Clean Air Act and California Senate Bill 375. Several areas in the SCAG region have

been designated as nonattainment or maintenance areas for one or more transportation-related criteria pollutants. The federal Clean Air Act, requires SCAG's 2016 RTP/SCS to meet all federal transportation conformity requirements, including: regional emissions analysis, financial constraint, timely implementation of transportation control measures, and interagency consultation and public involvement. Additionally, SB 375 requires that the RTP also include a Sustainability Community Strategy, which outlines growth strategies that better integrate land use and transportation planning and help reduce the state's greenhouse gas emissions from cars and light trucks. For the SCAG region, the California Air Resources Board (ARB) has set greenhouse gas reduction targets at eight percent below 2005 per capita emissions levels by 2020, and 13 percent below 2005 per capita emissions levels by 2035.

## City of Los Angeles

### Green LA: An Action Plan to Lead the Nation in Fighting Global Warming

The City of Los Angeles (City) released its climate action plan, *Green LA: An Action Plan to Lead the Nation in Fighting Global Warming*, in May 2007. The plan sets forth a goal of reducing GHG emissions in the city to 35 percent below 1990 levels by 2030. This voluntary plan identifies more than 50 action items, which are grouped into focus areas, to reduce emissions. The emphasis is on municipal facilities and operations of which the Proposed Project would play a part.

### ClimateLA

ClimateLA is an implementation program that provides detailed information about each action item discussed in the Green LA framework (City of Los Angeles 2008). Action items range from harnessing wind power for electricity production to implementing energy-efficient retrofits in City buildings, converting the City's fleet vehicles to cleaner and more-efficient models, and reducing water consumption. Some actions affect only municipal facilities, such as retrofitting City Hall with high-efficiency lighting systems, while others facilitate changes in the private sector (e.g., through rebates for the purchase of energy-efficient appliances). ClimateLA is a living document, reflecting a process of ongoing learning and continuous improvement as technology advances and City departments develop expertise in the methods for lowering GHG emissions.

### Sustainable City pLAn, 2015

The Sustainable City pLAn, introduced by Mayor Eric Garcetti in April 2015, identifies goals and strategies for improving Los Angeles' sustainability as it relates to the environment, the economy, and equity. With respect to GHGs, the plan commits to increasing solar power generation and energy efficiency. In addition, it accelerates the City's commitment to attaining GHG reductions, with goals that would reduce GHG emissions levels by 45 percent by 2025, 60 percent by 2035, and 80 percent by 2050 compared with 1990 baseline emissions. The plan also puts forth the goal of improving GHG efficiency[1] by 55 percent by 2025 and 75 percent by 2035 relative to 2009 levels. Other targets identified in the plan include reducing the number of vehicle miles traveled per capita by 5 percent by 2025 and 10 percent by 2035 and increasing the number of trips made by walking, biking, or transit by 35 percent by 2025 and 50 percent by 2035.

[1] GHG efficiency is measured by the amount of GHGs emitted per dollar of economic productivity.

**Los Angeles Department of Water and Power: Power Integrated Resource Plan**

Released to the public in December 2014, the Power Integrated Resource Plan identifies a portfolio of power generation resources and power system assets to meet the City's future energy needs, with the lowest cost and risk possible, consistent with the Los Angeles Department of Water and Power's (LADWP's) environmental priorities and reliability standards. Updates in the 2014 Power Integrated Resource Plan include new energy efficiency programs to achieve 15 percent energy efficiency savings by 2020, a Demand Response Implementation Plan with a goal to achieve 506 megawatts (MW) of demand response by 2026, and an energy storage procurement target of 178 MW by 2021 to support increased levels of renewable energy. As stated in the 2014 IRP, LADWP has increased the proportion of its electricity coming from renewable sources from 3 percent in 2003 to 23 percent in 2014, and additional increases are forthcoming.

## 3.6.2 Environmental Setting

A GHG is any gas that absorbs infrared radiation in the atmosphere. This absorption traps heat within the atmosphere, maintaining the earth's surface temperature at a level higher than would be the case in the absence of GHGs. GHGs include water vapor, carbon dioxide ($CO_2$), methane ($CH_4$), nitrous oxide ($N_2O$), ozone ($O_3$), perfluorocarbons (PFCs), hydrofluorocarbons (HFCs), and halogenated chlorofluorocarbons. Naturally occurring GHGs include water vapor, $CO_2$, $CH_4$, $N_2O$, and $O_3$. Human activities add to the levels of most of these naturally occurring gases. Increasing levels of GHGs in the atmosphere result in an increase in the temperature of the earth's lower atmosphere, a phenomenon that is commonly referred to as "global warming." Warming of the earth's lower atmosphere induces a suite of additional changes, including changes in global precipitation patterns; ocean circulation, temperature, and acidity; global mean sea level; species distribution and diversity; and the timing of biological processes. These large-scale changes are collectively referred to as "global climate change."

