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Document Title:	Section 3-8 Greenhouse Gas Emissions
Description:	This Section evaluates the direct, indirect and cumulative impacts the Project may have on greenhouse gas emissions and identifies any required Applicant-Proposed Measures (APM) and any required Mitigation Measures.
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3.8 GREENHOUSE GAS EMISSIONS

This section evaluates the environmental effects of greenhouse gas (GHG) emissions that may result directly or indirectly from the project. The analysis in this section describes the applicable regulations and programs, presents the existing GHG effects and California GHG emissions trends, identifies the criteria used for determining the significance of environmental impacts, lists applicant-proposed measures (APMs) that would be incorporated into the project to avoid or substantially lessen potentially significant impacts to the extent feasible, and describes the potential GHG impacts of the proposed project. The analysis is based on a review of existing resources, technical data, and applicable laws, regulations, plans, and policies, as well as the following technical reports prepared for the project:

- *Air Quality and Greenhouse Gas Technical Report, Soda Mountain Solar Project,* SWCA Environmental Consultants (SWCA) (2024) (Appendix C)

3.8.1 Regulatory Setting

3.8.1.1 Federal

DESERT RENEWABLE ENERGY CONSERVATION PLAN

In September 2016, the Bureau of Land Management (BLM) adopted the Desert Renewable Energy Conservation Plan (DRECP) Land Use Plan Amendment (LUPA) to the California Desert Conservation Area (CDCA) Plan, Bishop Resource Management Plan, and Bakersfield Resource Management Plan. The DRECP LUPA addresses solar, wind, geothermal energy generation, and transmission projects on 10.8 million acres of BLM-administered lands in the desert regions of southern California (BLM 2016).

The BLM DRECP LUPA establishes several land use classifications, including Development Focus Areas (DFAs), Variance Process Lands (VPLs), Recreation Management Areas, General Public Lands, and various conservation land use designations. In DFAs, renewable energy projects are incentivized and permitting is streamlined. Renewable energy projects may be implemented on VPLs, but they must first be evaluated under a variance process and then approved by the BLM to proceed through National Environmental Policy Act (NEPA) environmental review. General Public Lands are BLM-administered lands that do not have a specific land allocation or designation associated with energy development, conservation, or recreation. These lands are not needed to fulfill the DRECP biological conservation or renewable energy strategy. These areas are available to renewable energy applications but do not benefit from permit review streamlining or other incentives.

BLM Conservation Areas include National Landscape Conservation System lands, Areas of Critical Environmental Concern (ACECs), and Wildlife Allocations. Recreation Management Areas are designated for recreation actions. This designation includes Extensive Recreation Management Areas, which entail management specifically to address recreation use and demand; and Special Recreation Management Areas, which are high-priority areas for recreation and have unique value and importance for recreation.

The majority of the project site is located on DRECP General Public Lands, and the generation-tie line route is within the Soda Mountains Expansion ACEC.

U.S. ENVIRONMENTAL PROTECTION AGENCY

On April 2, 2007, in *Massachusetts v. EPA* (549 US 497), the Supreme Court found that GHGs are air pollutants covered by the Clean Air Act (CAA). The Court held that the U.S. Environmental Protection Agency (EPA) must determine whether emissions of GHGs from new motor vehicles cause or contribute to air pollution, which may reasonably be anticipated to endanger public health or welfare or whether the science is too uncertain to make a reasoned decision. In making these decisions, EPA is required to follow the language of Section 202(a) of the CAA.

On April 17, 2009, the EPA Administrator signed proposed "endangerment" and "cause or contribute" findings for GHGs under Section 202(a) of the CAA. EPA held a 60-day public comment period, considered public comments, and issued final findings. EPA found that six GHGs taken in combination endanger both the public health and the public welfare of current and future generations. The EPA also found that the combined emissions of these GHGs from new motor vehicles and new motor vehicle engines contribute to the greenhouse effect as air pollution that endangers public health and welfare under CAA Section 202(a) (Appendix C).

Specific GHG regulations that the EPA has adopted to date are as follows:

> **40 CFR Part 98. Mandatory Reporting of Greenhouse Gases Rule.** This rule requires mandatory reporting of GHG emissions for facilities that emit more than 25,000 metric tons (MTs) of carbon dioxide equivalent (CO_2e) emissions per year. The project would not trigger GHG reporting as required by this regulation.
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> **40 CFR Part 52. Proposed Prevention of Significant Deterioration and Title V Greenhouse Gas Tailoring Rule.** EPA has mandated that Prevention of Significant Deterioration (PSD), and Title V requirements apply to facilities whose stationary source CO_2e emissions exceed 100,000 tons per year. The project would not trigger PSD or Title V permitting under this regulation.

