4.12 | GREENHOUSE GASES

INTRODUCTION

This section presents an overview of the existing greenhouse gas (GHG) regulations and discusses the potential global climate change impacts as a result of construction and operation activities associated with the proposed CGPU. Global climate change refers to any significant change in climate measurements, such as temperature, precipitation, or wind, lasting for an extended period (i.e., decades or longer) (United States Environmental Protection Agency [U.S. EPA], 2013).

EXISTING CONDITIONS

ENVIRONMENTAL BASELINE SETTING

Climate change is the observed increase in the average temperature of the Earth's atmosphere and oceans along with other substantial changes in climate (such as wind patterns, precipitation, and storms) over an extended period of time. The term "climate change" is often used interchangeably with the term "global warming," but "climate change" is preferred to "global warming" because it helps convey that there are other changes in addition to rising temperatures. The baseline against which these changes are measured originates in historical records identifying temperature changes that have occurred in the past, such as during previous ice ages. The global climate is continuously changing, as evidenced by repeated episodes of substantial warming and cooling documented in the geologic record. The rate of change has typically been incremental, with warming or cooling trends occurring over the course of thousands of years. The past 10,000 years have been marked by a period of incremental warming, as glaciers have steadily retreated across the globe. However, scientists have observed acceleration in the rate of warming during the past 150 years. Per the United Nations Intergovernmental Panel on Climate Change (IPCC, 2007), the understanding of anthropogenic warming and cooling influences on climate has led to a high confidence (90% or greater chance) that the global average net effect of human activities since 1750 has been one of warming. The prevailing scientific opinion on climate change is that most of the observed increase in global average temperatures, since the mid-20th century, is likely due to the observed increase in anthropogenic GHG concentrations (IPCC, 2007).

Gases that absorb and re-emit infrared radiation in the atmosphere are called greenhouse gases (GHGs). GHGs are present in the atmosphere naturally, are released by natural sources, or are formed from secondary reactions taking place in the atmosphere. The gases that are widely seen as the principal contributors to human-induced climate change include carbon dioxide (CO_2), methane (CH_4), nitrous oxides (N_2O), fluorinated gases such as hydrofluorocarbons (HFCs) and perfluorocarbons (PFCs), and sulfur hexafluoride (SF_6). Water vapor is excluded from the list of GHGs because it is short-lived in the atmosphere and its atmospheric concentrations are largely determined by natural processes, such as oceanic evaporation.

GHGs are emitted by both natural processes and human activities. Of these gases, CO_2 and CH_4 are emitted in the greatest quantities from human activities. Emissions of CO_2 are largely by-products of fossil fuel combustion, whereas CH_4 results from off-gassing associated with agricultural practices and landfills. Man-made GHGs, many of which have greater heat-absorption potential than CO_2, include fluorinated gases and SF_6 (California Environmental Protection Agency [CalEPA], 2006). Different types of GHGs have varying global warming potentials (GWPs). The GWP of a GHG is the potential of a gas or aerosol to trap heat in the atmosphere over a specified timescale (generally, 100 years). Because GHGs absorb different amounts of heat, a common reference gas (CO_2) is used to relate the amount of heat absorbed to the amount of the gas emissions, referred to as "carbon dioxide equivalent" (CO_2E), and is the amount of a GHG emitted multiplied by its GWP. CO_2 has a GWP of one. By contrast, CH_4 has a GWP of 21, meaning its global warming effect is 21 times greater than carbon dioxide on a molecule per molecule basis (IPCC, 1997).

The accumulation of GHGs in the atmosphere regulates the earth's temperature. Without the natural heat trapping effect of GHG, Earth's surface would be about 34°C cooler (CalEPA, 2006). However, it is believed that emissions from human activities, particularly the consumption of fossil fuels for electricity production and transportation, have elevated the concentration of these gases in the atmosphere beyond the level of naturally occurring concentrations. The following discusses the primary GHGs of concern.

- **Carbon Dioxide.** The global carbon cycle is made up of large carbon flows and reservoirs. Billions of tons of carbon in the form of CO_2 are absorbed by oceans and living biomass (i.e., sinks) and are emitted to the atmosphere annually through natural processes (i.e., sources). When in equilibrium, carbon fluxes among these various reservoirs are roughly balanced (U.S. EPA, April 2012). CO_2 was the first GHG demonstrated to be increasing in atmospheric concentration, with the first conclusive measurements being made in the last half of the 20th Century. Concentrations of CO_2 in the atmosphere have risen approximately 40% since the industrial revolution. The global atmospheric concentration of CO_2 has increased from a pre-industrial value of about 280 parts per million (ppm) to 391 ppm in 2011 (IPCC, 2007; National Oceanic and Atmospheric Association [NOAA], 2010). The average annual CO_2 concentration growth rate was larger between 1995 and 2005 (average: 1.9 ppm per year) than it has been since the beginning of continuous direct atmospheric measurements (1960–2005 average: 1.4 ppm per year), although there is year-to-year variability in growth rates (NOAA, 2010). Currently, CO_2 represents an estimated 82.8% of total GHG emissions (Department of Energy [DOE] Energy Information Administration [EIA], August 2010). The largest source of CO_2, and of overall GHG emissions, is fossil fuel combustion.

- **Methane.** CH_4 is an effective absorber of radiation, though its atmospheric concentration is less than that of CO_2 and its lifetime in the atmosphere is limited to 10 to 12 years. It has a global warming potential (GWP) approximately 21 times that of CO_2. Over the last 250 years, the concentration of CH_4 in the atmosphere has increased by 148 percent (IPCC, 2007), although emissions have declined from 1990 levels. Anthropogenic sources of CH_4 include enteric fermentation associated with domestic livestock, landfills, natural gas and petroleum systems, agricultural activities, coal mining, wastewater treatment, stationary and mobile combustion, and certain industrial processes (U.S. EPA, April 2012).