The Intergovernmental Panel on Climate Change (IPCC) has been established by the World Meteorological Organization and United Nations Environment Programme to assess scientific, technical, and socioeconomic information relevant to the understanding of climate change and its potential impacts and provide options for adaptation and mitigation. As the leading authority on climate change science, IPCC's best estimates are that average global temperature rise between 2000 and 2100 could range from 0.5°F to 8.6°F (IPCC 2013). Large increases in global temperatures, as high as 8.6°F, could have massive deleterious impacts on natural and human environments. IPCC has concluded that "human influence on the climate system is clear and growing, with impacts observed across all continents and oceans. Many of the observed changes since the 1950s are unprecedented over decades to millennia. The IPCC is now 95 percent certain that humans are the main cause of current global warming" (IPCC 2014: v).

Since the industrial revolution began in approximately 1750, the concentration of $CO_2$ in the earth's atmosphere has increased from 270 parts per million (ppm) to roughly 391 ppm. Atmospheric concentrations of $CH_4$ and $N_2O$ have similarly increased since the beginning of the industrial age. Since 1880, the global average surface temperature has increased by 1.5°F, the global average sea level has risen by nearly 190 millimeters (since 1901), and northern hemisphere snow cover (data available since 1920) has decreased by nearly 3 million square kilometers (IPCC 2013). These recently recorded changes can be attributed with a high degree of certainty to increased concentrations of GHGs in the atmosphere. Sinks of $CO_2$ (which remove rather than emit $CO_2$) include uptake by vegetation and dissolution into the ocean. Global GHG emissions greatly exceed the removal capacity of natural sinks. As a result, concentrations of GHGs in the atmosphere are increasing (California Energy Commission 2006).

GHGs are global pollutants, unlike criteria air pollutants and toxic air contaminants (TACs). Criteria air pollutants and TACs occur locally or regionally, and local concentrations respond to locally implemented control measures. The long atmospheric lifetimes of GHGs allow them to be transported great distances from sources and become well mixed, unlike criteria air pollutants. Climate change is the cumulative result of GHG emissions and GHG emissions are the cause, on a cumulative basis, of the significant adverse environmental impacts of global climate change.

### 3.6.2.1 Definition of Greenhouse Gases

The GHGs listed by the IPCC ($CO_2$, $CH_4$, $N_2O$, HFCs, PFCs, and sulphur hexafluoride [$SF_6$]) (2013) are discussed in this section in order of abundance in the atmosphere. California law and the State CEQA Guidelines contain a similar definition of GHGs (Health and Safety Code Section 38505(g); 14 California Code of Regulations Section 15364.5). Water vapor, the most abundant GHG, is not included in this list because its natural concentrations and fluctuations far outweigh its anthropogenic (human-made) sources.[2] The sources and sinks[3] of each of these gases are discussed in detail below. Generally, GHG emissions are quantified and presented in terms of metric tons of carbon dioxide equivalent ($CO_2e$) emitted per year. The primary GHGs associated with the project are $CO_2$, $CH_4$, and $N_2O$. HFCs, PFCs, and $SF_6$ are associated primarily with industrial processes and, thus, are not discussed herein.

To simplify reporting and analysis, GHGs are commonly defined in terms of global warming potential (GWP). The IPCC defines the GWP of various GHG emissions on a normalized scale that recasts all GHG emissions in terms of $CO_2e$. The GWP of $CO_2$ is, by definition, 1. The GWP values used in this report are based on IPCC Fourth Assessment Report (AR4) and United Nations Framework Convention on Climate Change (UNFCCC) reporting guidelines and defined in Table 3.6-1, below (IPCC 2007). The AR4 GWP values are used in ARB's California inventory and the most recent AB 32 Scoping Plan estimate update (ARB 2014a).

**Table 3.6-1. Lifetime, Global Warming Potential, and Abundance of Several Significant GHGs**

| Gas | Global Warming Potential (100 years) | Lifetime (years)[a] | Atmospheric Abundance |
|---|---|---|---|
| $CO_2$ (ppm) | 1 | 50–200 | 394 |
| $CH_4$ (ppb) | 25 | 9–15 | 1,893 |
| $N_2O$ (ppb) | 298 | 121 | 326 |

[a] Defined as the half-life of the gas.
ppm = parts per million; ppb = parts per billion
Sources: Myhre et al. 2013; Blasing 2014; ARB 2014a.

[2] Although water vapor plays a substantive role in the natural greenhouse effect, the change in GHGs in the atmosphere due to anthropogenic actions is enough to upset the radiative balance of the atmosphere and result in global warming.
[3] A sink removes and stores GHGs in another form. For example, vegetation is a sink because it removes atmospheric $CO_2$ during respiration and stores the gas as a chemical compound in its tissues.

