4.13 ENERGY AND GREENHOUSE GAS EMISSIONS

This section of the EIR assesses the change in the consumption of energy resources—electricity, natural gas, and petroleum fuels—that would occur with development of the proposed project. It determines whether such consumption would be wasteful and/or inefficient and whether an increased demand for energy resources would exceed the capacity of existing energy infrastructure, resulting in a need for new facilities. This section also addresses the climate change impacts from construction and operation of the proposed project and provides estimates of greenhouse gas (GHG) emissions.

The proposed project includes the construction of a warehouse/distribution facility consisting of a single building totaling 678,275 square feet (sf). Lot coverage would be 43 percent and the building height of the proposed project would not exceed 40 feet. Construction and operation activities would create permanent and temporary demand for energy resources, and GHGs would be emitted. Consumption of energy resources and subsequent emissions would result from construction, new and intensified land uses, and project-related transportation. Solid waste associated with the proposed project would also emit GHGs during decomposition.

Sources used for this discussion include energy forecast and consumption reports by the California Energy Commission (CEC); the *2007 Integrated Energy Policy Report* (CEC 2007a); the *Draft Guidance Document – Interim CEQA Greenhouse Gas (GHG) Significance Threshold* (SQAMD 2008a); *CEQA & Climate Change* (CAPCOA 2008) and the *Climate Change 2007: Fourth Assessment Report* (IPCC 2007). This section also uses quantitative data from the South Coast Air Quality Management District (SCAQMD); the 2007 URBEMIS air quality modeling software; the *Traffic Study for the Palm Avenue Warehouse/ Distribution Center City of San Bernardino* (Crain & Associates 2007; Appendix L2); the California Air Resources Board (ARB) websites; and other relevant resources. Full bibliographic entries for all referenced materials and communication are provided in Section 4.13.8 (References).

No comment letters related to energy and greenhouse gas emissions were received in response to the notice of preparation (NOP) circulated on August 3, 2007, for the proposed project.

Energy

4.13.1 Environmental Setting

Electricity

In 2003, Californians used approximately 6,961 kilowatt-hours (kWh) of electricity per person compared to the average U.S. per capita consumption of 11,646 kWh (CEC 2010b). To date, California's per capita consumption is the lowest in the country (CEC 2010b). This is due in part to California's mild climate, which reduces electricity demand for heating and cooling. In addition, California has strict state building code standards requiring energy efficiency (see discussion of Title 24 under Regulatory Framework).

While per capita consumption is low, the state's overall electricity consumption is the second highest in the country due to California's large population and thriving economy. Table 4.13-1 (2008 California Electrical Energy Production by Resource) inventories California's electricity production according to source of electricity[42] and by the proportion of in-state production compared to imported electricity. As shown below, the state consumed approximately 306,577 gigawatt-hours (GWh) of electricity in 2007.

Table 4.13-1 2008 California Electrical Energy Production by Resource Type (GWh)

Fuel Type	*In-State*	*Northwest Imports*	*Southwest Imports*	*Total Electricity Produced (GWh)*	*Percent (%) of Total System Production*
Coal[a]	3,977	8,581	43,271	55,829	18.21%
Large Hydro	21,040	9,334	3,359	33,733	11.00%
Natural Gas	122,216	2,939	15,060	140,215	45.74%
Nuclear	32,482	747	11,039	44,268	14.44%
Renewables:	28,804	2,344	1,384	32,532	10.61%
Biomass	5,720	654	3	6,377	2.08%
Geothermal	12,907	0	755	13,662	4.46%
Small Hydro	3,729	674	13	4,415	1.44%
Solar	724	0	22	746	0.24%
Wind	5,724	1,016	591	7,331	2.39%
Total	***208,519***	***23,945***	***74,113***	***306,577***	***100.00%***

SOURCE: CEC 2009a

1 GWh = 1,000 MWh = 1,000,000 kWh. A **watt** is the rate of energy transfer equivalent to 1 ampere flowing under a pressure of 1 volt at unit power factor. A **watt-hour** is an electric energy unit of measure equal to 1 watt of power supplied to (or taken from) an electric circuit steadily for 1 hour.

In 1999, 82 percent of the electricity consumed in California was produced in state. In 2008, this number dropped to 68 percent (CEC 2009a). The drop in California's productive capacity can be linked to the closure of several aging power plants (CEC 2007c). While the California Energy Commission (CEC) has set a state goal of meeting 33 percent of California's electricity demand through renewable energy resources by 2020, the state does not appear to be on track to meet this goal (CEC 2009a). Private electricity providers, such as Southern California Edison (SCE), PG&E, and San Diego Gas and Electric, have contracts with renewable energy providers for approximately 10,271 megawatts (MW) of renewable capacity. However, renewable facilities that are online and delivering electricity today accounts for 900 MW of the total. In addition to making the rest of the currently contracted renewable facilities operational, additional contracted sources would be needed to meet the CEC 2020 goal.

SCE is the primary distribution provider for electricity for the proposed project area. It is one of the nation's largest electric utilities, serving a population of more than 14 million in a 50,000-square-mile service area, encompassing eleven counties within central, coastal, and Southern California (SCE 2010a). SCE is a regulated electrical utility and, as such, maintains electrical facilities and infrastructure within the

[42] The production of electricity requires the consumption or conversion of resources, including water, wind, oil, natural gas, coal, solar, geothermal, and nuclear.

City and surrounding areas. Those facilities and infrastructure are expected to be used to provide service to the SCE Planning Area under the applicable rules and tariffs approved by the California Public Utilities Commission (CPUC). SCE derives its electricity from a variety of sources; nearly half of its electricity comes from natural gas, and almost 20 percent comes from renewable sources. The remaining 30 percent is derived from sources such as geothermal, coal, and hydroelectric. Within San Bernardino County, SCE operates the Etiwanda Power Plant, a thermal generating station, accounting for approximately 10.5 percent of the SCE-generating capacity in San Bernardino County. In addition, eight small hydroelectric power plants are situated on the south side of the San Bernardino Mountains, which accounts for less than 1 percent of the total capacity.

Electricity Conservation Efforts

SCE's energy-efficiency and conservation programs are approved annually by the CPUC. Customers are notified of current efficiency and conservation programs through notices in monthly bills and through group seminars (e.g., presentations to trade organizations or local Chambers of Commerce). Larger business customers are encouraged to participate in conservation programs during individual consultations. Energy efficiency programs are designed for specific uses such as lighting, refrigeration, HVAC, pumping (agricultural, golf courses, lakes, water districts, etc.), and often include rebates for energy-efficient appliances, air conditioning and refrigeration compressor replacements, and energy-efficient lighting.

Natural Gas

Natural gas is a fossil fuel, a non-renewable fuel formed from the fossilized remains of plants and animals, similar to other hydrocarbons such as coal or oil. Therm factors are used to convert the volume of gas to its heat equivalent, one million cubic feet equals 10.31 therms of natural gas. At 60.0 cubic feet per year, California's per capita natural gas consumption is lower than the national average of 67.9 cubic feet per year (CEC 2010a).[43] However, in terms of total statewide natural gas consumption, California is second only to Texas. As with electricity, California's high statewide natural gas consumption results from the state's large population and its vigorous economy. In 2009, 13 percent of California's natural gas supply was provided through in-state sources. The rest of the natural gas consumed in California came from the southwest (41 percent), the Rocky Mountains (24 percent), and Canada (22 percent) (CEC 2009a). Approximately 40 percent of the 2,449,599 million cubic feet[44] of natural gas consumed in California annually goes towards the production of electricity.

Natural gas is provided to the proposed project area by Southern California Gas Company (SCGC), which provides service to 19 million people in California. SCGC purchases natural gas from several bordering states. As development occurs, SCGC upgrades and extends its service to new development projects. SCGC has indicated that it will continue to extend services to accommodate development (SCGC 2010).

[43] Based on 2008 data, the most current information available.
[44] 100 cubic feet equals 1 therms of natural gas.

Oil and Petroleum

Because California is one of the top oil-producing states in the country, the state has been historically able to meet a large portion of its internal demand for petroleum resources through in-state sources. However, as with other energy resources, demand for energy resources has risen steadily over the past few decades while production capacity and extraction volumes have decreased.

California has several major refining facilities with a combined crude oil distillation capacity totaling more than 1.8 million barrels per day (CEC 2009a). While California is currently ranked fourth in the nation among oil producing states (behind Louisiana, Texas, and Alaska) (CEC 2007d), its crude oil production has been slipping in the last decade. California experienced a 40 percent decrease in production between 1998 and 2008 (CEC 2009a). In 2005, approximately 38 percent of California's oil supply was produced in state, 16 percent was imported from Alaska, and 46 percent was from foreign sources (CEC 2009a).

California consumes more petroleum products (gasoline, diesel, fuel oil, and kerosene) than any other state; nearly 44 million gallons of gasoline and 10 million gallons of diesel per day (CEC 2006b). According to the CEC, approximately half of the energy consumed in California is for transportation (CEC 2010b). Although alternative fuels, such as alcohol-based fuels, biomass fuels (e.g., biodiesel), natural gas and hydrogen, are in increasing demand, the transportation sector relies heavily on petroleum fuels. In 2007, Californians consumed an estimated 20 billion gallons of gasoline and diesel fuel for transportation, an increase of nearly 50 percent over the last 20 years (CEC 2010b). Statewide fuel efficiency is approximately 18.15 miles per gallon (Caltrans 2009). The declining supply of in-state petroleum products, coupled with increasing demand, has resulted in an increased need for imported oil resources. According to the CEC, California's reliance on crude oil imports will increase from 406 million barrels in 2008 to between 497 million (low forecast) and 596 million (high forecast) barrels in 2030.

4.13.2 Regulatory Framework

Federal

Energy Policy Act of 2005

The Energy Policy Act of 2005 is a federal policy that promotes the development of renewable energy resources. In addition, the Act provides incentives (i.e. tax credits) to residential and business consumers who purchase energy-efficient vehicles and appliances, install qualified fuel cells, stationary microturbine power plants, and solar power equipment, and to businesses that retrofit or construct new buildings to meet energy efficient standards.

State

California Code of Regulations (CCR) Title 24

CCR Title 24, Part 6 (California's Energy Efficiency Standards for Residential and Nonresidential Buildings) (Title 24) was first established in 1978 in response to a legislative mandate to reduce California's energy consumption. The standards are updated periodically to increase the baseline energy efficiency requirements. Although it was not originally intended to reduce GHG emissions, electricity production by fossil fuels results in GHG emissions and energy efficient buildings require less electricity. Therefore, increased energy efficiency results in decreased GHG emissions. The 2008 standards are the most recent version which went into effect in January 1, 2010.

