

SECTION 4.5

GREENHOUSE GASES

UNDERSTANDING GLOBAL CLIMATE CHANGE

Global climate change is a change in the average weather of the Earth which can be measured by wind patterns, storms, precipitation, and temperature. The earth's climate is in a state of constant flux with periodic warming and cooling cycles. Extreme periods of cooling are termed "ice ages," which may then be followed by extended periods of warmth. For most of the earth's geologic history, these periods of warming and cooling have been the result of many complicated interacting natural factors that include: volcanic eruptions that spew gases and particles (dust) into the atmosphere; the amount of water, vegetation, and ice covering the earth's surface; subtle changes in the earth's orbit; and the amount of energy released by the sun (sun cycles). However, since the beginning of the Industrial Revolution around 1750, the average temperature of the earth has been increasing at a rate that is faster than can be explained by natural climate cycles alone.

With the Industrial Revolution came an increase in the combustion of carbon-based fuels such as wood, coal, oil, natural gas, and biomass. Industrial processes have also created emissions of substances not found in nature. This in turn has led to a marked increase in the emissions of gases shown to influence the world's climate. These gases, termed "greenhouse" gases (GHGs), influence the amount of heat trapped in the earth's atmosphere. Because recently observed increased concentrations of GHGs in the atmosphere are related to increased emissions resulting from human activity, the current cycle of "global warming" is generally believed to be largely due to human activity. Of late, the issue of global warming or global climate change has arguably become the most important and widely debated environmental issue in the United States and the world. Because it is the collective of human actions taking place throughout the world that contributes to climate change, it is quintessentially a global or cumulative issue.

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There are numerous GHGs, both naturally occurring and manmade. Each GHG has variable atmospheric lifetime and global warming potential (GWP). The atmospheric lifetime of the gas is the average time a molecule stays stable in the atmosphere. Most GHGs have long atmospheric lifetimes, staying in the atmosphere hundreds or thousands of years. GWP is a measure of the potential for a gas to trap heat and warm the atmosphere. Although GWP is related to its atmospheric lifetime, many other factors including chemical reactivity of the gas also influence GWP.

GWP is reported as a unitless factor representing the potential for the gas to affect global climate relative to the potential of carbon dioxide (CO₂). Because CO₂ is the reference gas for establishing GWP, by definition its GWP is 1. Although methane (CH₄) has a shorter atmospheric lifetime than CO₂, it has a 100-year GWP of 25; this means that CH₄ has 25 times more effect on global warming than CO₂ on a molecule-by-molecule basis.

The GWP is officially defined as "[T]he cumulative radiative forcing—both direct and indirect effects—integrated over a period of time from the emission of a unit mass of gas relative to some reference gas" (EPA 2010). GHG emissions estimates are typically represented in terms of metric tons (MT) of CO₂ equivalent (CO₂E). CO₂E emissions are the product of the amount of each gas by its GWP. The effects of several GHGs may be discussed in terms of MT CO₂E and can be summed to represent the total potential of these gases to warm the global climate. **Table 4.5-1** summarizes some of the most common GHGs. All of the gases listed are produced by both biogenic (natural) and anthropogenic (human) sources. These are the GHGs of primary concern in this analysis. CO₂ would be emitted by the Project due to the combustion of fossil fuels in vehicles (including construction), from electricity

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generation and natural gas consumption, water use, and from solid waste disposal. Smaller amounts of CH₄ and nitrous oxide (N₂O) would be emitted from these activities.

**TABLE 4.5-1
GLOBAL WARMING POTENTIALS AND ATMOSPHERIC LIFETIMES**

Gas	Atmospheric Lifetime (years)	100-year GWP	20-year GWP
Carbon dioxide (CO ₂)	50–200	1	1
Methane (CH ₄)*	12.4	28	84
Nitrous oxide (N ₂ O)	121	265	264
HFC-23	222	12,400	10,800
HFC-32	5.2	677	2,430
HFC-125	28.2	3,170	6,090
HFC-134a	13.4	1,300	3,710
HFC-143a	47.1	4,800	6,940
HFC-152a	1.5	138	506
HFC-227ea	38.9	3,350	5,360
HFC-236fa	242	8,060	6,940
HFC-43-10mee	16.1	1,650	4,310
CF ₄	50,000	6,630	4,880
C ₂ F ₆	10,000	11,100	8,210
C ₃ F ₈	2,600	8,900	6,640
C ₄ F ₁₀	2,600	9,200	6,870
c-C ₄ F ₈	3,200	9,540	7,110
C ₅ F ₁₂	4,100	8,550	6,350
C ₆ F ₁₄	3,100	7,910	5,890
SF ₆	3,200	23,500	17,500

Source: RECON 2018a, p. 12.