$CO_2$ is the most important anthropogenic GHG. It accounts for more than 75 percent of all GHG emissions emitted by humans. Its atmospheric lifetime of 50 to 200 years ensures that atmospheric concentrations of $CO_2$ will remain elevated for decades, even after mitigation efforts to reduce GHG concentrations are promulgated (IPCC 2007). The primary sources of anthropogenic $CO_2$ in the atmosphere include fossil fuel usage (including motor vehicle fuels and coal power plants), gas flaring, cement production, and land use changes (including deforestation).

**$CH_4$**, the main component of natural gas, is the second-most abundant GHG and has a GWP of 25 (IPCC 2007). Sources of anthropogenic emissions of $CH_4$ include growing rice, raising cattle, natural gas combustion, landfill outgassing, and coal mining (National Oceanic and Atmospheric Administration 2005).

**$N_2O$** is a powerful GHG, with a GWP of 298 (IPCC 2007). Anthropogenic sources of $N_2O$ include agricultural processes (e.g., fertilizer application), nylon production, fuel-fired power plants, nitric acid production, and vehicle emissions. $N_2O$ is also used in rocket engines and racecars and as an aerosol spray propellant. In the United States, more than 70 percent of $N_2O$ emissions are related to agricultural soil management practices, particularly fertilizer applications.

### 3.6.2.2 GHG Emissions Sources

More than 97 percent of U.S. GHG emissions result from burning fossil fuels. Although many nations, including the U.S., regularly monitor and report GHG emissions, federal legislation to reduce global emissions has not been adopted, although it is the subject of much debate. EPA is presently pursuing the regulation of GHGs through the federal CAA, following a U.S. Supreme Court ruling that clarified its authority under the CAA to do so. Many states, including California, as a prominent leader, have passed legislation to reduce GHG emissions. California's GHG regulatory framework is discussed in the *Regulatory Setting* section.

#### Greenhouse Gas Inventories

A GHG inventory is a quantification of all GHG emissions and sinks within a selected physical and/or economic boundary. GHGs can be inventoried on a large scale (i.e., for global and national entities) or a small scale (i.e., for a particular building or person). Although many processes are difficult to evaluate, several agencies have developed tools to quantify emissions from certain sources.

##### U.S. Greenhouse Gas Emissions Inventory

EPA estimates that total U.S. GHG emissions for 2013 amounted to 6,673 million metric tons (MMT) of $CO_2e$, which represents a 2.0 percent increase compared with 2012 levels but a 9.0 percent decrease from 2005 levels and a 5.9 percent decrease from 1990 levels. The largest contributors to U.S. GHG emissions in 2013 were electricity generation (31 percent), transportation (27 percent), and the industrial sector (21 percent). Emissions in the electricity generation, transportation, residential, commercial, and industrial sectors consist primarily of $CO_2$ (82 percent of emissions). GHG emissions from agriculture consist predominantly of $CH_4$ and $N_2O$. In general, industrial and, to a lesser extent, commercial emissions in the U.S. have declined over the last decade, while emissions in other sectors, such as transportation, have grown steadily. U.S. GHG emissions are responsible for approximately 16 percent of the global total (EPA 2015).

#### California Greenhouse Gas Emissions Inventory

In 2013, total California GHG emissions were estimated to be 459.3 $MMTCO_2e$. The transportation sector accounted for approximately 37 percent of total emissions, followed by electricity generation (20 percent), the industrial sector (23 percent), commercial and residential sources (12 percent), agriculture (8 percent), and other sources (6 percent) (ARB 2015).

Annual statewide GHG emissions inventories provide an important tool for establishing historical emission trends and tracking California's progress toward the 2020 goal. From 2000 to 2013, GHG emissions decreased by 2.0 percent. In addition, California's per capita GHG emissions have generally decreased over the last 12 years, going from 14.0 metric tons of $CO_2e$ per person in 2001 to 12.0 in 2013, a 14 percent decrease (ARB 2015).

#### City of Los Angeles Greenhouse Gas Emissions Inventory

In 2004, total community-wide GHG emissions were greater than 50 $MMTCO_2e$, roughly the same amount as that of Sweden. The transportation sector accounted for approximately 47 percent of total emissions, followed by electricity generation (approximately 32 percent), natural gas use (9 percent), and the burning of other industrial fuels (12 percent) (City of Los Angeles 2008). The City's *Green LA: An Action Plan to Lead the Nation in Fighting Global Warming* includes more than 50 actions for reducing city-wide GHG emissions as well as measures for adapting to the effects of climate change. The City's goal is to reduce GHG emissions to 35 percent below 1990 levels by 2030 (City of Los Angeles 2007).

### 3.6.2.3 Local Setting

The Bureau of Sanitation is responsible for operating and maintaining one of the world's largest wastewater collection and treatment systems. More than 6,500 miles of sewers serve more than 4 million residential and business customers in Los Angeles as well as 29 contracting cities and agencies. These sewers are connected to the City's four wastewater and water reclamation plants, which process, on average, 550 million gallons per day (mgd). Wastewater treatment operations (processes) are very energy intensive. Such operations, including associated buildings, consume the second-largest amount of electricity among City departments and generate 12.9 percent of all indirect GHG emissions. Wastewater operations, including associated buildings, are ranked fifth among City departments in natural gas usage (City of Los Angeles 2008).