CCR Title 24, Part 11 (California's Green Building Standard Code) (CALGreen) was adopted in 2010 and went into effect January 1, 2011. CALGreen is the first statewide mandatory green building code and significantly raises the minimum environmental standards for construction of new buildings in California. The Mandatory provisions in CALGreen will reduce the use of VOC-emitting materials, strengthen water conservation, and require construction waste recycling.

Regional

There are no regional policies that would apply to energy facilities and energy consumption for the proposed project.

Local

City of San Bernardino General Plan

The following goals and policies pertaining to energy that are applicable to the proposed project are contained in the City of San Bernardino General Plan:

Goal 13.1 Conserve scarce energy resources.

Policy 13.1.2 Ensure the incorporation of energy-conservation features in the design of all new construction and site development in accordance with state law.

Consistency Analysis

The proposed project would incorporate several energy-saving measures into site design, including energy-saving interior and exterior light fixtures, light-colored asphalt paving surfaces, Energy Star compliant appliances, low-flow toilets, and maximum use of non-reflective building surfaces to the extent feasible to minimize energy consumption. The project would comply with all Title 24 requirements to maximize energy efficient. Therefore, the project would not conflict with this goal and policy.

4.13.3 Project Impacts and Mitigation Measures

Analytic Method

The proposed project would result in the development of 678,275 sf of warehouse uses. This analysis estimates the proposed project's energy consumption based on the types and intensity of the proposed land use, the total annual vehicle miles traveled (VMT), and types and intensity of construction activities.

Construction

The proposed project would consume petroleum for operation of construction vehicles and to generate electricity for equipment, such as welding machines and power tools. Energy consumed by construction power equipment would be relatively minimal, as would construction energy required for lighting and heating of trailers and operation of ancillary electrical equipment. Energy would also be required for extraction and transportation of raw materials and pre-construction manufacturing, an indirect form of consumption. Construction would occur over a period of twenty-two months in three phases:

- **Phase 1**—approximately 12 months of excavation, grading, and site preparation
- **Phase 2**—approximately 7 months of building construction, including pouring the building foundation, forming the concrete panels that will become the sides of the building, and erecting (tilting up) the structure
- **Phase 3**—approximately 3 months of finishing and landscaping

Construction-related consumption is difficult to estimate because variables such as the model and age of equipment used and the nature of the terrain and existing site uses can affect the amount of total horsepower needed and the efficiency with which horsepower loads are managed. Therefore, a quantitative estimate of construction-related energy demand is discussed in more detail in Section 4.2 (Air Quality) of this EIR. However, construction of the proposed project would not generate atypical or exceptionally high energy demand. All activities would be typical of construction activities employed for projects of a similar size and nature.

Operation

Table 4.13-2 (Project Energy Demand) shows the proposed project's estimated electricity, natural gas and petroleum consumption. Electricity and natural gas consumption vary by the type of uses, the type of construction materials used to construct it, and the efficiency of the energy-consuming devices it contains. Consumption generation factors were applied to the square footage of the proposed project to obtain a consumption figure for each proposed use. Electricity would be used by on-site workers for space heating and cooling, ventilation, water heating, interior and exterior lighting, office and other equipment, air compressors, and motors. Natural gas would be used by on-site occupants for space heating and water heating. Based on the size of the proposed project, 7,325,370 kWh/year of electricity and 124,803 therms/ year of natural gas would be consumed at project build-out. The majority of the energy consumed in the form of petroleum products by the proposed project during its operational phase (excluding construction-related consumption) would be attributable to vehicular consumption.

Table 4.13-2 shows the proposed project's annual petroleum consumption at build-out. These data are based on the *California Motor Vehicle Stock, Travel and Fuel Forecast* prepared by the California Department of Transportation (Caltrans 2006) and on estimates of VMT based on current statewide averages (calculations are shown in the Notes).

Table 4.13-2 Projected Annual Energy Demand

	Basis for Consumption Estimate (floor area or VMT)	*Energy Consumption Rates*	*Projected Energy Consumption*
Electricity	678,275 sf	10.8 kWh/sf/year[a]	7,325,370 kWh/year
Natural Gas	678,275 sf	0.184 therms/sf/year[a]	124,803 therms/year
Petroleum	43,745 VMT	18.15 miles/gallon	2,410 million gallons/year

SOURCE: Caltrans, *California Motor Vehicle Stock, Travel and Fuel Forecast* (2009).

a. Energy Information Administration, Office of Energy Markets and End Use, Residential Energy Consumption Survey 2005 Data Table US8 and Forms EIA-871A, C, and E of the 2003 Commercial Buildings Energy Consumption Survey. Energy consumption rates are based on the "warehouse, greater than 100,000 sf" land use category.

VMT= vehicle miles travelled (annually)

Thresholds of Significance

The following thresholds of significance are based on Appendix G of the 2011 CEQA Guidelines and City-specific thresholds, where applicable. For purposes of this EIR, implementation of the proposed project may have a significant adverse impact to energy resources if it would:

- Encourage the wasteful or inefficient use of energy
- Require or result in the construction of new energy production and/or transmission facilities or expansion of existing facilities, the construction of which could cause significant environmental effects

Project Impacts and Mitigation Measures

Threshold	Would the proposed project encourage the wasteful or inefficient use of energy?

Impact 4.13-1 The proposed project would not encourage the wasteful or inefficient use of energy. This is considered a *less-than-significant* impact.

Construction. Energy would be consumed during construction of the proposed project, primarily in the form of petroleum fuels and electricity. Fuel would be needed for vehicles and construction equipment and to run electrical generators for uses such as lighting, welding machines, and power tools. Fuel would also be consumed during the production and transport of raw materials. Construction of the proposed project would result in a permanent consumption of finite energy resources. However, construction would consist of temporary activities that would not result in long-term demand for energy. The California Air Resources Board recently passed amendments to Title 13 of the CCR, which requires heavy diesel vehicles to restrict idling to five minutes or less. While these requirements were designed to

prevent polluting emissions (see Section 4.2), the anti-idling amendments have the added benefit of reducing fuel consumption.

Operation. The proposed project would result in the long-term consumption of energy in the form of electricity, natural gas, and petroleum-based fuel. Although the proposed project would consume energy, such consumption would not be expected to be wasteful or inefficient. Based on the information provided in Table 4.13-2, the total annual electricity consumption by the proposed project is estimated to be 7,325,370 kWh/year. The project-generated demand for natural gas would be 124,803 therms/year. The proposed project would consume approximately 2,410 gallons of petroleum. As described in greater detail below under Impact 4.13-3, the proposed project would incorporate energy-reducing project features that would reduce electricity, natural gas, and petroleum use. Features include close proximity to a transit facility and regional transportation routes, and the use of landscaping to reduce the heat island effect. Moreover, the proposed project would be required to comply with the energy-efficiency building standards in Title 24, and the Pavley fuel efficiency standards for passenger vehicles.

In addition to City policies and ordinances, existing federal and state programs are credited with reducing GHG emissions in California. The California Energy Commission's Title 24 sets energy-efficiency standards for diesel-engine idling restrictions, the required use of low carbon fuels, and vehicle emission standards, which help to reduce the production of GHGs throughout the City. This would be a ***less-than-significant*** impact.

Threshold	Would the proposed project require or result in the construction of new energy production and/or transmission facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?

Impact 4.13-2 **The proposed project would not require new energy production or transmission facilities, the construction of which would cause significant environmental effects. This is considered a *less-than-significant* impact.**

The project site is currently undeveloped and does not consume energy. Implementation of the proposed project would increase the use of electricity at the project site for lighting, heating, and air conditioning proposed buildings, and for illuminating parking areas. The proposed project would therefore contribute to a demand for new energy infrastructure in the SCE Planning Area. SCE has proposed to invest $20 billion during coming years in its transmission and distribution systems throughout its 50,000-square-mile service area (SEC 2010b). The upgrading of existing equipment would occur while SCE accommodates significant customer growth. However, the proposed project's contribution to demand for new facilities would be incremental, and new facilities would not be constructed as a direct result of the proposed project. The proposed project would not, therefore, contribute to potentially significant environmental impacts associated with the construction of electricity generation and transmission facilities.

The proposed project would be served by natural gas lines approved by SCGC. Underground natural gas lines would be extended to the project site to serve the proposed project. Installation of these lines would require excavation and would have potentially significant construction-related impacts. Construction-related impacts to air quality, biological resources, archaeological/paleontological resources, and hydrology are discussed in Section 4.2, Section 4.3 (Biological Resources), Section 4.4 (Cultural

Resources), and Section 4.7 (Hydrology/Water Quality). In each of these sections, the construction-related impacts of the proposed project were either determined to be less than significant or were mitigated to a less-than-significant level (with the exception of PM_{10} during construction). No additional construction-related impacts, beyond those discussed in those sections of this environmental document, would occur as a result of the extension of new utilities lines to the project site. The physical and environmental impact of constructing new infrastructure for the proposed project would not result in adverse environmental effects. This would be a ***less-than-significant*** impact.

4.13.4 Cumulative Impacts

Construction of cumulative development would result in consumption of energy resources. However, consumption associated with construction would be temporary and would not constitute wasteful or inefficient energy use. The proposed project, and related projects, would be expected to comply with the energy efficiency standards in Title 24. In accordance with these policies, all development would use building design strategies to discourage wasteful, inefficient energy consumption. The cumulative construction and operational impact with regard to the consumption of energy resources would be less than significant. The project's contribution to this cumulative impact would not be considerable, and the project's cumulative impact would be ***less than significant***.

The determination that existing power facilities would have sufficient capacity to serve the proposed project site takes into account reasonably foreseeable development in the vicinity of the project site. It is not anticipated that the construction of new energy production and/or transmission facilities or expansion of existing facilities would be needed to support development under the cumulative scenario.

Construction of gas and electricity lines on other developments sites would undergo separate environmental review, which would disclose site-specific impacts that cannot be accounted for in this document due to a lack of information. The site-specific details of future development projects are speculative and fall outside the scope of this analysis.

Thus, impacts related to the construction of new energy production and/or transmission facilities or expansion of existing facilities would be less than significant for the cumulative scenario. For all of the reasons previously identified with regard to the construction of new energy production and/or transmission facilities to serve the proposed project, the project's contribution to this cumulative impact would not be considerable, and the project's cumulative impact would be ***less than significant***.

