

## **4.7 GREENHOUSE GASES**

### **4.7.1 Regulatory Setting**

This section presents a description of the laws, policies, and plans relevant to greenhouse gas (GHG) emissions and climate change.

#### **Federal Regulations**

The Environmental Protection Agency (USEPA) is the federal agency responsible for implementing the federal Clean Air Act (CAA). On April 2, 2007, in *Massachusetts v. EPA*, 549 U.S. 497 (2007), the Supreme Court found that GHGs are air pollutants covered by the Clean Air Act (CAA) and that the USEPA has the authority to regulate GHGs. The Court held that the USEPA Administrator must determine (1) whether or not emissions of GHGs from new motor vehicles cause or contribute to air pollution, which may reasonably be anticipated to endanger public health or welfare; or (2) whether the science is too uncertain to make a reasoned decision.

#### **Mandatory GHG Reporting Rule**

On October 30, 2009, USEPA published the final version of the Mandatory GHG Reporting Rule in the Federal Register. In general, this national reporting requirement provides USEPA with accurate and timely GHG emissions data from facilities that emit 25,000 metric tons (MT) or more of CO<sub>2</sub> per year. Subsequent rulings have expanded the emissions sources required to report emissions data, which now include oil and natural gas industries, industrial wastewater treatment, and industrial landfills. Certain categories, such as general stationary fuel combustion sources and electricity generation, began reporting their yearly emissions with the 2010 reporting year. A total of 41 source categories now report emissions as a result of the Mandatory GHG Reporting Rule (USEPA 2013).

#### **GHG Findings under the Federal CAA**

On December 7, 2009, the USEPA Administrator signed two distinct findings regarding GHGs under section 202(a) of the CAA:

- **Endangerment Finding:** The USEPA Administrator found that the current and projected concentrations of the six key well-mixed GHGs (CO<sub>2</sub>, methane [CH<sub>4</sub>], nitrous oxide [N<sub>2</sub>O], hydrofluorocarbons [HFCs], perfluorocarbons [PFCs], and sulfur hexafluoride [SF<sub>6</sub>]) in the atmosphere threaten the public health and welfare of current and future generations.
- **Cause or Contribute Finding:** The USEPA Administrator found that the combined emissions of these well-mixed GHGs from new motor vehicles and new motor vehicle engines contribute to the GHG pollution, which threatens public health and welfare.

Although these findings did not themselves impose any requirements on industries or other entities, this action was a prerequisite to finalizing the USEPA's Proposed Greenhouse Gas Emission Standards for Light-Duty Vehicles. On May 7, 2010, the final Light-Duty Vehicle Greenhouse Gas Emissions Standards and Corporate Average Fuel Economy Standards were published in the Federal Register. The emissions standards will require model year 2016 vehicles to meet an estimated combined average emissions level of 250 grams of CO<sub>2</sub> per mile, which is equivalent to 35.5 miles per gallon if the automobile industry were to meet this CO<sub>2</sub> level solely by improving fuel economy.

On August 28, 2012, the U.S. Department of Transportation and USEPA issued a joint Final Rulemaking requiring additional federal GHG and fuel economy standards for passenger cars and light-duty trucks produced in model years 2017 through 2025. These vehicles would be required to meet an estimated combined average emissions level of 163 grams of CO<sub>2</sub> per mile in model year 2025, which is equivalent to mileage of 54.5 miles per gallon if the improvements were made solely through improvements in fuel efficiency.

In addition to the standards for light-duty vehicles, on August 9, 2011, the U.S. Department of Transportation and USEPA announced standards to reduce GHG emissions and improve the fuel efficiency of heavy-duty trucks and buses.

### **State Regulations**

With the passage of legislation including Senate Bills (SB), Assembly Bills (AB), and Executive Orders, California launched an innovative and proactive approach to dealing with GHG emissions and climate change at the State level.