3.8.1.2 State

EXECUTIVE ORDER S-3-05

Executive Order S-3-05 was established by Governor Arnold Schwarzenegger in June 2006 and establishes statewide emission reduction targets through the year 2050 as follows:

1. By 2010, reduce GHG emissions to 2000 levels.
2. By 2020, reduce GHG emissions to 1990 levels.
3. By 2050, reduce GHG emissions to 80% below 1990 levels.

This Executive Order does not include any specific requirements that pertain to the project; however, future actions taken by the state to implement these goals may affect the project, depending on the specific implementation measures that are developed.

EXECUTIVE ORDER B-55-18

In September 2018, Executive Order B-55-18 established a new statewide goal to achieve carbon neutrality as soon as possible, no later than 2045, and to achieve and maintain net negative emissions thereafter. The California Air Resources Board (CARB) was directed to develop the framework for implementing the goal of carbon neutrality. Executive Order B-30-15 (April 2015) established a

California GHG reduction target of 40% below 1990 levels by 2030. One purpose of this interim target is to ensure California meets its target of reducing GHG emissions to 80% below 1990 levels by 2050 (Executive Order S-3-05, June 2005). This executive order also specifically addresses the need for climate adaptation and directs state agencies to update the California Climate Adaptation Strategy to identify how climate change will affect California infrastructure and industry and what actions the state can take to reduce the risks posed by climate change. Senate Bill (SB) 32 of 2016 codified this GHG emissions target to 40% below the 1990 level by 2030.

CALIFORNIA RENEWABLE PORTFOLIO STANDARD PROGRAM

Electric utilities in California must procure a minimum quantity of the sales from eligible renewable energy resources as specified by Renewable Portfolio Standard (RPS) requirements. To integrate renewable generators on the grid, optimize the delivery of growing amounts of renewable energy production, and facilitate achieving the targeted GHG reductions, the California legislature has also authorized energy agencies to establish energy storage procurement targets.

The Clean Energy and Pollution Reduction Act of 2015 (SB 350) established California's State policy objectives on long-term energy planning and procurement as signed into law on October 7, 2015. The 100 Percent Clean Energy Act of 2018 (SB 100) revised the RPS targets to establish the policy that eligible renewable energy resources and zero-carbon resources supply 100% of retail sales of electricity to California end-use customers and 100% of electricity procured to serve all state agencies by December 31, 2045. With SB 350 and SB 100, California's objectives include the following:

- To set the RPS for the procurement of California's electricity from renewable sources at 33% by 2020, 50% by 2026, and 60% by 2030
- To plan for 100% of total retail sales of electricity in California to come from eligible renewable energy resources and zero-carbon resources by December 31, 2045
- To double the energy efficiency savings in electricity and natural gas end uses by retail customers by 2030

CAP-AND-TRADE PROGRAM

The California Cap on Greenhouse Gas Emissions and Market-Based Compliance Mechanisms Regulation (Cap-and-Trade Program) was initially approved by CARB in 2011. The Cap-and-Trade Program applies to covered entities that fall within certain source categories, including petroleum refiners and suppliers of transportation fuels and is triggered when facility emissions exceed 25,000 MTs of CO_2e in a year. The covered entities must hold compliance instruments sufficient to cover the actual GHG emissions, as evidenced through CARB's Mandatory Reporting Regulation requirements. This means that transportation fuel suppliers bear the GHG compliance obligation in the Cap-and-Trade Program for the GHG emissions from motor vehicle and off-road equipment fuels used by construction workforces and crews.

SENATE BILL 1368

California SB 1368 was enacted in 2006 and required the California Public Utilities Commissions (CPUC) to establish a carbon dioxide (CO_2) emissions standard for base load generation owned by or under long-term contract with publicly owned utilities. The CPUC established a GHG Emissions Performance Standard (EPS) of 1,100 pounds of CO_2 per megawatt-hour (MWh). SB 1368 also requires the posting of notices of public deliberations by publicly owned companies on the CPUC website and establishes a process to determine compliance with the EPS. The project, as a renewable energy generation facility, is determined by rule to comply with the GHG EPS requirements of SB 1368.

ASSEMBLY BILL 32

California Assembly Bill (AB) 32, also known as the Global Warming Solutions Act of 2006, requires CARB to establish a statewide GHG emissions cap for 2020 based on 1990 emission levels. AB 32 requires CARB to adopt regulations that identify and require selected sectors or categories of emitters of GHGs to report and verify their statewide GHG emissions, and CARB is authorized to enforce compliance with the program. Under AB 32, CARB is also required to adopt a statewide GHG emissions limit equivalent to the statewide GHG emissions levels in 1990, which must be achieved by 2020. CARB established this limit in December 2007 at 427 million MTs of CO_2e. This is approximately 30% below forecasted "business-as-usual" emissions of 596 million MTs of CO_2e in 2020 and about 10% below average annual GHG emissions during the period of 2002 through 2004 (Appendix C).