- **Nitrous Oxide.** Concentrations of N_2O began to rise at the beginning of the industrial revolution and continue to increase at a relatively uniform growth rate (NOAA, 2010). N_2O is produced by microbial processes in soil and water, including those reactions that occur in fertilizers that contain nitrogen, fossil fuel combustion, and other chemical processes. Use of these fertilizers

has increased over the last century. Agricultural soil management and mobile source fossil fuel combustion are the major sources of N_2O emissions. The GWP of nitrous oxide is approximately 310 times that of CO_2.

- **Fluorinated Gases.** Fluorinated gases, such as HFCs, PFCs, and SF_6, are powerful GHGs that are emitted from a variety of industrial processes. Fluorinated gases are used as substitutes for ozone-depleting substances such as chlorofluorocarbons (CFCs), hydrochlorofluorocarbons (HCFCs), and halons, which have been regulated since the mid-1980s because of their ozone-destroying potential and are phased out under the Montreal Protocol (1987) and Clean Air Act Amendments of 1990. Electrical transmission and distribution systems account for most SF_6 emissions, while PFC emissions result from semiconductor manufacturing and as a by-product of primary aluminum production. Fluorinated gases are typically emitted in smaller quantities than CO_2, CH_4, and N_2O, but these compounds have much higher GWPs. SF_6 is the most potent GHG the IPCC has evaluated.

Worldwide anthropogenic emissions of GHGs were approximately 40,000 million metric tons (MMT) CO_2E in 2004, including ongoing emissions from industrial and agricultural sources, but excluding emissions from land use changes (i.e., deforestation, biomass decay) (IPCC, 2007). CO_2 emissions from fossil fuel use accounts for 56.6 percent of the total emissions of 49,000 MMT CO_2E (includes land use changes) and CO_2 emissions from all sources account for 76.7 percent of the total. Methane emissions account for 14.3 percent of GHGs and N_2O emissions account for 7.9 percent (IPCC, 2007).

Total U.S. GHG emissions were 6,821.8 MMT CO_2E in 2009 (U.S. EPA, April 2012). Total U.S. emissions have increased by 10.5 percent since 1990; emissions rose by 3.2 percent from 2009 to 2010 (U.S. EPA, April 2012). This increase was primarily due to (1) an increase in economic output resulting in an increase in energy consumption across all sectors; and (2) much warmer summer conditions resulting in an increase in electricity demand for air conditioning. Since 1990, U.S. emissions have increased at an average annual rate of 0.5 percent. In 2010, the transportation and industrial end-use sectors accounted for 32 percent and 26 percent of CO_2 emissions from fossil fuel combustion, respectively. Meanwhile, the residential and commercial end-use sectors accounted for 22 percent and 19 percent of CO_2 emissions from fossil fuel combustion, respectively (U.S. EPA, April 2012).

Based upon the California Air Resources Board (ARB) California Greenhouse Gas Inventory for 2000-2009 (ARB, October 2011), California produced 453 MMT CO_2E in 2009. The major source of GHG in California is transportation, contributing 38 percent of the state's total GHG emissions. Electricity generation is the second largest source, contributing 23 percent of the state's GHG emissions (ARB, October 2012). California emissions are due in part to its large size and large population compared to other states. However, a factor that reduces California's per capita fuel use and GHG emissions, as compared to other states, is its relatively mild climate. The ARB has projected statewide unregulated GHG emissions for the year 2020 will be 507 MMT CO_2E (ARB, April 2012). These projections represent the emissions that would be expected to occur in the absence of any GHG reduction actions.

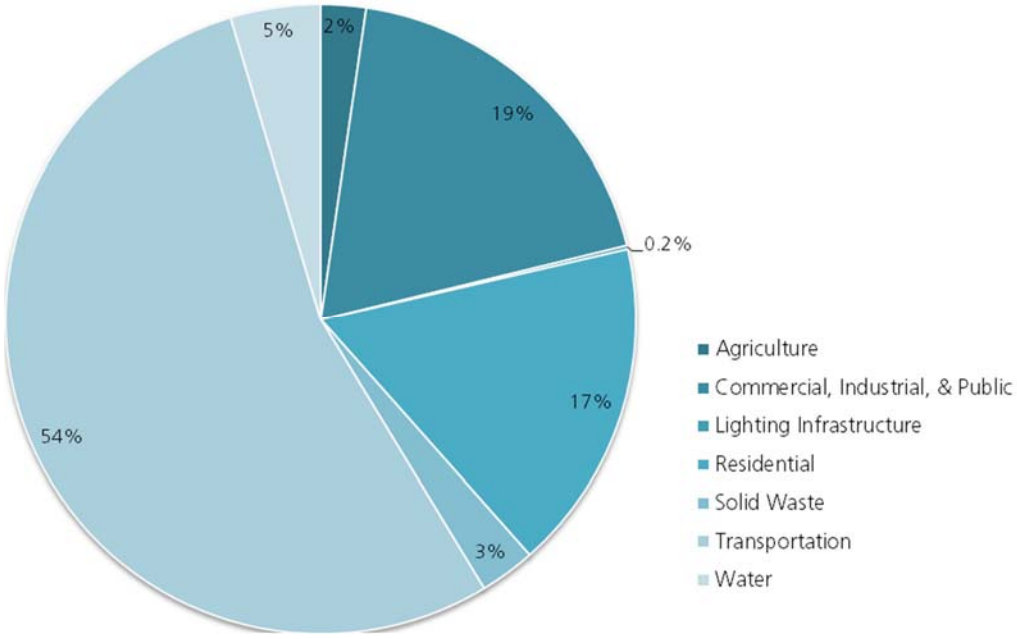
Coachella's 2010 communitywide baseline GHG emissions [382,787 metric tons of CO_2E (MT CO_2E)] are summarized in Table 4.12-1. The percent contribution of each of Coachella's emissions sectors are shown in Figure 4.12-1. Consistent with emissions at the statewide level, transportation is the largest emission sector.