The existing pumps at VPP consume approximately 6.5 million kWh per year.[4] Based on the carbon intensity of LADWP's electricity for 2013, the existing GHG consumption of the existing facility is approximately 3,300 metric tons annually (see Appendix B [Air Quality Emissions and Greenhouse Gas Calculations] of this EIR).

[4] Assumes an annualized 36-mgd wastewater flow.

# 3.6.3 Environmental Impact Analysis

## 3.6.3.1 Methodology

### Construction

Project construction would be a source of GHG emissions. Such emissions would result from earth moving, the use of heavy equipment, and vehicle use as well as land clearing, ground excavation, and cut-and-fill activities. Construction-period GHG emissions were quantified by using CalEEMod (version 2013.2.2) annual outputs. CalEEMod has been approved by SCAQMD for emissions estimations within the South Coast Air Basin. Consistent with SCAQMD-recommended methodology, total construction-period emissions were amortized over a 30-year period, the assumed life of the Proposed Project, then added to the opening-year GHG emissions total to determine tons per year.

### Operation

CalEEMod annual outputs were also used to determine operational GHG emissions. Based on information provided by the project design team (Arcadis), the proposed pumps at VAPP would be more efficient than the existing pumps at VPP. Because the Proposed Project would create redundancy for increased system reliability, the additional pumping capacity would not be needed except during wet-weather events. Assuming an annualized 36-mgd flow for the combined VPP and VAPP facility, there would be little change in overall energy consumption related to pumping. However, there would be an increase in energy consumption related to the operational control room, which would consume approximately 570,000 kWh per year (Arcadis 2016). Additional electricity consumption was assumed based on CalEEMod defaults (see Appendix B of this EIR).

## 3.6.3.2 Screening Analysis

As noted in Section Chapter 1.0, Introduction, the analysis and conclusions contained in the Initial Study (see Appendix A [Notice of Preparation/Initial Study] of this EIR) prepared for the Proposed Project considered and then eliminated a number of impacts from further analysis, including those contained in CEQA Appendix G and the *L.A. CEQA Thresholds Guide* (2006). Therefore, only those impacts and corresponding thresholds of significance noted below were determined to require further analysis and are addressed in this EIR.

## 3.6.3.3 Thresholds of Significance

State CEQA Guidelines Section 15064.4 provides guidance to lead agencies for determining the significance of impacts from GHG emissions. Section 15064.4(a) states that a lead agency should make a good-faith effort that is based, to the extent possible, on scientific and factual data to describe, calculate, or estimate the amount of GHG emissions that would result from a project. State CEQA Guidelines Section 15064.4(b) also states that, when assessing the significance of impacts from GHG emissions, a lead agency should consider (1) the extent to which the project may increase or reduce GHG emissions compared with existing conditions, (2) whether the project's GHG emissions would exceed a threshold of significance that the lead agency has determined to be applicable to the project, and (3) the extent to which the project would comply with regulations or requirements adopted to implement a statewide, regional, or local plan for the reduction or mitigation of GHG emissions.

Because the *L.A. CEQA Thresholds Guide* was adopted prior to the requirement for GHG impacts to be addressed as part of CEQA, there are no local thresholds of significance related to GHGs. Therefore, the thresholds of significance from Appendix G of the State CEQA Guidelines are used, which state that a proposed project would normally have a significant impact on GHG emissions if it were to:

**GHG-1.** Generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment;

**GHG-2.** Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing emissions of GHGs.

The State CEQA Guidelines also state that the significance criteria established by the applicable air quality management district or air pollution control district may be relied upon to make the above determinations.

Although SCAQMD has not adopted quantitative thresholds, its staff has developed interim GHG significance thresholds that are applicable to industrial (stationary-source) projects where SCAQMD is the lead agency. The threshold identified by SCAQMD indicates that a project would normally have significant impacts with respect to GHG emissions if it were to:

**GHG-3.** Result in more than 10,000 metric tons of $CO_2e$ per year, including construction emissions amortized over 30 years added to operational GHG emissions (SCAQMD 2008).

The Proposed Project uses this threshold in its determination of significance.

The project's GHG emissions were evaluated for consistency with California's AB 32 (the Global Warming Solutions Act of 2006) emissions reduction goals, as well as other applicable local plans for reducing GHGs.

Note that GHGs are exclusively cumulative impacts. Therefore, in accordance with the scientific consensus regarding the cumulative nature of GHGs, the analysis herein analyzes the cumulative contribution of project-related GHG emissions.