4.5.1 REGULATORY FRAMEWORK

In response to rising concern associated with increasing GHG emissions and global climate change impacts, several plans and regulations have been adopted at the international, national, and state levels with the aim of reducing GHG emissions. The following is a discussion of the federal, state, and local plans and regulations most applicable to the Project.

A. FEDERAL

U.S. Environmental Protection Agency

The U.S. EPA has many federal level programs and Projects to reduce GHG emissions. The U.S. EPA provides technical expertise and encourages voluntary reductions from the private sector. One of the voluntary programs applicable to the Project is the Energy Star program.

Energy Star is a joint program of U.S. EPA and the U.S. Department of Energy, which promotes energy-efficient products and practices. Tools and initiatives include the Energy Star Portfolio Manager, which helps track and assess energy and water consumption across an entire portfolio of buildings, and the Energy Star Most Efficient 2013, which provides information on exceptional products that represent the leading edge in energy-efficient products in 2013 (RECON 2018a, p. 23).

Corporate Average Fuel Economy Standards

The federal Corporate Average Fuel Economy standards established by National Highway Traffic Safety Administration determine the fuel efficiency of certain vehicle classes in the United States. Current Corporate Average Fuel Economy standards require vehicle manufacturers of passenger cars and light-duty trucks to achieve an average fuel economy of 35.5 miles per gallon by 2016 and an average fuel economy of 54.5 miles per gallon by 2025. With improved gas mileage, fewer gallons of transportation fuel would be combusted to travel the same distance, thereby reducing nationwide GHG emissions associated with vehicle travel.

B. STATE

Statewide GHG Emission Targets

Executive Order S-3-05 – Statewide GHG Emission Targets

This Executive Order (EO) establishes the following GHG emissions reduction goals for the state of California:

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

This EO also directs the Secretary of the California EPA to oversee the efforts made to reach these targets, and to prepare biannual reports on the progress made toward meeting the targets and on the impacts to California related to global warming, including impacts to water supply, public health, agriculture, the coastline, and forestry. With regard to impacts, the report shall also prepare and report on mitigation and adaptation plans to combat the impacts. The first Climate Action Team Assessment Report was produced in March 2006 and has been updated every two years since then.

Executive Order B-30-15 – 2030 Statewide GHG Emission Goal

EO B-30-15, issued on April 29, 2015, establishes an interim GHG emission reduction goal for the state of California to reduce GHG emissions 40 percent below 1990 levels by 2030. This EO also directs all state agencies with jurisdiction over GHG-emitting sources to implement measures designed to achieve the new interim 2030 goal, as well as the pre-existing, long-term 2050 goal identified in EO S-3-05. Additionally, this EO directs CARB to update its Climate Change Scoping Plan to address the 2030 goal. CARB released the update to the Climate Change Scoping Plan in November 2017 discussed below.

Assembly Bill 32 – California Global Warming Solutions Act of 2006

In response to EO S-3-05, the California Legislature passed AB 32, the California Global Warming Solutions Act of 2006 and thereby enacted Sections 38500–38599 of the California Health and Safety Code. The heart of AB 32 is its requirement that CARB establish an emissions cap and adopt rules and regulations that would reduce GHG emissions to 1990 levels by 2020. AB 32 also required CARB to adopt a plan by January 1, 2009, indicating how emission reductions would be achieved from significant GHG sources via regulations, market mechanisms, and other actions.

Senate Bill 32 – California Global Warming Solutions Act of 2006

Approved in September 2016, SB 32 updates the California Global Warming Solutions Act of 2006. Under SB 32, the state would reduce its GHG emissions to 40 percent below 1990 levels by 2030. In implementing the 40 percent reduction goal, CARB is required to prioritize emissions reductions to consider the social costs of the emissions of GHGs. “Social costs” are defined as “an estimate of the

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economic damages, including, but not limited to, changes in net agricultural productivity; impacts to public health; climate adaptation impacts, such as property damages from increased flood risk; and changes in energy system costs, per metric ton of greenhouse gas emission per year.”

Implementation of SB 32 was contingent upon adoption of AB 197, State Air Resources Board: greenhouse gases: regulations, prior to January 1, 2017. AB 197 includes certain administrative changes to CARB and directs CARB to update the State Scoping Plan. AB 197 was adopted in September 2016.

Climate Change Scoping Plan

As directed by the California Global Warming Solutions Act of 2006, in 2008, CARB adopted the Climate Change Scoping Plan: A Framework for Change (Original Scoping Plan). CARB has periodically revised GHG emissions forecasts and prepared supplemental revisions to the Original Scoping Plan. In 2014, CARB adopted the comprehensive First Update to the Climate Change Scoping Plan: Building on the Framework (First Update to the Scoping Plan) (RECON 2018a, p. 24). The First Update to the Scoping Plan “. . . highlights California’s success to date in reducing its GHG emissions and lays the foundation for establishing a broad framework for continued emission reductions beyond 2020, on the path to 80 percent below 1990 levels by 2050” (RECON 2018a, p. 24). The First Update to the Scoping Plan found that California is on track to meet the 2020 emissions reduction mandate established by AB 32 and notes that California could reduce emissions further by 2030 to levels squarely in line with those needed to stay on track to reduce emissions to 80 percent below 1990 levels by 2050 if the state realizes the expected benefits of existing policy goals (RECON 2018a, p. 24).