<u>Greenhouse Gas Emissions</u>

4.13.5 Environmental Setting

Overview

The term "climate change" refers to global and regional variations in wind patterns, storm intensity, precipitation, and temperature that occur over time. It is widely accepted that emissions of GHGs and

aerosols, and changes in land cover associated with development are accelerating global climate change and that adverse environmental impacts would likely result. Over time, the Earth's climate has undergone several periods of change, such as ice ages and warm periods, traced through fossil isotopes, ice core samples, and other measurement techniques. Recent climate change studies use the historical record to predict future climate variations and what level of fluctuation might be considered statistically "normal" given historical trends. Temperature records from the last 150 years, the Industrial Age, deviate from normal predictions in both rate and magnitude. Most climatologists predict an unprecedented warming period during the next century and beyond. This warming trend is increasingly attributed to human-generated GHG emissions resulting from the industrial processes, transportation, solid waste generation, and land use patterns of the twentieth and twenty-first centuries. According to the United Nations Intergovernmental Panel on Climate Change (IPCC), GHG emissions associated with human activities have grown since pre-industrial times, increasing by 70 percent between 1970 and 2004 (IPCC 2007).

The IPCC has constructed several emission trajectories of GHG emissions needed to stabilize global temperatures and minimize climate change impacts. The IPCC predicted that the range of global mean temperature change from 1990 to 2100, given six scenarios, could range from 1.1 degrees Celsius (°C) to 6.4°C. The IPCC projects an increase of global GHG emissions by 25 to 90 percent between 2000 and 2030, depending on the reduction thresholds, mitigation, and alternative fuel development that are pursued around the world during this period. It should be noted that regardless of the analytical methodology used and the level of GHG reductions that are assumed, global average temperature and sea level are expected to rise under all scenarios modeled by the IPCC (IPCC 2007).

Greenhouse Gases

Gases that trap heat in the atmosphere are called GHGs because they transform the light of the sun into heat, similar to the glass walls of a greenhouse. It is believed that emissions from human activities, such as electricity production and vehicle use, have elevated the concentration of these gases in the atmosphere beyond the level of naturally occurring concentrations. Global atmospheric concentrations of carbon dioxide, methane, and nitrous oxide have increased markedly since 1750 as a result of human activities and now far exceed pre-industrial values determined from ice cores spanning many thousands of years. The following provides a brief description of the GHGs included in the following analysis.

Carbon Dioxide enters the atmosphere through the burning of fossil fuels (e.g., oil, natural gas, and coal), solid waste, and trees and wood products, and as a result of other chemical reactions, such as those required to manufacture cement. Globally, the largest source of carbon dioxide emissions is the combustion of fossil fuels such as coal, oil, and gas in power plants, automobiles, industrial facilities, and other sources. A number of specialized industrial production processes and product uses such as mineral production, metal production, and the use of petroleum-based products can also lead to carbon dioxide emissions. Carbon dioxide is also removed from the atmosphere (or "sequestered") when it is absorbed by plants as part of the biological carbon cycle. Natural sources of carbon dioxide that occur within the carbon cycle where billions of tons of atmospheric carbon dioxide are removed from the atmosphere by oceans and growing plants, also known as "sinks," and are emitted back into the atmosphere annually through natural processes, also known as 'sources.' When in balance, the total carbon dioxide emissions and removals from the entire carbon cycle are roughly equal. Since the Industrial Revolution in the

1700s, human activities, including burning of oil, coal and gas and deforestation, have increased carbon dioxide concentrations in the atmosphere. In 2005, global atmospheric concentrations of carbon dioxide were 35 percent higher than they were before the Industrial Revolution (USEPA 2010b).

Methane is emitted from a variety of both human-related and natural sources. Human-related activities include fossil fuel production, animal husbandry, rice cultivation, biomass burning, and waste management. Methane is emitted during the production and transport of coal, natural gas, and oil. Methane emissions also result from livestock and other agricultural practices and by the decay of organic waste in municipal solid waste landfills. It is estimated that 60 percent of global methane emissions are related to human-related activities. Natural sources of methane include wetlands, gas hydrates, permafrost, termites, oceans, freshwater bodies, non-wetland soils, and other sources, such as wildfires. Methane emission levels from a particular source can vary significantly from one country or region to another, depending on many factors such as climate, industrial and agricultural production characteristics, energy types and usage, and waste management practices. For example, temperature and moisture have a significant effect on the anaerobic digestion process, which is one of the key biological processes that cause methane emissions in both human-related and natural sources. Also, the implementation of technologies to capture and utilize methane from sources such as landfills, coalmines, and manure management systems affects the emission levels from these sources (USEPA 2010b).

Nitrous oxide, more commonly known as "laughing gas," is produced naturally by microbial processes in soil and water. In addition to agricultural sources, some industrial processes, such as fossil fuel-fired power plants, nylon production, nitric acid production, and vehicle emissions, also contribute to its atmospheric load. It is used in rocket engines, racecars, and as an aerosol spray propellant. Global concentration of nitrous oxide in 1998 was 314 parts per billion (ppb) (USEPA 2010b).

Chlorofluorocarbons (CFCs) have no natural source, but were synthesized for uses as refrigerants, aerosol propellants, and cleaning solvents. Since their creation in 1928, the concentrations of CFCs in the atmosphere have been rising. Due to the discovery that they are able to destroy stratospheric ozone, a global effort to halt their production was undertaken and has successfully reduced or stopped the increase in the levels of the major CFCs. However, due to the long atmospheric lifetimes, CFCs will remain in the atmosphere for over 100 years. CFCs, Tetrafluoromethane (CF_4), sulfur hexafluoride (SF_6), and hydrofluorocarbons (HFCs) have been banned and are no longer commercially available. Therefore, they are not considered any further in this analysis.

Hydrofluorocarbons (HFCs) are another set of synthesized compounds. HFCs are also considered GHGs, though they are less stable in the atmosphere and therefore have a shorter lifetime and less of an impact than CFCs.

Global atmospheric concentrations of the above-mentioned GHGs have increased markedly as a result of human activities and now far exceed pre-industrial era values. The accumulation of GHGs in the atmosphere regulates the earth's temperature. The elevated concentration of GHGs, in turn, is causing the earth's temperature to rise. A warmer earth may lead to changes in rainfall patterns, much smaller polar ice caps, a rise in sea level, and a wide range of impacts on plants, wildlife, and humans. GHG emissions from California are comprised of approximately 81 percent carbon dioxide from fossil fuel

combustion, four percent carbon dioxide from process emissions, six percent from methane, and seven percent from nitrous oxide. The remaining two percent of GHG emissions in California are comprised of other GHGs.

Global Warming Potential

As shown in Table 4.13-3 (Global Warming Potentials and Atmospheric Lifetimes of Common GHGs), individual GHGs have varying individual global warming potentials (GWP) and atmospheric lifetimes. GHG emissions are typically reported in terms of CO_2 equivalent (CO_2e) to provide a common unit of measure, and because CO_2 is the most prevalent of all GHGs. The reference gas for GWP is carbon dioxide, with a GWP of one. Other GHGs are converted into CO_2e on the basis of their global warming potential (GWP), which is defined as the cumulative radiative forcing[45] effects of a gas over a specified time horizon in comparison to CO_2. For example, methane's GWP is 23, since methane has a greater global warming effect than carbon dioxide on a molecule-to-molecule basis. One teragram ([Tg] equal to one million metric ton [MT]) of CO_2e is the mass of a project emissions of an individual GHG multiplied by the gas's GWP. The following discussion details the project's generation of total CO_2e emissions.

Table 4.13-3 Global Warming Potentials and Atmospheric Lifetimes of Common GHGs

GHG	*Formula*	*100-Year Global Warming Potential[a]*	*Atmospheric Lifetime (years)*
Carbon dioxide	CO_2	1	Variable
Methane	CH_4	21	12 (± 3)
Nitrous oxide	N_2O	310	120
Sulphur hexafluoride	SF_6	23,900	3,200

SOURCE: USEPA 2009

a. The warming effects over a 100-year time frame relative to other GHG.

Regional Adverse Effects of Climate Change

The increasing atmospheric concentration of GHGs resulting from human activities is changing the climate in ways that pose serious risks to health, economy, and environment. Potential consequences of climate change on the project site could include impacts on water resources, public health, electricity supplies, fire suppression resources, and vegetation.

Human Health

One of the biggest risks to the health of climate change is air pollution. Increased heat may increase ozone levels and air pollution toxicity, which may intensify respiratory cases and death attributed to

[45] Radiative forcing is the change in balance between radiation entering the Earth's atmosphere and radiation being emitted back into space. A "positive radiative forcing effect" means that the ratio of incoming to outgoing radiation increases, generally resulting in a warming of the Earth. Conversely, a "negative radiative forcing effect" generally results in cooler Earth temperatures

asthma and pulmonary inflammation. Warmer temperatures could increase the opportunities for tick-borne Lyme disease and mosquito-borne diseases such as West Nile virus. Cases of dehydration, heat stroke/exhaustion, heart attack, stroke, and respiratory distress caused by extreme heat may also increase (USEPA 2010c).

Ecosystems

The ecosystems that support the San Bernardino area through water and food supplies, as well as the city's economy, will endure a variety of stresses associated with climate change. There is some uncertainty about exactly how changes in temperature and precipitation will impact the health of ecosystems, and how sensitive their interdependent systems are to any significant level of change (USEPA 2010c).

Temperature

If GHGs continue to increase, climate models predict that the average temperature at the Earth's surface could increase from 3.2 to 7.2°F above 1990 levels by the end of this century (USEPA 2010a). The average maximum daily temperature for the City of San Bernardino between 1893 and 2004 was 79.9°F. Given a 7-degree increase, the average daily temperature could reach up to 86.9°F by 2100.

Water Resources

Southern California is a semi-arid region and is largely dependent upon imported water supplies. A growing population, climate change, environmental concerns, and other factors in other parts of the state and western United States, make the city highly susceptible to water supply reliability issues. Primary water supplies from snow packs in the Sierra Nevada mountain range could be reduced by as much as 20 to 40 percent by 2100 (CEC 2009b).

Fire Risk

The occurrence of wildfires could increase as much as 53 percent, especially in areas interfacing with natural vegetation (CEC 2009b). The project site is currently vacant and does not interface with natural vegetation. Although the hill features and undisked portions of the site support various vegetation communities, the majority of the flat terrain has been disked. Further, the project site is not located within Foothill Fire Zones A & B or C as identified on the Land Use Plan/Zoning Districts Map of the General Plan.

Increased Frequency of Rolling Blackouts

A blackout refers to the total loss of power to an area. Blackouts come without warning, last for indeterminate periods, and are typically caused by catastrophic equipment failure, severe weather, or excessive power demands. Summer electricity shortages could occur as early as 2020, as southern California is considered particularly vulnerable (CEC 2009b). Worst-case scenarios include rolling and/or total black outs. The nature, cause, and locality of the blackout determine who is affected. Outages may last from a few hours to a few weeks depending on the nature of the blackout and the configuration of the electrical network. Rolling blackouts are deliberate power cuts which are designed to reduce the load

on an electricity generation system and the power grid. Rolling blackouts are a last resort measure used by an electricity provider in order to avoid a total blackout of the power system. They are usually in response to a situation where the demand for electricity exceeds the power supply capability of the network. Rolling blackouts may be localized to a specific part of the electricity network or may be more widespread and affect the entire city. Rolling blackouts typically last only a few hours.