### 3.6.3.4 Construction and Operational Impacts

**GHG-1. Generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment.**

Construction of the Proposed Project would result in GHG emissions from fuel combustion associated with heavy-duty construction equipment, construction workers' vehicle trips, material deliveries, and trips by haul trucks. In addition, earthwork would require fuel combustion, resulting in further GHG emissions. As shown in Table 3.6-2, these activities would emit approximately 691 metric tons of $CO_2e$. Consistent with SCAQMD-prescribed methodology, emissions were amortized over a 30-year period, resulting in 23 metric tons of $CO_2e$ per year.

**Table 3.6-2. Project-Related GHG Emissions**

| Phase | $CO_2e$ (metric tons) |
|---|---|
| Construction | |
| Total Construction | 691 |
| Amortized Construction | 23 |
| Operation | |
| Annual Operation | 382 |
| Energy | 336 |
| Mobile | 21 |
| Waste | 6 |
| Water | 19 |
| TOTAL[a] | 405 |
| SCAQMD Threshold | 10,000 |

[a] The total includes amortized construction emissions.
Source: CalEEMod modeling by ICF, 2016 (Appendix B of this EIR).

Operation of the Proposed Project would result in GHG emissions from direct energy consumption at the operational building, employee vehicle trips, and waste and potable water distribution. As shown in Table 3.6-2, with the amortized construction-period emissions, project implementation would result in annual emissions of approximately 405 metric tons $CO_2e$. Table 3.6-2 does not quantify emissions associated with pumping at the future facility, as wastewater flows would not be increased as a result of project implementation. The Proposed Project would create additional capacity for use during infrequent wet-weather events (extreme weather flows), but any increases in emissions due to pumping would be offset by the increased efficiency of the VAPP pumps and the decreasing carbon intensity of LADWP's electricity.

As GHG emissions resulting from project implementation would not exceed SCAQMD's 10,000-metric-ton threshold, impacts would be **less than significant**, and no mitigation measures are required.

**GHG-2. Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing emissions of GHGs.**

Implementation of the Proposed Project would generate GHG emissions that would be greater than existing conditions, but would not exceed the interim SCAQMD threshold, as shown in Table 3.6-2. Therefore, the Proposed Project would not directly contribute to the GHG reductions envisioned under AB 32, SB 375, Green LA, ClimateLA, or the Sustainable City pLAn, but would not conflict with state and local GHG reduction goals. Although the project type is not explicitly discussed in any of the GHG reduction plans identified above, Action E12 within ClimateLA aims to "maximize the energy efficiency of wastewater treatment equipment" (City of Los Angeles 2008). Energy efficiency has been incorporated into the project design through the use of variable frequency drives for the pumps, which adjust motor speeds to vary discharge flows, thereby allowing for efficient pump operation. Also, the new pumps would be more energy-efficient than the existing VPP pumps. Thus, the Proposed Project would be consistent with Action E12.

The City has several plans in place addressing GHG emissions reductions (ClimateLA, Green LA, and the Sustainable City pLAn), but the reduction targets are not legally binding. Therefore, the most applicable plan, policy, or regulation adopted for the purpose of reducing GHG emissions is AB 32, which codified the state's GHG emissions-reduction targets for 2020. Beyond 2020, there are no adopted enforceable plans, policies, or regulations pursuant to EO S-03-05 and EO B-30-15 that are legally applicable to the project. Regardless, an overview of proposed plans and discussion documents designed to help meet EO S-03-05 and EO B-30-15 targets is provided.

### AB 32 Scoping Plan

AB 32 identified 427 $MMTCO_2e$ as the acceptable level of GHG emissions for California in 2020, which is the same as the 1990 GHG emissions level and approximately 28.5% less than 2020 business-as-usual (BAU) conditions (596 $MMTCO_2e$).[5] To reach the target level, there will have to be widespread reductions in GHG emissions across California. Some reductions will need to come in the form of changes pertaining to vehicle emissions and mileage standards. Some will come from changes pertaining to sources of electricity and increased energy efficiency at existing facilities. The remainder will need to come from plans, policies, or regulations that will require new facilities to have lower carbon intensities than they have under BAU conditions.

The AB 32 Scoping Plan details specific GHG emissions-reduction measures that target specific GHG emissions sources. The scoping plan considers a range of actions, including direct regulations, alternative compliance mechanisms, monetary and non-monetary incentives, voluntary actions, and market-based mechanisms (e.g., a cap-and-trade system). Also included are mobile-source emissions reduction measures (Pavley, Low-Carbon Fuel Standard [LCFS], vehicle efficiency measures), energy production–related emissions-reduction measures (natural gas transmission and distribution efficiency measures, natural gas extraction efficiency measures), and the renewable portfolio standard (electricity). The Proposed Project would be consistent with the measures identified in Table 3.6-3 contained within the AB 32 Scoping Plan and other measures adopted by ARB but not yet included in the scoping plan. A demonstration of the consistency with key ARB measures is included in Table 3.6-3. As a result, Proposed Project-related GHG emissions would be reduced through several of the AB 32 Scoping Plan measures. Accordingly, the Proposed Project would not conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing emissions of GHGs, and as such, **impacts would be less than significant**, and no mitigation measures are required.