#### Assembly Bill 1493 (Pavley)

AB 1493 requires the California Air Resources Board (CARB) to develop and implement regulations to reduce automobile and light truck GHG emissions. These stricter emissions standards were designed to apply to automobiles and light trucks beginning with model year 2009. In June 2009, the USEPA Administrator granted a CAA waiver of preemption to California. This waiver allowed California to implement its own GHG emissions standards for motor vehicles beginning with model year 2009. California agencies worked with federal agencies to conduct joint rulemaking to reduce GHG emissions for passenger car model years 2017 to 2025.

#### Executive Order S-3-05

The goal of this Executive Order S-3-05 (EO S-3-05), signed on June 1, 2005, by Governor Arnold Schwarzenegger, is to reduce California's GHG emissions to: 1) 2000 levels by 2010, 2) 1990 levels by 2020, and 3) 80 percent below the 1990 levels by the year 2050. In 2006, this goal was further reinforced with the passage of AB 32.

#### Assembly Bill 32

Assembly Bill 32 (AB 32), the California Global Warming Solutions Act of 2006, was signed in September 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.

In December 2008, CARB adopted its *Climate Change Scoping Plan* (Scoping Plan), which contains the main strategies California will implement to achieve the required GHG reductions required by AB 32. The Scoping Plan also includes CARB-recommended GHG reductions for each emissions sector of the State's GHG inventory. CARB further acknowledges that decisions about how land is used will have large impacts on the GHG emissions that will result from the transportation, housing, industry, forestry, water, agriculture, electricity, and natural gas emissions sectors.

CARB is required to update the Scoping Plan at least once every five years to evaluate progress and develop future inventories that may guide this process. CARB is currently in the process of updating the Scoping Plan, and a draft update was issued for initial review and comment on October 1, 2013.

#### Executive Order S-01-07

Governor Schwarzenegger set forth the low carbon fuel standard for California. Under this Executive Order, the carbon intensity of California's transportation fuels is to be reduced by at least 10 percent by 2020.

#### Senate Bill 1078, Senate Bill 107, and Senate Bill X1-2

SB 1078 requires retail sellers of electricity, including investor-owned utilities and community choice aggregators, to provide at least 20 percent of their supply from renewable sources by 2017 (CEC 2002). SB 107 changed the target date to 2010. Executive Order S-14-08 expands the State's Renewable Portfolio Standard to 33 percent renewable power by 2020. This new goal was codified in 2011 with the passage of SB X1-2. To meet the goals set out in SB X1-2, a significant effort will be needed to reduce overall energy used in the State through energy efficiency efforts and a large effort to increase the amount of renewable energy generated and purchased by utility companies.

#### Senate Bill 97 (Chapter 185, 2007)

SB 97, signed August 2007, acknowledges that climate change is a prominent environmental issue that requires analysis under CEQA. SB 97 required the Governor's Office of Planning and Research to develop recommended amendments to the CEQA Guidelines for addressing GHG emissions. The Amendments became effective on March 18, 2010.

#### Senate Bill 375

SB 375, signed in September 2008, aligns regional transportation planning efforts, regional GHG reduction targets, and land use and housing allocation. SB 375 requires Metropolitan Planning Organizations (MPOs) to adopt a Sustainable Communities Strategy (SCS) or an Alternative Planning Strategy (APS) which will prescribe land use allocation in that MPO's regional transportation plan (RTP). On September 23, 2010, CARB adopted regional GHG targets for passenger vehicles and light trucks for 2020 and 2035 for the 18 MPOs in California. If MPOs do not meet the GHG reduction targets, transportation projects would not be eligible for funding programs after January 1, 2012. The regional GHG targets are established for passenger vehicles and light trucks and do not include emissions from heavy-duty vehicles, such as on-road tanker trucks.

#### Regional and Local Regulations

CARB's Scoping Plan states that local governments are "essential partners" in the effort to reduce GHG emissions (CARB 2008). The Scoping Plan also acknowledges that local governments have broad influence and, in some cases, exclusive jurisdiction over activities that contribute to significant direct and indirect GHG emissions through their planning and permitting processes, local ordinances, outreach and education efforts, and municipal operations. Many of the proposed measures to reduce GHG emissions rely on local government actions.