To achieve maximum technologically feasible and cost-effective GHG emission reductions, AB 32 permits the use of market-based compliance mechanisms and requires CARB to monitor compliance with and enforce any rule, regulation, order, emission limitation, emissions reduction measure, or market-based compliance mechanism that it adopts. CARB has adopted nine early action measures for implementation, including ship electrification at ports, reduction of high global warming potential (GWP) gases in consumer products, heavy-duty vehicle greenhouse gas emission reduction (aerodynamic efficiency), reduction of perfluorocarbons (PFCs) from semiconductor manufacturing, improved landfill gas capture, reduction of hydrofluorocarbon (HFC)-134a from do-it-yourself motor vehicle servicing, sulfur hexafluoride (SF_6) reductions from the non-electric sector, a tire inflation program, and a low carbon fuel standard.

SENATE BILL 97

In 2007, the California State Legislature passed SB 97, which required amendment of the State California Environmental Quality Act (CEQA) Guidelines to incorporate analysis of, and mitigation for, GHG emissions from projects subject to CEQA. The amendments, which took effect on March 18, 2010, added Section 15064.4 to the State CEQA Guidelines, specifically addressing the potential significance of GHG emissions.

Section 15064.4 neither requires nor recommends a specific analytical methodology or quantitative criteria for determining the significance of GHG emissions. Rather, the section calls for a "good faith effort" to "describe, calculate or estimate" GHG emissions and indicates that the analysis of the significance of any GHG impacts should include consideration of the extent to which the project would

1. increase or reduce GHG emissions;
2. exceed a locally applicable threshold of significance; or
3. comply with "regulations or requirements adopted to implement a statewide, regional, or local plan for the reduction or mitigation of greenhouse gas emissions."

The State CEQA Guidelines also state that a project may be found to have a less than significant impact related to GHG emissions if it complies with an adopted plan that includes specific measures to sufficiently reduce GHG emissions (14 California Code of Regulations 15064(h)(3)). Importantly, the State CEQA Guidelines do not require or recommend a specific analytical methodology or provide quantitative criteria for determining the significance of GHG emissions.

17 CALIFORNIA CODE OF REGULATIONS 95350 ET SEQ.

The purpose of these regulations is to achieve GHG emission reductions by reducing sulfur hexafluoride emissions from gas-insulated switchgear. Owners of such switchgear must not exceed maximum

allowable annual emissions rates, which were reduced each year until 2020, after which annual emissions must not exceed 1.0%. Owners must regularly inventory gas-insulated switchgear equipment and measure quantities of SF_6 and maintain records of these for at least 3 years. Additionally, by June 1 each year, owners must also submit an annual report to CARB's Executive Officer for emissions that occurred during the previous calendar year.

ENERGY ACTION PLAN

The California Energy Commission and CPUC first adopted the Energy Action Plan in 2003 and subsequently adopted a second plan and an update in 2005 and 2008, respectively. The 2003 plan established an electricity "loading order" as the preferred sequence for meeting electricity demands. The loading order lists energy efficiency and demand response first, renewable resources second, and clean and efficient natural gas-fired power plants third. When renewable energy is available to the grid, the California Independent System Operator (CAISO) requests turndown of fossil power production from unspecified dispatchable fossil fuel plants to make way for the use of the renewable energy resources.

3.8.1.3 Local

SAN BERNARDINO GREENHOUSE GAS REDUCTION PLAN UPDATE

The San Bernardino Greenhouse Gas Reduction Plan (GHGRP) Update is an update to the 2011 San Bernardino County GHGRP. The GHGRP Update presents a target for the year 2030, which is to reduce emissions to 40% below 2007 levels. This goal would put the county on a path toward the state's long-term goal to achieve statewide carbon neutrality (zero net emissions) by 2045 (San Bernardino 2021).

SAN BERNARDINO COUNTYWIDE PLAN

The San Bernardino Countywide Plan (San Bernardino County 2024a), adopted by the Board of Supervisors in 2020, updates and expands the County's General Plan by addressing the physical, social, and economic issues facing the unincorporated portions of the county. The Countywide Plan consists of the Policy Plan, the Business Plan, and a communities plan. The Policy Plan, based on the former General Plan, consists of 11 elements: Land Use, Housing, Infrastructure and Utilities, Transportation and Mobility, Natural Resources, Renewable Energy and Conservation, Cultural Resources, Hazards, Personal and Property Protection, Economic Development, and Health and Wellness. The Business Plan consists of a policy-based governance element along with an implementation plan. The communities plan consists of 35 Community Action Guides that provide a framework for communities to create future character and independent identity through community actions.

