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8.0
Greenhouse Gas Emissions

This section of the EIR summarizes the greenhouse gas (GHG) environmental and regulatory setting, identifies climate change impacts from project implementation, and specifies mitigation measures for significant impacts. This analysis is based in part on the results of GHG modeling using the California Emissions Estimator Model (CalEEMod). The CalEEMod results are included in Appendix C. Additional information regarding related regulations and legislation was utilized, as was information from the California Energy Commission and the California Air Resources Board (CARB).

During the Draft EIR's (Notice of Preparation) NOP review period, no comments regarding the greenhouse gas emissions of the proposed project were received. The County's NOP and comment letters on the NOP are included in Appendix B.

8.1 Environmental Setting

Climate Change Science

The international scientific community has concluded with a high degree of confidence that human activities are causing an accelerated warming of the Earth's atmosphere. The resulting changes in climate has serious global implications and, consequently, human activities that contribute to climate change may have a potentially significant effect on the environment. In recent years, concern about climate change and its potential impacts has risen dramatically and that concern has translated into a range of international treaties and national and regional agreements aimed at diminishing the rate that global warming is occurring and potentially halting its environmental effects. The federal government is addressing concerns about climate change through a range of initiatives and regulatory actions. Many states and local agencies, private sector interests, and other public and private interests have also taken initiative to combat climate change. At the state level, California has taken a leadership role in tackling climate change, as evidenced by the programs outlined in the Regulatory Setting section below.

Causes and Effects of Climate Change

The greenhouse effect naturally regulates the Earth's temperature; however, human activity, industrialization and population growth has increased the intensity of the greenhouse effect by releasing increasing amounts of greenhouse gasses GHGs into the atmosphere. GHGs can

remain in the atmosphere for decades. The GHG emissions that are already in the atmosphere will continue to cause climate change for years to come, just as the warming temperatures already being experienced are at least partially the result of emissions produced in the past. Climatic changes are happening now and are projected to increase in frequency and severity before the benefits of GHG emission reductions will be realized. Increased concentrations of GHGs in the atmosphere result in increased air, surface, and ocean temperatures. Many of the effects and impacts of climate change stem from resulting changes in temperature and meteorological responses to those changes.

Rising Temperatures

The Intergovernmental Panel on Climate Change, which includes more than 1,300 scientists from the United States and abroad, estimated that over the last century, global temperatures have increased by about 1.3 degrees Fahrenheit (°F). The Intergovernmental Panel on Climate Change forecasts indicate that global temperatures can be expected to continue to rise between 2.5 and 10°F over the next century. According to the California Climate Adaptation Strategy (California Natural Resources Agency 2009), average state temperatures are currently predicted to increase 1.8 to 5.4°F by 2050 and 3.6 to 9°F by 2100. Some regional models show average temperatures in California increasing as much as 10.8°F. Achieving the low emission scenarios has become unlikely, while the probability of reaching the medium and high scenarios is believed to be more likely.

Locally, Monterey County has already experienced a rise in average temperatures. Winter weather conditions are now of a shorter duration, with warmer temperatures than were typical 30 years ago. As a whole, temperatures in California have already risen 1°F on average over this time period. According to Cal-Adapt, a climate change projection modeling tool developed by California Energy Commission, temperatures in the Monterey County area have historically averaged about 58.1°F. Temperatures in the County are projected to further rise between 2.9 and 4.9°F by 2090, based on average low and high emissions scenarios (California Energy Commission 2016).

Precipitation Levels

Precipitation levels are difficult to predict compared to other indicators of climate change. Annual rain and snowfall patterns vary widely from year to year, especially in California. Generally, higher temperatures increase evaporation and decrease snowfall, resulting in an overall drier climate. On average, projections show little change in total average annual precipitation in California. Furthermore, among several models, precipitation projections do not show any consistent predictable trend for the next century other than the Mediterranean seasonal precipitation pattern is expected to continue, with most precipitation falling during winter from storms originating in the North Pacific. One of the four climate models prepared

by the California Climate Adaptation Strategy (California Natural Resources Agency 2009) projects slightly wetter winters, and another model projects slightly drier winters with a 10 to 20 percent decrease in total annual precipitation. However, even modest changes, particularly decreases, in precipitation would have a significant impact because California ecosystems are conditioned to historical precipitation levels and water resources are nearly fully utilized. In Monterey County, changes in precipitation can have profound effects on the agricultural industry, a major economic contributor to the area.

Water Supply

In conjunction with population growth, climate change is expected to increase pressure on and competition for water resources, further exacerbating already stretched water supplies. Decreasing snowpack and spring stream flows and increasing demand for water from a growing population and hotter climate could lead to increasing water shortages. Water supplies are also at risk from rising sea levels and salt water intrusion. Competition for water between cities, farmers, and the environment is expected to increase.

Anticipated changes to source water conditions include more intense and less predictable storm events, longer drought periods, reduced snowpack at lower elevations, and earlier spring run-off. Changes in source water quantity and quality may therefore impact the treatment necessary to produce potable drinking water. These changes could result in additional required treatment processes and increased costs for treated drinking water in order to avoid potential for human health risk via drinking water consumption.

These affects to water supply are expected to affect communities throughout the globe, including Monterey County communities.

More Frequent and Extreme Storm Events

Extreme weather, in addition to drought, is expected to become more common throughout California. More extreme storm events are expected to increase water runoff to streams and rivers during the winter months, heightening flood risks. Warmer ocean surface temperatures have contributed to warmer and wetter conditions in the Sierra Nevada, increasing flood risk. Strong winter storms may produce “atmospheric rivers” that transport large amounts of water vapor from the Pacific Ocean to the California coast. These atmospheric rivers often persist for days, dropping heavy rain or snow. As the strength of these storms increase and transport increased amounts of precipitation, the risk of flooding is accordingly increased.