In conjunction with the First Update to the Scoping Plan, CARB identified “six key focus areas comprising major components of the state’s economy to evaluate and describe the larger transformative actions that will be needed to meet the state’s more expansive emission reduction needs by 2050” (RECON 2018a, p. 25). Those six areas are: (1) energy; (2) transportation (vehicles/equipment, sustainable communities, housing, fuels, and infrastructure); (3) agriculture; (4) water; (5) waste management; and (6) natural and working lands. The First Update identifies key recommended actions for each sector that will facilitate achievement of the 2050 reduction goal.

Based on CARB’s research efforts, it has a “strong sense of the mix of technologies needed to reduce emissions through 2050” (RECON 2018a, p. 25). Those technologies include 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.

In November 2017, CARB released the 2017 Climate Change Scoping Plan Update, the Proposed Strategy for Achieving California’s 2030 Greenhouse Gas Target (RECON 2018a, p. 25). The 2017 Scoping Plan identifies state strategies for achieving the state’s 2030 interim GHG emissions reduction target codified by SB 32. Measures under the 2017 Scoping Plan Scenario build on existing programs such as the Low Carbon Fuel Standard, Advanced Clean Cars Program, Renewable Portfolio Standard (RPS), Sustainable Communities Strategy (SCS), and the Short-Lived Climate Pollutant Reduction Strategy, and the Cap-and-Trade Program. Additionally, the 2017 Scoping Plan proposes new policies to address GHG emissions from natural and working lands. As discussed below, CARB continues to adjust the cap of the Cap-and-Trade Program to achieve emission levels consistent with 2020 statewide GHG emissions reduction targets established by AB 32.

Cap-and-Trade Program

The California Cap-and-Trade Program began in January 2013 and is authorized to continue until the end of 2030. The program is a market-based regulation that is designed to reduce GHG emissions associated major sources by setting a firm cap on overall GHG emissions from covered entities and

gradually reducing that cap over time. The program defines major sources as facilities that generate more than 25,000 MT CO₂E per year, which includes many electricity generators, refineries, cement production facilities, oil and gas production facilities, glass manufacturing facilities, and food processing plants. Each entity covered by the program is allocated specific GHG emission allowances and is able to buy or sell additional offset credits to other major sources-covered entities. Thus, the program employs market mechanisms to cost-effectively reduce overall GHG emissions. Throughout the program's duration, CARB continues to adjust the overall GHG emissions cap to achieve emission levels consistent with 2020 statewide GHG emission reduction targets established by AB 32 and the 2030 statewide GHG emission reduction targets established by SB 32.

Regional Emissions Targets – SB 375

SB 375, the 2008 Sustainable Communities and Climate Protection Act, was signed into law in September 2008 and requires CARB to set regional targets for reducing passenger vehicle GHG emissions in accordance with the Original Scoping Plan. The purpose of SB 375 is to align regional transportation planning efforts, regional GHG emissions reduction targets and fair-share housing allocations under state housing law. SB 375 requires Metropolitan Planning Organizations (MPOs) to adopt an SCS or Alternative Planning Strategy to address GHG reduction targets from cars and light-duty trucks in the context of that MPO's Regional Transportation Plan (RTP).

The Southern California Association of Governments (SCAG) adopted the *2016–2040 Regional Transportation Plan/Sustainable Communities Strategy, A Plan for Mobility, Accessibility, Sustainability and a High Quality of Life* (2016 RTP/SCS) in April 2016. The main goal of the 2016 RTP/SCS is a long-range visioning plan that balances future mobility and housing needs with economic, environmental and public health goals. CARB's targets for the SCAG region call for an 8 percent reduction in GHG emissions per capita from automobiles and light-duty trucks compared to 2005 levels by 2020, and a 13 percent reduction by 2035. The overarching strategy of the 2016 RTP/SCS is create more compact communities in existing urban areas, providing neighborhoods with efficient and plentiful public transit, abundant and safe opportunities to walk, bike and pursue other forms of active transportation, and preserving more of the region's remaining natural lands.

Pursuant to Government Code Section 65080(b)(2)(K), a Sustainable Communities Strategy 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.

California Building Standards Code (Title 24)

The California Code of Regulation, Title 24, is referred to as the California Building Code (CBC). It consists of a compilation of several distinct standards and codes related to building construction including, plumbing, electrical, interior acoustics, energy efficiency, handicap accessibility and so on. Of particular relevance to GHG emissions reductions are the CBC's energy efficiency and green building standards as outlined below.