## **Southern California Association of Governments**

The Southern California Association of Governments (SCAG) is the applicable MPO for Imperial County. SCAG's jurisdiction covers six counties—Los Angeles, Orange, San Bernardino, Riverside, Ventura, and Imperial—and approximately 18 million residents. One of the main responsibilities of SCAG is to maintain and develop comprehensive transportation planning for the region through RTPs. In addition to transportation planning, SCAG is also responsible for planning the region's growth management, hazardous waste management, and air quality. The most recent EIR for the SCAG 2012 RTP/SCS indicated that the region would meet the SB 375 emissions targets from light-duty trucks and passenger vehicles, would meet the 2020 target, and would achieve even greater emission reductions in 2035 as compared to the 2035 target (SCAG 2012).

## **Imperial County Air Pollution Control District**

The Imperial County Air Pollution Control District (ICAPCD) has no regulations or additional guidelines relative to GHG emissions for residential, commercial, or industrial projects; however, ICAPCD Rule 903 applies to any stationary source that would have the potential to emit air contaminants equal to or in excess of the threshold for a major source of regulated air pollutants. In 2011, ICAPCD amended Rule 903 to add GHGs to the list of regulated pollutants. As part of the revised rule, stationary sources that exceed the *de minimis* emissions level of 20,000 tons of carbon dioxide equivalent (CO<sub>2</sub>e) per year in a 12-month period would need to meet recordkeeping and reporting requirements.

## **Imperial County**

The existing Imperial County General Plan does not include any policies that directly address GHG emissions; however, the *Conservation and Open Space Element* of the General Plan contains goals, policies, and programs that would contribute to the reduction of GHG emissions:

- Protection of Air Quality

*Goal 9.* The County shall actively seek to improve and maintain the quality of air in the region.

*Objective 9.1.* Ensure that all facilities shall comply with current federal and State requirements for attainment of air quality objectives.

*Objective 9.2.* Cooperate with all federal and State agencies in the effort to attain air quality objectives.

- Conservation of Energy Sources

*Goal 6.* The County shall seek to achieve maximum conservation practices and maximum development of renewable alternative sources of energy.

*Objective 6.2.* Encourage the utilization of alternative passive and renewable energy resources.

*Objective 6.3.* Maximize energy conservation and efficiency of utilization.

*Objective 6.4.* Minimize environmental impact of energy sources.

*Objective 6.6.* Encourage compatibility with national and State energy goals and city and community general plans.

*Objective 6.7.* Support local utility companies' energy conservation programs.

*Policy:* The County shall establish programs and procedures to encourage the conservation of energy by the general public.

*Program:* Promote the demonstration of new energy-saving or supply technologies such as solar energy technologies on County facilities and the dissemination of information on their relative effectiveness and operating costs.

*Program:* Amend County Building Codes in accordance with local conditions and California Energy Commission standards for both residential and nonresidential buildings to include insulation requirements against heat infiltration in new construction.

*Program:* Encourage State legislation which would remove tax disincentives on capital investments in solar space cooling equipment.

*Program:* Amend County Building Codes to remove unnecessary obstacles to implementing energy conservation technology.

#### **4.7.2 Existing Environmental Setting**

GHGs are present in the atmosphere naturally, are released by natural and anthropogenic sources, and are formed from secondary reactions taking place in the atmosphere. Natural sources of GHGs include the respiration of humans, animals, and plants; decomposition of organic matter; and evaporation from the oceans. Anthropogenic sources include the combustion of fossil fuels, waste treatment, and agricultural processes.