Diminished Air Quality

Climate change is expected to exacerbate air quality problems by increasing the frequency, duration, and intensity of conditions conducive to air pollution formation. Higher

temperatures and increased ultraviolet radiation from climate change are expected to facilitate the chemical formation of more secondary air pollutants from ground-level sources. Conversely, decreased precipitation is expected to reduce the amount of particulates cleansed from the air.

While there are variations throughout the state, Californians experience the worst quality air in the nation. More than 90 percent of California's population lives in areas that have ozone or particulate matter levels above the State air quality standard. Incidents of wildfires in nearby foothills and mountain regions have already grown in frequency and severity and are expected to increase, further contributing to air quality problems.

The project site is located in the North Central Coast Air Basin ("air basin"). As discussed in Section 6.0 of this EIR, the air basin is in non-attainment with State mandated thresholds for ozone and suspended particulate matter.

Environmental Protection

Climate change effects will have broad impacts on local and regional ecosystems, habitats, and wildlife as average temperatures increase, precipitation patterns less predictable, and more extreme weather events occur. Species have adapted to natural and more gradual, environmental changes for millions of years, however, species that cannot adapt to foreseeable changes in climate are at risk of extinction. Conversely, other more adaptable species could increase their habitat range. Overall, the risk of extinction could increase for many species. As temperatures increase, California vegetation is also expected to change. Generally, desert and grassland vegetation is projected to increase while forest vegetation is projected to decline. The natural cycle of plant flowering and pollination, as well as the temperature conditions necessary for a thriving locally-adapted agriculture, may also be affected. Perennial crops, such as grapes, may take years to recover. Increased temperatures also provide a foothold for invasive species of weeds, insects, and animals.

Social Vulnerability to Climate Change

The impacts of climate change will not affect people equally. Some people are more likely to be impacted than others. People exposed to the most severe climate-related hazards are often those least able to cope with the associated impacts, due to their limited adaptive capacity. Globally, climate change is expected to have a greater impact on larger populations living in poorer developing countries that rely on natural resources and agricultural systems that will likely be affected by changing climates.

Certain groups in developed countries like the United States will also experience more impacts from climate change than others. People in rural areas are more likely to be affected by climate change impacts, such as droughts or severe storms, compared to their urban

counterparts. However, certain groups living in cities will also be at higher risk than others. People who are at greatest risk for the impacts described earlier in this section include children, the elderly, those with existing health problems (e.g.., obese youth), the socially and/or economically disadvantaged (e.g., households that speak or understand little English, low income households, the unemployed, populations without a high school diploma), those who are less mobile (e.g. living in group quarters, households without a vehicle), and those who work outdoors. Place of residence is another vulnerability indicator, as renters, households without air conditioning, households lacking access to grocery stores, households in treeless areas, and households on impervious land cover are also more vulnerable to climate change impacts.

Health Effects/Illness

As temperatures rise from global warming, the frequency and severity of heat waves will grow and increase the potential for bad air quality days, which can lead to increases in illness and even death due to dehydration, heart attack, stroke and respiratory disease. Additionally, dry conditions can lead to a greater number of wildfires producing smoke that puts people with asthma and respiratory conditions at risk of illness or death.

Higher temperatures and the increased frequency of heat waves are expected to significantly increase heat-related illnesses, such as heat exhaustion and heat stroke, while also exacerbating conditions associated with cardiovascular and respiratory diseases, diabetes, nervous system disorders, emphysema, and epilepsy. An increase of 10°F in average daily temperature is associated with a 2.3 percent increase in mortality. During heat waves mortality rates can increase to about nine percent. As temperatures in Monterey County increase, vulnerable populations such as children, the elderly, people with existing illnesses, and people who work outdoors will face the greatest risk of heat-related illness.

Flood Risk

Increased flood frequency and elevated flood risk are expected in California as a result of sea level rise, more intense storm events resulting in increased storm water runoff, and shifts in the seasonal timing of rainfall and snowpack runoff.

Greenhouse Gas Types

GHGs are emitted by both natural processes and human activities. The human-produced GHGs most responsible for global warming and their relative contribution to it are carbon dioxide, methane, nitrous oxide and chlorofluorocarbons. The contribution of these GHGs to the U.S. inventory of GHGs in 2013 is summarized in Table 8-1, GHG Types and Their Contribution to Global Warming.

Table 8-1 GHG Types and Their Contribution to Global Warming

Greenhouse Gas	Percent	Typical Sources
Carbon dioxide (CO_2)	81	Combustion of fuels, solid waste, wood
Methane (CH_4)	11	Fuel production/combustion; livestock, decay of organic materials
Nitrous Oxide (N_2O)	6	Combustion of fuels, solid waste; agricultural and industrial processes
Chlorofluorocarbons (CFCs)	3	Industrial processes

SOURCE: United States Environmental Protection Agency 2017.
NOTES: Percentages reflect weighting for global warming potential.

Greenhouse Gas Global Warming Potentials

Each type of GHG has a different capacity to trap heat in the atmosphere and each type remains in the atmosphere for a particular length of time. The ability of a GHG to trap heat is measured by an index called the global warming potential expressed as carbon dioxide equivalent. Carbon dioxide is considered the baseline GHG in this index and has a global warming potential of one. Methane has a global warming potential of 21 times that of carbon dioxide and nitrous oxide has a global warming potential of 310 times that of CO_2. The families of chlorofluorocarbons, hydrofluorocarbons and perfluorocarbons have a substantially greater global warming potential than other GHGs, generally ranging from approximately 1,300 to over 10,000 times that of CO_2. See Table 8-2, GHG Global Warming Potentials, below, for reference on the global warming potential of various GHGs.

Table 8-2 GHG Global Warming Potentials

Greenhouse Gas	Atmospheric Lifetime (Years)	Global Warming Potential
Carbon Dioxide CO2	50-200	1
Methane CH4	12 (+/- 3)	21
Nitrous Oxide N2O	120	310
HFC-23	264	11,700
HFC-134a	14.6	1,300
HFC-152a	1.5	140
PFC Tetrafluoromethane CF4	50,000	6,500
PFC Hexafluoroethane C2F6	10,000	9,200
Sulfur Hexaflouride SF6	3,200	23,900

SOURCE: United Nations Framework Convention on Climate Change2017

While CO_2 represents the vast majority of the total volume of GHGs released into the atmosphere, the release of even small quantities of other types of GHGs can be significant for their contribution to climate change.