Part 6 – Energy Code

Title 24, Part 6, of the California Code of Regulations is the Energy Efficiency Standards or California Energy Code. This code, originally enacted in 1978, establishes energy-efficiency standards for residential and non-residential buildings in order to reduce California's energy consumption. The Energy Code is

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updated periodically to incorporate and consider new energy-efficiency technologies and methodologies as they become available. New construction and major renovations must demonstrate their compliance with the current Energy Code through submission and approval of a Title 24 Compliance Report to the local building permit review authority and the California Energy Commission (CEC). By reducing California's energy consumption, emissions of statewide GHGs may also be reduced. The previous Energy Code, known as the 2013 Energy Code, became effective July 1, 2014.

The current version of the Energy Code, known as the 2016 Energy Code, became effective January 1, 2017. The 2016 Energy Code provides mandatory energy-efficiency measures as well as voluntary tiers for increased energy efficiency. The CEC's preliminary estimates indicate that the 2016 Energy Code would achieve a 28 percent reduction in home energy use and a 5 percent reduction in non-residential energy use when compared to the previous 2013 Energy Code (CEC 2015). The CEC has further indicated that the 2020 Energy Code will require new residential developments to achieve zero-net energy use.

Part 11 – California Green Building Standards Code

The California Green Building Standards Code, referred to as CalGreen, was added to Title 24 as Part 11 first in 2009 as a voluntary code, which then became mandatory effective January 1, 2011 (as part of the 2010 CBC). The 2016 CalGreen institutes mandatory minimum environmental performance standards for all ground-up new construction of non-residential and residential structures. It also includes voluntary tiers (I and II) with stricter environmental performance standards for these same categories of residential and non-residential buildings. Local jurisdictions must enforce the minimum mandatory Green Building Standards and may adopt additional amendments for stricter requirements.

The mandatory standards require:

- Outdoor water use requirements as outlined in Model Water Efficient Landscape
- Ordinance emergency standards
- 20 percent mandatory reduction in indoor water use relative to specified baseline levels;
- 65 percent construction/demolition waste diverted from landfills;
- Infrastructure requirements for electric vehicle charging stations;
- Mandatory inspections of energy systems to ensure optimal working efficiency; and
- Requirements for low-pollutant emitting exterior and interior finish materials such as paints, carpets, vinyl flooring, and particleboards.

Similar to the reporting procedure for demonstrating Energy Code compliance in new buildings and major renovations, compliance with the CalGreen water reduction requirements must be demonstrated through completion of water use reporting forms for new low-rise residential and non-residential buildings. The water use compliance form must demonstrate a 20 percent reduction in indoor water use by either showing a 20 percent reduction in the overall baseline water use as identified in CalGreen or a reduced per-plumbing-fixture water use rate.

Other State Measures

Other related regulations adopted by California are summarized below.

- Advanced Clean Cars Program (i.e., Pavley I and Low Emission Vehicle III) – A set of vehicle standards that require light-duty cars and trucks to have reduced GHG emissions.
- Low Carbon Fuel Standard – A statewide goal requiring a 10 percent reduction in the carbon intensity of transportation fuels by 2020.

- The RPS – The California RPS program was established in 2002 by Senate Bill (SB) 1078 (Sher, 2002) with the initial requirement that 20% of electricity retail sales must be served by renewable resources by 2017. The program was accelerated in 2006 under SB 107 (Simitian, 2006), which requires that the 20% mandate be met by 2010. In April 2011, SB 2 (1X) (Simitian) was signed into law, which codified a 33% RPS requirement to be achieved by 2020. In 2015, SB 350 (de León, 2015) was signed into law, which mandated a 50% RPS by December 31, 2030. SB 350 include interim annual RPS targets with three-year compliance periods. In addition, SB 350 requires 65% of RPS procurement must be derived from long-term contracts of 10 or more years. In 2018, SB 200 (de León, 2018) was signed into law, which again increases the RPS to 60% by 2030 and requires all state’s electricity to come from carbon-free resources by 2045. SB 100 became effective on January 1, 2019.
- AB 341, Solid Waste Diversion – The Commercial Recycling Requirements mandate that businesses (including public entities) that generate 4 cubic yards or more of commercial solid waste per week and multi-family residential with five units or more arrange for recycling services. Businesses can take one or any combination of measures in order to reuse, recycle, compost, or otherwise divert solid waste from disposal. Additionally, AB 341 mandates that 75 percent of all solid waste generated in the state be reduced, recycled, or composted by 2020 regardless of the source.