TABLE 4.12-1: COACHELLA COMMUNITY GREENHOUSE GAS EMISSIONS (2010)

COMMUNITY SECTOR	MT CO_2E	PERCENT
Agriculture	8,844	2%
Commercial, Industrial, & Public	72,294	19%
Lighting Infrastructure	730	0.2%
Residential	65,357	17%
Solid Waste	10,960	3%
Transportation	206,909	54%
Water	17,693	5%
Total Emissions	**382,787**	**100%**

Source: Table 4, Coachella Climate Action Plan, May 1, 2014
MT CO_2E = metric tons of carbon dioxide equivalency

Figure 4.12-1: Community Emissions Summary by Sector (2010)



Source: Figure 9, Coachella Climate Action Plan, May 1, 2014

Globally, climate change has the potential to affect numerous environmental resources through potential impacts related to future air temperatures and precipitation patterns. Scientific modeling predicts that continued GHG emissions at or above current rates would induce more extreme climate changes during the 21st century than were observed during the 20th century. Scientists have projected that the average global surface temperature could rise by 1.0-4.5°F (0.6-2.5°C) in the next 50 years, and the increase

may be as high as 2.2-10°F (1.4-5.8°C) in the next century. In addition to these projections, there are identifiable signs that global warming is currently taking place, including substantial ice loss in the Arctic (IPCC, 2007).

According to the CalEPA's 2010 Climate Action Team Biennial Report, potential impacts of climate change in California may include loss in snow pack, sea level rise, more extreme heat days per year, more high ozone days, more large forest fires, and more drought years (CalEPA, April 2010). Below is a summary of some of the potential effects that could be experienced in California as a result of climate change.

- **Sea Level Rise.** According to The Impacts of Sea-Level Rise on the California Coast, prepared by the California Climate Change Center (CCCC) (May 2009), climate change has the potential to induce substantial sea level rise in the coming century. The rising sea level increases the likelihood and risk of flooding. The study identifies a sea level rise on the California coast over the past century of approximately eight inches. Based on the results of various global climate change models, sea level rise is expected to continue. The California Climate Adaptation Strategy (California Natural Resources Agency, 2009) estimates a sea level rise of up to 55 inches by the end of this century.

- **Air Quality.** Higher temperatures, which are conducive to air pollution formation, could worsen air quality in California. Climate change may increase the concentration of ground-level ozone, but the magnitude of the effect, and therefore its indirect effects, are uncertain. If higher temperatures are accompanied by drier conditions, the potential for large wildfires could increase, which, in turn, would further worsen air quality. However, if higher temperatures are accompanied by wetter, rather than drier conditions, the rains would tend to temporarily clear the air of particulate pollution and reduce the incidence of large wildfires, thereby ameliorating the pollution associated with wildfires. Additionally, severe heat accompanied by drier conditions and poor air quality could increase the number of heat-related deaths, illnesses, and asthma attacks throughout the state (Mastrandreal et al, 2009).

- **Water Supply.** Analysis of paleoclimatic data (such as tree-ring reconstructions of stream flow and precipitation) indicates a history of naturally and widely varying hydrologic conditions in California and the west, including a pattern of recurring and extended droughts. Uncertainty remains with respect to the overall impact of climate change on future water supplies in California. However, the average early spring snowpack in the Sierra Nevada decreased by about 10 percent during the last century, a loss of 1.5 million acre-feet of snowpack storage. During the same period, sea level rose eight inches along California's coast. California's temperature has risen 1°F, mostly at night and during the winter, with higher elevations experiencing the highest increase. Many Southern California cities have experienced their lowest recorded annual precipitation twice within the past decade. In a span of only two years, Los Angeles experienced both its driest and wettest years on record (California Department of Water Resources [DWR], 2008; CCCC, May 2009).

  This uncertainty complicates the analysis of future water demand, especially where the relationship between climate change and its potential effect on water demand is not well understood. The Sierra snowpack provides the majority of California's water supply by accumulating snow during our wet winters and releasing it slowly when we need it during our dry springs and summers. Based upon historical data and modeling, DWR projects that the Sierra snowpack will experience a 25 to 40 percent reduction from its historic average by

2050. Climate change is also anticipated to bring warmer storms that result in less snowfall at lower elevations, reducing the total snowpack (DWR, 2008).

- **Hydrology.** As discussed above, climate change could potentially affect: the amount of snowfall, rainfall, and snow pack; the intensity and frequency of storms; flood hydrographs (flash floods, rain or snow events, coincidental high tide and high runoff events); sea level rise and coastal flooding; coastal erosion; and the potential for salt water intrusion. Sea level rise may be a product of climate change through two main processes: expansion of sea water as the oceans warm and melting of ice over land. A rise in sea levels could result in coastal flooding and erosion and could jeopardize California's water supply due to salt water intrusion. Increased storm intensity and frequency could affect the ability of flood-control facilities, including levees, to handle storm events.

- **Agriculture.** California has a $30 billion agricultural industry that produces half of the country's fruits and vegetables. Higher CO_2 levels can stimulate plant production and increase plant water-use efficiency. However, if temperatures rise and drier conditions prevail, water demand could increase; crop-yield could be threatened by a less reliable water supply; and greater air pollution could render plants more susceptible to pest and disease outbreaks. In addition, temperature increases could change the time of year certain crops, such as wine grapes, bloom or ripen, and thereby affect their quality (CCCC, 2006).