[5] ARB recently updated the AB 32 Scoping Plan and revised the 2020 BAU downward slightly to 509 $MMTCO_2e$, which reflects the reduced GHG emissions estimates resulting from the recent economic downturn and increased efficiencies.

**Table 3.6-3. Project Consistency with AB 32 Scoping Plan and Other ARB Measures**

| No. | Measure Description | Project Consistency |
|---|---|---|
| *Scoping Plan Measures* | | |
| T-1 | Advanced Clean Cars | **No conflict**. State program that requires no action at the local or project level. Benefits to project-related employee vehicle travel will be realized. |
| T-2 | Low Carbon Fuel Standard | **No conflict**. State program that requires no action at the local or project level. Benefits to project-related vehicle travel will be realized. |
| T-3 | Regional Transportation-Related Greenhouse Gas Targets | **No conflict**. State program that requires no action at the project level. SCAG is responsible for implementing the SCS and is currently revising the SCS as part of the 2016 RTP/SCS. Benefits to project-related employee vehicle travel will be realized. |
| T-4 | Vehicle Efficiency Measures<br>1. Tire Pressure<br>2. Fuel Efficiency Tire Program<br>3. Low Friction Oil<br>4. Solar Reflective Automotive Paint and Window Glazing | **No conflict**. State program that requires no action at the local or project level. Benefits to project-related car and truck travel will be realized. |
| T-7 | Heavy-Duty Vehicle GHG Emission Reduction<br>1. Tractor-Trailer GHG Regulation<br>2. Heavy Duty Greenhouse Gas Standards for New Vehicle and Engines (Phase I) | **No conflict**. State and federal programs that require no action at the local or project level. Benefits to project-related truck travel will be realized. |
| E-1 | 1. Building Energy Efficiency – Electricity<br>2.Appliance Energy Efficiency Standards – Electricity | **No conflict**. State program that requires no action at the local or project level. Proposed Project includes building efficiency design that will reduce emissions from electricity consumption. |
| CR-1 | 1. Building Energy Efficiency – Natural Gas<br>2.Appliance Energy Efficiency Standards – Natural Gas | **No conflict**. State program that requires no action at the local or project level. Proposed Project includes building efficiency design that will reduce emissions from natural gas consumption. |
| E-3 | 33 Percent Renewable Portfolio Standard | **No conflict**. State program that requires no action at the local or project level. Benefits to project-related electricity and water consumption will be realized. |
| W-1 | Water Use Efficiency | **No conflict**. The Proposed Project proposes water fixture and irrigation efficiency measures to reduce water use. Moreover, this is a state program that requires no action at the local or project level. Benefits will be realized at the project level. |
| H-5 | 1. Low Global Warming Potential Refrigerants for New Motor Vehicle Air-Conditioning Systems | **No conflict**. State program that requires no action at the local or project level. Benefits will be realized independently. |

| No. | Measure Description | Project Consistency |
|---|---|---|
| *Other ARB Measures* | | |
| - | Renewable Portfolio Standard (50% by 2030) per SB 350 | **No conflict**. See E-3. State program that requires no action at the local or project level. Benefits to project-related electricity and water consumption will be realized. |
| - | Pavley (AB 1493) | **No conflict**. See T-1 and T-2. State program that requires no action at the local or project level. Benefits to project-related employee car travel will be realized. |
| - | Heavy Duty (Tractor-Trailer) GHG Regulation | **No conflict**. See T-7. State and federal programs that require no action at the local or project level. Benefits to project-related truck travel will be realized. |

Source: ARB 2008; ARB 2014a.
Notes:
T = Transportation Measures; E = Electricity Measures; W = Water Measures; H = High GWP Measures

### Green LA, ClimateLA, and Sustainability pLAn

The City's Green LA Climate Action Plan (CAP) created a concrete set of objectives and actions designed to make Los Angeles a leader in confronting global climate change and reducing GHG emissions. The Green LA CAP identifies over 50 individual action items that will lead Los Angeles to lower GHG emission levels. The City's ClimateLA is the implementation program for the Green LA Plan, and describes each of these action items, providing a context, lead departments, a timeline for completion of each measure, and GHG reduction potential from each action item. These action items and measures aim to reduce emissions directly from municipal facilities and operations and create a framework to address citywide GHG emissions. The actions build on the City's leadership in developing and implementing sustainable environmental policy. The major focus areas include energy, water transportation, land use, waste, Port, airport, open space and greening, green economy, and adaptation. The Sustainable City pLAn builds on ClimateLA and Green LA, and accelerates the City's commitment to reducing GHG emissions. A summary of project consistency with major goals and action items included in Green LA, ClimateLA, and the Sustainable City pLAn is provided in Table 3.6-4. As shown below, the project would not conflict with major goals and action items within the City's Green LA CAP, ClimateLA implementation plan, or Sustainable City pLAn. Accordingly, the Proposed Project would not conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing emissions of GHGs, and as such, **impacts would be less than significant and no mitigation measures are required.**

