

Greenhouse Gas Emissions and Climate Change

3.7.1 Introduction

This section identifies and evaluates issues related to greenhouse gas (GHG) emissions and climate change that could result from cannabis cultivation and manufacturing licensed under the Commercial Cannabis Cultivation and Manufacturing Regulations and Licensing Program (Program), including analysis of both the Project scenario and the More Permissive Project scenario. Existing GHG emission conditions in Santa Cruz County (County) are described, as well as applicable regulations. Potential impacts to GHG emissions and climate change in the County that could result from the Program are evaluated, along with effectiveness of relevant Program restrictions and regulations. Where potentially significant impacts are identified, mitigation measures are recommended. This section is based on information from the County's Climate Action Strategy (CAS), Monterey Bay Unified Air Pollution Control District (MBUAPCD), County General Plan, the California Air Resources Board (CARB), and use of the California Emissions Estimator Model Version 2016.3.1 (CalEEMod).

Program Impact Analysis At a Glance

The Program could adversely affect GHG emissions and climate change due to the energy demand of the Program. Mitigation to increase energy efficiency and carbon-free energy sources would ensure direct and indirect impacts are less than significant. However, Program-induced additional or expanded unlicensed cannabis activities could have significant and unavoidable secondary impacts.

Analysis of GHG emissions involves assessing the primary sources of GHG emissions, such as energy demands for building lighting, heating, cooling, and power, vehicle trips, and construction of new buildings and infrastructure. There are several unique challenges to analyzing GHG emissions and climate change under the California Environmental Quality Act (CEQA), largely because of climate change's "global" nature. Typical CEQA analyses address local actions that have impacts that are geographically limited, whereas climate change presents the considerable challenge of analyzing the relationship between local activities and the resulting potential, if any, for global environmental impacts. Most environmental analyses examine the "project-specific" impacts that a particular project is likely to generate. Regarding global warming, however, it is generally accepted that while the magnitude of global warming effects is substantial, the contribution of an individual project is so small that direct project-specific significant impacts (albeit not cumulative significant impacts) are highly unlikely. However, if a project causes a cumulatively significant impact to GHG emissions and climate change, it could be considered to have a global environmental impact. Analysis of air quality, including criteria pollutants and odors, is addressed in Section 3.3, *Air Quality*.

3.7.2 Environmental Setting

This section discusses the existing GHG emissions and climate change conditions related to the County, including current GHG levels and emissions. The County is located in the North Central Coast Air Basin (NCCAB), and is within the jurisdiction of the MBUAPCD.

As described in Section 3.3, *Air Quality*, the Pacific High pressure cell is the basic controlling factor in the climate of the NCCAB. The main pollutant of concern for the NCCAB related to GHG emissions and climate change is ozone (O₃), which is made up of reactive organic gases (ROG)¹ and nitrogen oxides (NO_x).

3.7.2.1 Global Climate Change

Overview of Climate Change

The U.S. Environmental Protection Agency (U.S. EPA) defines climate change as “any significant change in the measures of climate lasting for an extended period of time.” In other words, climate change includes major changes in temperature, precipitation, or wind patterns, among others, that occur over several decades or longer. These changes are caused by a number of natural factors, including oceanic processes, variations in solar radiation received by Earth, plate tectonics and volcanic eruptions as well as anthropogenic (i.e., human-related) activities. The primary anthropogenic driver of climate change is the release of GHGs into the atmosphere.

The Earth’s natural warming process is known as the “greenhouse effect.” The Earth’s atmosphere consists of a variety of gasses that regulate the Earth’s temperature by trapping solar energy; these gases are cumulatively referred to as GHGs because they trap heat like glass of a greenhouse. Relying on decades of research, the overwhelming majority of the scientific community agree that human activities, such as deforestation and the burning of fossil fuels to produce energy, contribute to elevated concentration of GHGs in the atmosphere beginning with the Industrial Revolution. The human production and release of GHGs to the atmosphere have caused an increase in the average global temperature. While the increase in global temperature is known as “global warming,” the resulting change in weather patterns is known as “global climate change.”

Potential Effects of Global Climate Change

Global climate change could result in a number of potential adverse physical and environmental effects including sea level rise, flooding, increased weather variability and intensified storm events, reduced reliability of water supplies, reduced quality of water supplies, and increased stress on ecosystems that would reduce biodiversity. Additionally, climate change may impact human health due to heat waves and extreme weather events, reduced air quality, and increased climate-sensitive diseases, including food-borne, water-borne, and animal-borne diseases.

Adverse effects from climate change could occur all across the globe. Sensitive communities, such as low-lying nations that are more susceptible to impacts from sea level rise, may be more heavily impacted than communities in other regions. The effects of climate change could have significant global consequences.

Greenhouse Gases

GHGs consist of a variety of gases that have the potential to trap heat in the earth’s atmosphere; mainly water vapor (H₂O), carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), ozone (O₃), and chlorofluorocarbons (CFCs). Water vapor and ozone and their relationship to climate change are not clearly understood and defined, so these GHGs are not currently regulated. Therefore, methodologies

¹ ROG and volatile organic compounds (VOCs) are considered equivalent in this analysis.

and regulations approved by the Intergovernmental Panel on Climate Change (IPCC), U.S. EPA, and CARB focus on CO₂, CH₄, N₂O, and CFCs. CFCs have been banned and have no natural source, so these GHGs are not included in this analysis. The following provides a brief description of each of the remaining GHGs and their sources:

- CO₂** The natural production and absorption of CO₂ occurs through the burning of fossil fuels (e.g., oil, natural gas, and coal), solid waste, trees and wood products, and as a result of other chemical reactions, such as those required to manufacture cement. CO₂ is constantly being exchanged among the atmosphere, ocean, and land surface as it is both produced and absorbed by many microorganisms, plants, and animals. However, emissions and removal of CO₂ by these natural processes tend to balance. Since the Industrial Revolution began around 1750, human-related activities are responsible for the increase in CO₂ that has occurred in the atmosphere since the Industrial Revolution (IPCC 2013). CO₂ is the primary GHG emitted through human activities. Globally, the largest source of human-related CO₂ emissions is the combustion of fossil fuels such as coal, oil, and gas in power plants, automobiles, and industrial facilities. CO₂ is removed from the atmosphere (or sequestered) when it is absorbed by plants as part of the biological carbon cycle. When in balance, total CO₂ emissions and removals from the entire carbon cycle are roughly equal.
- CH₄** CH₄ is emitted from a variety of both human-related and natural sources. Anthropogenic sources of CH₄ include the production and transport of coal, natural gas, and oil, from livestock and other agricultural practices, and from the decay of organic waste in municipal solid waste landfills. It is estimated that 60 percent of global CH₄ emissions are related to human activities. Natural sources of CH₄ include wetlands, gas hydrates, permafrost, termites, oceans, freshwater bodies, non-wetland soils, and wildfires.
- N₂O** Concentrations of N₂O also began to rise at the beginning of the Industrial Revolution, reaching 314 parts per billion (ppb) by 1998. Microbial processes in soil and water, including those reactions that occur in fertilizer containing nitrogen, produce nitrous oxide. In addition to agricultural sources, some industrial processes (fossil fuel-fired power plants, nylon production, nitric acid production, and vehicle emissions) also contribute to the atmospheric load of N₂O.