The following policies identified in the Natural Resources element of the Countywide Plan are relevant to this analysis (San Bernardino County 2024b).

Goal NR-1 Air Quality. Air quality that promotes health and wellness of residents in San Bernardino County through improvements in locally-generated emissions.

- **Policy NR-1.1 Land use.** We promote compact and transit-oriented development countywide and regulate the types and locations of development in unincorporated areas to minimize vehicle miles traveled and greenhouse gas emissions.
- **Policy NR-1.2 Indoor air quality.** We promote the improvement of indoor air quality through the California Building and Energy Codes and through the provision of public health programs and services.

- **Policy NR-1.3 Coordination on air pollution.** We collaborate with air quality management districts and other local agencies to monitor and reduce major pollutants affecting the county at the emission source.
- **Policy NR-1.4 Military coordination on air quality.** We collaborate with the military to avoid or minimize impacts on military training and operations from air pollution and haze.
- **Policy NR-1.5 Sensitive land uses.** We consider recommendations from the California Air Resources Board on the siting of new sensitive land uses and exposure to specific source categories.
- **Policy NR-1.6 Fugitive dust emissions.** We coordinate with air quality management districts on requirements for dust control plans, revegetation, and soil compaction to prevent fugitive dust emissions.
- **Policy NR-1.7 Greenhouse gas reduction targets.** We strive to meet the 2040 and 2050 greenhouse gas emission reduction targets in accordance with state law.
- **Policy NR-1.8 Construction and operations.** We invest in County facilities and fleet vehicles to improve energy efficiency and reduce emissions. We encourage County contractors and other builders and developers to use low-emission construction vehicles and equipment to improve air quality and reduce emissions.
- **Policy NR-1.9 Building design and upgrades.** We use the [California Green Building Standards] CALGreen Code to meet energy efficiency standards for new buildings and encourage the upgrading of existing buildings to incorporate design elements, building materials, and fixtures that improve environmental sustainability and reduce emissions.

3.8.2 Environmental Setting

Global climate change refers to the changes in average climatic conditions on Earth as a whole, including changes in temperature, wind patterns, precipitation, and storms. Global warming, a related concept, is the observed increase in the average temperature of the Earth's atmosphere and oceans in recent decades. There is a general scientific consensus that global climate change is occurring, caused in whole or in part by increased emissions of GHGs, which keep the Earth's surface warm by trapping heat in the Earth's atmosphere, in much the same way as glass traps heat in a greenhouse. The Earth's climate is changing, because human activities, primarily the combustion of fossil fuels, are altering the chemical composition of the atmosphere through the buildup of GHGs. GHGs are released by the combustion of fossil fuels, land clearing, agriculture, and other activities and lead to an increase in the greenhouse effect. Although climate change has been a concern for several decades, the establishment of the Intergovernmental Panel on Climate Change (IPCC) by the United Nations and World Meteorological Organization in 1988 has led to increased efforts devoted to GHG emissions reduction and climate change research and policy.

Regarding the adverse effects of global warming, AB 2538 states, "Global warming poses a serious threat to the economic well-being, public health, natural resources and the environment of California." Over the past few decades, the energy intensity of the national and state economy has been declining due to the shift to a more service-oriented economy. California ranked fifth lowest among the states in CO_2 emissions from fossil fuel consumption per unit of gross state product. However, in terms of total CO_2 emissions, California is second only to Texas in the nation and is the 16th largest source of climate change emissions in the world, exceeding most nations.

3.8.2.1 Greenhouse Gas Background

GHGs include CO_2, methane (CH_4), nitrous oxide (N_2O), HFCs, PFCs, and SF_6. Carbon is the most abundant GHG. Other GHGs are less abundant but have higher GWP than CO_2. Thus, emissions of other GHGs are frequently expressed in the equivalent mass of CO_2, denoted as CO_2e. Forest fires, decomposition, industrial processes, landfills, and consumption of fossil fuels for power generation, transportation, heating, and cooking are the primary sources of GHG emissions. The primary GHGs attributed to global climate change are described below.

CARBON DIOXIDE

In the atmosphere, carbon generally exists in its oxidized form, as CO_2. Natural sources of CO_2 include the respiration (breathing) of humans, animals, and plants; volcanic outgassing; decomposition of organic matter; and evaporation from the oceans. Anthropogenic sources of CO_2 include the combustion of fossil fuels and wood, waste incineration, mineral production, and deforestation. Anthropogenic sources of CO_2 amount to over 30 billion tons per year, globally (SWCA 2024; see Appendix C). Natural sources release substantially larger amounts of CO_2. However, natural removal processes, such as photosynthesis by land- and ocean-dwelling plant species, cannot keep pace with this extra input of human-made CO_2. Consequently, the gas is building up in the atmosphere.