Almost all modern activities depend on electricity. An electricity blackout causes impacts to every aspect of daily life, virtually bringing daily activities to a complete standstill. Electrical loss could affect daily commutes (no traffic signals or trains), elevator use, office functions (no light, computers, copiers, or faxes), food preparation (no microwave, refrigerators, appliances, or solid-state ignition), and communications (no television or radio.). Emergency services would be drastically affected. As electricity demand increases and sources decrease, cost will rise and affect our overall economy.

Existing Greenhouse Gas Emissions

The City of San Bernardino has not prepared a GHG emissions inventory for the city. A GHG emissions inventory has been prepared for San Bernardino County through the year 2020 (SCAQMD 2009). The inventory focused on the areas of the county where the County of San Bernardino has land use jurisdiction; however, GHG emissions inventories were included for the entire County. The inventory reported that, in 2007, GHG emissions in the County were 32 million MT CO_2e. GHG emissions are predicted to increase to 41 million MT CO_2e by year 2020. Mobile emissions account for the greatest percentage of GHG emissions, 34 percent in 2007, and 37 percent in 2020.

The South Coast Air Quality Management District (SCAQMD) has not completed a GHG emission inventory for the South Coast Air Basin. According to the ARB, the total gross GHG emissions in California in 2008 totaled 478 million MT CO_2e. The greatest contributor to the GHG emissions was transportation, which resulted in 175 million MT CO_2e, or 37 percent of total emissions.

Greenhouse Gas Emissions from Development

Implementation of the proposed project would generate GHGs through the construction and operation of warehouse and distribution center uses. GHG emissions from the project would specifically arise from equipment used for extraction and processing of raw materials, and emissions from construction processes and from sources associated with project operation, including direct sources such as motor vehicles, natural gas consumption, solid waste handling/treatment, and indirect sources such as electricity generation.

4.13.6 Regulatory Setting

Federal

Clean Air Act

The Clean Air Act (CAA) of 1970 and the CAA Amendments of 1971 required the USEPA to establish National Ambient Air Quality Standards (NAAQS) with states retaining the option to adopt more stringent standards or to include other specific pollutants. On April 2, 2007, the Supreme Court found that GHGs, including carbon dioxide, are air pollutants covered by the CAA; however, no NAAQS have been established for GHGs.

Final Mandatory Reporting of Greenhouse Gas Rule

In September 2009, the USEPA issued the Final Mandatory Reporting of GHG Rule. The rule requires reporting of GHG emissions from large sources and suppliers in the United States, and is intended to collect accurate and timely emissions data to inform future policy decisions. Under the rule, suppliers of fossil fuels or industrial GHGs, manufacturers of vehicles and engines, and facilities that emit 25,000 MT or more per year of GHGs are required to submit annual reports to USEPA. The USEPA estimates that the rule covers about 10,000 facilities nationwide, accounting for about 85 percent of GHG emissions in the United States.

State

Executive Order S-3-05

California Governor Arnold Schwarzenegger announced on June 1, 2005, through Executive Order S-3-05, the following GHG emission reduction targets: by 2010, reduce GHG emissions to 2000 levels; by 2020, reduce GHG emissions to 1990 levels; by 2050, reduce GHG emissions to 80 percent of 1990 levels.

The first California Climate Action Team (CAT) Report to the Governor in 2006 contained recommendations and strategies to help meet the targets in Executive Order S-3-05. The latest CAT Biennial Report was released in April 2010. It expands on the policy oriented 2006 assessment. This report provides new information and scientific findings. The new information and details in the CAT Assessment Report include development of new climate and sea-level projections using new information and tools that have become available in the last two years; and evaluation of climate change within the context of broader social changes, such as land-use changes and demographic shifts (CAT 2010). The action items in the report focus on the preparation of the Climate Change Adaptation Strategy, required by Executive Order S-13-08, described below.

Assembly Bill 32

In September 2006, the California State Legislature adopted Assembly Bill (AB) 32, the California Global Warming Solutions Act of 2006. AB 32 focuses on reducing GHG emissions in California. GHGs as defined under AB 32 include carbon dioxide, methane, nitrous oxide, HFCs, perfluorocarbons, and sulfur hexafluoride. Under AB 32, the ARB has the primary responsibility for reducing GHG emissions and managing the CAT to coordinate statewide efforts and promote strategies that can be undertaken by many other California agencies. AB 32 requires the ARB to adopt rules and regulations that would achieve GHG emissions equivalent to statewide levels in 1990 by 2020. In general, AB 32 directs the ARB to do the following:

1. Make publicly available a list of discrete early action GHG emission reduction measures that can be implemented prior to the adoption of the statewide GHG limit and the measures required to achieve compliance with the statewide limit
2. Make publicly available a GHG inventory for the year 1990 and determine target levels for 2020
3. On or before January 1, 2010, adopt regulations to implement the early action GHG emission reduction measures
4. On or before January 1, 2011, adopt quantifiable, verifiable, and enforceable emission reduction measures by regulation that will achieve the statewide GHG emissions limit by 2020, to become operative on January 1, 2012, at the latest; the emission reduction measures may include direct emission reduction measures, alternative compliance mechanisms, and potential monetary and non-monetary incentives that reduce GHG emissions from any sources or categories of sources that the ARB finds necessary to achieve the statewide GHG emissions limit
5. Monitor compliance with and enforce any emission reduction measure adopted pursuant to AB 32

Regarding the first two bullets, the ARB has already made available a list of discrete early action GHG emission reduction measures. The ARB has also published a staff report titled *California 1990 GHG Emissions Level and 2020 Emissions Limit* (ARB 2007d) that assessed the statewide levels of GHG emissions in 1990. The ARB identified 427 MMT CO_2e as the total statewide aggregated GHG 1990 emissions level and 2020 emissions limit. Additionally, in December 2008, the ARB adopted the Climate Change Scoping Plan, which outlines the state's strategy to achieve the 2020 GHG limit. This Scoping Plan proposes a comprehensive set of actions designed to reduce overall GHG emissions in California, improve the environment, reduce dependence on oil, diversify energy sources, save energy, create new jobs, and enhance public health. The plan emphasizes a cap-and-trade program, but also includes the discrete early actions.

Title 24, Part 6

Although it was not originally intended to reduce GHG emissions, by reducing California's energy consumption, Title 24 has become a de facto means of reducing California's GHG emissions. Energy efficient buildings require less electricity, and electricity production by fossil fuels results in GHG emissions. Therefore, increased energy efficiency results in decreased GHG emissions. The energy efficiency standards in Title 24 are updated periodically to allow consideration and possible incorporation of new energy efficiency technologies and methods.

The Energy Commission adopted 2008 Standards on April 23, 2008, and the Building Standards Commission approved them for publication on September 11, 2008. The 2008 updates became effective on August 1, 2009. The Energy Commission adopted the 2008 changes to the Building Energy Efficiency Standards for several reasons:

1. To provide California with an adequate, reasonably priced, and environmentally sound supply of energy
2. To respond to AB 32, the Global Warming Solutions Act of 2006, which mandates that California must reduce its GHG emissions to 1990 levels by 2020
3. To pursue California energy policy that energy efficiency is the resource of first choice for meeting California's energy needs
4. To act on the findings of California's Integrated Energy Policy Report (IEPR) that concludes that the Standards are the most cost effective means to achieve energy efficiency, expects the Building Energy Efficiency Standards to continue to be upgraded over time to reduce electricity and peak demand, and recognizes the role of the Standards in reducing energy related to meeting California's water needs and in reducing GHG emissions
5. To meet the West Coast Governors' Global Warming Initiative commitment to include aggressive energy efficiency measures into updates of state building codes
6. To meet the Executive Order in the Green Building Initiative to improve the energy efficiency of nonresidential buildings through aggressive standards

Senate Bill 375

SB 375, approved by the governor on September 30, 2008, requires metropolitan planning organizations (MPOs) to include sustainable communities strategies (SCS), as defined, in their regional transportation plans (RTPs) for the purpose of reducing GHG emissions, aligns planning for transportation and housing, and creates specified incentives for the implementation of the strategies. Specifically, this bill makes findings and declarations concerning the need to make significant changes in land use and transportation policy in order to meet the GHG reduction goals established by AB 32. SB 375 also requires ARB to develop regional GHG emission reduction targets to be achieved from the automobile and light truck sectors for 2020 and 2035 by September 30, 2010. The eighteen Metropolitan Planning Organizations in California will prepare a SCS to reduce the amount of vehicle miles traveled in their respective regions and demonstrate the ability for the region to attain ARB's targets. Within eight years cities will be required to update housing plans required by the state.

Senate Bill 97

The provisions of Senate Bill 97, enacted in August 2007 as part of the state budget negotiations, direct the Office of Planning and Research (OPR) to propose CEQA Guidelines advising lead agencies how to mitigate the impacts of GHG emissions. OPR was been directed to promulgate such guidelines by July 2009, and the Resources Agency was directed to adopt such guidelines by January 2010. OPR held two workshops to present the amendments and obtain input from the public. The workshops included an overview of the Preliminary Draft CEQA Guideline amendments, and the process for adopting the amendments. On December 30, 2009, the Natural Resources Agency certified and adopted the proposed

CEQA Guidelines amendments. The amendments provide regulatory guidance with respect to the analysis and mitigation of the potential effects of GHG emissions.

Executive Order S-13-08

On November 14, 2008, Governor Schwarzenegger issued Executive Order S-13-08, the Climate Adaptation and Sea Level Rise Planning Directive, which provides clear direction for how the state should plan for future climate impacts. Executive Order S-13-08 calls for the implementation of four key actions to reduce the vulnerability of California to climate change:

1. Initiate California's first statewide Climate Change Adaptation Strategy (CAS) that will assess the state's expected climate change impacts, identify where California is most vulnerable, and recommend climate adaptation policies;
2. Request that the National Academy of Sciences establish an expert panel to report on sea level rise impacts in California in order to inform state planning and development efforts;
3. Issue interim guidance to state agencies for how to plan for sea level rise in designated coastal and floodplain areas for new and existing projects; and
4. Initiate studies on critical infrastructure projects and land-use policies vulnerable to sea level rise.

The 2009 CAS report summarizes the best-known science on climate change impacts in the state to assess vulnerability and outlines possible solutions that can be implemented within and across state agencies to promote resiliency. This is the first step in an ongoing, evolving process to reduce California's vulnerability to climate impacts (California Climate Change Portal 2010).