The GHG volume produced by a particular source is often expressed in terms of carbon dioxide equivalent (CO_2e). Carbon dioxide equivalent describes how much global warming a given type of GHG will cause, with the global warming potential of CO_2 as the base reference. It is useful because it allows comparisons of the impact from many different GHGs, such as methane, perfluorocarbons or nitrous oxide. If a project is a source of several types of GHGs, their individual global warming potential can be standardized and expressed in terms of CO_2e.

Inventories of Greenhouse Gases

California GHG Emissions Inventory

California is a substantial contributor of global greenhouse gases. Based on (California Air Resources Board) CARB's most recent state GHG inventory, a net of about 459.28 million tons of CO_2e were generated in 2013 (California Air Resources Board 2015). In 2013, about 37 percent of all GHG gases emitted in the state came from the transportation sector. Industrial uses and electric power generation (in-state generation and out-of-state generation for imported electricity) were the second and third largest categories at about 23 percent and 20 percent, respectively. The commercial and residential use sectors combined to generate about 12 percent of the 2013 emissions, while the agricultural sector contributed about eight percent.

Monterey County GHG Emissions Inventory

Greenhouse gas emissions generated in Monterey County represent a small fraction of the statewide emissions inventory. In 2006, the county conducted a GHG emissions inventory as part of its General Plan update (Monterey County 2010). In 2006, 1,394,404 metric tons of CO_2e was estimated to have been generated in the county (Monterey County 2008, Table 4.3-11). As with most cities and counties in the state, the primary source of GHG emissions is the transportation sector (cars and trucks). These on-road sources of emissions accounted for about 46 percent of all emissions generated in the county compared with the approximately 15 percent of total emissions created by electricity generation, 14 percent by industrial processes, 14 percent from combustion of natural gas, eight percent from agricultural equipment fuel use, and two percent from landfill emissions.

Policies are included in the county's 2010 general plan that serve as mitigation for potential GHG impacts related to build-out of the plan. The County of Monterey updated the municipal inventory component of the 2006 inventory in 2013 pursuant to that mitigation and Policy OS-10.15 of the general plan to address GHG emissions from county operations (*Monterey County's Municipal Climate Action Plan: Greenhouse Gas Reduction Plan for County Operations* June 2013). The *Monterey County's Municipal Climate Action Plan: Greenhouse Gas*

Reduction Plan for County Operations serves as one component of the county's larger, community-wide climate action plan.

Existing Sources of GHG Emissions within the Project Site

The project site is vacant and there is no current use of the site aside from a portion used for occasional grazing. There are no notable existing baseline GHG emission sources. The site does not contain important sources of sequestered carbon such as trees that would be lost as a result of its conversion to urban use.

8.2 REGULATORY SETTING

State and regional policies and regulations pertaining to climate change are summarized below. These provide context for how climate change is being addressed and identify policy and regulatory actions whose implementation would lessen the contribution of the proposed project to climate change. The federal government is also taking significant regulatory steps toward addressing climate change. Generally, California legislation and regulations are as comprehensive, or are more comprehensive, than federal actions; therefore, this regulatory section focuses on state activity.

State

California Assembly Bill No. 1493 ("Pavley I Rule")

AB 1493, enacted on July 22, 2002, required CARB to develop and adopt regulations that reduce GHGs emitted by passenger vehicles and light-duty trucks by improving fuel efficiency requirements. Pavley I requirements apply to these vehicles in the model years 2009 to 2016. CARB has estimated the effectiveness of Pavley I standards on vehicle emission factors and estimates that these standards will reduce GHG emissions in the transportation sector by 20 percent in 2020 and 25 percent in 2035 above and beyond a scenario without these standards.

Executive Order S-03-05

The Governor signed this executive order on June 1, 2005. It recognizes the anticipated effects of climate change, such as increased temperatures, reduced Sierra Nevada snowpack, worsened air quality, and sea level rise among others. The executive order includes GHG emission reduction targets for the purpose of combating these effects. GHG emissions are to be reduced to 2000 levels by 2010, 1990 levels by 2020, and 80 percent below 1990 levels by 2050.

California Assembly Bill 32 (Global Warming Solutions Act)

In September 2006, Governor Arnold Schwarzenegger signed Assembly Bill (AB) 32, the California Global Warming Solutions Act of 2006. AB 32 establishes regulatory, reporting,

and market mechanisms to achieve quantifiable reductions in GHG emissions and a cap on statewide GHG emissions. AB 32 requires that statewide GHG emissions be reduced to 1990 levels by 2020 consistent with Executive Order S-03-05. This reduction will be accomplished through an enforceable statewide cap on GHG emissions that was phased in starting in 2012. To effectively implement the cap, AB 32 directs CARB to develop and implement regulations to reduce statewide GHG emissions from stationary sources.

Executive Order S-01-07 Low Carbon Fuel Standard

Issued on January 18, 2007, this order mandates that a statewide goal be established to reduce the carbon intensity of California's transportation fuels by at least 10 percent by 2020, and that a Low Carbon Fuel Standard for transportation fuels be established. The Low Carbon Fuel Standard has been developed and implemented by CARB. CARB has incorporated the GHG emissions reductions accruing to the Low Carbon Fuel Standard into the 2014 Scoping Plan as described above.

Executive Order S-13-08

This Executive Order enhances the state's management of climate impacts from sea level rise, increased temperatures, shifting precipitation and extreme weather events. In December 2009, the California Natural Resources Agency released the 2009 California Climate Adaptation Strategy Discussion Draft. The document provides interim guidance to state and local agencies on planning for the impacts and risks of climate change.