METHANE

CH_4 is produced when organic matter decomposes in environments lacking sufficient oxygen. Natural sources include wetlands, termites, and oceans. Decomposition occurring in landfills accounts for the majority of human-generated CH_4 emissions in California and in the United States as a whole. Agricultural processes, such as intestinal fermentation in livestock, manure management, and rice cultivation, are also significant sources of CH_4 in California.

NITROUS OXIDE

N_2O is produced naturally by a wide variety of biological sources, particularly microbial action in soils and water. Tropical soils and oceans account for the majority of natural source emissions. N_2O is a product of the reaction that occurs between nitrogen and oxygen during fuel combustion. Both mobile and stationary combustion produce N_2O, and the quantity emitted varies according to the type of fuel, technology, and pollution control device used, as well as maintenance and operating practices. Agricultural soil management and fossil fuel combustion are the primary sources of human-generated N_2O emissions in California.

HYDROFLUOROCARBONS, PERFLUOROCARBONS, SULFUR HEXAFLUORIDE

HFCs are used primarily as substitutes for ozone (O_3)-depleting substances regulated under the Montreal Protocol (1987), an international treaty that was approved on January 1, 1989, and was designated to protect the O_3 layer by phasing out the production of several groups of halogenated hydrocarbons believed to be responsible for O_3 depletion. PFCs and SF_6 are emitted from various industrial processes, including aluminum smelting, semiconductor manufacturing, electric power transmission and distribution, and magnesium casting. There is no primary aluminum or magnesium production in California; however, the rapid growth in the semiconductor industry leads to greater use of PFCs.

The magnitude of the impact on global warming differs among the GHGs. The effect each GHG has on climate change is measured as a combination of the volume of its emissions and its GWP. GWPs are one type of simplified index based upon radiative properties used to estimate the potential future impacts

of emissions of different gases upon the climate system, expressed as a function of how much warming would be caused by the same mass of CO_2. Thus, GHG emissions are typically measured in terms of pounds or tons of CO_2e. GWP are based on a number of factors, including the radiative efficiency (heat-absorbing ability) of each gas relative to that of CO_2, as well as the decay rate of each gas (the amount removed from the atmosphere over a given number of years) relative to that of CO_2. The larger GWP, the more that a given gas warms the Earth compared to CO_2 over that time period. HFCs, PFCs, and SF_6 have a greater GWP than CO_2. In other words, these other GHGs have a greater contribution to global warming than CO_2 on a per-mass basis. However, CO_2 has the greatest impact on global warming because of the relatively large quantities of CO_2 emitted into the atmosphere.

A summary of the atmospheric lifetime and GWP of selected gases is presented in Table 3.8-1. As indicated in this table, GWPs range from 1 to 23,500 based on IPCC assessment reports (ARs). IPCC has released three ARs—AR4, AR5, and AR6—with updated GWPs; however, CARB reports the statewide GHG inventory using the AR4 GWPs (IPCC 2007), which is consistent with international reporting standards. By applying the GWP ratios, one can tabulate the project-related equivalent mass of CO_2, denoted as CO_2e emissions, in MTs per year.

Table 3.8-1. Global Warming Potentials

GHG	GWP Values for 100-year Time Horizon		
	AR4	AR5	AR6
Carbon dioxide (CO_2)	1	1	1
Methane (CH_4)	25	28	Fossil origin: 29.8 Non-fossil origin: 27.2
Nitrous oxide (N_2O)	298	265	273
Select hydrofluorocarbons (HFCs)	124–14,800	4–12,400	–
Sulfur hexafluoride (SF_6)	22,800	23,500	–

Source: SWCA 2024 (Appendix C).

3.8.2.2 Greenhouse Gas Emissions Inventories

U.S. GREENHOUSE GAS EMISSIONS

According to EPA's *Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990–2021* (EPA 2022), total U.S. GHG emissions have decreased by 6.6% from 1990 to 2020, with a peak in 2005 where emissions were 15.8% above 1990 levels (EPA 2022). The largest source of GHG emissions from human activities in the United States is from burning of fossil fuels for electricity, heat, and transportation. The latest national GHG emissions are for calendar year 2021, in which total gross U.S. GHG emissions were reported at 6,340.2 million metric tons (MMT) CO_2e. Emissions decreased from 2019 to 2021 by 277.7 MMT CO_2e, and net emissions (including sinks) were 5,586.0 MMT CO_2e (EPA 2022).