California Public Utility Commission

The California Public Utility Commission (CPUC) Energy Action Plan (2008 update) requires new residential buildings to be energy neutral by 2020 and commercial buildings to be energy neutral by 2030 to meet the AB 32 objectives. The mandate will require further reduction in energy usage related emissions which will reduce the project emissions overall. The goals are outlined in the CPUC California Long Term energy Efficiency Strategic Plan, adopted in September 2008.

Assembly Bill 1493: Pavley I

AB 1493 (Pavley) required the California Air Resources Board (CARB) to adopt regulations that will reduce GHG from automobiles and light-duty trucks by 30 percent below 2002 levels by the year 2016, effective with 2009 models. By 2020, this requirement will reduce emissions in California by approximately 16.4 MMT of CO_2e, representing 17.3 percent of emissions from passenger/light-duty vehicles in the state.

Assembly Bill 1493: Pavley II

California committed to further strengthening the AB 1493 standards beginning in 2017 to obtain a 45 percent GHG reduction from 2020 model year vehicles. This requirement will reduce emissions in

California by approximately 4.0 $MMTCO_2e$, representing 2.5 percent of emissions from passenger/light-duty vehicles in the state.

Regional

South Coast Air Quality Management District Greenhouse Gas Emissions Thresholds

The SCAQMD is in the process of creating CEQA significance thresholds for GHG emissions in the Basin. Currently, the SCAQMD staff is conducting ongoing meetings with a GHG CEQA Significance Threshold Working Group that includes representatives from various agencies and stakeholder groups such as ARB, city and county planning departments, and utility providers. On December 5, 2008, the SCAQMD Governing Board adopted the staff proposal for an interim GHG significance threshold for projects where the SCAQMD is lead agency. The staff's recommended interim GHG significance threshold uses a tiered approach to determining significance, based on a 90 percent emission capture rate for the basin. According to SCAQMD, a 90 percent emission capture rate means that 90 percent of total emissions from all new or modified stationary source projects would be subject to a CEQA analysis. The tiered approach envisioned by SCAQMD would require quantification of GHG emissions for all projects that are subject to CEQA and quantification of the GHG reduction effectiveness of design parameters incorporated into the project and any mitigation measures imposed by the lead agency. SCAQMD proposes a significance threshold of 10,000 MT CO_2e per year for industrial projects.

Local

There are no local statutes related to global climate change that would apply to the proposed project.

4.13.7 Project Impacts and Mitigation Measures

Analytic Method

The SCAQMD recommends a tiered approach for determining the significance of GHG emission associated with a proposed project. Tier 3 of the proposed approach establishes a screening significance threshold level to determine significance using a 90 percent emission capture rate approach as described above. A screening significance threshold level of 10,000 MT CO_2e/year applies to industrial projects. An inventory of project GHGs (i.e., CO_2, CH_4, and N_2O), including motor vehicles, energy use, and solid waste sources, is developed and compared with this screening level threshold.

This analysis estimates the construction and operational GHG emissions that would be generated by the proposed project and the contributions that such emissions would make towards global climate change. An estimated inventory of GHG emissions (i.e., CO_2, CH_4, and N_2O) was developed for the proposed project. This analysis also assesses the GHG reduction potential of the proposed project's design, land use, and transportation features, discusses the proposed project's compliance with applicable climate change policies, and identifies improvement measures (modified from the reduction strategies identified

in the CAT report [2006] and issued by the California Attorney General's Office [AGO 2007]) to reduce GHG emissions.

An inventory of the project's three most prevalent GHG emissions (i.e., CO_2, CH_4, and N_2O) is presented below. Emissions of the individual gases were estimated and then converted to their CO_2e using the individually determined global warming potential (GWP) of each gas. Thus, total GHG emissions equal the project's total CO_2 emissions plus its total CO_2e emissions from CH_4 and N_2O. Table 4.13-5 displays GHG emissions data from vehicle use, electricity generation, natural gas combustion, water use, and solid waste processing/disposal compared to similar project sources. Construction emissions were estimated and amortized over a 30-year period, as recommended by the SCAQMD.

Due to the global nature of assessment of GHG emissions and the effects of climate change, impacts can currently only be analyzed from a cumulative context. The proposed project is not capable of generating enough GHG emissions to influence global climate change on its own; however, GHG emissions present cumulative concerns for the state, regional, national, and global climate. In this regard, the project would participate in this potential impact through its incremental contribution combined with the cumulative increase of all other sources of GHGs. A 90 percent emission capture rate sets the emission threshold low enough to capture a substantial fraction of future stationary source projects that will be constructed to accommodate future statewide population and economic growth, while setting the emission threshold high enough to exclude small projects that will in aggregate contribute a relatively small fraction of the cumulative statewide GHG emissions. A threshold based on a 90 percent emissions rate would determine whether a project's incremental contribution to a cumulative effect is cumulatively considerable. Therefore, this analysis includes both the project and cumulative impacts.

Thresholds of Significance

The following thresholds of significance are based on Appendix G of the 2011 CEQA Guidelines and City-specific thresholds, where applicable. For purposes of this EIR, implementation of the proposed project may have a significant adverse impact to energy resources if it would:

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

Based on the proposed SCAQMD GHG thresholds, the proposed project would generate GHG emission that would have the potential to result in a significant impact on the environmental or conflict with an applicable plan if it would generate more than 10,000 MT CO_2e annually, including amortized construction emissions.

Project Impacts and Mitigation Measures

Threshold	Would the proposed project generate GHG emissions that may have a significant impact on the environment, or that would conflict with an applicable plan, policy, or regulation adopted for the purposes of reducing the emissions of GHGs?

Impact 4.13-3 **The proposed project would not generate GHG emissions that would have a significant impact on the environment, or that would conflict with an applicable plan, policy, or regulation adopted for the purposes of reducing the emissions of GHGs. This is considered a *less-than-significant* impact.**

Construction Emissions

Construction emissions are calculated using the URBEMIS 2007 computer model developed for the CARB by estimating the various types and number of equipment that would be used to grade and excavate the project site and construct the proposed development. Construction emissions are analyzed according to the thresholds established by the SCAQMD and published in the SCAQMD CEQA Air Quality Handbook. All construction activity estimates were based on information estimated by the applicant and engineer. Construction equipment within the project site that would generate criteria air pollutants could include excavators, export trucks, and loaders. Some of this equipment would be used during grading activities as well as when structures are constructed on the project site. In addition, emissions during construction and grading activities include truck trips off site to remove excavated soil from the project site. It is assumed that grading would involve the export of approximately 200,000 cubic yards of soil. It is further assumed that most of the construction equipment used would be diesel-powered.

The project would emit GHGs during construction of the project from the operation of construction equipment and from worker and building supply vendor vehicles. The project construction emissions of CO_2 e are shown in Table 4.13-4 (Estimated CO_2 Construction Emissions, 2011–2013) below. Emissions estimates for each phase were based on construction phasing and square footage data provided by the applicant. The highest emissions are expected during the mass grading phase of construction due to the vehicle trips required for hauling material from the project site. The contribution of construction emissions to the annual GHG emissions generated by the proposed project is determined by amortizing the total construction emissions over a 30-year period and adding the annual construction emissions to the annual emissions, as recommended by the SCAQMD (SCAQMD 2008b).

Operational Emissions

Motor Vehicle Greenhouse Gas Emissions

The project will be completed in three phases and is expected to be occupied in 2013. Upon completion, it is estimated that the project would generate approximately 1,303 passenger-car-equivalent vehicle trips per day, including 89 AM and 89 PM peak-hour trips. The largest source of GHG emissions associated with the project would be on- and off-site motor vehicle use. CO_2 emissions, the primary GHG from

mobile sources, are directly related to the quantity of fuel consumed. Two important determinants of transportation-related GHG emissions are VMT and vehicle fuel efficiency. VMT in the California

Table 4.13-4 Estimated Greenhouse Gas Emissions from Construction, 2011-2013

Construction Activity	*Total CO2e (metric tons)*
Mass Grading (2011–2012)	259
Fine Grading (2012)	94
Trenching (2012)	17
Building (2012-2013)	1,427
Paving (2013)	18
Architectural Coating (2013)	10
Total Project Construction Emissions	***1,825***
Annual Amortized GHG emissions[a]	***61***

SOURCE: URBEMIS 2007 (output data are provided in Appendix B)

a. Total construction emissions amortized over a 30-year period.

region has steadily increased over the last quarter century. Total VMT for the proposed project was calculated using the assumed vehicle fleet mix and assumed distances for types of trips. Approximately 53 percent of trips are assumed to be passenger vehicle commuter trips and 47 percent are assumed to be truck trips. Due to the number of proposed loading docks, this assumption is conservative compared to the Institute Transportation Engineers (ITE) assumptions for a similar facility, which estimates that up to 27 percent of the fleet would be trucks. Sixty percent of the truck trips are assumed to be long-trips, which is the average distance from the project site to the boundary of the air basin (75 miles), and 40 percent of the truck trips are assumed to be short trips within the air basin, or half of the long-trip distance (38 miles). Passenger vehicles are assumed to travel ten miles for each trip, which is below the average commute length of 12 miles due to the close proximity of residences to the project site (FWHA 2008). Total daily VMT for the proposed project by 2013 would be 43,745.

CO_2 e emissions during operation of the project at full build-out were estimated using URBEMIS 2007 (Appendix B). Total CO_2e emissions from vehicle trips associated with the proposed project would be 10,627 MT per year.

Solid Waste Greenhouse Gas Emissions

Solid waste generated by the project would also contribute to GHG emissions. Treatment and disposal of municipal, industrial, and other solid wastes produce significant amounts of CH_4. In addition to CH_4, solid waste disposal sites also produce biogenic CO_2 and non-methane volatile organic compounds (NMVOCs) as well as smaller amounts of nitrous oxide (N_2O), nitrogen oxides (NO_X) and carbon monoxide (CO). CH_4 produced at solid waste sites contributes approximately 3 to 4 percent to the annual global anthropogenic GHG emissions (IPCC 2006).

In many industrialized countries, waste management has changed much over the last decade. Waste minimization and recycling/reuse policies have been introduced to reduce the amount of waste generated, and increasingly, alternative waste management practices to solid waste disposal on land have been implemented to reduce the environmental impacts of waste management. Also, landfill gas recovery has become more common as a measure to reduce CH_4 emissions from solid waste disposal sites.

CH_4 and CO_2 emissions from solid waste generated by the project are estimated based on formulas provided in the State Workbook: Methodologies for Estimating Greenhouse Gas Emissions (pages 5-1 to 5-3). Total project emission of GHGs from landfill material is shown in Table 4.13-5 (Project Operational Greenhouse Gas Emissions) below. N_2O emissions from landfills are considered negligible (because the microbial environment in landfills is not very conducive to the nitrification and denitrification processes that result in N_2O emissions) and are; therefore, not explicitly modeled as part of GHG emissions generated through solid waste.