C. LOCAL

Imperial County Air Pollution Control District (ICAPCD)

The CARB’s Scoping Plan states that local governments are “essential partners” in the effort to reduce GHG emissions (CARB 2008). The Scoping Plan also acknowledges that local governments have broad influence and, in some cases, exclusive jurisdiction 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. Many of the proposed measures to reduce GHG emissions rely on local government actions. Imperial County has not established formal quantitative or qualitative thresholds through a public rulemaking process, but CEQA permits the lead agency to establish a project-specific threshold of significance if backed by substantial evidence, until a formal threshold is approved.

ICAPCD Rule 903

ICAPCD Rule 903 applies to any stationary source that would have the potential to emit air contaminants equal to or in excess of the threshold for a major source of regulated air pollutants. In 2011, ICAPCD amended Rule 903 to add GHGs to the list of regulated pollutants. As part of the revised rule, stationary sources that do not exceed the *de minimis* emissions level of 20,000 tons CO₂e per year in a 12-month period would not need to meet recordkeeping and reporting requirements. The ICAPCD has no regulations or additional guidelines relative to GHG emissions for residential, commercial, or industrial projects.

Imperial County General Plan

The Imperial County General Plan Renewable Energy and Transmission Element was adopted in October 2015. As stated in the element, the benefits of renewable energy development include reduction in potential GHG by displacing fossil-fuel-generated electricity with renewable energy, which does not add to the greenhouse effect; contribution towards meeting the state’s RPS mandate; and minimization of impacts to local communities, agriculture and sensitive resources (RECON 2018a, p.28).

The Imperial County General Plan does not contain any goals, objectives, policies or programs directly pertaining to global climate change (GCC) or GHG.

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4.5.2 ENVIRONMENTAL SETTING

A. GLOBAL CLIMATE CHANGE

GCC is a change in the average weather of the earth that is measured by temperature, wind patterns, precipitation, and storms over a long period of time. The baseline, against which these changes are measured, originates in historical records identifying temperature changes that have occurred in the past, such as during previous ice ages. The global climate is continuously changing, as evidenced by repeated episodes of substantial warming and cooling documented in the geologic record. The rate of change has typically been incremental, with warming or cooling trends occurring over the course of thousands of years. The past 10,000 years have been marked by a period of incremental warming, as glaciers have steadily retreated across the globe. However, scientists have observed an unprecedented acceleration in the rate of warming during the past 150 years. GCC is a documented effect. Although the degree to which the change is caused by anthropogenic (human activity) sources is still under study, the increase in warming has coincided with the global industrial revolution which has seen the widespread reduction of forests to accommodate urban centers, agriculture, and the use of fossil fuels (primarily the burning of coal, oil, and natural gas for energy). Most scientists agree that anthropogenic sources are a main, if not primary, contributor to the GCC warming.

The effects of increasing global temperature are far-reaching and extremely difficult to quantify. The scientific community continues to study the effects of GCC. In general, increases in the ambient global temperature resulting from increased GHGs is anticipated to result in rising sea levels which could threaten coastal areas through accelerated coastal erosion; threats to levees and inland water systems; and disruption to coastal wetlands and habitat.

B. EXISTING GREENHOUSE GAS EMISSIONS

The CARB performs statewide GHG inventories. The inventory is divided into nine broad sectors of economic activity: agriculture, commercial, electricity generation, forestry, high GWP emitters, industrial, recycling and waste, residential, and transportation. Emissions are quantified in million metric tons (MMT) of CO₂E. **Table 4.5-2** shows the estimated statewide GHG emissions for the years 1990, 2005, and 2015.

**TABLE 4.5-2
CALIFORNIA GREENHOUSE GAS EMISSIONS BY SECTOR IN 1990, 2008, AND 2015**

Emissions Sector	1990 Emissions in MMT CO ₂ E (% total) ^{1, 2}	2005 Emissions in MMT CO ₂ E (% total) ^{2, 3, 4}	2015 Emissions in MMT CO ₂ E (% total) ^{2, 3, 4}
Agriculture	23.4 (5%)	34.52 (7%)	34.65 (8%)
Commercial	14.4 (3%)	14.27 (3%)	14.75 (3%)
Electricity Generation	110.6 (26%)	107.85 (22%)	83.67 (19%)
High Global Warming Potential	--	9.42 (2%)	19.05 (4%)
Industrial	103.0 (24%)	95.45 (20%)	91.71 (21%)
Recycling and Waste	--	7.78 (2%)	8.73 (2%)
Residential	29.7 (7%)	27.98 (6%)	23.17 (5%)
Transportation	150.7 (35%)	184.48 (38%)	164.63 (37%)
Forestry (Net CO ₂ flux)	-6.5	--	--
Not Specified	1.3	--	--
TOTAL	426.6	481.75	440.36

Source: RECON 2018a, p. 15.

MMT CO₂E = million metric tons of CO₂ equivalent

1 1990 data was retrieved from the CARB 2007 source.