California Senate Bill 375 (Sustainable Communities Strategy)

This 2008 bill sets forth a mechanism for coordinating land use and transportation on a regional level for the purpose of reducing GHGs. The focus is to reduce miles traveled by passenger vehicles and light trucks. CARB is required to set GHG reduction targets for each metropolitan region for the years 2020 and 2035. Each of California's metropolitan planning organizations then prepares a sustainable communities strategy that demonstrates how the region will meet its GHG reduction target through integrated land use, housing, and transportation planning. Once adopted by the metropolitan planning organizations, the Sustainable Communities Strategy is to be incorporated into that region's federally enforceable regional transportation plan. If a metropolitan planning organization is unable to meet the targets through the Sustainable Communities Strategy, then an alternative planning strategy must be developed which demonstrates how targets could be achieved, even if meeting the targets is deemed to be infeasible.

AMBAG is the metropolitan planning organization responsible for preparing the sustainable communities strategy. The Sustainable Communities Strategy is embedded in AMBAG's *2035 Metropolitan Transportation Plan/Sustainable Communities Strategy and Regional Transportation Plans for Monterey, San Benito, and Santa Cruz Counties* (Association of Monterey Bay Area Governments 2014) (MTP/SCS). The environmental effects of implementing the MPT/SCS were evaluated in the *Final Environmental Impact Report for the 2035 Metropolitan Transportation Plan/Sustainable Communities Strategy and Regional*

Transportation Plans for Monterey, San Benito, and Santa Cruz Counties (Association of Monterey Bay Area Governments 2014). The Sustainable Communities Strategy sets forth a forecasted development pattern for the region, which, when integrated with the transportation network and other transportation measures and policies, is intended to reduce GHG emissions from passenger vehicles and light duty trucks to achieve the regional GHG reduction targets set by CARB.

CARB set targets for the AMBAG region as "not to exceed 2005 emissions levels" by 2020 and a five percent reduction from 2005 levels by 2035. AMBAG adopted these standards in September 2010. These targets apply to the AMBAG region as a whole for all on-road light duty trucks and passenger vehicles emissions, and not to individual cities or sub-regions. Therefore, AMBAG, through the 2035 MTP/SCS, must maintain or reduce these levels to meet the 2020 target and reduce these levels to meet the 2035 targets.

SB 375 specifically states that local governments retain their autonomy to develop and adopt local General Plan policies and land uses. The 2035 MTP/SCS provides a regional policy foundation that local governments may build upon, if they so choose. The 2035 MTP/SCS includes and accommodates the quantitative growth projections for the region. In addition, the 2035 MTP/SCS EIR lays the groundwork for the streamlined CEQA review of qualifying development projects. Such projects are defined as Transit Priority Projects that are located within an Opportunity Area that meet specific criteria including:

- Consistent with the Sustainable Communities Strategy;
- Contains at least 50 percent residential use;
- Proposed to be developed at a minimum 20 dwelling units per acre; and
- Located within one half mile of a major transit stop or high quality transit corridor that is included in the MTP/SCS.

AB 32 Scoping Plan

In December 2008, CARB adopted the Climate Change Scoping Plan, which contains the main strategies California will implement to achieve reduction of approximately 118 million metric tons (MMT) CO_2e, or approximately 22 percent from the state's projected 2020 emission level of 545 MMT of CO_2e under a business-as-usual scenario This is a reduction of 47 MMT CO_2e, or almost 10 percent, from 2008 emissions. CARB's original 2020 projection was 596 MMT CO_2e, but this revised 2020 projection takes into account the economic downturn that occurred in 2008. The Scoping Plan also includes CARB recommended GHG reductions for each emissions sector of the state GHG inventory. CARB estimates the largest reductions in GHG emissions would be by implementing the following measures and standards:

- improved emissions standards for light-duty vehicles (26.1 MMT CO_2e);

- the Low-Carbon Fuel Standard (LCFS) (15.0 MMT CO_2e);
- energy efficiency measures in buildings and appliances (11.9 MMT CO_2e); and
- renewable portfolio and electricity standards for electricity production (23.4 MMT CO_2e).

In 2011, CARB adopted a cap-and-trade regulation. The cap-and-trade program covers major sources of GHG emissions in the state such as refineries, power plants, industrial facilities, and transportation fuels. The cap-and-trade program includes an enforceable emissions cap that will decline over time. The state distributes allowances, which are tradable permits, equal to the emissions allowed under the cap. Sources under the cap are required to surrender allowances and offsets equal to their emissions at the end of each compliance period. Enforceable compliance obligations started in 2013. The program applies to facilities that comprise 85 percent of the states GHG emissions.

With regard to land use planning, the scoping plan expects that reductions of approximately 3.0 MMT CO_2e will be achieved through implementation of Senate Bill (SB) 375.

California Senate Bill 97 (CEQA Guidelines Amendments)

As directed by SB 97, the California Natural Resources Agency adopted amendments to the CEQA Guidelines for GHG emissions on December 30, 2009. On February 16, 2010, the Office of Administrative Law approved the Amendments, and filed them with the Secretary of State for inclusion in the California Code of Regulations. The amendments became effective on March 18, 2010. CEQA allows lead agencies to analyze and mitigate the significant effects of GHG emissions at a programmatic level, such as in a general plan, or as part of a separate plan (e.g., a climate action plan) to reduce GHG emissions.

California Green Building Standards Code

The Green Building Standards Code (CALGreen), which requires all new buildings in the state to be more energy efficient and environmentally responsible, took effect on January 1, 2011. These comprehensive regulations will achieve major reductions in greenhouse gas emissions, energy consumption and water use.

Renewable Energy Legislation/Orders

The California Renewable Portfolio Standard Program (RPS) requires electric utilities and other entities under the jurisdiction of the California Public Utilities Commission to meet a portion of their retail sales with renewable power. SB 1078, adopted in 2002, required 20 percent of retail sales to be met with renewable power by 2017. The requirement was accelerated to 20 percent by 2010 by SB 107 in 2006. The program was subsequently expanded in September 2010 by requiring all utilities to meet a 33 percent target by 2020. Governor Brown then signed A8B 350, the Clean Energy and Pollution Reduction Act of 2015, which increases the RPS requirement to 50 percent of all retail sales by 2030.