GHG emissions related to human activities have been determined to be highly likely responsible for intensifying the greenhouse effect and leading to a trend of unnatural warming of the earth's atmosphere and oceans, with corresponding effects on global circulation patterns and climate (IPCC 2007). Similarly, impacts of GHGs are borne globally, as opposed to the more localized air quality effects of criteria air pollutants and toxic air contaminants. The quantity of GHGs that ultimately results in climate change is not precisely known; however, no single project alone is expected to measurably contribute to a noticeable incremental change in the global average temperature or to a global, local, or micro climate. Given the nature of environmental consequences from GHGs and global climate change, CEQA requires that lead agencies evaluate the cumulative impacts of GHGs, even relatively small additions, on a global basis.

#### **Trends of Climate Change**

Warming of the climate system is now considered to be unequivocal (IPCC 2007), with global surface temperature increasing approximately 1.33°F over the last 100 years. The rate of increase in global average surface temperature over the last 100 years has not been consistent; the last three decades have warmed at a much faster rate—on average, 0.32°F per decade. Continued warming is projected to increase the global average temperature by 2°F to 11°F over the next 100 years.

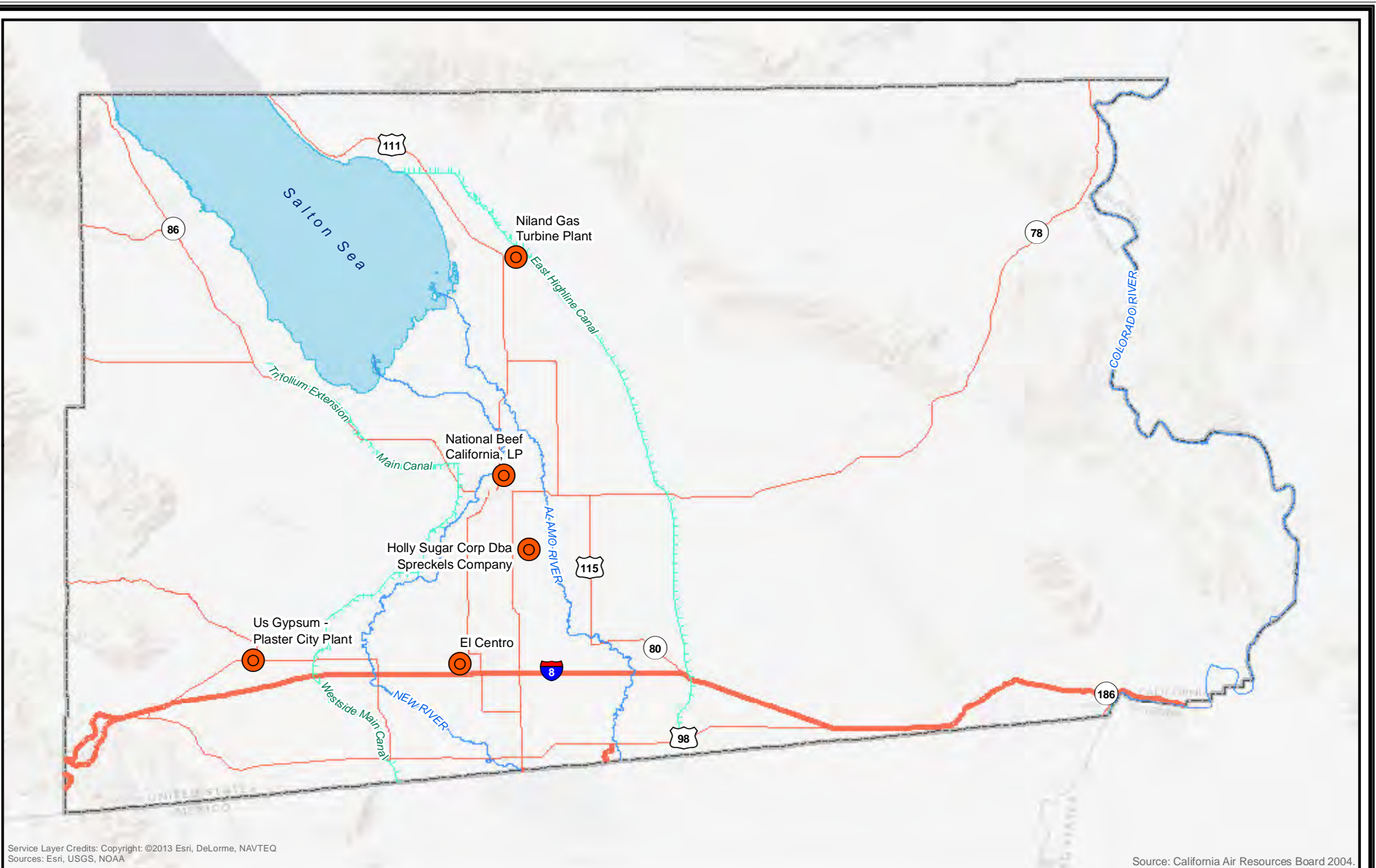
The causes of this warming have been identified as both natural processes and as the result of human actions. The Intergovernmental Panel on Climate Change (IPCC) concluded that variations in natural phenomena, such as solar radiation and volcanoes, produced most of the warming from pre-industrial times to 1950 and had a small cooling effect afterward. After 1950, however, increasing GHG concentrations resulting from human activity, such as fossil fuel burning and deforestation, have been responsible for most of the observed temperature increase.