STATEWIDE GHG EMISSIONS

According to California GHG emissions inventories from 2000 through 2020 (CARB 2022), California emitted 369.1 MMT CO_2e in 2020. The sources of GHG emissions in California include transportation, industrial uses, electric power production from both in-state and out-of-state sources, commercial and residential uses, agriculture, high-GWP substances, and recycling and waste. The California GHG emission source categories (as defined in CARB's 2008 scoping plan [CARB 2008]) and their relative contributions in 2020 are presented in Table 3.8-2. Total GHG emissions in 2020 were approximately

45.4 MMT CO_2e less than 2016 emissions. Based on data presented, the 2016 statewide GHG inventory fell below 1990 levels, consistent with AB 32. The declining trend in GHG emissions, coupled with programs that will continue to provide additional GHG reductions going forward, demonstrates that California will continue to reduce emissions below the 2020 target of 431 MMT CO_2e (CARB 2022) and toward the 2050 target (80% below 1990 levels by 2050 [consistent with Executive Order S-3-05]). The California GHG inventory for 2016 through 2020 is presented in Table 3.8-2.

Table 3.8-2. California Greenhouse Gas Inventory

Parameter	Unit	Year				
		2016	2017	2018	2019	2020
Transportation	MMT CO2e	165.20	166.60	165.30	162.40	135.80
	Percentage	39.9%	40.6%	40.2%	40.2%	36.8%
Electric power	MMT CO2e	70.40	64.20	65.00	60.20	59.50
	Percentage	17.0%	15.6%	15.8%	14.9%	16.1%
Industrial	MMT CO2e	81.60	81.70	81.90	80.40	73.30
	Percentage	19.7%	19.9%	19.9%	19.9%	19.9%
Commercial and residential	MMT CO2e	37.20	37.60	37.40	40.50	38.70
	Percentage	9.0%	9.2%	9.1%	10.0%	10.5%
Agriculture	MMT CO2e	32.20	31.70	32.20	31.40	31.60
	Percentage	7.8%	7.7%	7.8%	7.8%	8.6%
Recycling and waste	MMT CO2e	8.50	8.60	8.70	8.80	8.90
	Percentage	2.1%	2.1%	2.1%	2.2%	2.4%
High GWP	MMT CO2e	19.40	20.10	20.50	20.70	21.30
	Percentage	4.7%	4.9%	5.0%	5.1%	5.8%
Total net emissions	MMT CO2e	414.50	410.50	411.00	404.40	369.10

Source: CARB 2022.

3.8.3 Impact Analysis

This analysis quantifies the project's total annual GHG emissions from construction. This analysis evaluates the significance of the project's GHG emissions by assessing the project's consistency with CEQA guidance.

3.8.3.1 Thresholds of Significance

The determinations of significance of project impacts are based on applicable policies, regulations, goals, and guidelines defined by the CEQA Environmental Checklist Form in Appendix G of the State CEQA Guidelines. The project would be considered to have a significant effect on GHG emissions if the effects exceed the significance criteria described below:

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

3.8.3.2 Methodology

This analysis focuses on the potential change of GHG emissions due to implementation of the project. GHG emissions would result from both construction and operation of the project. Specific methodologies used to evaluate these emissions are discussed below and in Appendix C. This analysis includes an estimate of the GHG emissions that would be avoided because of the proposed solar facilities' ability to produce electricity from renewable resources. The analysis is based on project specifics and default values in the latest version of CalEEMod. Accordingly, this analysis has been conducted using the newest tools that are accepted by the regulatory agencies.

3.8.3.3 Applicant-Proposed Measures

The applicant has identified and committed to implement the following APMs as part of the proposed project to avoid or substantially lessen potentially significant impacts to GHG emissions, to the extent feasible. The APMs, where applicable, are discussed in Section 3.3.3.5 Applicant-Proposed Measures.

3.8.3.4 Impact Assessment

Impact GHG-1: Would the project generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment? (Less than Significant)

CONSTRUCTION

Construction of the project would result in GHG emissions, which are primarily associated with use of off-road construction equipment, on-road vendor trucks, and worker vehicles. Total GHG emissions from all phases of construction activities were amortized over the estimated 30-year life of the project and added to the annual operational emissions of GHGs. The project would offset GHG emissions through renewable energy generation and thereby result in environmental benefits by lessening the impacts of global climate change; therefore, the annual displaced GHG emissions were estimated to include all direct and indirect emissions associated with implementation of the project. Project decommissioning emissions were not calculated, as the equipment and fuel types that would exist 30 or more years in the future are unknown. Also, as described above, it is anticipated that the decommissioning emissions would be lower than the construction emissions.

Project construction emissions were calculated and compared to the Mojave Desert Air Quality Management District (MDAQMD) daily and annual significance thresholds. Construction emissions were also amortized over a 30-year project lifetime. CalEEMod was used to calculate the annual GHG emissions based on the construction scenario described. Construction of the project is anticipated to last approximately 18 months. On-site sources of GHG emissions include off-road equipment and off-site sources, including haul trucks, vendor trucks, and worker vehicles. Table 3.8-3 presents total daily and annual construction emissions for the project from on-site and off-site emission sources.