Final Supplement to the AB 32 Scoping Plan Functional Equivalent Document

In 2011, CARB released this document to provide a more in-depth analysis of the five alternatives to the scoping plan that were originally included in that document. The supplemental analysis was conducted in response to litigation brought against CARB which challenged the adequacy of the alternatives analysis contained in the scoping plan. The Supplement included an update of the business-as-usual GHG emissions projections that were contained in the scoping plan. The update is based on more recent economic conditions (including the economic downturn) and on reduction measures from the scoping plan that are already in place). The updated 2020 business-as-usual emissions forecast levels of 507 MMT CO_2e is lower than that contained in the 2008 scoping plan. With this forecast, only a 16 percent reduction below business-as-usual levels would be needed to return to 1990 levels (e.g. 427 MMT CO_2e) by 2020.

Advanced Clean Cars

In January 2012, CARB adopted an Advanced Clean Cars program aimed at reducing both smog-causing pollutants and GHG emissions for vehicles model years 2017-2025. Advanced Clean Cars program refers to a suite of regulations that combine what were previously independent regulations that targeted GHG emissions reductions and smog emissions from passenger cars and light-duty trucks. The regulations focus on substantially increasing the number of plug-in hybrid cars and zero-emission vehicles in the vehicle fleet and on making fuels such as electricity and hydrogen readily available for these vehicle technologies.

The Advanced Clean Cars program would provide major reductions in GHG emissions. By 2025, the program is projected to result in a 34 percent reduction in GHG emissions from new passenger cars and trucks above and beyond a scenario without the Advanced Clean Cars program.

2014 Scoping Plan Update

In response to comments on the 2008 scoping plan, and AB 32's requirement to update the scoping plan every five years, CARB revised and reapproved the scoping plan, and prepared the first update to the 2008 scoping plan in 2014 (2014 scoping plan). The 2014 scoping plan contains the main strategies California will implement to achieve a reduction of 80 MMT of CO_2e emissions, or approximately 16 percent, from the state's projected 2020 emission level of 507 MMT of CO_2e under the business-as-usual scenario defined in the 2014 scoping plan. The 2014 scoping plan also includes a breakdown of the amount of GHG reductions CARB recommends for each emissions sector of the state's GHG inventory. Several strategies to reduce GHG emissions are included: the Low Carbon Fuels Standard, the Pavley Rule, the Advanced Clean Cars program, the Renewable Portfolio Standard, and the Sustainable Communities Strategy.

Executive Order B-30-15

Issued on April 29, 2015, this order advances the intent of Executive Order S-03-05 by establishing a California GHG reduction target of 40 percent below 1990 levels by 2030. The new emission reduction is intended to be an interim target that maintains a reduction trajectory towards meeting the state's goal of reducing emissions to 80 percent below 1990 levels by 2050 as identified in Executive Order S-03-05. This is in line with the scientifically established levels needed in the U.S. to limit global warming below two degrees Celsius - the warming threshold at which many scientists say there will likely be major climate disruptions, such as "super droughts" and rising sea levels.

California Senate Bill 350 (Clean Energy and Pollution Reduction Act of 2015)

SB 350 was adopted in October 2015. It has several aspects. Among its requirements are that the State Energy Resources Conservation and Development Commission must establish annual targets for statewide energy efficiency savings and demand reduction that will achieve a cumulative doubling of statewide energy efficiency savings in electricity and natural gas final-end uses of retail customers by January 1, 2030. Local publicly owned electric utilities are now required to establish annual targets for energy efficiency savings and demand reduction consistent with this goal. The bill is also intended achieve GHG reductions through increased investments in transportation electrification and notes that reducing GHGs to 40 percent below 1990 levels by 2030 and to 80 percent below 1990 levels by 2050, consistent with Executive Orders S-03-05 and S-30-15, will require widespread transportation electrification.

California Senate Bill 32 (California Global Warming Solutions Act of 2006: Emissions Limit)

This bill was adopted in September 2016. It sets a new statewide GHG emissions reduction target of at least 40 percent below 1990 levels by the end of 2030. It represents an interim GHG reduction target designed to ensure that the state continues to adopt rules and regulations that keep the state on track to meet the statewide GHG reduction goal of 80 percent below 1990 levels by 2050 set forth in Executive Order S-03-05. The emissions reduction goal set in SB 32 sets expectations for GHG emissions reductions in the state in the post-AB 32 2020 environment given that emissions reduction goals set forth in AB 32 will have been reached by 2020.

Title 24 Building Energy Efficiency Standards

California's Energy Efficiency Standards for Residential and Nonresidential Buildings (California Code of Regulations, Title 24, Part 6) were first established in 1978 to reduce California's energy consumption. The scoping plan requires improved building energy

efficiency with each new update to Title 24, which is updated every three years. The standards were most recently updated in 2016 and went into effect in January 2017.Energy efficient buildings require less electricity, natural gas, and other fuels, the use of which creates GHG emissions. The 2016 update requires new buildings to become more energy-efficient than ever before by increasing the energy efficiency of new construction by 20 percent for residential uses and 25 percent for non-residential uses, compared to the previous 2008 Title 24 standards.

Title 24 California Green Building Standards Code

The Green Building Standards Code (CALGreen) (California Code of Regulations, Title 24, Part 11), which requires all new buildings in the state to be more energy efficient and environmentally responsible, took effect on January 1, 2011. The standards were most recently updated in 2016 and went into effect in January 2017. These comprehensive regulations will achieve major reductions in greenhouse gas emissions, energy consumption and water use.