### **Impacts of Climate Change**

Over the same period that increased global warming has occurred, many other changes have occurred or are predicted to occur in other natural systems. Sea levels have risen; precipitation patterns throughout the world have shifted, with some areas becoming wetter and others drier; wildfires are predicted to increase in number and intensity; extreme weather events such as heat waves have increased; and numerous other conditions have been observed. Although it is difficult to prove a definitive cause-and-effect relationship between global warming and other observed changes to natural systems, the scientific community has a high level of confidence that these changes are a direct result of increased global temperatures caused by increased presence of GHGs in the atmosphere (IPCC 2007).

### **Greenhouse Gas Emission Sources**

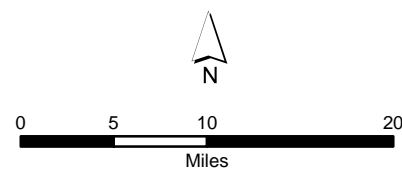
GHG emissions contributing to global climate change are attributable in large part to human activities associated with the transportation, industrial/manufacturing, electric utility, residential, commercial, and agricultural sectors. Emissions of CO<sub>2</sub> are byproducts of fossil fuel combustion; and methane (CH<sub>4</sub>), a highly potent GHG, is the primary component in natural gas and is associated with agricultural practices and landfills. N<sub>2</sub>O is also largely attributable to agricultural practices and soil management. Figure 4.7-1 shows the GHG sources in Imperial County.



Service Layer Credits: Copyright: ©2013 Esri, DeLorme, NAVTEQ  
 Sources: Esri, USGS, NOAA

Source: California Air Resources Board 2004.

**Legend**  
 Green House Gas Source



**Figure 4.7-1**  
 Imperial County Renewable Energy and  
 Transmission Element Update PEIR  
 Sources of Green House Gas Emissions