Electricity and Natural Gas Combustion Greenhouse Gas Emissions

The proposed project would use electricity for its commercial and industrial components, which would contribute to GHG emissions. The generation of electricity through the combustion of fossil fuels typically yields CO_2 and, to a much smaller extent, CH_4 and N_2O. To determine emissions from electricity consumption, annual electricity use must be established. The project related electricity emissions were estimated by using project electricity and natural gas use estimates from Section 4.13.1. The emissions factors for electricity use and natural gas combustion were obtained from the California Climate Action Registry (CCAR 2009). GHG emissions from these two sources are as shown in Table 4.13-5 (Project Operational Greenhouse Gas Emissions) below.

Water Use Greenhouse Gas Emissions

Water use can also be an indirect source of GHG emissions due to the energy required to provide, treat, and distribute water to southern California (and specifically the project site). In 2006, the California Energy Commission (CEC) published a report (Navigant 2006) that estimated the magnitude and intensity of water-related energy consumption by segment of the water-use cycle. These estimates were used to develop a representative evaluation of the amount of energy deemed embedded in a unit of water, by virtue of the amount of energy consumed in collecting, extracting, conveying, treating, and distributing the water to end users and then by treating and disposing of the wastewater. The CEC estimates distinguish between indoor and outdoor water use, and whether the end user is in northern or southern California.

Using these estimates, an estimation of energy use related to the net increase in water demand associated with the project was calculated, and then the CCAR protocols for GHG emissions were used to predict GHG emissions. For implementation of the proposed project, it is estimated that water demand would increase by about 76.1 acre-feet per year. This water demand would result in indirectly emitting about 104 additional MT CO_2e.

Other Greenhouse Gas Emissions

Ozone is a GHG; however, unlike the other GHGs, ozone in the troposphere is relatively short-lived and, therefore, is not global in nature. According to the ARB, it is difficult to make an accurate determination of the contribution of ozone precursors (NO_X and ROGs) to global warming. Therefore, it is assumed that project emissions of ozone precursors would not significantly contribute to global climate change. At present, there is a federal ban on CFCs; therefore, it is assumed the project will not generate emissions of these GHGs. The project may emit a small amount of HFC emissions from leakage and service of refrigeration and air conditioning equipment and from disposal at the end of the life of the equipment. However, the refrigerants to be used in the project and the capacity of these are unknown at this time. PFCs and sulfur hexafluoride are typically used in industrial applications, none of which would be used by the project. Therefore, it is not anticipated that the project would contribute significant emissions of these additional GHGs.

Project Compliance with SQAQMD Threshold

As shown in Table 4.13-5 (Project Operational Greenhouse Gas Emissions), the proposed project would result in annual emissions of 14,520 MT CO_2e. The GHG estimate does not include any GHG reducing measures and represents the business as usual emissions that would result from the proposed project. The largest contributor of GHGs is a result of vehicular use, which contributes 73 percent of the overall total increase in emissions. The second largest contributor of emissions associated with proposed project implementation is electricity use (17 percent), followed by natural gas use (4 percent), solid waste generation (4 percent), water use (1 percent), and amortized construction emissions (1 percent).

Table 4.13-5 Project Operational Greenhouse Gas Emissions

Source of Emissions	Palm/Industrial Distribution Center Project Build out	
	CO_2e (metric tons)	Percent of Total Emissions
Vehicular Use	10,627	73
Electricity Use	2,431	17
Natural Gas Use	668	4
Solid Waste	629	4
Water Use	104	1
Construction Emissions (amortized)	61	1
Annual Total	***14,520***	***100***

SOURCE: URBEMIS 2007 (Version 9.2.2). California Climate Action Registry General Reporting Protocol, Reporting Entity-Wide GHG Emissions, Version 3.1, January 2009; USEPA, 1998; Navigant Consulting. 2006 (output data are provided in Appendix B)

Therefore, business as usual GHG emissions as a result of the proposed project would exceed the 10,000 MT CO_2e significance threshold. However, the GHG estimate does not include any GHG reducing measures. The CAT, established by Executive Order S-3-05, has recommended strategies to reduce GHG emissions at a statewide level to meet the statewide GHG emission reduction goals of the executive order. In addition, the 2008 CAPCOA report, *CEQA and Climate Change*, includes numerous

GHG reducing measures. The California Attorney General's Office has also published a list of recommendations of GHG reducing measures. The project would implement several feasible and applicable measures recommended by the CAT, California Attorney General, and CAPCOA to further reduce GHG emissions below those identified in significance thresholds, as shown in Table 4.13-6 (Greenhouse Gas Emissions Reduction Design Strategies). Incorporation of the measures in Table 4.13-6 would reduce overall GHG emissions from the proposed project. CAPCOA provides some basic estimates of GHG emission reductions that may be expected with incorporation of the measures listed in Table 4.13-6 (CAPCOA 2010). It should be noted that reduction estimates vary widely and not all recommended measures have reduction estimates associated with them. Further reductions may be expected though incorporation of the measures recommended by the CAT and California Attorney General, though the extent of the reduction is not readily quantifiable at this time.

Table 4.13-6 Greenhouse Gas Emissions Reduction Design Strategies

California Climate Change Greenhouse Gas Emissions Reduction Strategies	*Proposed Project Design/Mitigation Measure for Compliance*
CAPCOA RECOMMENDATIONS	
Improve Design of Development. The project will include improved design elements to enhance walkability and connectivity. Improved street network characteristics within a neighborhood include street accessibility, usually measured in terms of average block size, proportion of four-way intersections, or number of intersections per square mile. Design is also measured in terms of sidewalk coverage, building setbacks, street widths, pedestrian crossings, presence of street trees, and a host of other physical variables that differentiate pedestrian-oriented environments from auto-oriented environments. Includes the following individual measure that would be implemented by the proposed project: ■ Provide Bike Parking in Non-Residential Projects **Provide Bike Parking in Non Residential Projects** Nonresidential projects provide plentiful short- and long-term bicycle parking facilities to meet peak season maximum demand.	**MM4.2-6(b)** Bicycle racks shall be incorporated into the project design and employee bathrooms shall be designed to include at least one shower.

Table 4.13-6 Greenhouse Gas Emissions Reduction Design Strategies

California Climate Change Greenhouse Gas Emissions Reduction Strategies	*Proposed Project Design/Mitigation Measure for Compliance*
Commute Trip Reduction Programs Includes the following individual measures that would be implemented by the proposed project: ■ Preferential Carpool Parking ■ Bicycle End of Trip Facilities **Preferential Parking Permit Program** The project will provide preferential parking in convenient locations (such as near public transportation or building front doors) in terms of free or reduced parking fees, priority parking, or reserved parking for commuters who carpool, vanpool, ride-share or use alternatively fueled vehicles. The project will provide wide parking spaces to accommodate vanpool vehicles. **End of Trip Facilities** Nonresidential projects provide "end-of-trip" facilities including showers, lockers, and changing space (e.g., four clothes lockers and one shower provided for every 80 employee parking spaces, separate facilities for each gender for projects with 160 or more employee parking spaces).	**MM4.2-6(c)** The project site shall utilize a parking program that encourages carpooling. Employees will be required to pay for parking on site. Employees who carpool or use electric vehicles (EVs) or compressed natural gas (CNG) vehicles will be given a discount on the parking fee. Preferential parking spaces shall also be designated for employees who carpool, and EVs/CNG vehicles. See mitigation measure MM4.2-6(b) above.
Increase Destination Accessibility. The project will be located in an area with high accessibility to destinations. Includes the following individual measure that would be implemented by the proposed project: ■ Proximity to Bike Path/Bike Lanes **Proximity to Bike Path/Bike Lanes** Entire project is located within one-half mile of an existing/planned Class I or Class II bike lane and project design includes a comparable network that connects the project uses to the existing offsite facility. Project design includes a designated bicycle route connecting all units, onsite bicycle parking facilities, offsite bicycle facilities, site entrances, and primary building entrances to existing Class I or Class II bike lane(s) within one half mile. Bicycle route connects to all streets contiguous with project site. Bicycle route has minimum conflicts with automobile parking and circulation facilities. All streets internal to the project wider than 75 feet have Class II bicycle lanes on both sides.	The nearest bike lane to the proposed project is located on West Kendall Drive, approximately one-quarter mile east of the project site.

Table 4.13-6 Greenhouse Gas Emissions Reduction Design Strategies

California Climate Change Greenhouse Gas Emissions Reduction Strategies	*Proposed Project Design/Mitigation Measure for Compliance*
Pedestrian Network The project provides a pedestrian access network that internally links all uses and connects to all existing/planned external streets and pedestrian facilities contiguous with the project site. Project design includes a designated pedestrian route interconnecting all internal uses, site entrances, primary building entrances, public facilities, and adjacent uses to existing external pedestrian facilities and streets. Route has minimal conflict with parking and automobile circulation facilities. Streets (with the exception of alleys) within the project have sidewalks on both sides. All sidewalks internal and adjacent to project site are minimum of five feet wide. All sidewalks feature vertical curbs. Pedestrian facilities and improvements such as grade separation, wider sidewalks, and traffic calming are implemented wherever feasible to minimize pedestrian barriers. All site entrances provide pedestrian access.	**MM4.2-6(a)** Where feasible, the project applicant shall provide a sidewalk on Palm Avenue to connect the project site to the bus stop on Kendall Drive.
Price Workplace Parking The project will implement workplace parking pricing at its employment centers. This may include: explicitly charging for parking for its employees, implementing above market rate pricing, validating parking only for invited guests, not providing employee parking and transportation allowances, and educating employees about available alternatives.	**MM4.2-6(c)** The project site shall utilize a parking program that encourages carpooling. Employees will be required to pay for parking on site. Employees who carpool or use electric vehicles (EVs) or compressed natural gas (CNG) vehicles will be given a discount on the parking fee. Preferential parking spaces shall also be designated for employees who carpool, and EVs/CNG vehicles.
Increase Diversity of Urban and Suburban Developments The suburban project will have at least three of the following on site and/or offsite within ¼-mile: Residential Development, Retail Development, Park, Open Space, or Office. The mixed-use development should encourage walking and other non-auto modes of transport from residential to office/commercial locations (and vice versa). The project should minimize the need for external trips by including services/facilities for day care, banking/ATM, restaurants, vehicle refueling, and shopping.	**MM4.2-6(e)** The project will include employee services on site, including lunch vending machines or other lunch option, an ATM, and childcare services. Additionally, retail, office, and residential development are located within one-quarter mile of the project site on Palm Avenue, including a small shopping area located across Palm Avenue from the project site with a restaurant and a gas station with a mini-market.
Increase Location Efficiency Project site is on a vacant infill site, redevelopment area, or brownfield or grayfield lot that is highly accessible to regional destinations.	The proposed project is highly accessible to Interstate 215 and Interstate 15. The majority of the flat terrain on the project site has been disked.