California Assembly Bill 197 (2017 Scoping Plan)

With the passage of AB 32, the California Legislature also passed companion legislation AB 197, which provides additional direction for developing the Scoping Plan. CARB has held three public meetings to receive input on the Scoping Plan and expects to adopt the updated Scoping Plan in 2018. The updated Scoping Plan represents a second update to the original Scoping Plan called for by AB 32 to reflect the 2030 target of reducing statewide GHG emissions by 40 percent below 1990 levels set by Executive Order B-30-15 and codified by SB 32. The GHG reduction strategies included in the plan that CARB will implement to meet the target:

- SB 350 - achieve 50 percent Renewables Portfolio Standard (RPS) by 2030 and doubling of energy efficiency savings by 2030;
- Low Carbon Fuel Standard-increased stringency (reducing carbon intensity 18 percent by 2030, up from 10 percent in 2020);
- Mobile Source Strategy (Cleaner Technology and Fuels Scenario) maintaining existing GHG standards for light-and heavy-duty vehicles, put 4.2 million zero-emission vehicles on the roads, and increase zero-emission buses, delivery and other trucks by 2030;
- Sustainable Freight Action Plan - improve freight system efficiency, maximize use of near-zero emission vehicles and equipment powered by renewable energy, and deploy over 100,000 zero-emission trucks and equipment by 2030;
- Short-Lived Climate Pollutant Reduction Strategy - reduce emissions of methane and hydrofluorocarbons 40 percent below 2013 levels by 2030 and reduce emissions of black carbon 50 percent below 2013 levels by 2030;

- SB 375 Sustainable Communities Strategies - increased stringency of 2035 targets;
- Post-2020 Cap-and-Trade Program - declining caps, continued linkage with Québec and Ontario, Canada;
- 20 percent reduction in greenhouse gas emissions from the refinery sector; and
- By 2018, develop an Integrated Natural and Working Lands Action Plan to secure California's land base as a net carbon sink.

Local

Monterey Bay Air Resources District

The Monterey Bay Air Resources District ("air district") has been in the process of developing guidance for evaluation of GHG emissions impacts for several years. To date, the air district has not adopted CEQA guidance for analysis of GHG effects of land use projects, nor has it prepared a qualified GHG reduction plan for use or reference by local agencies.

In the past, the air district recommended that thresholds of significance adopted by the San Luis Obispo Air Pollution Control District could be used as a reference for assessing impacts of land use projects planned within the local air district. This reference was made due to the air district's belief that conditions within the San Luis Obispo Air Pollution Control District were similar to those within the local air district. The Luis Obispo Air Pollution Control District developed substantial evidence for the formulation of quantified thresholds of significance. The thresholds are 4.9 metric tons/service population year or 1,150 metric tons. The service population metric approach is described for its application to the proposed project in the Environmental Impact Analysis section below. However, the San Luis Obispo Air Pollution Control District's thresholds were not utilized for the proposed project impact analysis due primarily to a recent California Supreme Court ("Newhall Ranch" case) decision which suggests that an appropriate threshold should address the land use character of the proposed project being analyzed. The Supreme Court case is also summarized in the Environmental Impact Analysis section below.

Monterey County General Plan

The 2010 Monterey County General Plan contains a policy to develop and adopt a Greenhouse Gas (GHG) Reduction Plan within 24 months of General Plan adoption (Policy OS-10.11). A reduction plan for county municipal operations has been adopted, but the county still needs to prepare a reduction plan to address community GHGs, including GHGs from land use projects. Once the county adopts a qualified GHG reduction plan, compliance of future land use projects with that plan will be the basis for determining the significance of their impacts on global climate change.

Las Palmas Ranch Specific Plan

The Las Palmas Ranch Specific Plan includes the following energy conservation policies. Consistency with these policies is addressed in the Energy section of this EIR.

Energy Conservation Policies

> 1. Each residential unit should be afforded adequate solar access for the operation of active and passive solar systems. Locating structures with their major axis oriented within 22.5 degrees of true east/west is generally the best means to insure adequate south-facing solar access. For single-family homes, the orientation is fairly simple to implement as is full access to the south wall for passive solar design. For multi-family units, orientation and access are more difficult; generally south roof access for active space hearing or domestic water hearing systems is considered sufficient.
>
> 2. Careful design of structures to utilize solar access and to control heat loss and heat gain can achieve significant energy conservation. When these design elements are coupled with passive design features (thermal storage units, south facing glass, domestic hot water systems and other energy conserving components), the energy conservation potential greatly increases. Support structures built by the developer such as commercial areas, swimming pools, recreation and community buildings should make maximum use of alternate energy sources both to reduce operation costs and to serve as community examples.

8.3 THRESHOLDS OR STANDARDS OF SIGNIFICANCE

CEQA Guidelines Appendix G indicates that a project may have a significant effect on the environment if it would have any of the effects listed below. The County utilizes the list of effects as its standards of significance for CEQA analyses. If any of the standards of significance are not applicable to the proposed project or the project would have no related impact, this is so noted, and no further evaluation regarding the effect is provided.

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

Selection of a Threshold of Significance/Reduction Target on which to Base Analysis of Project Effects

State CEQA Guidelines Section 15064.4 addresses the approach for evaluating the significance of GHG emissions effects. Lead agencies are encouraged to use a model or models to estimate GHG emissions volumes then determine whether the emissions exceed a

threshold that the lead agency determines to be significant. State CEQA Guidelines Section 15064.7(c) states that when adopting thresholds of significance, a lead agency may consider thresholds of significance previously adopted or recommended by other public agencies, or recommended by experts. This discussion summarizes the County's approach for considering the GHG impacts of the proposed project in light of a changing State legislative/regulatory environment and the long-term buildout timeframe for the proposed project.