² Quantities and percentages may not total properly due to rounding.

³ 2005 and 2015 data was retrieved from the CARB 2017a source.

⁴ Reported emissions for key sectors. The inventory totals for 2005 and 2015 did not include Forestry or Not Specified sources.

As shown in **Table 4.5-2**, statewide GHG source emissions totaled 426.6 MMT CO₂E in 1990, 481.75 MMT CO₂E in 2005, and 440.36 MMT CO₂E in 2015. Many factors affect year-to-year changes in GHG emissions, including economic activity, demographic influences, environmental conditions such as drought, and the impact of regulatory efforts to control GHG emissions. However, transportation-related emissions consistently contribute the most GHG emissions, followed by electricity generation and industrial emissions.

4.5.3 IMPACTS AND MITIGATION MEASURES

A. STANDARDS OF SIGNIFICANCE

As stated previously, the CEQA Guidelines allow Lead Agencies to establish significance thresholds for their respective jurisdictions. These significance thresholds may be adopted after considering thresholds of significance adopted or recommended by other public agencies or experts.

No GHG emission significance threshold has been adopted by the Imperial County APCD for land development projects. Thus, in the absence of a threshold of significance for GHG emissions that has been adopted in a public process following environmental review, this analysis considers guidance promulgated by other agencies.

The County is a member of SCAG, which is composed of several different counties including Imperial, Los Angeles, Orange, Riverside, San Bernardino, and Ventura counties. Air districts responsible for managing air quality within the SCAG boundaries include the Antelope Valley Air Quality Management District, the Mojave Desert Air Pollution Control District, South Coast Air Pollution Control District, and the Ventura County Air Pollution Control District. This analysis conservatively uses SCAQMD screening level thresholds.

SCAQMD

The SCAQMD published its *Interim CEQA GHG Significance Thresholds for Stationary Sources, Rules, and Plans* in 2008 (SCAQMD 2008). The interim thresholds are a tiered approach; projects may be determined to be less than significant under each tier or require further analysis under subsequent tiers. The five tiers are:

- **Tier 1** – The project is exempt from CEQA.
- **Tier 2** – The project is consistent with an applicable regional GHG emissions reduction plan.
- **Tier 3** – Project GHG emissions represent an incremental increase below, or mitigated to less than Significance Screening Levels, where screening levels are developed based on a 90 percent emissions capture rate
 - o 3,000 MT CO₂E is the Residential/Commercial Screening Level
 - o 10,000 MT CO₂E is the Permitted Industrial Screening Level
- **Tier 4** – The project achieves performance standards, where performance standards may include
 - o Option #1: Uniform Percent Emission Reduction Target Objective (e.g., 30 percent) from Business as Usual (BAU) by incorporating Project Design Features and/or Implementing Emissions Reduction Measures.
 - o Option #2: Early Implementation of Applicable AB 32 Scoping Plan Measures.

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- o Option #3: Achieve sector-based standard (e.g. pounds per person, pounds per square foot, etc.)
- **Tier 5** – Off-sets along or in combination with the above target Significance Screening Level. Offsets must be provided for a 30-year project life, unless the project life is limited by permit, lease, or other legally binding condition

Consistent with the SCAQMD guidance, the recommended/preferred tiered approach for most land use development projects in SCAQMD jurisdiction is assessment against the applicable screening levels. As the project is not exempt from CEQA and is not part of an approved local plan, project emissions would initially be assessed against a 3,000 MT CO₂E screening level. This 3,000 MT CO₂E screening level is intended to exempt projects that are too small to have significant impacts from further analysis.

B. METHODOLOGY

Implementation of the proposed Project would result in GHG emissions associated with the construction and operation of the project. GHG emissions were calculated using California Emissions Estimator Model (CalEEMod) Version 2016.3.2 (RECON 2018a, p. 32). The CalEEMod program is a tool used to estimate emissions resulting from land development projects in the State of California. CalEEMod was developed with the participation of several state air districts including the SCAQMD.

CalEEMod estimates parameters such as the type and amount of construction equipment required, trip generation, and utility consumption based on the size and type of each specific land use using data collected from surveys performed in SCAQMD. Where available, parameters were modified to reflect project-specific data.

GHG emissions associated with build-out of the project site were estimated for the operations year in 2020. Additionally, GHG emissions were modeled in year 2030 to parallel the year of the state GHG reduction target established by SB 32.

Based on Guidance from the South Coast Air Quality Management District (SCAQMD), total construction GHG emissions resulting from a project should be amortized over a period of 30 years and added to operational GHG emissions to account for their contribution to GHG emissions over the lifetime of a project (RECON 2018a, p. 33).

No GHG emission significance threshold has been adopted by the Imperial County APCD. Project GHG emissions were evaluated against the SCAQMD screening level of 3,000 MT CO₂E.