Global warming potentials are one type of simplified index based upon radiative properties that can be used to estimate the potential future impacts of emissions of different gases upon the climate system in a relative sense. Because the global warming potential that each GHG has on climate change varies, the common metric of Carbon Dioxide Equivalents (CO₂e) is used to report a combined impact from all of the GHGs. This metric scales the global warming potential of each GHG to that of CO₂. GHG emissions are typically expressed in metric tons (MT CO₂e), millions of metric tons (MMT CO₂e), or gigatons (Gt CO₂e).

3.7.2.2 Existing GHG Emissions from Human Activity

The burning of fossil fuels, such as coal and oil, especially for the generation of electricity and powering of motor vehicles, has led to substantial increases in CO₂ emissions (and thus substantial increases in atmospheric concentrations). In 2011, global atmospheric CO₂ concentrations were 390.5 parts per million (ppm), which represented an increase of about 40 percent above the pre-industrial concentrations that were present prior to 1750 (IPCC 2013).

State of California GHG Emissions

In 2014, California generated approximately 441.5 MMT CO₂e, a decrease of 2.8 MMT CO₂e compared to 2013. This represents an overall decrease of 9.4 percent since peak levels in 2004. Gross per capita emissions were 11.4 MT CO₂e per person in 2014, constituting an 18 percent decrease from the 2001 peak of 13.9 MT CO₂e per person. Overall trends in the state's GHG emission inventory demonstrate that the carbon intensity of California's economy (the amount of carbon pollution per million dollars of gross domestic product [GDP]) is declining, representing a 28 percent decline since the 2001 peak, while the state's GDP has grown 28 percent during this period.

Transportation is the source of approximately 36 percent of the state's GHG emissions, followed by electricity generation (both in-state and out-of-state) at 20 percent, and industrial sources at 21 percent. Residential and commercial sources account for 9 percent, agriculture accounts for 8 percent, High Global Warming Potential Gases (high-GWP) comprise 4 percent, and recycling and waste accounts for 2 percent (CARB 2016).

County of Santa Cruz Emissions

GHG emissions inventories from government operations and from community activities in unincorporated areas of the County were originally prepared for 2005, which is a commonly accepted baseline year in California. An update of these inventories was prepared for 2009, the latest year in which a complete data set for the County is available. In 2005, total GHG emissions for government operations were 38,901 MT CO₂e, falling 12 percent to 34,267 MT CO₂e in 2009. Government operations include solid waste facilities, employee commute, buildings and facilities, vehicle fleet, wastewater treatment facilities, public lighting, and water delivery. Solid waste facilities contribute the largest amount of GHG emissions, followed by employee commute, buildings and facilities, and vehicle fleet. In 2005, total GHG emissions for community activities were 1,907,037 MT CO₂e, falling 59 percent to 791,279 MT CO₂e in 2009. This dramatic reduction reflects the closure of the Davenport Cement Plant (CEMEX), which accounted for about half the GHG emissions generated in the County in 2005. Community activities include the sectors of transportation, residential, commercial and industrial, and solid waste. The transportation sector contributed 60 percent of community emissions in 2009, with the residential sector contributing the second largest amount of GHG emissions (County of Santa Cruz 2013).

Forestry and agriculture also contribute to the County's net GHG emissions. California's forests remove approximately 5 MMT CO₂e from the atmosphere annually. This sequestration, or "carbon sink" is a valuable ecosystem service provided by forests; the 143,000 acres of redwood and redwood-Douglas fir forests and 19,900 acres of oak woodland in the County contribute to this service. Forest lands in the County currently store around 56 MMT CO₂e. The County ranks in the top third of California counties for agricultural production, and the agricultural sector (not including timberland) occupies 8.5 percent of the County's land area, or 24,324 acres. Rough estimates of emissions from agricultural fuel and fertilizer use were 20,456 MT CO₂e in 2005, falling 21 percent to 16,791 MT CO₂e in 2009. Agricultural emissions account for at most 2 percent of County CO₂e emissions (County of Santa Cruz 2013).

For this analysis, the baseline is the level of GHG emissions associated with cannabis cultivation and manufacturing that was occurring in the County in November, 2016 when the Notice of Preparation (NOP) for this EIR was published. The potential environmental impacts of the Program are those associated with any new activity, or expansion of existing activity, beyond that baseline level that is

attributable to the Program. It is that additional increment of cultivation and manufacturing that is the subject of this environmental analysis, pursuant to CEQA.

3.7.3 Regulatory Setting

Global climate change is addressed through the efforts of various federal, state, regional, and local government agencies as well as national and international scientific and governmental conventions and programs. These agencies work jointly and individually to understand and regulate the effects of GHG emissions and resulting climate change through legislation, regulations, planning, policymaking, education, and a variety of programs. The significant agencies, conventions, and programs focused on global climate change are discussed below and in Appendix A.

3.7.3.1 State

California Air Resources Board

CARB, a part of the California EPA (CalEPA), is responsible for the coordination and administration of both federal and state air pollution control programs within California. In this capacity, CARB conducts research, sets state ambient air quality standards, compiles emission inventories, develops suggested control measures, and provides oversight of local programs. CARB has primary responsibility for the development of California's State Implementation Plan (SIP), for which it works closely with the federal government and the local air districts. CARB has also recently adopted a statewide GHG emissions limit for 2020 (427 MMT CO₂e), an emissions inventory, and requirements to measure, track, and report GHG emissions by major industries.

Executive Order S-30-15

California Governor Jerry Brown announced on April 29, 2015 through Executive Order B-30-15 a new statewide policy goal to reduce GHG emissions 40 percent below their 1990 levels by 2030. This order acts as an intermediate goal to achieving 80 percent reductions by 2050 as outlined in Executive Order S-3-05 below.

Executive Order S-3-05

California Governor Arnold Schwarzenegger created on June 1, 2005, through Executive Order S-3-05, the following GHG emission reduction targets:

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

The Secretary of CalEPA has been charged with coordination of efforts to meet these targets and formed the Climate Action Team (CAT) to implement the Order. The CAT also provided strategies and input to CARB's Climate Change Scoping Plan discussed below.

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

The California Global Warming Solutions Act of 2006 (AB 32) recognizes that California is a major contributor to U.S. GHG emissions. AB 32 acknowledges that such emissions cause significant adverse impacts to human health and the environment, and therefore must be identified and mitigated where appropriate. AB 32 also establishes a state goal of reducing GHG emissions to 1990 levels by 2020 – a reduction of approximately 30 percent from projected state emission levels and 15 percent from current state levels, with even more substantial reductions required in the future.²

CARB has adopted the Climate Change Scoping Plan, which outlines the state’s strategy to achieve the 2020 GHG limit set by AB 32. This Scoping Plan proposes a comprehensive set of actions designed to reduce overall GHG emissions in California, improve the environment, reduce dependence on oil, diversify energy sources, save energy, create new jobs, and enhance public health.