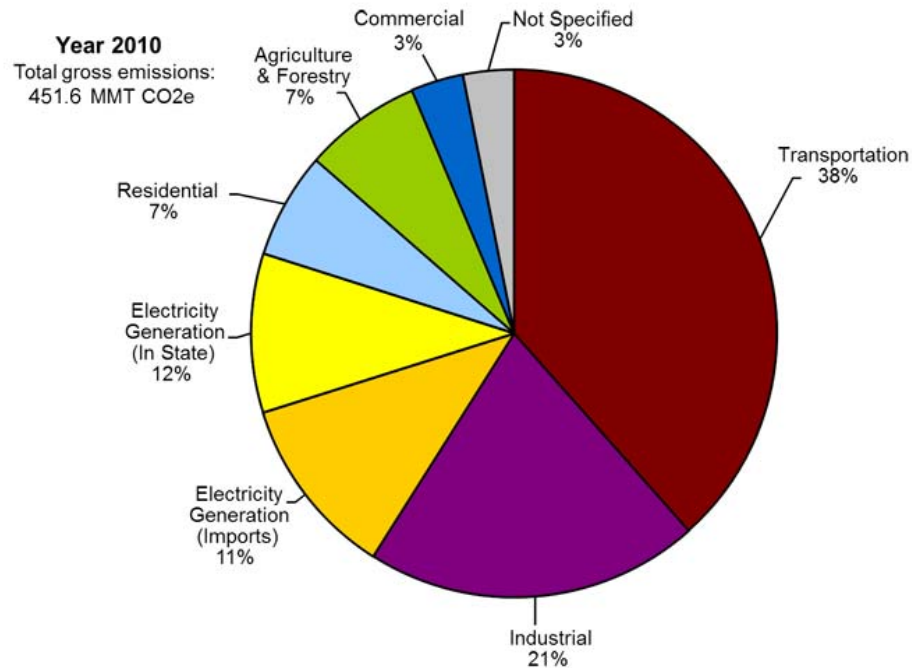
For purposes of accounting for and regulating GHG emissions, sources of GHG emissions are grouped into emissions sectors. CARB identifies the following main GHG emissions sectors that account for most anthropogenic GHG emissions generated within California:

- Transportation: On-road motor vehicles, recreational vehicles, aviation, ships, and rail
- Electricity: Use and production of electrical energy
- Industry: Mainly stationary sources (e.g., boilers and engines) associated with process emissions
- Commercial and Residential: Area sources, such as landscape maintenance equipment, fireplaces, and consumption of natural gas for space and water heating
- Agriculture: Agricultural sources that include off-road farm equipment; irrigation pumps; crop residue burning (CO<sub>2</sub>); and emissions from flooded soils, livestock waste, crop residue decomposition, and fertilizer volatilization (CH<sub>4</sub> and N<sub>2</sub>O)
- High GWP Gases: Refrigerants for stationary and mobile source air conditioning and refrigeration, electrical insulation (e.g., SF<sub>6</sub>), and various consumer products that use pressurized containers
- Recycling and Waste: Waste management facilities and landfills; primary emissions are CO<sub>2</sub> from combustion and CH<sub>4</sub> from landfills and wastewater treatment

### **State GHG Emissions Inventory**

CARB performs an annual GHG inventory for emissions and sinks of the six major GHGs. As shown in Figure 4.7-2, California produced 451.6 million metric tons (MMT) of CO<sub>2</sub>e in 2010 (IPCC 2007). Combustion of fossil fuel in the transportation sector was the single largest source of California's GHG emissions in 2010, accounting for 38 percent of total GHG emissions in the state. The transportation sector was followed by the electric power sector, which accounts for 23 percent of total GHG emissions in the State (including in- and out-of-state sources), and the industrial sector, which accounts for 21 percent of total GHG emissions in the State (CARB 2013b).





**Figure 4.7-2: 2010 California GHG Emissions by Sector**

#### **4.7.3 Significance Criteria**

The thresholds for significance of impacts for the analysis are based on the environmental checklist in Appendix G of the CEQA Guidelines. Consistent with the CEQA Guidelines and the professional judgment of the County's staff and environmental consultants, the proposed Project would result in a significant impact on the environment if it would:

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

#### **4.7.4 Impacts and Mitigation**

**GHG-1: Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment**

## **Construction and Operation**

Construction of renewable energy facilities associated with the proposed Project would generate GHG emissions. Site preparation activities, site grading, exhaust from vehicles transporting construction materials and personnel, and emissions from heavy-duty construction equipment could generate GHG emissions. Construction emissions would vary based on the number and types of heavy-duty vehicles and equipment in use, the intensity of construction activities, the number of construction personnel involved, and the length of time over which these construction activities would occur. Additionally, the level of GHGs emitted during construction would increase with the greater level of intensity of each of these factors. The types of emissions would be similar for construction of each renewable energy technology. The level of emissions would vary on a “project-by-project” basis based on the characteristics of individual projects.