Table 4.13-6 Greenhouse Gas Emissions Reduction Design Strategies

California Climate Change Greenhouse Gas Emissions Reduction Strategies	*Proposed Project Design/Mitigation Measure for Compliance*
Landscaping Project shall use drought resistant native trees, trees with low emissions and high carbon sequestration potential. Evergreen trees on the north and west sides afford the best protection from the setting summer sun and cold winter winds. Additional considerations include the use of deciduous trees on the south side of the house that will admit summer sun; evergreen plantings on the north side will slow cold winter winds; constructing a natural planted channel to funnel summer cooling breezes into the house. Neighborhood CCR's not requiring that front and side yards of single-family homes be planted with turf grass. Vegetable gardens, bunch grass, and low-water landscaping shall also be permitted, or even encouraged.	Approximately 12 percent of the project site would be landscaped, including drought-resistant vegetation such as the *Olea europaea* olive tree and *Quercus ilex* holly oak tree.
Water Use Appliances Require the installation of low water use appliances.	Low-flow appliances would be utilized including ultra low-flush toilets and motion-activated washbasins, per the City's request, and "Save Water" signs shall be placed near faucets.
Alternative Fuel Construction Equipment Use alternative fuel types for construction equipment. At the tailpipe biodiesel emits 10% more CO_2 than petroleum diesel. Overall lifecycle emissions of CO2 from 100% biodiesel are 78% lower than those of petroleum diesel (NREL 1998, USEPA 2007b).	**PR4.2C** The developer shall require by contract specifications that all diesel-powered equipment used be retrofitted with after-treatment products, including diesel oxidation catalysts (that reduce NO_X emissions by at least 40 percent) and other technologies available, to the extent that they are readily available and cost effective in the South Coast Air Basin when construction activities commence. Contract specifications shall be included in the proposed project construction documents, which shall be approved by the City of San Bernardino. **PR4.2D** The developer shall require by contract specifications that all heavy-duty diesel-powered equipment operating and refueling at the project site use low-NO_X diesel fuel to the extent that it is readily available and cost effective (up to 125 percent of the cost of California Air Resources Board diesel) in the South Coast Air Basin at the time construction activities commence. This requirement shall not apply to diesel-powered trucks traveling to and from the project site. Contract specifications shall be included in the proposed project construction documents, which shall be approved by the City of San Bernardino.
CALIFORNIA CLIMATE ACTION TASKFORCE RECOMMENDATIONS AND CALIFORNIA ATTORNEY GENERAL'S OFFICE RECOMMENDED STRATEGIES	
Transportation-Related Emissions	
CCAT Standard Vehicle Climate Change Standards: AB 1493 (Pavley) required the State to develop and adopt regulations that achieve the maximum feasible and cost-effective reduction of climate change emissions emitted by passenger vehicles and light duty trucks. Regulations were adopted by the CARB in September 2004.	These are CARB enforced standards and vehicles that access the project are required to comply with the standards. Therefore, the project would be required to be consistent with these strategies, as appropriate.
CCAT Standard Other Light Duty Vehicle Technology: New standards would be adopted to phase in beginning in the 2017 model.	These are CARB enforced standards and vehicles that access the project are required to comply with the standards. Therefore, the project would be required to be consistent with these strategies, as appropriate.

Table 4.13-6 Greenhouse Gas Emissions Reduction Design Strategies

California Climate Change Greenhouse Gas Emissions Reduction Strategies	*Proposed Project Design/Mitigation Measure for Compliance*
CCAT Standard Heavy-Duty Vehicle Emission Reduction Measures: Increased efficiency in the design of heavy-duty vehicles and an education program for the heavy-duty vehicle sector.	These are CARB enforced standards and vehicles that access the project are required to comply with the standards. Therefore, the project would be required to be consistent with these strategies, as appropriate.
CCAT Standard Diesel Anti-Idling: In July 2004, the CARB adopted a measure to limit diesel-fueled commercial motor vehicle idling. Post signs that restrict idling; education for truck drivers regarding diesel health impacts.	The proposed project would comply with ARB's requirement of July 22, 2004 to limit emissions from idling trucks and buses. Operators of commercial trucks and buses are required to manually shut off their engines before the idling time limit of five minutes is reached. The proposed project would place signs instructing operators of the idling restrictions.
CCAT Standard Alternative Fuels—Ethanol: Increased use of ethanol fuel.	These are CARB enforced standards and vehicles that access the project are required to comply with the standards. Therefore, the project would be required to be consistent with these strategies, as appropriate.
California Attorney General Strategy Provide the necessary facilities and infrastructure to encourage the use of low or zero-emission vehicles.	The project will require the installation of facilities to support the use of alternative fuel vehicles, if feasible and available based on market conditions.
California Attorney General Strategy Enforce and follow limits idling time for commercial vehicles, including delivery and construction vehicles.	The proposed project would comply with ARB's requirement of July 22, 2004 to limit emissions from idling trucks and buses. Operators of commercial trucks and buses are required to manually shut off their engines before the idling time limit of five minutes is reached. The proposed project would place signs instructing operators of the idling restrictions.
California Attorney General Strategy Create a ride-sharing program. Promote existing ride sharing programs e.g., by designating a certain percentage of parking spaces for ride sharing vehicles, designating adequate passenger loading and unloading for ride sharing vehicles, and providing a web site or message board for coordinating rides.	**MM4.2-6(c)** The project site shall utilize a parking program that encourages carpooling. Employees will be required to pay for parking on site. Employees who carpool or use electric vehicles (EVs) or compressed natural gas (CNG) vehicles will be given a discount on the parking fee. Preferential parking spaces shall also be designated for employees who carpool, and EVs/CNG Vehicles.
California Attorney General Strategy Provide public transit incentives such as free or low-cost monthly transit passes to employees, or free ride areas to residents and customers.	**MM4.2-6(d)** Operation of the project shall include a shuttle that provides service to nearby food establishments during lunch hours, and shuttle service to the adjacent residential neighborhood during the morning and evening commute hours. In addition, public transportation options are provided within walking distance of the project site for workers at the project site. No residential component is proposed for the project.
California Attorney General Strategy Provide a vanpool for employees.	**MM4.2-6(d)** Operation of the project shall include a shuttle that provides service to nearby food establishments during lunch hours, and shuttle service to the adjacent residential neighborhood during the morning and evening commute hours.
California Attorney General Strategy Promote "least polluting" ways to connect people and goods to their destinations.	The proposed project is located on the opposite side of the I-215 freeway from the nearest residential uses. Traffic (which includes a large proportion of big-rig traffic) would move to and from the project site quickly and efficiently, avoiding heavy utilization of surface streets, especially within residential neighborhoods.

Table 4.13-6 Greenhouse Gas Emissions Reduction Design Strategies

California Climate Change Greenhouse Gas Emissions Reduction Strategies	*Proposed Project Design/Mitigation Measure for Compliance*
California Attorney General Strategy Adopt a comprehensive parking policy that discourages private vehicle use and encourages the use of alternative transportation.	As shown in Table 4.11-10 (Project Parking Summary), the proposed project would provide the minimum amount of parking required. The project would supply 569 spaces, and the total parking required for the project would be 569 spaces.
California Attorney General Strategy Ensure that the project enhances, and does not disrupt or create barriers to, non-motorized transportation.	The proposed project would not create any barriers to non-motorized transportation. The proposed project is located on the opposite side of the I-215 freeway from the nearest residential uses. Traffic (which includes a large proportion of big-rig traffic) would move to and from the project site quickly and efficiently, avoiding heavy utilization of surface streets, especially within residential neighborhoods.
California Attorney General Strategy Require amenities for non-motorized transportation, such as secure and convenient bicycle parking.	**MM4.2-6(b)** Bicycle racks shall be incorporated into the project design and employee bathrooms shall be designed to include at least one shower.
Solid Waste, Water Use, and Energy Emissions	
California Attorney General Strategy Provide easy and convenient recycling opportunities for residents, the public, and tenant businesses.	PR4.2A will ensure that trash receptacles within the project area will be required to have lids that enable convenient collection and loading and will be emptied on a regular basis, in compliance with City of San Bernardino regulations for the collection of solid waste.
CCAT Standard Water Use Efficiency: Approximately 19 percent of all electricity, 30 percent of all natural gas, and 88 million gallons of diesel are used to convey, treat, distribute and use water and wastewater. Increasing the efficiency of water transport and reducing water use would reduce greenhouse gas emissions. Use both potable and non-potable water to the maximum extent practicable; low flow appliances (i.e., toilets, dishwashers, showerheads, washing machines, etc.); automatic shut off valves for sinks in restrooms; drought resistant landscaping; Place "Save Water" signs near water faucets.	The proposed project will comply with the Water Use Efficiency strategy. Low-flow appliances would be utilized including ultra low-flush toilets and motion-activated washbasins, per the City's request, and "Save Water" signs shall be placed near faucets. Approximately 12 percent of the project site would be landscaped, additionally PR4.7E requires the use of vegetated swales and landscaping in order to contain and treat runoff.
California Attorney General Strategy Create water-efficient landscapes. Install water-efficient irrigation systems and devices, such as soil moisture-based irrigation controls and use water-efficient irrigation methods.	Approximately 12 percent of the project site would be landscaped, including drought-resistant vegetation such as the *Olea europaea* olive tree and *Quercus ilex* holly oak tree.
California Attorney General Strategy Design buildings to be water-efficient. Install water-efficient fixtures and appliances.	The proposed project will comply with the Water Use Efficiency strategy. Low-flow appliances would be utilized including ultra low-flush toilets and motion-activated washbasins, per the City's request, and "Save Water" signs shall be placed near faucets. Approximately 12 percent of the project site would be landscaped; additionally, PR4.7E requires the use of vegetated swales and landscaping in order to contain and treat runoff.