Senate Bill 375

The passage of Senate Bill (SB) 375 on September 30, 2008 created a process whereby local governments and other stakeholders must work together within their region to achieve the GHG reductions specified in AB 32 through integrated development patterns, improved transportation planning, and other transportation measures and policies. Additionally, SB 375 required that those targets be incorporated within a Sustainable Communities Strategy (SCS), a newly required element within the Metropolitan Planning Organization’s (MPO’s) Regional Transportation Plan.

On September 23, 2010, CARB adopted the vehicular GHG emissions reduction targets that require a 7 percent to 8 percent reduction by 2020 and between 13 percent and 16 percent reduction by 2035 relative to emissions in 2005 for each MPO. Southern California Association of Governments (SCAG) is the MPO for the Southern California region and is required to work with local jurisdictions. CARB has determined SCAG’s reduction target for per capital vehicular emissions to be 8 percent by 2020 and 13 percent by 2035.

Senate Bill 97

SB 97, passed in 2007, amends CEQA to establish that GHG emissions and their effects are appropriate subjects for CEQA analysis, and directs the Office of Planning and Research (OPR) to develop draft CEQA Guidelines for evaluating and mitigating GHG emissions and global climate change effects. In March 2010, the California Office of Administrative Law codified into law CEQA amendments that provide regulatory guidance with respect to the analysis and mitigation of the potential effects of GHG emissions, as found in CEQA Guidelines Section 15183.5. The California Resources Agency adopted the GHG regulatory guidance into the CEQA Guidelines in January 2009.

However, neither a threshold of significance nor any specific mitigation measures are included or provided in these CEQA Guidelines Amendments. The CEQA Guidelines require a lead agency to make a good-faith effort based on the extent possible on scientific and factual data, to describe, calculate, or estimate the amount of GHG emissions resulting from a project. The Guidelines give discretion to the Lead Agency whether to: 1) use a model or methodology to quantify GHG emissions resulting from a project, and which model or methodology to use; and/or 2) rely on a quantitative analysis or performance-based standards. Further, the Guidelines identify three factors that should be considered in the evaluation of the significance of GHG emissions:

² CARB has determined the statewide levels of GHG emissions in 1990 to be 427 MMT CO₂e.

1. The extent to which a project may increase or reduce GHG emissions as compared to the existing environmental setting;
2. Whether the project emissions exceed a threshold of significance that the lead agency determines applies to the project; and
3. The extent to which the project complies with regulations or requirements adopted to implement a statewide, regional, or local plan for the reduction or mitigation of GHG emissions.

Executive Order S-13-08

Executive Order S-13-08, the Climate Adaptation and Sea Level Rise Planning Directive, provides clear direction for how the state should plan for future climate impacts. The first result is the 2009 California Adaptation Strategy report which summarizes the best known science on climate change impacts in the state to assess vulnerability and outlines possible solutions that can be implemented within and across state agencies to promote resiliency.

California Building Code (Title 24 of the California Code of Regulations)

Title 24 of the California Code of Regulations is known as the California Building Code (CBC). The CBC was updated in 2016 and includes the following:

California Code of Regulations Title 24, Part 6 comprises the California Energy Code, which was first established in 1978 in response to a legislative mandate to reduce California's energy consumption. The standards are updated periodically to increase the baseline energy efficiency requirements. Although it was not originally intended to reduce GHG emissions, electricity production by fossil fuels results in GHG emissions and energy efficient buildings require less electricity. Therefore, increased energy efficiency results in decreased GHG emissions.

California Code of Regulations Title 24, Part 11 comprises the California's Green Building Standard Code (CALGreen), which establishes mandatory green building code requirements as well as voluntary measures (Tier 1 and Tier 2) for new buildings in California. The mandatory provisions in CALGreen will reduce the use of VOC-emitting materials, strengthen water efficiency conservation, increase construction waste recycling, and increase energy efficiency. Tier 1 and Tier 2 are intended to further encourage building practices that minimize the building's impact on the environment and promote a more sustainable design.

3.7.3.2 Regional

Monterey Bay Unified Air Pollution Control District

MBUAPCD shares responsibility with CARB for ensuring that state and national ambient air quality standards (AAQS) are achieved and maintained within the NCCAB. State law assigns local air districts the primary responsibility for control of air pollution from stationary sources while reserving to CARB an oversight function. MBUAPCD is responsible for developing regulations governing emissions of air pollution, permitting and inspecting stationary sources of air pollution, monitoring of ambient air quality, and air quality planning activities, including implementation of transportation control measures (MBUAPCD 2008).

MBUAPCD monitors air quality and regulates stationary emission sources in the County. As a responsible agency under CEQA, MBUAPCD reviews and approves environmental documents prepared by other lead agencies or jurisdictions to reduce or avoid impacts on air quality and to ensure that the lead agency's environmental document is adequate to fulfill CEQA requirements. As a concerned agency, the MBUAPCD comments on environmental documents and suggests mitigation measures to reduce air quality impacts.

MBUAPCD Air Quality Management Plan (2012-2015)

The California Clean Air Act (CCAA) requires attainment of state AAQS by the earliest practicable date. For air districts in violation of the state ozone, carbon monoxide, sulfur dioxide, or nitrogen dioxide standards, attainment plans were required by July 1991. The MBUAPCD was required to develop an attainment plan to address ozone violations. The CCAA requires the MBUAPCD to periodically prepare and submit a report to CARB that assesses its progress toward attainment of the state AAQS. This report is the seventh update to the 1991 Air Quality Management Plan (AQMP), and updates elements included in the 2012 AQMP based on a review of the period from 2012-2015. It shows that the region continues to make progress toward meeting the state ozone standard.

This AQMP only addresses attainment of the state ozone standard. It is an assessment and update to the 2012 Triennial Plan. In 2012, the U.S. EPA designated the NCCAB as attainment with the national 8-hour ozone standard of 0.075 ppm. In 2015, the national standard was revised to 0.070 ppm. The NCCAB continues to be in attainment with the stricter national standard (MBUAPCD 2017).

Association of Monterey Bay Area Governments

The Association of Monterey Bay Area Governments (AMBAG) is the MPO/Regional Transportation Planning Agency (RTPA) for the Monterey Bay Area, which is responsible for coordinating with all the RTPAs, such as San Benito County Council of Governments, the Santa Cruz County Regional Transportation Commission, and the Transportation Agency of Monterey County. The MBUAPCD will work closely with AMBAG and its constituents to include appropriate air quality components in the Sustainable Communities Strategy Implementation Project (SCSIP), the 2040 Metropolitan Transportation Plan/Sustainable Communities Strategy (MTP/SCS), and other local and regional projects to ensure the most comprehensive regional best management practices possible.

Population forecasts adopted by AMBAG are used to forecast population-related emissions. Through the planning process, emission growth is offset by basin-wide controls on stationary, area, and transportation sources of air pollution.