- **Ecosystems and Wildlife.** Climate change and the potential resulting changes in weather patterns could have ecological effects on a global and local scale. Increasing concentrations of GHGs are likely to accelerate the rate of climate change. As previously noted, scientists project that the average global surface temperature could rise by 1.0-4.5°F (0.6-2.5°C) in the next 50 years, and 2.2-10°F (1.4-5.8°C) in the next century, with substantial regional variation. Soil moisture is likely to decline in many regions, and intense rainstorms are likely to become more frequent. Rising temperatures could have four major impacts on plants and animals: (1) timing of ecological events; (2) geographic range; (3) species' composition within communities; and (4) ecosystem processes, such as carbon cycling and storage (Parmesan, 2004; Parmesan, C. and H. Galbraith, 2004).

While the above discussion identifies the possible effects of climate change at a global and potentially statewide level, current scientific modeling tools are unable to predict with a similar degree of accuracy what local impacts may occur with a similar degree of accuracy. In general, regional and local predictions are made based on downscaling statewide models (CalEPA, April 2010).

According to the Coachella Climate Action Plan (2014), the Coachella area will likely experience very climate impacts similar to the rest of the state, including:

- Average temperature increase between 2.5°F and 7.5°F;

- Changes in seasonal temperatures, e.g. average July temperatures could increase by as much as 9.0°F;

- Seasonal precipitation changes, with March and April receiving less rainfall resulting in an extension of the summer dry season;

- Increase in the frequency, intensity and duration of heat waves and droughts; and

- Increase in the number of extreme heat days.

Table 4.12-2 outlines key climate change phenomena described in the Climate Action Plan and their associated impacts and consequences by sector for Coachella. Many of the impacts and consequences will be felt across multiple sectors. This summary focuses on climate change impacts to sectors within the purview of the City and does not include those impacts to all sectors.

TABLE 4.12-2: SUMMARY OF CLIMATE CHANGE PHENOMENA, IMPACTS, AND CONSEQUENCES BY SECTOR

CLIMATE CHANGE PHENOMENA	SECTOR AFFECTED	ASSOCIATED IMPACTS	ASSOCIATED CONSEQUENCES
Temperature and extreme heat events	Public Health	Heat-related: heat waves and urban heat island Wildfires	Illnesses, injuries, and loss of life Decline in air quality
	Water Resources	Drought	Decline in quantity and quality of freshwater Increased water demand
	Economy	Drought Heat-related	Loss of agricultural productivity Energy disruption Economic gains/losses
Precipitation and extreme precipitation events	Public Health	Flooding Drought	Illnesses, injuries, and loss of life
	Water Resources	Flooding Drought Nonpoint source pollution	Illnesses, injuries, and loss of life Decline in quality of freshwater Economic losses
	Economy	Flooding Drought	Loss of agricultural productivity Destruction and damage to property Economic gains/losses

Source: Table 2, Coachella Climate Action Plan, May 1, 2014

REGULATORY SETTING

International

The United States is, and has been, a participant in the United Nations Framework Convention on Climate Change (UNFCCC) since it was produced by the United Nations in 1992. The UNFCCC is an international environmental treaty with the objective of, "stabilization of GHG concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system." This is generally understood to be achieved by stabilizing global GHG concentrations between 350 and 400 ppm, in order to limit the global average temperature increases between 2 and 2.4°C above pre-industrial levels (IPCC, 2007). The UNFCC itself does not set limits on GHG emissions for

individual countries or enforcement mechanisms. Instead, the treaty provides for updates, called "protocols," that would identify mandatory emissions limits.

Five years later, the UNFCC brought nations together again to draft the Kyoto Protocol (1997). The Kyoto Protocol established commitments for industrialized nations to reduce their collective emissions of six GHGs (CO_2, CH_4, N_2O, SF_6, HFCs, and PFCs) to 5.2 percent below 1990 levels by 2012. The United States is a signatory of the Kyoto Protocol, but Congress has not ratified it and the United States has not bound itself to the Protocol's commitments (UNFCCC, 2007). The first commitment period of the Kyoto Protocol ended in 2012. Governments, including 38 industrialized countries, agreed to a second commitment period of the Kyoto Protocol beginning January 1, 2013 and ending either on December 31, 2017 or December 31, 2020, to be decided by the Ad Hoc Working Group on Further Commitments for Annex I Parties under the Kyoto Protocol at its seventeenth session (UNFCCC, November 2011).

In Durban (17th session of the Conference of the Parties in Durban, South Africa, December 2011), governments decided to adopt a universal legal agreement on climate change as soon as possible, but not later than 2015. Work will begin on this immediately under a new group called the Ad Hoc Working Group on the Durban Platform for Enhanced Action. Progress was also made regarding the creation of a Green Climate Fund (GCF) for which a management framework was adopted (UNFCCC, December 2011; United Nations, September 2012).

Federal

The United States is currently using a voluntary and incentive-based approach toward emissions reductions in lieu of the Kyoto Protocol's mandatory framework. The Climate Change Technology Program (CCTP) is a multi-agency research and development coordination effort (led by the Secretaries of Energy and Commerce) that is charged with carrying out the President's National Climate Change Technology Initiative (U.S. EPA, December 2007). However, the voluntary approach to address climate change and GHG emissions may be changing. The United States Supreme Court in Massachusetts et al. v. Environmental Protection Agency et al. ([2007] 549 U.S. 05-1120) held that the U.S. EPA has the authority to regulate motor-vehicle GHG emissions under the federal Clean Air Act.

The U.S. EPA issued a Final Rule for mandatory reporting of GHG emissions in October 2009. This Final Rule applies to fossil fuel suppliers, industrial gas suppliers, direct GHG emitters, and manufacturers of heavy-duty and off-road vehicles and vehicle engines, and requires annual reporting of emissions. The first annual reports for these sources were due in March 2011.