AB 32 and the 2008/2014 Scoping Plan Guidance

With the adoption of AB 32 in 2006, local and regional agencies began to align their CEQA processes and craft GHG thresholds of significance to be consistent with the year 2020 reduction goal embedded in AB 32 and further operationalized in the subsequent 2008 and 2014 CARB scoping plans. However, the defensibility of using AB 32 and the 2008/2014 Scoping Plans as a basis for a project-specific threshold of significance for local projects has been called into question based on a 2015 California Supreme Court decision in *Center for Biological Diversity v. California Department of Fish and Wildlife* (commonly referred to as the "Newhall Ranch" case). In November 2015, the court issued a ruling that, in short, concluded that the statewide 29 percent below business-as-usual reduction specified in the 2008 Scoping Plan can be used as a threshold of significance for individual development projects. However, the court also determined that if this threshold is used, substantial evidence must be provided to demonstrate that achieving this reduction at an individual project level is sufficient to determine that the project has a less-than- significant GHG emissions impact. The court found that the CEQA document which was the subject of the lawsuit did not provide this evidence.

The ruling called into question what has been a standard CEQA analysis methodology for assessing GHG impacts of individual projects within a city or air district where neither agency has adopted a qualified GHG reduction plan. The court provided no clear guidance on appropriate thresholds of significance for individual development projects that might be used to assess their GHG impacts. It did, however, suggest several options for evaluating the cumulative impacts of proposed land use developments. One of these is reliance on "existing numerical thresholds of significance for greenhouse gas emissions." As noted above, neither the County of Monterey nor the Monterey Bay Air Resources District (air district) have adopted numerical thresholds of significance or qualified GHG reduction plans that could otherwise be used as a threshold of significance for the proposed project in light of the Newhall Ranch case.

Table 8-3 of the 1990 California Greenhouse Gas Inventory for Residential Land Use Related Emissions Sectors, shows the adjusted residential-based, land use-driven emissions inventory for 1990 for a residential project. Total land use driven emissions were projected at

272.85 million metric tons (MMT) CO_2e in 1990. This emissions volume represents the numerator for an efficiency-based threshold of significance for the year 2020.

To account for the Newhall Ranch decision, an efficiency-based GHG threshold of significance is being used in this EIR that is specific to assessing impacts from new land use development of the type proposed and that is based on Scoping Plan guidance. The efficiency-based metric represents an emissions threshold at or below which the emissions from local land use projects are below a volume needed to help meet the state's GHG emissions reduction target established under AB 32. AB 32 is the applicable GHG reduction plan because the proposed project is expected to be operational before 2020. The efficiency-based threshold for the proposed project is calculated by dividing emissions associated with statewide residential and commercial uses (sources attributable to land use projects) by the sum of jobs and residents within the state. The sum of jobs and residents is called the "service population." The efficiency approach allows lead agencies to assess whether any given project or plan would accommodate population and employment growth in a way that is consistent with the emissions limit established under AB 32.

Table 8-3 1990 California Greenhouse Gas Inventory for Residential Land Use Related Emissions Sectors

Land Use Type	Emissions (MMT CO2e)
On-Road Transportation	
Passenger Cars	63.77
Light Duty Trucks	44.75
Motorcycles	0.43
Heavy Duty Trucks	29.03
Freight	0.02
Subtotal	138.00
Electricity Generation In-State	
Commercial Cogeneration	0.70
Merchant Owned	2.33
Transmission and Distribution	1.56
Utility Owned	29.92
Subtotal	34.51
Electricity Generation In-State	
Specified Imports	29.61
Transmission and Distribution	1.02
Unspecified Imports	30.96
Subtotal	61.59

Residential	
Household Use	29.66
Subtotal	29.66
Industrial	
Landfills	6.26
Domestic Wastewater Treatment	2.83
Subtotal	9.09
Total Emissions	272.85

SOURCE: California Air Resources Board. No Date.

AB 32 establishes a statewide goal of reducing emissions to 1990 levels by 2020. Accordingly, a 2020 efficiency-based threshold of significance that is consistent with this target can be calculated using the components of the 1990 statewide GHG emissions inventory that are land use based. GHG emissions related to individual land use sector development types (e.g. residential and commercial) can be isolated out of the 1990 statewide emissions inventory by eliminating emissions sources that are not land use driven and that would not accommodate projected new population or employment growth. For example, emissions associated with ocean transport or agriculture are not related to new land use development projects. Isolating emissions from the land use-driven sectors of the overall statewide inventory enables development of a GHG efficiency metric that is specific to the type of land use project under consideration. For example, emissions associated with on-road transportation, electricity, natural gas, wastewater treatment, and solid waste are typically part of the GHG emissions inventory for new land use development projects. The same GHG emissions sources identified in the statewide inventory can be isolated and used to create an AB 32-based, efficiency-based threshold of significance that is specific to a land use project.

As noted above, the service population is the sum of population and employment projections for any selected target year and represents the denominator in the efficiency metric calculation. Year 2020 population for the State of California is projected at 40,643,643 (California Department of Finance 2015), while Year 2020 employment is projected at 15,199,000 jobs (California Department of Transportation 2015). Employment projections for 11 different employment sectors are provided for Year 2020 projections; farm and manufacturing jobs are not included, as neither sector is land use driven. The 2020 service population equals 55,842,643 (40,643,643 population + 15,199,000 employment).

Using the statewide residential land use-related 1990 GHG emissions volume and the projected 2020 service population as shown above, the 2020 efficiency-metric threshold of significance is: 272.85 MMT CO_2e/55,842,643 = 4.88 MT CO_2e per service population. This is the threshold of significance used in this EIR.

As noted in the Regulatory Setting section above, the San Luis Obispo Unified Air Pollution Control District developed thresholds of significance for application within its district boundary. Its efficiency metric of 4.9 MT CO_2e is very similar to the threshold identified above for the proposed project and is based on the same general analytical approach.

Subsequent Use of 2020 Threshold of Significance Determination Methodology

The 2020 threshold of significance determination methodology utilized in this EIR applies to the proposed project only. The methodology reflects the County's best, most current effort to identify a threshold of significance in a GHG analysis environment that is in a state of flux. As new information and guidance becomes available from the State, regional, and/or other local agencies, the County's methodology for determining GHG thresholds of significance and the significance of individual project GHG impacts will be subject to change.