3.7.3.3 Local

County of Santa Cruz General Plan and Local Coastal Program (LCP)

Circulation Element

Objective 3.1 – Vehicle Miles. To limit the increase in Vehicle Miles Traveled (VMT) to achieve as a minimum, compliance with the current Air Quality Management Plan.

Vehicle Miles Policy 3.1.1 – Land Use Patterns (Jobs/Housing Balance). Encourage concentrated commercial centers, mixed residential and commercial uses, and overall land use

patterns which reduce urban sprawl and encourage the reduction of vehicle miles traveled per person.

Objective 3.2 – Vehicle Occupancy. To increase the average number of persons per commute vehicle to 1.35 persons per vehicle while pursuing a goal of reducing automobile trips to a maximum of 60 percent of all trips through encouragement of alternative transportation by transit, bicycles, and walking.

Vehicle Occupancy Policy 3.2.1 – Trip Reduction. Require all existing and proposed development to comply with all provisions of the Trip Reduction ordinance.

Vehicle Occupancy Policy 3.2.2 – Mode Split. Encourage large employers to provide incentives to carpoolers, bicyclists, pedestrians, and transit riders such as priority parking, company car use, bicycle lockers, bus passes etc. in conjunction with the Trip Reduction ordinance.

Vehicle Occupancy Policy 3.2.3 – Employee Carpool Program. Encourage large new developments to establish pool programs for car, van or bus pools.

Vehicle Occupancy Policy 3.2.4 – Park and Ride. Encourage the use of parking areas in new and existing large developments for Park and Ride purposes.

Objective 3.6 – Transit Promotion. To promote opportunities for regular transit use to commute to school, shopping, employment, and recreational resources.

Transit Promotion Policy 3.6.1 – Transit-Friendly Design. Locate and design public facilities and new developments to facilitate transit access, both within the development and outside it.

Conservation and Open Space Element

Objective 5.17 – Energy Conservation (LCP). In accordance with Measure C, The Decade of the Environment Referendum, adopted by the people of Santa Cruz County in June 1990, to maximize conservation and efficient use of energy in the private and public sectors and encourage the development and use of locally available renewable energy resources in order to reduce dependence on imported and nonrenewable energy supplies.

Energy Conservation Policy 5.17.1 – Promote Alternative Energy Sources. Promote the use of energy sources which are renewable, recyclable, and less environmentally degrading than non-renewable fossil fuels.

Energy Conservation Policy 5.17.2 – Design Structures for Solar Gain (LCP). Require the incorporation of environmentally sound active and passive heating and cooling and/or natural daylighting design principles in the location and construction of all new buildings and in the renovation and remodeling of existing buildings.

Energy Conservation Policy 5.17.3 – Solar Access (LCP). Encourage maximum solar access orientation in siting development, and require protection of solar access in existing development.

Energy Conservation Policy 5.17.4 – Retrofit Programs. Encourage and stimulate energy conservation and the use of renewable energy through retrofit programs for residential, agricultural, commercial, public facilities, and industrial land uses.

Energy Conservation Policy 5.17.5 – Weatherization Improvements (LCP). Require energy efficiency and weatherization improvements in existing and new development including

insulation, water conservation techniques, and encourage the installation of solar heating systems. Require a retrofit to meet energy efficiency standards upon sale or transfer of ownership.

Objective 5.18 – Air Resources. To improve the air quality of Santa Cruz County by meeting or exceeding state and federal ambient air quality standards, protect County residents from the health hazards of air pollution, protect agriculture from air pollution induced crop losses and prevent degradation of the scenic character of the area.

Air Resources Policy 5.18.1 – New Development. Ensure new development projects are consistent at a minimum with the Monterey Bay Unified Air Pollution Control District Air Quality Management Plan and review such projects for potential impact on air quality.

Air Resources Policy 5.18.2 – Non-Attainment Pollutants. Prohibit any net increase in emissions of non-attainment pollutants or their precursors from new or modified stationary sources which emit 25 tons per year or more of such pollutants.

Air Resources Policy 5.18.3. – Air Quality Mitigations. Require land use projects generating high levels of air pollutants (i.e., manufacturing facilities, hazardous waste handling operations) to incorporate air quality mitigations in their design.

Air Resources Policy 5.18.5 – Sensitive Land Uses. Locate air pollution sensitive land uses, including hospitals, schools, and care facilities, away from major sources of air pollution such as manufacturing, extracting facilities.

Air Resources Policy 5.18.6 – Plan for Transit Use. Encourage commercial development and higher density residential development to be located in designated centers or other areas that can be easily served by transit.

Air Resources Policy 5.18.7 – Alternatives to the Automobile. Emphasize transit, bicycles, and pedestrian modes of transportation rather than automobiles.

Air Resources Policy 5.18.8 – Encouraging Landscaping. Maintain vegetated and forested areas, and encourage cultivation of street trees and yard trees for their contributions to improved air quality.

Air Resources Policy 5.18.9 – Greenhouse Gas Reduction. Implement state and federal legislation promoting the national goal of 35 percent reduction of carbon dioxide and other greenhouse gases by 2000.

Air Resources Policy 5.18.10 – Elimination of Ozone Depleting Chemicals. Support and implement local actions to achieve the most rapid possible international, national, state, and local elimination of the emission of ozone-depleting chemicals.

Santa Cruz County Code (SCCC)

Chapter 7.110 – Ozone-Depleting Compounds

The purpose of this chapter is to protect the environment, and the health, safety and welfare of the County's citizens by prohibiting the manufacture, sale and distribution of certain products made of or with CFCs involved in the manufacturing process, and by significantly reducing the release of halons into the earth's atmosphere.

County of Santa Cruz Climate Action Strategy

The County's Climate Action Strategy (CAS) outlines a course of action to reduce GHG emissions produced by governmental operations and community activities within the unincorporated County. Implementation of the CAS builds on the fact that the County has already met the 2020 emissions reduction target recommended by the state, and sets the County on a path toward reducing emissions to 59 percent below 2009 levels by 2050.

The CAS articulates a broad strategy for reaching emission reduction goals, identifies individual programs, policies, and initiatives to work toward these goals, and includes strategies to reduce emissions in the major focus areas of transportation, energy, and solid waste. The CAS also describes the particular ways in which the County may be vulnerable to impacts of climate change, and suggests adaptation strategies for further consideration and implementation.

An implementation plan is included in the CAS (Chapter 4). Annual reports on implementation of the CAS track and evaluate activities that are being relied upon to reduce GHGs and prepare for impacts of climate change. The annual reports to the Board of Supervisors provide information on the ongoing programs and projects each department is pursuing, and new initiatives each department intends to pursue to implement the CAS each fiscal year (County of Santa Cruz 2013).

Sustainable Santa Cruz County Plan

Accepted in 2014 as a planning and feasibility study, the Sustainable Santa Cruz County Plan articulates a community-based vision for a more sustainable way of life in the urban areas of the unincorporated County, specifically Live Oak, Soquel, and Aptos. The Plan integrates the County's land use and transportation policies in a way that protects existing single family neighborhoods and environmental resources, supports economic growth, and increases access to opportunity for all County residents.