On May 13, 2010, the U.S. EPA issued a Final Rule that took effect on January 2, 2011, setting a threshold of 75,000 metric tons (MT) CO_2E per year for GHG emissions. New and existing industrial facilities that meet or exceed that threshold will require a permit after that date. On November 10, 2010, the U.S. EPA published the "PSD and Title V Permitting Guidance for Greenhouse Gases." The U.S. EPA's guidance document is directed at state agencies responsible for air pollution permits under the Federal Clean Air Act to help them understand how to implement GHG reduction requirements while mitigating costs for industry. It is expected that most states will use the U.S. EPA's new guidelines when processing new air pollution permits for power plants, oil refineries, cement manufacturing, and other large pollution point sources.

On January 2, 2011, the U.S. EPA implemented the first phase of the Tailoring Rule for GHG emissions Title V Permitting. Under the first phase of the Tailoring Rule, all new sources of emissions

are subject to GHG Title V permitting if they are otherwise subject to Title V for another air pollutant and they emit at least 75,000 MT CO_2E per year. Under Phase 1, no sources were required to obtain a Title V permit solely due to GHG emissions. Phase 2 of the Tailoring Rule went into effect July 1, 2011. At that time new sources were subject to GHG Title V permitting if the source emits 100,000 MT CO_2E per year, or they are otherwise subject to Title V permitting for another pollutant and emit at least 75,000 MT CO_2E per year.

California

Assembly Bill (AB) 1493 (2002), referred to as "Pavley," requires ARB to develop and adopt regulations to achieve "the maximum feasible and cost-effective reduction of GHG emissions from motor vehicles." On June 30, 2009, the U.S. EPA granted the waiver of Clean Air Act preemption to California for its GHG emission standards for motor vehicles beginning with the 2009 model year. Pavley I took effect for model years starting in 2009 to 2016 and Pavley II, which is now referred to as "LEV (Low Emission Vehicle) III GHG" will cover 2017 to 2025. Fleet average emission standards will reach 22 percent reduction by 2012 and 30 percent by 2016.

In 2005, former Governor Schwarzenegger issued Executive Order (EO) S-3-05, establishing statewide GHG emissions reduction targets. EO S-3-05 provides that by 2010, emissions shall be reduced to 2000 levels; by 2020, emissions shall be reduced to 1990 levels; and by 2050, emissions shall be reduced to 80 percent of 1990 levels (CalEPA, 2006). In response to EO S-3-05, CalEPA created the Climate Action Team (CAT), which in March 2006 published the Climate Action Team Report (the "2006 CAT Report") (CalEPA, 2006). The 2006 CAT Report identified a recommended list of strategies that the state could pursue to reduce GHG emissions. These are strategies that could be implemented by various state agencies to ensure that the emission reduction targets in EO S-3-05 are met and can be met with existing authority of the state agencies. The strategies include the reduction of passenger and light duty truck emissions, the reduction of idling times for diesel trucks, an overhaul of shipping technology/infrastructure, increased use of alternative fuels, increased recycling, and landfill methane capture, etc.

California's major initiative for reducing GHG emissions is outlined in Assembly Bill 32 (AB 32), the "California Global Warming Solutions Act of 2006," signed into law in 2006. AB 32 codifies the statewide goal of reducing GHG emissions to 1990 levels by 2020 (essentially a 15% reduction below 2005 emission levels; the same requirement as under S-3-05), and requires ARB to prepare a Scoping Plan that outlines the main State strategies for reducing GHGs to meet the 2020 deadline. In addition, AB 32 requires ARB to adopt regulations to require reporting and verification of statewide GHG emissions.

After completing a comprehensive review and update process, the ARB approved a 1990 statewide GHG level and 2020 limit of 427 MMT CO_2E. The Scoping Plan was approved by ARB on December 11, 2008, and includes measures to address GHG emission reduction strategies related to energy efficiency, water use, and recycling and solid waste, among other measures. The Scoping Plan includes a range of GHG reduction actions that may include direct regulations, alternative compliance mechanisms, monetary and non-monetary incentives, voluntary actions, and market-based mechanisms.

Executive Order S-01-07 was enacted on January 18, 2007. The order mandates that a Low Carbon Fuel Standard ("LCFS") for transportation fuels be established for California to reduce the carbon intensity of California's transportation fuels by at least 10 percent by 2020.

Senate Bill (SB) 97, signed in August 2007, acknowledges that climate change is an environmental issue that requires analysis in California Environmental Quality Act (CEQA) documents. In March 2010, the California Resources Agency (Resources Agency) adopted amendments to the State CEQA Guidelines for the feasible mitigation of GHG emissions or the effects of GHG emissions. The adopted guidelines give lead agencies the discretion to set quantitative or qualitative thresholds for the assessment and mitigation of GHGs and climate change impacts.

ARB Resolution 07-54 establishes 25,000 metric tons of GHG emissions as the threshold for identifying the largest stationary emission sources in California for purposes of requiring the annual reporting of emissions. This threshold is just over 0.005 percent of California's total inventory of GHG emissions for 2004.

Senate Bill (SB) 375, signed in August 2008, enhances the State's ability to reach AB 32 goals by directing ARB to develop regional GHG emission reduction targets to be achieved from vehicles for 2020 and 2035. In addition, SB 375 directs each of the State's 18 major Metropolitan Planning Organizations (MPO) to prepare a "sustainable communities strategy" (SCS) that contains a growth strategy to meet these emission targets for inclusion in the Regional Transportation Plan (RTP). On September 23, 2010, ARB adopted final regional targets for reducing GHG emissions from 2005 levels by 2020 and 2035. The Southern California Association of Governments (SCAG) was assigned targets of an 8% reduction in GHGs from transportation sources by 2020 and a 13% reduction in GHGs from transportation sources by 2035. In the SCAG region, SB 375 also provides the option for the coordinated development of subregional plans by the subregional councils of governments and the county transportation commissions to meet SB 375 requirements.