As shown in Table 3.8-3, the estimated total GHG emissions during construction would be approximately 8,304 MTs CO_2e over the construction period, which is below the MDAQMD threshold. Estimated project-generated construction emissions amortized over 30 years would be approximately 277 MTs CO_2e per year. As with project-generated construction criteria air pollutant emissions, GHG emissions generated during construction of the project would occur only when construction is active, lasting only for the duration of the construction period, and would not represent a long-term source of GHG emissions. Therefore, construction activities would not generate GHG emissions, either directly or indirectly, which would have an adverse effect on the environment.

Table 3.8-3. Estimated Daily and Annual Construction Greenhouse Gas Emissions

Construction Years	CO_2	CH_4	N_2O	CO_2e
Daily emissions (pounds per day)				
2025	56,205	1.34	4.15	57,571
2026	50,346	0.83	3.97	51,553
Total	**106,551**	**2.17**	**8.12**	**109,124**
MDAQMD daily GHG threshold*	N/A	N/A	N/A	497,137
Threshold exceeded?	***N/A***	***N/A***	***N/A***	***No***
Annual emissions (tons per year)				
2025	4,939	0.11	0.41	5,068
2026	3,141	0.03	0.31	3,236
Total	**8,080**	**0.14**	**0.72**	**8,304**
30-year amortized construction emissions				*277*
MDAQMD annual GHG threshold†	N/A	N/A	N/A	90,718
Threshold exceeded?	***N/A***	***N/A***	***N/A***	***No***

Source: SWCA 2024 (see Appendix C).

Note: N/A = not applicable.

* The MDAQMD daily GHG threshold is 548,000 short tons converted to metric tons.

† The MDAQMD annual GHG threshold is 100,000 short tons converted to metric tons.

OPERATION

Operation of the project would generate GHG emissions through motor vehicle trips to and from the project site and water use. CalEEMod was used to calculate the annual GHG emissions based on the operational assumptions described in Appendix C. The estimated operational project-generated GHG daily and annual emissions are shown in Table 3.8-4 and Table 3.8-5, respectively.

Table 3.8-4. Estimated Daily Operational Greenhouse Gas Emissions

Sector	GHG Emissions (pounds per day)			
	CO_2	CH_4	N_2O	CO_2e
Mobile	10,243	0.03	1.12	10,609
Area	18.5	<0.005	<0.005	18.6
Energy	144	0.01	<0.005	145
Water	58.0	0.23	0.01	65.5
Waste	3.34	0.33	0.00	11.7
Refrigeration	N/A	N/A	N/A	1.30
Stationary	0	0	0	0
Total	**10,468**	**0.61**	**1.13**	**10,851**
			Total operational daily GHGs	***10,851***
			MDAQMD daily significance threshold*	***497,137***

Source: SWCA 2024 (Appendix C).

Notes: N/A = not applicable. Emissions reflect operational year 2027.

* The MDAQMD daily GHG threshold is 548,000 short tons converted to metric tons.

Table 3.8-5. Estimated Annual Operational Greenhouse Gas Emissions

Sector	GHG Emissions (metric tons per year)			
	CO_2	CH_4	N_2O	CO_2e
Mobile	1,211	<0.005	0.13	1,253
Area	1.51	<0.005	<0.005	1.52
Energy	23.9	<0.005	<0.005	24.0
Water	9.61	0.04	<0.005	10.8
Waste	0.55	0.06	0.00	1.94
Refrigeration	N/A	N/A	N/A	0.22
Stationary	19.0	<0.005	<0.005	19.1
Total	**1,266**	**0.10**	**0.13**	**1,310**
			Amortized construction emissions	277
			Total annual operational + amortized construction GHGs	***1,587***
			Total operational (30 years) + amortized construction GHGs	***39,577***
			Displaced annual emissions (from project operation)	***305,730***
			MDAQMD annual significance threshold	***90,718***

Source: SWCA 2024 (Appendix C).

Notes: N/A = not applicable. Emissions reflect operational year 2027.

* The MDAQMD GHG threshold is 100,000 short tons converted to metric tons.

As shown in Table 3.8-5, estimated annual project-generated GHG emissions would be approximately 1,310 MT CO_2e per year as a result of project operations only. After summing the amortized project construction emissions, total GHGs generated by the project would be approximately 1,587 MT CO_2e per year. The project's annual indirect GHG emissions from the displacement of fossil fuel–fired electricity generation is significantly higher than the project's annualized direct and indirect emissions sources; consequently, the overall effect of the project would reduce GHG emissions. Therefore, the project would have a beneficial GHG emissions impact, and impacts would be **less than significant**.