The Plan is intended to help implement the County's CAS, and a primary goal of the Plan is to reduce production of GHG emissions, which in the County are generated principally by the use of cars. The Plan identifies that coordination of land use and transportation policies to decrease reliance on the single-occupancy vehicle, increase the use of transit, and support walking and biking is key to reducing emissions. Recommendations in the Sustainable Santa Cruz County Plan are in the process of being incorporated into the County's General Plan, and would implement three of the top five strategies in the CAS.

3.7.4 Methodology and Assumptions

This analysis of potential GHG impacts reviews the existing GHG emissions described in Section 3.7.2, *Environmental Setting*, and determines the Program's potential impacts on GHG emissions, including the Project and the More Permissive Project scenarios. For analysis of air quality, please see Section 3.3, *Air Quality*. Refer to Section 3.0, *Introduction and Approach to Analysis*, for a detailed discussion of projected cannabis activities in the County due to Program implementation.

To address direct impacts from operational emissions, CalEEMod was run in August 2017 to provide a conservative estimate of operational GHG emissions potentially produced from the increase in cannabis cultivation above existing activities. Emissions from cultivation are generated from electricity demand from indoor and greenhouse cultivators, water demand from all cultivation types,

and vehicle trips/miles traveled from cannabis industry employment. Since cannabis cultivation is a unique land use type that does not have predetermined factors for CalEEMod, user-defined land uses for indoor, greenhouse, and outdoor cultivation were run through the model, with the following assumptions for cultivation demands:

Table 3.7-1 CalEEMod Assumptions by Cultivation Type

Emission Source	Indoor	Greenhouse	Outdoor
Water Demand	0.1 gallons of water per day per sf with a growing season of 365 days	0.1 gallons of water per day per sf with a growing season of 270 days	0.03 gallons of water per day per sf with a growing season of 180 days
Electricity	200,000 kWh/year of electricity per 1,000 sf of canopy	110,000 kWh/year of electricity per 1,000 sf of canopy	N/A
Vehicle Daily Trips (employees only)	An average daily traffic trip rate of 1.64/1,000 sf of canopy with employees commuting 6 days a week		

Sources: ODOE 2017; County of Santa Cruz 2017; RAND 2010.

Detailed CalEEMod assumptions and results can be found in Appendix F.

Electricity demand estimates used the Oregon Department of Energy’s (ODOE) Indoor Cannabis Cultivator Energy Use Estimator. As a conservative estimate of energy demand of indoor cultivation, high energy usage was assumed, which includes high wattage high intensity discharge (HID) fixtures, unvented, high light density (less than 40 sf per light), significant supplemental cooling and/or heating to grow space, high volume ventilation and air circulation (high level of air changes) that operates the majority of the time, as well as multiple other energy using equipment, including dehumidification, pumping and water temperature control, and CO₂ production. The calculations assume a typical 12 to 18 hour per day light operation for vegetative and flowering phases and a continuous grow cycle. The model estimates the energy demand for indoor cultivators would be 200,000 kilowatt hours (kWh) per year per 1,000 sf of canopy. For estimated energy demand from greenhouse cultivators, it was assumed that approximately one half of these operations would be medium-high energy users and one half would be medium-low energy users reflecting the assumption these operations would include a mixture of cultivation types. Medium-high energy use includes high wattage HID fixtures with medium light density (40-60 sf per light), significant supplemental cooling and/or heating to grow space, high volume ventilation and air circulation that is frequently on, and minimal dehumidification, pumping, CO₂ production, or additional energy usages. Medium-low energy usage includes high wattage HID fixtures at low light fixture density (greater than 60 sf per light), very minimal or no supplemental cooling or heating to grow space, minimal mechanical ventilation and air circulation (ventilation only used minimally and not continuously to control temperature), and no dehumidification, pumping, CO₂ production, or additional energy usages. The model estimates medium-high energy demand would be 140,000 kWh/year/1,000 sf, and medium low energy demand would be 80,000 kWh/year/1,000 sf. The average of these two numbers is 110,000 kWh/year/1,000 sf (ODOE 2017). See Section 3.14, *Utilities and Energy Conservation*, for more discussion on electricity rates.

Average cannabis water demand factors were determined based on literature review and observed conditions by the County Licensing Office staff (County of Santa Cruz 2017b). These factors assume that all operations would utilize new water (i.e., no water would be recycled and reused onsite) to project a reasonable worst case water demand from new cannabis cultivation. Total water demands were estimated based on estimated new cultivation/canopy area for outdoor, indoor, and greenhouse

operations, average water demand factors calculated for cannabis cultivation, and standard number of growing days based on type of operation. See Section 3.14, *Utilities and Energy Conservation*, for more discussion on water use rates.

Mobile emissions were estimated based on an average daily trip rate for cannabis cultivation derived from research conducted by the RAND Drug Policy Center and the ERA Economics study (RAND 2010) (ERA Economics, LLC for CA Department of Food and Agriculture 2017). See Section 3.13, *Transportation and Circulation* for analysis of average daily trip rates and transportation impacts.

This analysis programmatically addresses emissions from manufacturing operations and construction of cannabis-related structures, including any residential units, where the use of CalEEMod was unreliable or infeasible due to the speculative nature of these activities. Utility and energy demands resulting from new home occupation-scale cannabis product manufacturing are not assessed, as demands are largely represented as part of the existing Countywide conditions and would represent a negligible increase over existing demands. The construction of up to 228 new homes associated with cultivation sites would have to comply with established building codes including strict state-wide energy efficiency standards. It is assumed that manufacturing facilities would occur in existing buildings and any new commercial buildings, or improvements to existing buildings and greenhouses, would also have to comply with energy efficiency and renewable energy standards in the building code. Therefore, energy demand associated with manufacturing operations and construction of cannabis-related structures is considered to be minimal.

Impacts related to GHG emissions are assessed through the evaluation of existing GHG levels in the County, review of existing policy framework for GHG emissions, review of the Program's requirements, and comparison of the Program's potential emissions with recommended thresholds of significance. The Program is reviewed for the potential to result in a significant increase in GHG emissions, as well as potential inconsistencies of the Program with the County CAS. The analysis takes into consideration the existing General Plan policies that align with statewide goals for GHG reductions, such as trip reduction policies. The analysis also accounts for provisions of the Program, including the proposed requirement that: "All licenses issued under [the Program] must be consistent with the County's policies, objectives, laws, regulations, and programs related to land use, including those related to the County's General Plan and Local Coastal Program."