In April 2011, Governor Brown signed SB 2X requiring California to generate 33% of its electricity from renewable energy by 2020.

For more information on the Senate and Assembly bills, Executive Orders, and reports discussed above, and to view reports and research referenced above, please refer to the following websites: www.climatechange.ca.gov and http://www.arb.ca.gov/cc/cc.htm.

Local Regulations and CEQA Requirements

Pursuant to the requirements of SB 97, the Resources Agency has adopted amendments to the *State CEQA Guidelines* for the feasible mitigation of GHG emissions or the effects of GHG emissions. As noted previously, the adopted CEQA Guidelines provide general regulatory guidance on the analysis and mitigation of GHG emissions in CEQA documents, while giving lead agencies the discretion to set quantitative or qualitative thresholds for the assessment and mitigation of GHGs and climate change impacts. To date, the Bay Area Air Quality Management District (BAAQMD), the South Coast Air Quality Management District (SCAQMD), the San Luis Obispo Air Pollution Control District, and the San Joaquin Air Pollution Control District have adopted quantitative significance thresholds for GHGs.[1]

[1] On March 5, 2012 the Alameda County Superior Court issued a judgment finding that the BAAQMD had failed to comply with CEQA when it adopted the thresholds contained in the BAAQMD's 2010 CEQA Guidelines. The BAAQMD has been ordered to set aside the thresholds and is no longer recommending that these thresholds be used as a general measure of a project's significant air quality impacts. In August 2013, the First District Court of Appeal overturned the trial court and held that the thresholds of significance adopted by the BAAQMD were not

SCAQMD is currently in the process of updating its Air Quality CEQA Guidelines. To date, SCAQMD has only recommended and adopted an Interim CEQA GHG significance threshold for stationary sources (10,000 MT CO_2E).

SCAQMD is in the process of developing significance thresholds for criteria air pollutants and GHGs relative to general plans (SCAQMD, 2005). A SCAQMD Working Group has proposed several possible thresholds; including thresholds for analysis of general plan impacts (see Table 4.12-3). The first proposed threshold corresponds to a 2020 service population metric of 6.6 MT $CO_2E/SP/yr$ (SCAQMD, 2009), which is consistent with the significance thresholds for general plans adopted, but subsequently set aside as noted previously, by the Bay Area Air Quality Management District (BAAQMD, 2010). The second proposed published threshold is a 2035 service population metric of 4.1 MT $CO_2/SP/yr$. These efficiency thresholds were developed based on the statewide GHG inventory and statewide emission reduction goals of AB 32.

TABLE 4.12-3: SCAQMD PROPOSED GHG SIGNIFICANCE THRESHOLDS (MT CO_2E/YR)

CATEGORY	SIGNIFICANCE THRESHOLDS
Construction	30-yr amortization applied to operational significance thresholds
Operation – Stationary Sources	10,000
Operation – Project Level Uses	Residential Land Use = 3,500
	Commercial Land Use = 1,400
	Mixed Land Use = 3,000
	Residential/Commercial/Mixed Use Land Use = 3,000
Operation – Plan Level Performance Standards	% Reduction = 28%
	GHGs / SP / YR
	Project Level = 4.6 / SP / YR
	General Plans = 6.6 / SP / YR in 2020
	= 4.1 / SP / YR in 2035
	Maximum Emissions Limit = 25,000

Source: SCAQMD, 2009

Coachella Climate Action Plan

As laid out in the Climate Action Plan (2014), the City of Coachella proposes to set an efficiency-based greenhouse gas reduction target of 15% below 2010 per service population emissions by 2020 and an emissions reduction target of 49% per service population emissions by 2035.

subject to CEQA review. The California Supreme Court has agreed to hear an appeal of this case. The case is currently being briefed and the matter is still pending. Thus, BAAQMD will not issue a further recommendation until this litigation is complete.

The City of Coachella GHG inventory established that 2005 emissions totaled 312,628 MT CO_2E, and grew to 382,787 MT CO_2E in 2010 (City of Coachella, 2014). Population and employment growth, increased per capita energy use, and a rebounding economy are expected to increase city-wide emissions to 923,091 MT CO_2E in 2020, or 9.8 MT CO_2E per service population. As outlined in the Climate Action Plan, to achieve the 15% reduction target from the 2010 per service population baseline, the City would need to develop and implement strategies that reduce emissions by 2.8 MT CO_2E per service population in 2020. To achieve a 49% reduction target from the 2010 per service population baseline, the City would need to reduce emissions by 5.1 MT CO_2E per service population in 2035.

ENVIRONMENTAL IMPACTS AND MITIGATION

SIGNIFICANCE CRITERIA

Pursuant to the requirements of SB 97, the Resources Agency adopted amendments to the *State CEQA Guidelines* for the feasible mitigation of GHG emissions or the effects of GHG emissions in March 2010. These guidelines are used in evaluating the cumulative significance of GHG emissions from the adoption and implementation of the CGPU.

According to the adopted *State CEQA Guidelines*, impacts related to GHG emissions from the CGPU would be significant if its adoption and implementation would:

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

The City of Coachella uses significance criteria established by the South Coast Air Quality Management District (SCAQMD) to evaluate air quality impacts. At the time of this writing, no federal, state, regional or local air quality regulatory agency has adopted a quantitative threshold of significance for construction-related GHG emissions. Neither SCAQMD nor the City of Coachella has adopted a significance threshold for analyzing GHG emissions from plans or development projects or a methodology for analyzing GHG emissions impacts as of writing of this document.

The vast majority of individual projects do not generate sufficient GHG emissions to create a project-specific impact through a direct influence to climate change; therefore, the issue of climate change typically involves an analysis of whether a project's contribution towards an impact is cumulatively considerable. "Cumulatively considerable" means that the incremental effects of an individual project are significant when viewed in connection with the effects of past projects, other current projects, and probable future projects (CEQA Guidelines, Section 15355).