Although it is anticipated that construction of renewable energy facilities would generate GHG emissions, estimates of future GHG emissions cannot be calculated at this time. The proposed Project would be implemented on a “project-by-project” basis based on County approval of individual renewable energy projects. Because the proposed Project only identifies locations suitable for renewable energy facilities and does not contain specific development proposals, construction-related emissions that may occur at any one time are speculative and cannot be accurately determined at this stage of the planning process. Consequently, it is not possible to quantitatively analyze whether the proposed Project would violate established GHG standards. Similarly, operational emissions associated with maintenance and inspection of future renewable energy facilities cannot be accurately determined at this stage of the planning process.

Introduction of renewable energy facilities under the proposed Project would displace power currently produced by carbon-based fuels that would otherwise be used to meet regional demand for electricity. As documented in the Draft EIR/EIS prepared for the DRECP, estimates prepared by the California Public Utilities Commission (CPUC) project that by 2020, the marginal power plant would consist of a new combined-cycle combustion turbine 95 percent of the time or a new combustion turbine 5 percent of the time. Based on this ratio, GHG emissions associated with marginal power production are 830 pounds CO<sub>2</sub>e per megawatt hour (MWh). Additionally, USEPA estimates presented in the DRECP EIR/EIS project that baseline GHG emissions for marginal power in California would be more than 990 pounds CO<sub>2</sub>e per MWh. (DRECP 2014).

Electricity generated by future renewable energy facilities developed under the proposed Project would displace GHG emissions currently produced by carbon-based fuels. Using the conservative estimate of GHG emissions for marginal power plants developed by the CPUC, future solar and wind facilities would eliminate a minimum of 830 pounds CO<sub>2</sub>e per MWh. Similarly, future geothermal energy facilities developed under the proposed Project would displace approximately 520 pounds CO<sub>2</sub>e per MWh. The displacement of CO<sub>2</sub>e for geothermal production would be reduced by 310 pounds CO<sub>2</sub>e per MWh due to the CO<sub>2</sub> that occurs naturally in geothermal steam released by operations at a geothermal plant (DRECP 2014). Consequently, displacement of power currently produced by carbon-based fuels by development of future renewable energy facilities would offset GHG emissions generated during construction, operation, and decommissioning of future renewable energy facilities and reduce impacts to a level less than significant. No mitigation measures would be required.

**GHG-2: Conflict with applicable plan, or policy, or regulation adopted for the purpose of reducing emissions of greenhouse gases**

**Construction and Operation**

As described in Section 4.7.1 above, the Imperial County General Plan does not include any policies that directly address GHG emissions; however, development of future renewable energy facilities under the proposed Project would displace power currently produced by carbon-based fuels and reduce regional GHG emissions. This displacement of GHG emissions would be consistent with EO S-3-05, AB 32, and other legislation related to the reduction of GHG emissions in California described above in Section 4.7.1. Therefore, the proposed Project would not conflict with any applicable plan, policy, or regulation adopted for reducing the emissions of GHGs; and impacts would be less than significant. No mitigation measures would be required.

**4.7.5 Cumulative Impacts**

Implementation of the proposed Project in conjunction with existing, approved, proposed, and reasonably foreseeable projects within the County would not result in cumulative emissions that would conflict with applicable plans, policies, or regulations adopted for the purpose of reducing the emissions of greenhouse gases. As described in Section 4.7.4, development of renewable energy facilities under the proposed Project would facilitate the reduction in GHG emissions by generating electricity from renewable energy resources rather than fossil fuel technologies. This displacement of GHGs would be consistent with EO S-3-05, AB 32, and other climate change legislation. Furthermore, construction of renewable energy facilities under the proposed Project and existing, approved, proposed, and reasonably foreseeable projects within the County would comply with emissions regulations pertaining to climate change. Therefore, implementation of the proposed Project would not generate cumulatively considerable GHG emissions; and cumulative impacts would be less than significant.

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