3.7.5 Significance Criteria

CEQA Guidelines Thresholds

Significance criteria for evaluating impacts on GHG emissions associated with the Program are based on Appendix G of the 2017 CEQA Guidelines. Implementation of the Program would have a significant impact related to GHG emissions if the Program would result in any of the following:

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

Bay Area AQMD GHG Thresholds

The County's CAS is consistent with AB 32 goals and meets the standards for a Qualified GHG Reduction Plan. If the Program is consistent with the CAS, it can be presumed that the Program would not have significant GHG emission impacts. This approach is consistent with CEQA Guidelines Section 15183.5(b), which provides a programmatic GHG reduction plan to streamline project level analysis.

In addition, as the MBUAPCD has not adopted its own thresholds of significance for GHGs, Bay Area AQMD (BAAQMD) GHG thresholds were used in this analysis at the recommendation of MBUAPCD staff (BAAQMD 2017).

For plan-level projects, BAAQMD operational-related thresholds for GHGs are:

- Compliance with a Qualified GHG Reduction Strategy; or
- 4.6 MT CO₂e/Service Population/year³.

If annual emissions of operational-related GHG emissions exceed these thresholds, the proposed Program would result in a cumulatively considerable contribution of GHG emissions and a cumulatively significant impact to global climate change.

3.7.6 Environmental Impact Analysis and Mitigation

This section discusses the potential GHG emissions and climate change impacts associated with the Program. A detailed discussion of each impact follows. Where there are potentially significant or significant and unavoidable impacts, mitigation measures are proposed and the residual impact is determined. Impacts are summarized in Table 3.7-7.

3.7.6.1 Program Impacts

Impact GHG-1. Commercial cannabis cultivation and manufacturing under the Program could potentially generate significant levels of GHG emissions and be inconsistent with the County of Santa Cruz Climate Action Strategy. Impacts would be less than significant with mitigation.

Impact GHG-1.1 – Direct and Indirect Cultivation/Manufacturing. Direct impacts from the Program are related to GHG emissions caused by the direct cultivation and/or manufacturing of cannabis in the County. In order to determine if GHG emissions generated by the direct impacts of the Program are significant, the Program GHG emissions estimated using CalEEMod (see Appendix F) were compared to the CAS for consistency.

The CAS provides the GHG emissions inventories and emissions reduction targets for the County, and identifies GHG reduction strategies the County will use to achieve the 2035 and 2050 emissions reduction target (the County has already met the 2020 target). Based on this structure of the CAS, a project which is consistent with the CAS would simultaneously be consistent with AB 32 and EO S-3-05. In order to determine the impact significance of the proposed Program on GHG emissions, the Program was evaluated for its consistency with the CAS. The Program would apply to agricultural,

³ Service population includes residents and employees.

commercial, and industrial land uses, which are accounted for in the CAS' GHG emissions inventory. In addition, the Program would apply to residential land uses, but only with allowances for cannabis home occupation uses, which would not differ from baseline conditions for residential uses, and, therefore, home occupations are not addressed further in this analysis.

The CAS' Community Inventory includes GHG emissions from the use of electricity and natural gas in residences and businesses, as well as from vehicles traveling on local roads and state highways in unincorporated portions of the County. The Agriculture Inventory includes GHG emissions from fuel for equipment and excess nitrogen from fertilizer. The electricity use for water pumps used for irrigating crops is included in the community inventory, so agricultural emissions are addressed using rough estimates of emissions from agricultural fuel and fertilizer use. These emissions inventories for the unincorporated areas of the County in 2009 are detailed in Table 3.7-2 below.

Table 3.7-2 County of Santa Cruz Climate Action Strategy GHG Emissions Inventories

Emissions Inventory	Inventory Sector/Type	MT CO_{2e}/year Emitted in 2009
Community	Transportation	481,787
	Residential	189,658
	Commercial & Industrial	101,588
	Solid Waste	18,245
	Total	791,278
Agriculture	Pasture	703
	Strawberries	4,576
	Miscellaneous Vegetables	4,388
	Raspberries	600
	Apples	1,388
	Lettuce, Leaf	1,813
	Lettuce, Head	1,777
	Brussels Sprouts	1,145
	Wine Grapes	223
	Miscellaneous Tree and Vine Fruit	177
	Total	16,791
TOTAL	808,069	

Source: County of Santa Cruz 2013.

In the unincorporated County, the state's GHG emissions reduction goal for 2020 has already been met, as a result of the closure of the Davenport Cement Plant (CEMEX). However, in order to meet the 2035 and 2050 targets, total Community GHG emissions in the unincorporated areas of the County must be reduced by 300,000 MT CO_{2e} (38 percent below 2009 levels) and 470,000 MT CO_{2e} (59 percent below 2009 levels), respectively (see Table 3.7-2 for Community Inventory emissions). Under the "business as usual" scenario (BAU), which assumes no new actions are taken to reduce emissions, Community GHG emissions would reach 827,076 MT CO_{2e} in 2020, and 878,894 MT CO_{2e} in 2035. Therefore, under BAU projections, Community GHG emissions must be reduced by 380,000 MT CO_{2e} (43 percent below BAU forecast) to meet the 2035 target, and 590,000 MT CO_{2e} (64 percent below BAU forecast) to meet the 2050 target. Taking into account the emissions reductions potential of all

strategies, the CAS calculated a maximum potential reduction of 395,010 MT CO₂e by 2035, with 380,000 MT CO₂e needed by 2035 to make the County’s emissions reduction target.

While cannabis cultivation is by its nature an agricultural land use, it is also unique in that it is often conducted in indoor and greenhouse spaces that require more energy and water than other crop types. Additionally, cannabis cultivation commonly requires daily tending with peaks of activity during harvests, which necessitates onsite employees similar to other crop types. Using typical rates for energy, water, and average daily employee trips, operation-generated GHG emissions from potential future cannabis cultivation were estimated using CalEEMod. Table 3.7-3 summarizes the annual GHG emissions from the potential future indoor, greenhouse, and outdoor cannabis cultivation combined, and represents a conservative estimate of annual GHG emissions under the Program. This represents the additional increment of new activity, or expansion of existing activity, beyond that baseline level that is attributable to the Program. It is that additional increment of cultivation and manufacturing that is measured for this analysis. The annual GHG emissions from full buildout of the Program would be 273,266 MT CO₂e/year. The majority of these emissions stem from the high electricity use in indoor and greenhouse cultivation facilities, which use a conservatively estimated 200,000 kWh/year for 1,000 sf of an indoor facility, and 110,000 kWh/year for 1,000 sf of a greenhouse facility. As discussed in Section 3.7.4, *Methodology and Assumptions*, this assumes the usage of high wattage HID fixtures and other common energy using equipment utilized in indoor and greenhouse grow facilities.

Table 3.7-3 Operational GHG Emissions from Full Buildout of Proposed Indoor, Greenhouse, and Outdoor Cannabis Cultivation (Unmitigated)

	CO ₂ e
Annual Operational Emissions (MT/yr)	
2019	273,266
TOTAL	273,266

Note: Emissions of CO₂e are estimated using CalEEMod for area, energy, and mobile source emissions (see Appendix F for detailed CalEEMod assumptions and reports).