Water Use

Water use for fugitive dust control would have indirect GHG emissions associated with it. These emissions are a result of the energy used to supply, treat, and distribute water. Construction of the project would be anticipated to require approximately 1,200 acre-feet of water for fugitive dust control. Either potable water or reclaimed water may be used for fugitive dust control. This analysis conservatively assumes potable water is used and thus accounts for energy used for supply, treatment, and distribution of potable water. Water use emissions are estimated based on regional efficiency factors for water supply, treatment, and distribution.

Operation-related Emissions

Operation-related sources of air pollutant emissions include the direct emission of criteria pollutants. Common direct emission sources include mobile sources such as project-generated traffic, and area sources such as the use of landscaping equipment. In addition to these direct emission sources, GHG emissions are also generated indirectly as a result of project electricity use, water use, and solid waste generation.

Electricity Demand/Generation

Energy use emissions typically include indirect GHG emissions associated with the generation of electricity from fossil fuels off-site in power plants. Project electricity demand for security lighting and O&M buildings would be extremely limited as compared to the electricity generated by the Project solar panels; the Project would be a net generator of clean, renewable energy that would reduce GHG emissions associated with generation of electricity from fossil fuels at other power plants.

At this time, it is not known whether electricity generated by the Project would be sold to the IID, San Diego Gas & Electric, or a different utility provider. As the Project Site is within IID’s service area, IID-specific energy intensity factors (i.e., the amount of CO₂, CH₄, and N₂O per kilowatt-hour) were used to estimate the GHG emission reductions from the Project.

As discussed, the state mandate for renewable energy is 33 percent by 2020 and 50 percent by 2030; however, the energy-intensity factors included in CalEEMod only represent an 8.3 percent procurement of renewable energy (RECON 2018a, p. 38). Project emission estimates were modeled accounting for reductions achieved by 33 percent renewable energy procurement in 2020 and 50 percent renewable energy procurement in 2030. **Table 4.5-3** shows IID energy intensity factors used in modeling.

**TABLE 4.5-3
IMPERIAL IRRIGATION DISTRICT ENERGY INTENSITY FACTORS**

Gas	2010 Factors (lbs/MWh)	2020 Factors (lbs/MWh)	2030 Factors (lbs/MWh)
Carbon Dioxide (CO ₂)	1,270.90	956.99	740.93
Methane (CH ₄)	0.029	0.022	0.017
Nitrous Oxide (N ₂ O)	0.006	0.005	0.003

Source: RECON 2018a, p. 38.

Water Use

The water use and wastewater generation of a project has indirect GHG emissions associated with it. These emissions are a result of the energy used to supply, distribute, and treat water and wastewater. In addition, wastewater treatment can also emit both CH₄ and N₂O.

During project operation, water would be used for domestic use, fire protection, and to wash the solar modules. Operation of the Project would be anticipated to require approximately 60 acre-feet of water per year. The project would require less water than existing agricultural use. This analysis conservatively assesses the gross water use of the Project. Water use emissions are estimated based on regional efficiency factors for water supply, treatment, and distribution.

Solid Waste Generation

The disposal of solid waste produces GHG emissions from anaerobic decomposition in landfills, incineration, and transportation of waste. Solar farms are not known to generate substantial quantities of biodegradable waste. As such, solid waste emissions would not represent a measurable increase in GHG emissions.

4.5 GREENHOUSE GASES

C. PROJECT/CUMULATIVE IMPACTS AND MITIGATION MEASURES

Generation of Greenhouse Gas Emissions

Impact 4.5.1 The proposed Project would generate GHG emissions during construction and reclamation activities, primarily related to emissions from construction equipment. Operational emissions would occur to a lesser degree in relation to the use of maintenance equipment. Impacts resulting from Project-generated GHGs are considered **less than significant**.

Construction, Operation and Reclamation

Table 4.5-4 provides a summary of the GHG emissions generated by the project construction, operation, and reclamation. CalEEMod output files for Project operation are contained in Attachment 1 of **Appendix D** of this EIR.

**TABLE 4.5-4
ANNUAL GHG EMISSIONS**

Emission Source	GHG Emissions (MT CO ₂ E)	
	Year 2020	Year 2030
<i>Construction</i>		
Mobile and Equipment	1,391	
Water Use	1,890	
Total Construction	3,281	
Amortized Construction	109	
<i>Operation</i>		
Vehicles	53	43
Energy Use	-74,195	-57,424
Area Sources	<1	<1
Water Use	94	73
Solid Waste Disposal	<1	<1
Gross Operation	121	95
Total Operation	-74,048	-57,308
<i>Total Emissions</i>		
Gross Construction, Operation, and Reclamation	366	335
Net Construction, Operation, and Reclamation	-73,829	-57,089

Source: Attachment 1 of the Air Quality and Greenhouse Gas Analysis included in **Appendix D** of this EIR.