Impact GHG-2: Would the project conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs? (Less than Significant)

Currently, there are no federal, state, or local climate change or GHG emissions regulations that address the GHG emissions during project construction. There are a number of federal, state, and local plans and policies, and GHG emissions reduction strategies that are potentially applicable to the project operation, either directly or indirectly. The project operation is consistent with the following:

- The project would be consistent with the AB 32 scoping plan strategies to increase the total amount of renewable energy sources consistent with the goal of the state's RPS.
- The project would be consistent with CARB's emission reduction strategy presented in the Scoping Plans. The 2008 Scoping Plan specifically addresses critical measures directed at emission sources that are included in the cap-and-trade program that are designed to achieve cost-effective emissions reductions while accelerating the necessary transition to the low carbon economy.
- The project would be consistent with the San Bernardino County Policy Plan and GHG Plan.
- The project implementation would help California meet its RPS requirements.

The project would help promote California's GHG policies by creating renewable energy resources and would not exceed the applicable GHG screening levels shown in Table 3.8-4 and Table 3.8-5. Therefore, the project would not conflict with an applicable plan, policy, or regulation adopted to reduce GHG emissions. Moreover, projects that are consistent with an applicable plan, policy, or regulation adopted to reduce GHG emissions are considered less than significant during construction, operation, and reclamation. Furthermore, GHG emissions from the project, as shown in Appendix C, would not generate substantial GHG emissions during construction or operation. Therefore, impacts would be **less than significant**.

3.8.4 Mitigation Measures

No mitigation is required.

3.8.5 Cumulative Impacts

Impact C-GHG-1: Would the impacts of the proposed project, in combination with other past, present, and reasonably foreseeable future projects, contribute to a cumulative impact related to GHG emissions? (Less than Significant)

The analysis of a project's GHG emissions is inherently a cumulative impacts analysis, because climate change is a global problem, and the emissions from any single project alone would be negligible. Accordingly, the analysis above considers the potential for the project to contribute to the cumulative impact of global climate change. Table 3.8-3 through Table 3.8-5 show the estimated annual project-generated GHG emissions as a result of project construction and operation. Given that the project would displace GHG emissions during operations, the project would generate construction and operation GHG emissions that are below the MDAQMD threshold and that would not conflict with applicable reduction plans and policies. Additionally, given that GHG emission impacts are cumulative in nature, the project's incremental contribution to cumulatively significant GHG emissions would be **less than significant**.

3.8.6 References Cited

Bureau of Land Management (BLM). 2016. *Desert Renewable Energy Conservation Plan, Land Use Plan Amendment to the California Desert Conservation Area Plan, Bishop Resource Management Plan, and Bakersfield Resource Management Plan*. Available at: https://eplanning.blm.gov/public_projects/lup/66459/133474/163144/DRECP_BLM_LUPA.pdf. Accessed January 2024.

California Air Resources Board (CARB). 2008. *Climate Change Scoping Plan: A Framework for Change*. December. Available at: https://ww2.arb.ca.gov/sites/default/files/classic/cc/scopingplan/document/adopted_scoping_plan.pdf. Accessed June 2024.

———. 2022. *California Greenhouse Gas Emissions for 2000 to 2020*. Available at: https://ww2.arb.ca.gov/sites/default/files/classic/cc/inventory/2000-2020_ghg_inventory_trends.pdf. Accessed June 2024.

Intergovernmental Panel on Climate Change (IPCC). 2007. AR4 -Climate Change 2007: Synthesis Report. Contribution of Working Groups I, II and III to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change [Core Writing Team, Pachauri, R.K and Reisinger, A. (eds.)]. IPCC, Geneva, Switzerland, 104 pp. Available at: https://www.ipcc.ch/report/ar4/syr/

San Bernardino County. 2021. *Greenhouse Gas Reduction Plan Update*. Available at: https://www.sbcounty.gov/uploads/LUS/GreenhouseGas/GHG_2021/GHG%20Reduction%20Plan%20Update-Greenhouse%20Gas%20Reduction%20Plan%20Update%20-%20Adopted%209-21-2021.pdf. Accessed March 2024.

———. 2024a. Countywide Plan. Available at: https://countywideplan.com/. Accessed June 2024.

———. 2024b. About the Policy Plan. Available at: https://countywideplan.com/policy-plan/. Accessed June 2024.

SWCA Environmental Consultants (SWCA). 2024. *Air Quality and Greenhouse Gas Technical Report, Soda Mountain Solar Project*. Pasadena, California: SWCA Environmental Consultants.

United States Environmental Protection Agency (EPA). 2022. Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2021 U.S. Environmental Protection Agency, EPA 430R-24004. Available at: https://www.epa.gov/ghgemissions/inventory-us-greenhouse-gas-emissions-and-sinks-1990-2021.