The Program would potentially contribute 273,266 MT CO₂e/year in GHG emissions to the unincorporated areas of the County, which is an amount of GHG emissions not contemplated by the CAS. In order for the County to achieve its 2035 target of reducing GHG emissions by 380,000 MT CO₂e, additional measures would be needed by the CAS that are not currently programmed.

The Program includes the issuance of up to 80 manufacturing licenses per year including 8 home occupation licenses, 60 small to medium scale manufacturers, and 20 new larger, higher-yield manufacturers. Most of the activity associated with these licenses would occur in existing buildings and would not represent an increase in GHG emissions. Half of the non-home occupation businesses would be occurring at cultivation sites, with the other half at other eligible sites. New building construction for manufacturing cannabis products would be a minor contribution to the total Program GHG emissions.

While the County has a range of goals and policies addressing GHG emission reduction, including energy efficiency, water efficiency, and trip reduction, the Program does not require measures for future cannabis licensees. Therefore, the Program would not be consistent with the CAS, and direct GHG emissions impacts would be *potentially significant* for both the Project and the More Permissive Project.

In addition to being potentially inconsistent with the CAS, if the Program GHG emissions are compared to BAAQMD’s recommended GHG threshold of 4.6 MT CO₂e per service population (SP) per year, GHG emissions from future potential cannabis cultivation under the Program are found to be considerably over the 4.6 MT CO₂e/SP/year threshold, as calculated in Table 3.7-4 below.

Table 3.7-4 Unmitigated Program Emissions Compared to Operational GHG Emissions Thresholds

GHG Emissions Factors	Program
Residential Population ¹	0
Jobs ²	7,116
Service Population (Population + Jobs)	7,116
Annual GHG Threshold in MT CO ₂ e/yr (SP * 4.6 MT CO ₂ e/yr)	32,733.6
Annual GHG Emissions (MT CO ₂ e/yr) ³	273,266
Annual GHG Emissions/Service Population (MT CO₂e/SP/yr)	8.3
Threshold (MT CO ₂ e/SP/year)	4.6
Above Threshold?	YES

¹ Residential population is 0 since CalEEMod only calculated GHG emissions from the direct impacts of cannabis cultivation under the Program, and did not assess the indirect impacts of additional houses that would be developed under the Project, which are the only reason for an increase in residential population in the unincorporated areas of the County. Therefore, the service population only includes employees created by the Program.

² See Section 3.12, *Population, Employment, and Housing*, for details on number of employees generated by the Program.

³ Emissions of CO₂e are estimated using CalEEMod for area, energy, and mobile source emissions (see Appendix F for detailed CalEEMod assumptions and reports).

Source: BAAQMD 2017.

The Program would result in GHG emissions totaling 8.3 MT CO₂e/SP/year, which would exceed the 4.6 MT CO₂e/SP/year threshold. The Program’s prohibition of generator use would have a nominal decrease in existing GHG emissions, but would not reduce GHG emissions below the threshold. Therefore, GHG emissions would still be considered a *potentially significant* impact for both the Project and the More Permissive Project.

In addition, indirect impacts of the Program would result from GHG emissions due to the construction of up to 228 new onsite residential units required to cultivate, along with any associated roads, utility infrastructure, and site improvements to support onsite cannabis cultivation operations. Residences would be required for eligible parcels within A, RA, TP, and SU zone districts. Additionally, fire code requirements would require onsite water tanks, roadways, and vegetation clearing as described in Section 3.0, *Introduction and Approach to Analysis*.



Indoor cannabis cultivation can involve high-intensity lights, heating, cooling, dehumidification, and water demands that require high levels of energy with commensurate levels of GHG generation. However, measures to ensure energy efficiency would help to reduce GHG generation.

GHG emissions produced by the operation of these new houses and associated infrastructure under the Project would be characteristic of a typical rural single family home's emissions, and would constitute an incremental increase in GHG emissions in the County by itself; however, as emissions from indirect impacts are considered in addition to direct impact emissions, they would add onto the already potentially significant levels of GHG emissions (see Table 3.7-3 above). Therefore, indirect impacts related to GHG emissions would be *potentially significant* for both the Project and the More Permissive Project.

Mitigation Measures

Implement MM LU-1.1.6. Cannabis Best Management Practices. Implementation of best management practices related to energy efficiency for indoor and greenhouse cultivation would apply to Impact GHG-1.

MM GHG-1.1. Alternative Energy Sources. To reduce direct and indirect impacts related to GHG emissions from cannabis activities, proposed SCCC Chapter 7.128 and 7.132 shall be revised prior to adoption of Program regulations, to include the following provisions:

Electrical power for indoor cultivation operations including but not limited to illumination, heating, cooling, and ventilation shall be provided by alternative energy sources according to the following priority: 1) on-grid power with 100-percent renewable or carbon-free source (a planned product of Monterey Bay Community Power in 2018), or 2) a combination of grid power and on site renewable generation to achieve annual zero net electrical energy usage, or 3) purchase of carbon offsets of any portion of power not from renewable or carbon-free sources. As a first priority, carbon offsets shall be purchased through a qualified local entity such as The Offset Project.

For new buildings, onsite solar photovoltaic systems shall be required, and retrofitted buildings shall be encouraged to install onsite solar photovoltaic systems to offset energy demand.

All indoor cannabis cultivation and manufacturing facilities shall exceed the minimum standards of Title 24, Part 11 (CalGreen) by adopting all or some elements of CalGreen Tier 1 and 2 voluntary elective measures to increase energy efficiency in new buildings, remodels and additions. These measures shall prioritize upgrading lighting (e.g., using light-emitting diode [LED] lights) in indoor and greenhouse grow rooms, heating and cooling systems, appliances, equipment and control systems to be more energy efficient.

Plan Requirements and Timing. SCCC Chapter 7.128 and 7.132 shall be revised prior to adoption of the Program. The Licensee shall submit building plans to the County Cannabis Licensing Office and the County Planning Department Building Division for review and approval to ensure compliance and exceedance of the minimum energy efficiency standards of CalGreen and renewable or carbon-free power supply requirements prior to cultivation and/or manufacturing activities and issuance of a license. The Licensee shall demonstrate compliance to the County Cannabis Licensing Office and the Building Division through a site visit or documentation.

Monitoring. The Board of Supervisors shall revise SCCC Chapter 7.128 and 7.132 prior to adoption. The Licensing Official shall determine that a site adheres to MM GHG-1.1 before issuance of a license.

Post-Mitigation Level of Impacts

With implementation of MM GHG-1.1, emissions due to direct and indirect impacts of cannabis cultivation and/or manufacturing would be reduced over time through the increase of energy efficiency and the use of renewable and carbon-free energy in newly improved and licensed cultivation and/or manufacturing facilities. The requirements of MM GHG-1.1 would effectively eliminate nearly all of the GHG emissions associated with projected cultivation operations under the Program. As shown in Table 3.7-5, with the application of 100-percent renewable energy to CalEEMod’s mitigation scenario, GHG emissions would be reduced from 273,266 MT CO₂e/year to 26,782 MT CO₂e/year. Compared to BAAQMD thresholds, the mitigated annual GHG emissions/Service Population would be reduced from 8.3 MT CO₂e/SP/year to 0.8 MT CO₂e/SP/year, which is well below the threshold of 4.6 MT CO₂e/SP/year (see Table 3.7-6). This would reduce GHG emissions below the threshold established by the BAAQMD and would ensure consistency with the CAS and the County’s and state’s goals for GHG reduction. Therefore, direct impacts would be *less than significant with mitigation*.