For individual projects, the significance of GHG emissions may be evaluated based on locally adopted quantitative thresholds, or consistency with a regional GHG reduction plan. Neither the SCAQMD nor the City of Coachella has adopted quantitative GHG emission thresholds for evaluation of plan-level impacts. Several air districts have recommended or adopted quantitative bright-line and/or per capita (efficiency) GHG emission thresholds. The use of a bright-line GHG emission threshold would not be appropriate for the CGPU and Corridors Specific Plan, since this type of threshold is generally developed for analysis of individual projects, while the CGPU EIR considers the cumulative effect of all

individual projects within the City. Therefore, a per capita GHG emissions threshold is considered the most appropriate quantitative threshold for the Plan.

For the purposes of this EIR, the proposed SCAQMD general plan threshold of 6.6 MT $CO_2E/SP/yr$ is compared to the anticipated 2020 emissions associated with implementation of the CGPU to determine whether the project would cause a significant increase in GHG emissions. This threshold was established using statewide emissions, population and employment data. Substantial evidence supporting the use of the 2020 threshold is provided in the June 2010 version of the BAAQMD CEQA Air Quality Guidelines (BAAQMD, 2010).[2] The City of Coachella's proposed greenhouse gas reduction target of 49% below 2010 per service population emissions by 2035, or 4.2 $MTCO_2E/SP/YR$, is used here to determine impact significance.

In addition, as described under *Applicable Regulations*, SB 375 required SCAG to adopt a Sustainable Communities Strategy (SCS) as part of its Regional Transportation Plan (RTP). SCAG adopted an RTP/SCS in 2012 for the planning period of 2012 through 2035, the primary goal of which is to provide a vision for future growth in Southern California that will reduce per capita GHG emissions by 8% by 2020 and 13% by 2035. Therefore, for the purposes of this EIR, consistency of the proposed CGPU with the current RTP/SCS and other relevant plans, policies or regulations adopted for the purpose of reducing the emissions of GHGs will be evaluated.

GREENHOUSE GAS EMISSIONS

Impact 4.12-1: Would the Project generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?

Significance: Less than Significant with Mitigation.

Implementation of the proposed CGPU would generate new GHG emissions, directly and indirectly. However, policies contained in the CGPU as well as emission reduction strategies implemented at the State and federal levels aimed at limiting vehicle use and energy consumption would also reduce GHG emissions such that annual GHG emissions would not exceed the SCAQMD service population thresholds of 6.6 MT CO_2E for 2020. However, GHG emissions would continue to exceed the City's 2035 service population reduction target of 4.2 MT CO_2E (or 49%) for 2035.

The Climate Action Plan for the City of Coachella includes an analysis of GHG emissions reductions from the State of California programs, General Plan policies and additional measures recommended by the CAP to further reduce emissions. The following State policies were used in the emissions forecasts

2 As described previously, BAAQMD's June 2010 adopted thresholds of significance were challenged in a lawsuit. On March 5, 2012 the Alameda County Superior Court issued a judgment finding that the Air District had failed to comply with CEQA when it adopted the thresholds. The court found that the adoption of the thresholds was a project under CEQA and ordered the Air District to examine whether the thresholds would have a significant impact on the environment under CEQA before recommending their use. The court did not determine whether the thresholds are or are not based on substantial evidence and thus valid on the merits. The court issued a writ of mandate ordering the District to set aside the thresholds and cease dissemination of them until the Air District had complied with CEQA. As the court did not determine whether the thresholds are or are not based on substantial evidence and thus valid on the merits, the City continues to rely on the substantial evidence based on statewide data and analysis relative to AB 32 that underlies the June 2010 BAAQMD thresholds in making an independent determination of significance of plan-level GHG impacts pursuant to State CEQA Guidelines Section 15064.7(c).

included in the CAP to determine the per Service Population estimates in 2020: the Renewable Energy Portfolio Standard; Title 24; the Low Carbon Fuel Standard; and Pavley Clean Cars. Based on the information in the Climate Action Plan, implementation of these policies would reduce overall GHG emissions in the City by 211,740 and 407,924 MT CO_2E in 2020 and 2035, respectively.

In addition, the CGPU includes specific policies that guide the City's approach to reducing GHG emissions. The Climate Action Plan considers emissions reductions from various policies across a number of Elements, including: Land Use, Mobility, Sustainability and Natural Environment, Safety, and Infrastructure and Public Services. Examples of these include proposed CGPU policies aimed at:

- Improving building energy performance and reducing energy demand;
- Increasing utilization of sources of renewable energy;
- Reducing the number and length of vehicle trips;
- Reducing emissions arising from generation of solid waste;
- Increasing access to parks and open space and planting new trees; and
- Reducing indoor and outdoor water use and incorporating recycled in future water supplies.

For a full list of the policies included in the emissions reduction calculation see Chapter 4 of the Coachella Climate Action Plan.

As shown below, implementation of the identified policies would reduce overall GHG emissions in the City by 126,306 and 231,707 MT CO_2E by 2020 and 2035, respectively. These results were confirmed by a sensitivity analysis of the GHG inventory information included in the Climate Action Plan using CalEEMod. The results of the emissions modeling are generally similar to the information included in the Climate Action Plan and are included in Appendix 11.5.