**Table 3.6-4. Project Consistency with Green LA and ClimateLA, and Sustainable City pLAn Goals, Actions, and Targets**

| No. | Goal or Action Description | Project Consistency |
|---|---|---|
| Goal | Green the Power From the Largest Municipal Utility in the United States | **No conflict.** Actions include increasing use of renewables to 20% by 2010 and to 35% by 2020. This is a regional action that requires no action at the project level and reductions will be realized over time (similar to statewide RPS). |
| Goal | Transform Los Angeles Into The Model of an Energy Efficient City | **No conflict.** Actions include reducing energy use by all City departments to the maximum extent feasible and completing energy efficiency retrofits of all City-owned buildings to meet a 20% or more reduction in energy consumption. The Proposed Project would add redundancy and capacity relative to existing conditions, but would involve the use of more energy-efficient pumps. |
| Action E7 | Reduce energy use by all City departments to the maximum extent feasible. | **No conflict.** The Proposed Project would add redundancy and capacity, which would require additional energy use compared with existing conditions. However, the project would not preclude the Department of Public Works from achieving overall reductions in energy use through other projects. |
| Action E12 | Maximize energy efficiency of wastewater treatment equipment. | **No conflict.** Energy efficiency has been incorporated into the project design through the use of variable frequency drives for the pumps, which adjust motor speeds to vary discharge flows, thereby allowing for efficient pump operation. In addition, the new pumps would be more energy-efficient than the existing pumps. |
| Goal | Decrease Per Capita Water Use | **No conflict**. Actions include meeting all additional demand for water resulting from growth through water conservation and recycling, reducing per capita water consumption by 20%, and implementing the City's innovative water and wastewater integrated resources plan that will increase conservation, and maximize use of recycled water, including capture and reuse of stormwater. The Proposed Project would require minimal amounts of potable water, primarily for cleaning and restroom facilities, and would be in compliance with all standards for water efficiency. |
| Target | Reduce number of annual sewer spill to fewer than 100 by 2025 and 67 by 2035. | **No conflict.** The Proposed Project would add redundancy and capacity to prevent sanitary sewer overflows. |

### EO S-03-05 and EO B-30-15

EO B-30-15 established an interim GHG reduction target of 40 percent below 1990 levels by 2030, and EO S-3-05 established a long-term goal of reducing statewide GHG emissions to 80 percent below 1990 levels by 2050. Achieving these long-term GHG reduction policies will require systemic changes in how energy is produced and used.

There a number of studies that discuss potential mechanisms for limiting statewide GHG emissions to meet the aggressive goals identified by EO B-30-15 and EO S-3-05. For example, ARB and other state agencies commissioned Energy + Environmental Economics (E3) in 2015 to develop feasible GHG reduction scenarios for 2030. Other studies include a report by the California Center for Science and Technology (2012), the California Department of Transportation's (2015) *California Transportation Plan 2040,* ARB's *First Update to the AB 32 Scoping Plan*, and a study published in *Science* that analyzes the changes that will be required to reduce GHG emissions to 80 percent below 1990 levels by 2050 (Williams et al. 2012). In general, these studies reach similar conclusions—deep reductions in GHG emissions can *only* be achieved with significant changes in electricity production, transportation fuels, and industrial processes (e.g., decarbonizing electricity production, electrifying transportation, utilizing alternative fuels for aviation).

The systemic changes that will be required to achieve EO B-30-15 and EO S-3-05, if they are legislatively adopted, will require significant policy, technical, and economic solutions. Some changes, such as the use of alternative fuels (e.g., biofuel) to replace petroleum for aviation, cannot be accomplished without action by the federal government. Similarly, achieving the reduction goals will require California to dramatically increase the amount of electricity that is generated by renewable generation sources and, correspondingly, advance the deployment of energy storage technology and smart-grid strategies, such as price-responsive demand and the smart charging of vehicles. Although the City has increased its efforts in all of the areas discussed above, most notably for renewable source electricity generation, a significant statewide redesign of California's electricity system is needed to accomplish GHG emissions reduction goals. Accordingly, in evaluating the project's emissions for consistency with EO S-3-05 and EO B-30-15, it is important to note that many of the broad-scale shifts needed to meet the reduction goals are outside of the control of the City and beyond the scope of the Proposed Project.

The long-term climate change policy and regulatory changes that will be enacted to meet 2030 and 2050 emissions reduction targets are unknown at this time. As a consequence, the extent to which the project's emissions and resulting impacts will be mitigated through implementation of statewide (and nationwide) changes is not known. However, some of the anticipated statewide actions (e.g., decarbonization, energy efficiency, alternative transportation) can be facilitated, at least to some extent, through implementation of specific GHG reduction measures in large-scale developments. The Proposed Project includes a variable frequency drive, which would optimize the energy efficiency of the pumps.