8.4 Environmental Impact Analysis

Climate Change as a Cumulative Effect

Global climate change is, as the term indicates, a global phenomenon. Greenhouse gas emissions released into the atmosphere from a variety of human activities and natural processes that occur across the globe are contributing to global warming. While the U.S. emits the largest per capita volume of GHGs of any country in the world, other major countries (China is the largest total GHG contributor due to its population of nearly 1.4 billion and intensive industrialization efforts in recent decades) contribute substantial volumes of emissions that continue to grow on a per capita basis. Because climate change is a global phenomenon, it is highly unlikely that any one development project located anywhere in the world would have a significant individual impact on climate change. It is the sum total of contributions of development around the world that contribute to the problem. Hence, global climate change is inherently a cumulative effect.

The individual contribution of a project to GHGs in the atmosphere can generally be quantified in terms of the volume of greenhouse gas emissions that it generates. However, it is challenging to identify the precise indirect effects of that contribution at a very local scale due to the complexity of local, regional, and global atmospheric dynamics and to the broad scale at which global warming impacts, such as sea level rise, increases in extreme weather events, decrease in snowpack, etc. are known to occur.

Construction Emissions Estimate

Appendix C, Section 2.1, Overall Construction, Unmitigated Construction, shows the GHG emissions from project construction activities. Total construction emissions are projected at 682.52 MT CO_2e. Total construction emissions are amortized over a 30-year period and

added to the annual operational GHG emissions, discussed below, to arrive at a total annual GHG emissions volume. Based on total construction emissions of 682.52 MT CO_2e, the proposed project would generate construction emissions of about 22.75 MT CO_2e per year over 30 years. CalEEMod defaults have been used for the number and types of construction equipment to be utilized during the construction process and for other construction emissions because more project specific data is not available. No construction GHG mitigation measures were assumed.

Annual Unmitigated 2020 Operational Emissions Projection

Table 8-4, Unmitigated 2020 Operational Phase GHG Emissions, presented below shows a projected annual operational emissions volume of approximately 611.27 MT CO_2e for the year 2020. The unmitigated emissions volume is taken from Appendix C, Section 2.1, Overall Operational, Unmitigated Operational.

Table 8-4 Unmitigated 2020 Operational Phase GHG Emissions (MT/year)

Emissions Source	CO_2e
Area Source	1.82
Energy	231.64
Mobile Source	329.00
Waste	24.29
Water	24.53
Total	611.27[1]

SOURCE: CalEEMod, EMC Planning Group 2017

NOTE: [1]. Total difference relative to volume reported may vary due to rounding

When the amortized construction emissions (22.75 MT) are added to the annual unmitigated 2020 operational phase GHG emissions (611.27 MT) the total emissions attributable to the project are 634.02 MT per year. CalEEMod incorporates GHG emissions reductions that accrue from two key state legislative programs - the Pavley standards and Low Carbon Fuel Standard, as described in the Regulatory Setting section above. GHG emissions reductions will also result statewide from implementation of other state legislation and regulations enacted to implement the 2008 and 2014 CARB Scoping Plans. These reductions are beyond the control of the applicant, but GHG emissions from operation of the project would be reduced as a result. Therefore, the projected annual emissions volume of 634.02 MT is conservative; the total annual volume would likely be lower.

For the purposes of the GHG analysis, the service population is the sum of the resident population and number of employees. For the proposed project, an assisted living senior

community, the resident population cannot be assumed to be equivalent to the number of beds (or 142) as the vehicle trip generation for the residents of an assisted living community is far less than that of a typical residential project. Many residents of the proposed project will not own vehicles and the residents who do will make fewer daily trips.

The proposed project includes 13 casitas structures providing 26 individual units with a total of 42 beds. Casitas residents may maintain a moderate level of independence in their life style, including driving their own vehicles. Accordingly, dedicated parking is provided for each casita. Vehicle trips are assumed for the facility's remaining 100 beds, though at a rate appropriately lower than the rate assumed for single or multi-family residential uses. The Institute of Transportation Engineers (ITE) trip rate for Nursing Homes is 2.74 per bed and the ITE trip rate for Assisted Living is 2.66 per bed; both of these rates are more representative of the actual trip generation for the 100 beds serving assisted living and memory care individuals. By comparison, these rates are approximately one-fourth of the trip rate for a single-family home as identified by the Institute of Transportation Engineers.

As such, for GHG analysis purposes, the resident population for this project is conservatively assumed to be the sum of all the casita beds (42) plus approximately one-quarter of the remaining 100 beds (25). Thus, the total resident population would be 67. The proposed project is projected to create 92 jobs at maximum capacity. Therefore, the service population is 159 (67 residents plus 92 employees). The 2020 GHG efficiency metric for the proposed project is 3.99 MT CO_2e/service population (634.02 MT/159). This is below the threshold of significance of 4.88 MT CO_2e/service population. Consequently, the proposed project would have a less-than-significant impact from generation of GHG emissions and no mitigation measures are required.

AB 32 – the Applicable GHG Reduction Plan

The proposed project would conflict with AB 32, the applicable plan for reducing GHGs, if the GHG emissions it generates interfere with the State's ability to achieve GHG emissions reduction targets set forth in the Scoping Plan for the 2020 target year. As described in the Standards of Significance section, above, the thresholds of significance developed for the proposed project are designed to determine whether project emissions would exceed 2020 emissions reductions goals in the Scoping Plan for 2020. Project emissions would be below the threshold for 2020. Therefore, the proposed would not conflict with AB 32.

8.5 IMPACT SUMMARY AND MITIGATION MEASURES

IMPACT Generation of 634.02 Metric Tons (MT) of Carbon Dioxide Equivalent (CO_2e) per Year (Less than Significant)

The 2020 GHG efficiency metric for the proposed project is 3.99 MT CO_2e per service population (634.02 MT/160). This is 18 percent below the threshold of significance of 4.88 MT CO_2e per service population. Therefore, the proposed project would have a less-than-significant impact from generation of GHG emissions. No mitigation measures are required.