TABLE 4.12-4: IMPACT OF PROPOSED GENERAL PLAN POLICIES ON PROJECTED GREENHOUSE GAS EMISSIONS (MT CO_2E)

	2020 REDUCTION POTENTIAL	2035 REDUCTION POTENTIAL
GENERAL PLAN POLICIES		
Energy Efficiency	12,469	38,790
Energy Generation	36,703	68,940
Land Use and Transportation	61,397	87,931
Solid Waste	1,729	6,605
Vegetation and Open Space	7,305	16,941
Water	6,703	12,498
Total Reductions from General Plan Policies	126,306	231,707

Source: Table 11, Coachella Climate Action Plan, May 1, 2014

Based on the combined emission reduction resulting from federal, state and city-level General Plan policies, City GHG emissions would be reduced by 338,046 MT CO_2E per year resulting in an annual per service population emissions value of 6.2 MT CO_2E in 2020, below the SCAQMD recommended threshold of 6.6 MT CO_2E/SP/yr (City of Coachella, 2014).

By 2035, the combination of state and local GHG emissions measures is likely to reduce emissions by 639,630 MT CO_2E, resulting in an annual per service population emissions value of 5.4 MT CO_2E in 2035 (City of Coachella, 2013). This exceeds the City's target of 4.2 MT CO_2E/SP/yr.

Along with General Plan policies, the Climate Action Plan includes an analysis of more aggressive implementation programs for several General Plan policies and additional measures not included in the General Plan. While the suite of options is expected to evolve over time, the Climate Action Plan includes a suite of implementation strategies that, if implemented, could achieve the required GHG emissions reduction to meet the City's 2035 per service population target. These include:

- Adopting a Commercial Energy Conservation Ordinance
- Adopting a Residential Energy Conservation Ordinance
- Working with commercial businesses to install solar photovoltaic on existing buildings
- Implementing an outdoor water conservation strategy
- Increasing recycled and grey water use
- Increasing commercial and residential recycling

By 2035, this combination of GHG emissions measures is estimated to result in an annual reduction in GHG emissions of 838,494 MT CO_2E, resulting in a per service population emissions figure of 4.2 MT CO_2E, which meets the City's target of 4.2 MT CO_2E/SP/yr for 2035. However, the CAP document is not yet adopted; therefore, there is no guarantee that these or other equivalent strategies or measures would be implemented to reach this target. Therefore, impacts would be significant but mitigable.

Mitigation Measures

Between 2020 and 2035, require implementation of the Additional CAP Measures included in Table 18 of the City of Coachella Climate Action Plan, or other equally effective measures, which would achieve an annual per service population emission figure of 4.2 MT CO_2E or less by 2035.

Implementation of the required mitigation measure would achieve an annual per service population emission figure of 4.2 MT CO_2E or less, which would be meet with the City's reduction target for 2035.

CONFLICT WITH GREENHOUSE GAS REDUCTION PLANS

Impact 4.12-2: Would the Project conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emission of greenhouse gases?

Significance: Less than significant.

Adoption and implementation of the CGPU would result in GHG emissions associated with construction-related and operational activities. However, in order for the City of Coachella and the State of California to meet their GHG reduction goals, both the efficiency and manner in which construction activities are

executed, and in which new and modified development operate, are required to become more GHG efficient. Implementation of CGPU policies and programs along with the Climate Action Plan would affect the major GHG-producing sectors in the City, which will help the City progress toward its GHG emission reduction target and consistency with the Climate Change Scoping Plan and SCAG RTP/SCS. Therefore, the proposed project would be consistent with applicable GHG reduction plans.

The CGPU's consistency with the SCAG Sustainable Communities Strategy is discussed in Chapter 4.9, Circulation. In addition to being consistent with the policies and goals of the adopted RTP/SCS, the proposed CGPU would also be consistent with the RTP/SCS goal to achieve a reduction in per capita GHG emissions of 8% by 2020 and 13% by 2035. Based on the GHG emission estimates included in the Climate Action Plan, implementation of the proposed CGPU, in combination with State initiatives, would result in a reduction in annual GHG emissions from 8.2 MT CO_2E/SP in 2010 to 6.2 MT CO_2E/SP in 2020 and 5.4 MT CO_2E/SP in 2035. These equate to a reduction in per service population values of approximately 25% and 34% by 2020 and 2035, respectively. While per service population and per capita measures of GHG emissions are not identical, the reductions shown here indicate that the proposed CGPU would be generally consistent with the GHG emission reduction goals contained in the adopted RTP/SCS.

The CGPU has been developed to reduce GHG emissions pursuant to AB 32 GHG reduction goals. As discussed above in Impact 4.12-1, the CGPU would implement numerous policies that reduce GHG emissions from transportation, energy, water, and solid waste emission sources. Implementation of these policies supports the ARB's Scoping Plan goals to achieve emission reductions from land use development emission sources and create more GHG-efficient development without impeding population and economic growth. The CGPU policies described above under Impact 4.12-1 would reduce GHG emissions in all sectors described in the Climate Change Scoping Plan, and would not preclude or obstruct its implementation. Therefore, the policies, programs, measures, and actions of the proposed CGPU are consistent with ARB's Scoping Plan, which is the statewide plan to achieve the goals of AB 32. Therefore, this impact is considered **less than significant.**

Mitigation Measures

None required.

CUMULATIVE IMPACTS

Because the proposed project is a CGPU, which takes into account existing and potential development over approximately the next twenty years, the analysis of greenhouse-gas related impacts contained within this chapter of the EIR is already cumulative in nature. GHG emissions have the potential to adversely affect the environment because such emissions contribute, on a cumulative basis, to global climate change. Therefore, the topic of GHG emissions is inherently a cumulative impact. Though significance thresholds can be developed by air districts, state regulatory agencies, or federal regulatory agencies, these thresholds and their related goals are ultimately designed to effect change at a global level. While the evaluation presented above is focused on the proposed project, and is specific to the project, it is also considered cumulative because it is only as a contribution to a cumulative effect that the project-specific emissions have environmental consequences. Therefore, the analysis provided above includes the analysis of both the project and cumulative impacts.

SIGNIFICANT AND UNAVOIDABLE IMPACTS

No significant and unavoidable impacts were identified in relation to GHG emissions and climate change.

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