The Proposed Project would be constructed and fully operational prior to 2020, but would remain in operation over a long period of years. Project features are consistent with anticipated long-term statewide strategies to reduce GHG emissions and would help to facilitate substantial progress towards long term targets as adopted (SB 350) and proposed (Phase 2 trucks) state regulations are fully realized. Accordingly, the Proposed Project would not conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing emissions of GHGs, and as such, **impacts would be less than significant and no mitigation measures are required.**

### 2016-2040 RTP/SCS and Air Quality Management Plan

SCAG is the regional planning agency for Los Angeles, Orange, Ventura, Riverside, San Bernardino, and Imperial Counties. SCAG addresses regional issues related to transportation, the economy, community development, and the environment. SCAG's 2016-2040 RTP/SCS integrates land use and transportation strategies to meet and exceed required emission reductions per SB 375 of 8% by 2020, and 18% by 2035 and 21% by 2040 compared with the base year (i.e., 2005). The RTP/SCS includes setting forth a development pattern for the region integrates with the transportation network, measures, and policies to reduce GHG emissions from light-duty automobiles and trucks. The RTP/SCS must conform to the federal Clean Air Act.

Most emissions from typical development projects are generated by the transportation sector and the transportation sector is subject to the most robust regulatory program. For example, LCFS, Pavley I, and Pavley II are expected to reduce GHG emissions from passenger vehicles approximately 34 percent by 2020.[6] Emissions from heavy-duty trucks would decrease over time per adopted ("Phase 1") and pending ("Phase 2") GHG-reduction regulations from both the ARB and EPA.[7] Additionally, GHG intensity of buildings would decrease as the state and LADWP move towards the 50% renewable requirement per SB 350. The project proposes a land use that would not generate a substantial number of vehicle trips, and associated mobile source emissions would not conflict with or delay implementation of the SCS/RTP. This **impact is considered less than significant.**

Because sources of GHG emissions are frequently responsible for emitting criteria pollutants as well, an analysis of the project's potential for conflicts the SCAQMD Air Quality Management Plan is discussed below. SCAQMD is required to reduce emissions of criteria pollutants for which the Basin is in nonattainment status and develop reduction attainment plans. SCAQMD's most recent plan to achieve air quality standards is the 2012 AQMP, which outlines a comprehensive control strategy to meet PM2.5 and $O_3$ standards. Additionally, measures within AB 32 are aimed at GHG-emitting sources that are in most cases the same sources that emit criteria pollutants, including pollutants that contribute to the Basin's nonattainment status. The 2012 AQMP includes an analysis of the air quality co-benefits of AB 32. The SCAQMD relies on various emission reduction control strategies aimed primarily at stationary (permitted), area, and mobile sources. The mobile source strategy includes actions seeking further emission reductions from both on-road and off-road mobile sources, such as accelerated penetration of zero- and near-zero emission vehicles and early retirement of older vehicles. Some of the proposed actions rely on other agencies, including the state, to implement (SCAQMD 2013). As described in the Air Quality section of this EIR, the project would be consistent with the AQMP because it would result in emissions below regional and localized criteria pollutant thresholds to ensure that no violations of the National Ambient Air Quality Standards and California Ambient Air Quality Standards occur locally. Accordingly, the Proposed Project would not delay implementation of the AQMP. Therefore, the Proposed Project would not conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing emissions of GHGs, and as such, **impacts would be less than significant and no mitigation measures are required.**

[6] Pavley I and II require manufacturers to reduce per-mile GHG emissions starting in 2009. Pavley I required manufacturers to reduce emissions by about 30% by 2016; Pavley II sets a reduction target of 45% by 2020.

[7] Phase 1 and Phase 2 refer to the National Highway Traffic Safety Administration's HD Fuel Efficiency Improvement Program, which requires improvements in fuel efficiency for medium- and heavy-duty on-road vehicles.

## 3.6.4 Mitigation Measures

No mitigation measures are required.

## 3.6.5 Significant Unavoidable Adverse Impacts

No significant unavoidable adverse impacts would result from project implementation related to GHGs.

## 3.6.6 Cumulative Impacts

GHG emissions are exclusively cumulative impacts; there are no non-cumulative GHG emissions impacts from a climate change perspective. No single project, when considered in isolation, can cause climate change because a single project's emissions are not enough to change the radiative balance of the atmosphere. Because climate change is the result of GHG emissions and GHGs are emitted by innumerable sources worldwide, global climate change will have a significant cumulative impact on the natural environment as well as human development and activity. As such, GHGs and climate change are cumulatively considerable, even though the contribution may be individually limited (SCAQMD 2008). SCAQMD methodology and thresholds are thus cumulative in nature. As discussed above, the Proposed Project would not exceed the threshold of significance. Based on the project not exceeding the SCAQMD emissions threshold and the lack of conflict with GHG emissions reductions plans and policies, **the Proposed Project would not result in a cumulatively considerable impact related to GHGs.**