NOTE: Totals may vary due to independent rounding.

As shown, the Project's combined gross construction, operational, and reclamation GHG emissions would be 366 MT CO₂E in 2020; accounting for the GHG emissions offset by the renewable energy generation of the solar generation facility, the project would result in a net total reduction of 73,829 MT CO₂E in 2020.

The Project's gross annual GHG emissions and the GHG emissions offset by the renewable energy generation of the solar generation facility would gradually decline as a result of federal, state, and local implementation measures, such as increased fuel efficiency standards associated with the Advanced Clean Cars Program and reduced fossil fuel electricity generation in accordance with the State's RPS mandate. The combined gross construction, operations, and reclamation emissions would be 335 MT

CO₂E in 2030. Accounting for the GHG emissions offset by the renewable energy generation of the solar generation facility, the Project would result in a 57,089 MT CO₂E reduction in 2030.

As discussed previously, the SCAQMD's 3,000 MT CO₂E screening level is appropriate for exempting projects that are too small to have significant impacts from further analysis. As project emissions would be less than the 3,000 MT CO₂E screening level, GHG emissions impacts would be **less than significant**.

Under CEQA an impact is a "substantial, or potentially substantial, adverse change in the environment...". This analysis concludes that Project GHG emissions would result in less than significant impacts under CEQA. The Project would be anticipated to offset GHG emissions through renewable energy generation and thereby result in environmental benefits by lessening the impacts of global climate change. The Project's gross annual GHG emissions and the GHG emissions offset by the renewable energy generation of the solar generation facility would gradually decline as a result of federal, state, and local implementation measures. As emissions do not exceed the SCAQMD's screening threshold, the Project would not result in a cumulatively considerable impact to GHG emissions and would not conflict with the State GHG reduction targets. Impacts resulting from Project-generated GHGs are considered **less than significant** during construction, operation and reclamation.

Mitigation Measures

None required.

Significance After Mitigation

Not applicable.

Conflict with an Applicable Plan, Policy, or Regulation Adopted to Reduce Greenhouse Gas Emissions

Impact 4.5.2 The Project would help promote California's GHG policies by creating renewable energy resources and would not exceed applicable GHG screening levels. Therefore, the proposed Project would not conflict with an applicable plan, policy, or regulation adopted to reduce GHG emissions. Moreover, Project conflicts with an applicable plan, policy, or regulation adopted to reduce GHG emissions are considered **less than significant** during construction, operation and reclamation.

Construction, Operation and Reclamation

No GHG emission significance threshold has been adopted by the Imperial County APCD. Project GHG emissions were evaluated against the SCAQMD screening level of 3,000 MT CO₂E. The Project's combined gross construction, operation, and reclamation GHG emissions would be 366 MT CO₂E in 2020; accounting for the GHG emissions offset by the renewable energy generation of the solar generation facility, the project would result in a net total reduction of 73,829 MT CO₂E in 2020. The project's gross annual GHG emissions and the GHG emissions offset by the renewable energy generation of the solar generation facility would gradually decline as a result of federal, state, and local implementation measures. As emissions do not exceed the SCAQMD's screening threshold, the project would not result in a cumulatively considerable impact to GHG emissions and would not conflict with the State GHG reduction targets. Impacts would be less than significant.

EO S-3-05 and B-30-15 establish the GHG emission reduction policy of the Executive Branch for the state. AB 32 codified the 2020 goal of EO S-3-05 and launched the Original Scoping Plan (RECON 2018a, p. 45) that outlined the reduction measures needed to reach these goals. SB 32 codified the 2030 goal of B-30-15 and directed CARB to prepare a subsequent update to the Scoping Plan.

4.5 GREENHOUSE GASES

Subsequent to the adoption of AB 32 and the development of the Original Scoping Plan, several state agencies, including CARB, CEC, California Public Utilities Commission, Department of Resources Recycling and Recovery, California Department of Transportation, California Department of Forestry and Fire, the Department of Water Resources, the Department of Food and Agriculture, and the Department of Goods and Services have developed regulatory and incentive programs to reduce GHG emissions statewide. Policies related to the California Department of Food and Agriculture and California Department of Forestry and Fire are primarily related to the agriculture business and forest and rangeland management.

The Project would not have a direct or indirect effect on the strategies outlined in the State Scoping Plan or subsequent policies adopted by state agencies. In fact, the Project would promote the state's GHG policies by creating additional renewable energy resources. Project GHG emissions would not exceed applicable screening levels and therefore would be too small to have significant impact on achievement of statewide GHG emissions reduction targets. Therefore, Project conflicts with an applicable plan, policy, or regulation adopted to reduce GHG emissions are considered **less than significant** during construction, operation and reclamation.

Mitigation Measures

None required.

Significance After Mitigation

Not applicable.