Table 3.7-5 Operational GHG Emissions from Full Buildout of Proposed Indoor, Greenhouse, and Outdoor Cannabis Cultivation (Mitigated)

CO ₂ e	
Annual Mitigated Operational Emissions (MT/yr)	
2019	26,782
TOTAL	26,782

Note: Emissions of CO₂e are estimated using CalEEMod for area, energy, and mobile source emissions (see Appendix F for detailed CalEEMod assumptions and reports).

Table 3.7-6 Mitigated Program Emissions Compared to Operational GHG Emissions Thresholds

GHG Emissions Factors	Mitigated Program Emissions
Residential Population ¹	0
Jobs ²	7,116
Service Population (Population + Jobs)	7,116
Annual GHG Threshold in MT CO ₂ e/yr (SP * 4.6 MT CO ₂ e/yr)	32,733.6
Annual GHG Emissions (MT CO ₂ e/yr) ³	26,782
Annual Mitigated GHG Emissions/Service Population (MT CO₂e/SP/yr)	0.8
Threshold (MT CO ₂ e/SP/year)	4.6
Above Threshold?	NO

¹ Residential population is 0 since CalEEMod only calculated GHG emissions from the direct impacts of cannabis cultivation under the Program, and did not assess the indirect impacts of additional houses that would be developed under the Project, which are the only reason for an increase in residential population in the unincorporated areas of the County. Therefore, the service population only includes employees created by the Program.

² See Section 3.12, *Population, Employment, and Housing*, for details on number of employees generated by the Program.

³ Emissions of CO₂e are estimated using CalEEMod for area, energy, and mobile source emissions (see Appendix F for detailed CalEEMod assumptions and reports).

Source: BAAQMD 2017.

3.7.6.2 Summary of Program Impacts and Proposed Mitigation Measures

Table 3.7-7 below provides a summary of the GHG emissions and climate change impacts resulting from the Program and proposed mitigation measures.

Table 3.7-7 Summary of GHG Emissions and Climate Change Impacts

GHG Impacts	Level of Significance	Mitigation Measures	Post-Mitigation Level of Significance	
			Project	More Permissive Project
Impacts from Commercial Cannabis Cultivation and Cannabis Product Manufacturing				
Impact GHG-1.1. Commercial cannabis cultivation and manufacturing under the Program could potentially generate significant levels of GHG emissions and be inconsistent with the County of Santa Cruz Climate Action Strategy. Impacts would be less than significant with mitigation.				
Direct and Indirect	Potentially Significant	MM LU-1.1.6. Cannabis Best Management Practices MM GHG-1.1. Alternative Energy Sources	Less than significant with Mitigation	Less than significant with Mitigation

3.7.6.3 Secondary Impacts

Impact GHG-2. New or increased unregulated commercial cannabis cultivation and cannabis product manufacturing under the Program could potentially generate significant levels of GHG emissions and be inconsistent with the County of Santa Cruz Climate Action Strategy. Impacts would be significant and unavoidable.

Impact GHG-2 – Secondary Cultivation/Manufacturing. Currently, there is a substantial but unquantified amount of illegal cannabis cultivation and manufacturing occurring in the County (see Section 3.0, *Introduction and Approach to Analysis*). There is potential for expansion of the existing, baseline illegal activity as a result of the Program in that any licensing program may create the perception that, regardless of any restrictions and limitations of the program, there is opportunity for new cultivation and manufacturing businesses to become established and ultimately licensed within the County. This perception could lead to new cultivation and/or manufacturing activity that would not be licensed or permitted.

In addition, the Program would rescind SCCC 7.126, which offers limited immunity from prosecution to current cultivators as long as the cultivation is occurring in compliance with County regulations. When limited immunity is rescinded it is foreseeable that some portion of the cultivators who are receiving limited immunity, and who may not be eligible for a license, would continue to cultivate and may expand cultivation beyond the 99 plant limit given in SCCC 7.126. The new cultivation would not necessarily conform to County regulations after limited immunity is rescinded and would represent an expansion of illegal activity in the County.

Secondary impacts of the Program are related to GHG emissions produced by the construction and operation of future unregulated cannabis cultivation and/or manufacturing sites, and their associated

infrastructure. Many potential cannabis cultivators would be excluded from licensing by the proposed Program standards, and would likely continue to contribute to increased GHG emissions outside of the Program, such as the use of portable diesel and gasoline generators on a stationary basis for extended periods of time as the site's main energy source. Therefore, secondary impacts related to GHG emissions would be *potentially significant* for both the Project and the More Permissive Project.

Mitigation Measures

Implement MM AT-1.3a. Sustained Enforcement Program. To reduce secondary impacts related to considerable GHG emissions associated with unregulated cannabis cultivation/manufacturing and related development activities, MM AG-1.3a, addressing County implementation of the Unlicensed Cannabis Cultivation and Manufacturing Enforcement and Compliance Program, shall apply to Impact GHG-2.

Implement MM AT-1.3b. Annual Survey and Monitoring Report. To reduce secondary impacts related to considerable GHG emissions associated with unregulated cannabis cultivation/manufacturing and related development activities, MM AG-1.3b, addressing County criteria for an Annual Survey and Monitoring Report of licensed activities as well as illegal activities, including recommendations regarding enforcement staffing and resources, shall apply to Impact GHG-2.

Post-Mitigation Level of Impacts

With implementation of MMs AG-1.3a and AG-1.3b, unregulated cannabis cultivation and/or manufacturing would be reduced over time either through enforcement/closure of the grow sites or the permitting and licensing of new grow sites. However, due to the high likelihood for continued unregulated cannabis cultivation and manufacturing activities regardless of the enforcement and annual survey programs, and the inability to completely and effectively ensure compliance with the Program's regulations since the locations and nature of these unregulated activities throughout the County are unknown, secondary residual GHG emissions impacts associated with Impact GHG-2 would be *significant and unavoidable*.

3.7.6.4 Cumulative Impacts

The analysis of GHG emissions is cumulative in nature because climate change impacts are related to cumulative global GHG emissions. Additionally, climate change impacts related to GHG emissions do not necessarily occur in the same area as the project is located. The thresholds recommended by the BAAQMD were chosen based on the substantial evidence that such thresholds represent quantitative levels of GHG emissions, compliance with which means that the environmental impact of the GHG emissions will normally not be cumulatively considerable under CEQA. Therefore, the preceding analysis is related to cumulative impacts of GHG emissions, and in this analysis of the Program's contribution to cumulative GHG impacts is determined to be *less than significant with mitigation* for the Program's direct and indirect impacts from cultivation.