Table 4.13-6 Greenhouse Gas Emissions Reduction Design Strategies

California Climate Change Greenhouse Gas Emissions Reduction Strategies	*Proposed Project Design/Mitigation Measure for Compliance*
California Attorney General Strategy Implement low-impact development practices that maintain the existing hydrology of the site to manage storm water and protect the environment.	Approximately 12 percent of the project site would be landscaped; additionally, PR4.7E requires the use of vegetated swales and landscaping in order to contain and treat runoff.
California Attorney General Strategy Devise a comprehensive water conservation strategy appropriate for the project and location. Incorporate water-reducing features into building and landscape design.	The proposed project will comply with the Water Use Efficiency strategy. Low flow appliances would be utilized including ultra low-flush toilets and motion-activated washbasins, per the City's request, and "Save Water" signs shall be placed near faucets. Approximately 12 percent of the project site would be landscaped, additionally PR4.7E requires the use of vegetated swales and landscaping in order to contain and treat runoff. The landscaping plan for the proposed project includes drought-resistant vegetation such as the *Olea europaea* olive tree and *Quercus ilex* holly oak tree.
California Attorney General Strategy Offset water demand from new projects so that there is no net increase in water use.	As a distribution and warehouse facility, the proposed project is not anticipated to consume a large amount of water; however, low flow appliances would be utilized including ultra low-flush toilets and motion-activated washbasins, per the City's request, and "Save Water" signs shall be placed near faucet.
California Attorney General Strategy Incorporate water-reducing features into building and landscape design.	The proposed project will comply with the Water Use Efficiency strategy. Low flow appliances would be utilized including ultra low-flush toilets and motion-activated washbasins, per the City's request, and "Save Water" signs shall be placed near faucets. Approximately 12 percent of the project site would be landscaped; additionally, PR4.7E requires the use of vegetated swales and landscaping in order to contain and treat runoff.
California Attorney General Strategy Reduce unnecessary outdoor lighting.	Only outdoor lighting required for security and operation of the facility would be installed on the project site.
CCAT Standard Transportation Refrigeration Units (TRU), Off-Road Electrification, Port Electrification: Strategies to reduce emissions from TRUs, increase off-road electrification, and increase use of shore-side/port electrification. If TRUs access the site, implement measures to reduce emissions; install electrification in applicable projects (i.e., truck stops, warehouses, etc.)	The proposed project would comply with CARB's requirement of July 22, 2004, to limit emissions from idling trucks and buses. Operators of commercial trucks and buses are required to manually shut off their engines before the idling time limit of five minutes is reached. The proposed project would place signs instructing operators of the idling restrictions.
Land Use Measures, Smart Growth Strategies, and Carbon Offsets	
CCAT Standard Urban Forestry: A new statewide goal of planting 5 million trees in urban areas by 2020 would be achieved through the expansion of local urban forestry programs. Trees near structures shall be planted to act as insulators from weather, thereby decreasing energy requirements. Trees also store carbon.	Approximately 12 percent of the project site would be landscaped, including several varieties of trees along the perimeter of the project site and within landscaped areas.

Table 4.13-6 Greenhouse Gas Emissions Reduction Design Strategies

California Climate Change Greenhouse Gas Emissions Reduction Strategies	*Proposed Project Design/Mitigation Measure for Compliance*
CCAT Standard Smart Land Use and Intelligent Transportation Systems (ITS): Smart land use strategies encourage jobs/housing proximity, promote transit-oriented development, and encourage high-density residential/commercial development along transit corridors. It is the application of advanced technology systems and management strategies to improve operational efficiency of transportation systems and movement of people, goods, and services. Governor Schwarzenegger is finalizing a comprehensive 10-year strategic growth plan with the intent of developing ways to promote, through state investments, incentives and technical assistance, land use, and technology strategies that provide for a prosperous economy, social equity, and a quality environment.	This project would comply with this strategy by promoting jobs within a high-growth region of the state, as well as placing the project next to a regionally important freeway.
California Attorney General Strategy Incorporate public transit into project design.	Public transportation options for employees of the project are provided within walking distance of the project site and would therefore support this strategy.
California Attorney General Strategy Develop "brownfields" and other underused or defunct properties near existing public transportation and jobs.	The proposed project is highly accessible to I-215 and I-15. It is located in close proximity to retail and residential land use.

SOURCE: CAPCOA 2010, CAPCOA 2008, CAT 2007, California Attorney General 2010

It should be noted that many of the emissions reduction strategies in this table relate to technologies that are evolving and will evolve, or become available, during build-out of the Project. Some of these measures also relate to emissions reduction strategies that must be implemented on an area-wide or regional basis. Thus, several of these measures will be implemented over time as implementation becomes practicable, and the wording of these additional measures reflects that condition.

Emissions Reduction from Greenhouse Gas Reduction Measures

Table 4.13-7 (GHG Emission Reduction Estimates for Project-Incorporated Measures) provides the CAPCOA estimates for reductions that may be expected for each project-incorporated CAPCOA measure. Table 4.13-8 (Estimated GHG Emission Reductions with Project Features) provides the approximate reduction in project-related GHG emissions associated with implementation of these required measures. Incorporation of project features listed in Table 4.13-7 is estimated to reduce the project's overall GHG emissions by approximately 4,380 MT CO_2e. Additionally, mitigation measures MM4.2-6(a) through MM4.2-6(e) included in Draft EIR Section 4.2 are intended to reduce air quality impacts related to criteria air pollutants and would also reduce emissions of carbon dioxide from vehicle trips. Assembly Bill 1493 (Pavley) would also reduce GHG emissions from passenger vehicle trips associated with the proposed project. Construction of the proposed project would be complete in 2013; therefore, the emissions reductions projected to result from Pavley standards for year 2013 were used to determine the reduction in GHG emissions. The Pavley fuel efficiency standards would reduce project vehicular emissions by approximately 820 MT CO_2e. See Appendix L2 for the spreadsheet used to calculate the Pavley emissions reduction. Together, the measures listed in Table 4.13-7 and the Pavley standards would reduce business as usual project emissions by 5,200 MT CO_2e, for a total annual emissions of 9,320 MT CO_2e.

Table 4.13-7 GHG Emission Reductions Estimates for Project-Incorporated Measures

Project Features That Would Implement Strategy	*Project Reduction Estimate*
Vehicular Use Measures	
MM4.2-6(a) Where feasible, the project applicant shall provide a sidewalk on Palm Avenue to connect the project site to the bus stop on Kendall Drive.	0.5%
MM4.2-6(b) Bicycle racks shall be incorporated into the project design and employee bathrooms shall be designed to include at least one shower.	3%
MM4.2-6(c) The project site shall utilize a parking program that encourages carpooling. Employees will be required to pay for parking on site. Employees who carpool or use electric vehicles (EVs) or compressed natural gas (CNG) vehicles will be given a discount on the parking fee. Preferential parking spaces shall also be designated for employees who carpool, and EVs/CNG vehicles.	12%
MM4.2-6(e) The project will include employee services on site, including lunch vending machines or other lunch option, an ATM, and childcare services. Additionally, retail, office, and residential development are located within one-quarter mile of the project site on Palm Avenue, including a small shopping area located across Palm Avenue from the project site with a restaurant and a gas station with a mini-market.	9%
The nearest bike lane to the proposed project is located on West Kendall Drive, approximately one-quarter mile east of the project site. Due to the nature of the proposed use (industrial warehouse), a bicycle circulation system would not be appropriate.	6.7%
The proposed project is highly accessible to Interstate 215 and Interstate 15. The majority of the flat terrain on the project site has been disked.	10%
Total Estimated Reduction in Vehicular Use Emissions	***41.2%***
Water Use	
Approximately 12 percent of the project site would be landscaped, including drought-resistant vegetation such as the *Olea europaea* olive tree and *Quercus ilex* holly oak tree.	0.5%
Low-flow appliances would be utilized including ultra low-flush toilets and motion-activated washbasins, per the City's request, and "Save Water" signs shall be placed near faucets.	0.5%
Total Estimated Reduction in Water Use Emissions	***1%***
Construction	
PR4.2C The developer shall require by contract specifications that all diesel-powered equipment used be retrofitted with after-treatment products, including diesel oxidation catalysts (that reduce NO_X emissions by at least 40 percent) and other technologies available, to the extent that they are readily available and cost effective in the South Coast Air Basin when construction activities commence. Contract specifications shall be included in the proposed project construction documents, which shall be approved by the City of San Bernardino. **PR4.2D** The developer shall require by contract specifications that all heavy-duty diesel-powered equipment operating and refueling at the project site use low-NO_X diesel fuel to the extent that it is readily available and cost effective (up to 125 percent of the cost of California Air Resources Board diesel) in the South Coast Air Basin at the time construction activities commence. This requirement shall not apply to diesel-powered trucks traveling to and from the project site. Contract specifications shall be included in the proposed project construction documents, which shall be approved by the City of San Bernardino.	1%
Total Estimated Reduction in Construction Emissions	***1%***

SOURCE: CAPCOA 2010

Table 4.13-8 Estimated GHG Emission Reductions with Project Features

Use	Business-as-Usual Emissions (metric tons CO_2e)	Project Reduction Estimate[a]	Emissions Reduction of GHG-Reducing Features (metric tons CO_2e)
Vehicular Use	10,627	41.2%	4,378
Electricity Use	2,431	None	0
Natural Gas Use	668	None	0
Solid Waste	629	None	0
Water Use	104	1%	1
Construction	61	1%	1
Pavley Reduction			820
Total Emissions Reduction			***5,200***
Total Emissions with GHG Reducing Features and Pavley Reduction[b]			***9,320[b]***

a. Sum of the measures listed in Table 4.13-7

b. Business as usual emissions (14,520 MT CO_2e) minus the total emissions reduction.

Existing City policies and ordinances and federal and state programs are also credited with reducing greenhouse gases in California. The City requires compliance with the California Energy Commission's Title 24 energy efficiency standards for buildings, appliance energy efficiency standards, diesel-engine idling restrictions, the required use of E6 fuel (6 percent ethanol, 94 percent gasoline), and vehicle emission standards, which help to reduce the production of GHG emissions throughout the City. Mitigation measures included in other sections of this EIR will serve to reduce the GHG emissions associated with implementation of the proposed project. For example, in Draft EIR Section 4.2, project requirements PR4.2B through PR4.2D and mitigation measure MM4.2-8 would reduce emissions associated with construction activities. Mitigation measures MM4.2-6(a) through M4.2-6(e) would reduce emissions associated with operational by reducing vehicle trips. In Draft EIR Section 4.11 (Transportation/Traffic), mitigation measure MM4.11-1 is designed to reduce congestion and improve traffic flow, thereby reducing vehicle emissions.

With incorporation of the GHG emissions reducing features recommended by CAPCOA, required compliance with Pavley fuel efficiency standards, and implementation of the identified mitigation measures from Section 4.2 (Air Quality), the proposed project would not exceed the 10,000 tons annual CO_2e emissions threshold for industrial projects. Additionally, the remaining mitigation measures listed in Section 4.2 and Section 4.11 and the design considerations listed in Table 4.13-6 recommended by the Attorney General and CAT would further reduce the project's GHG emissions. Therefore, because the proposed project would not exceed the SCAQMD threshold, it would comply with the goals of AB 32 and would not result in GHG emissions that would have a significant impact on the environment. As a result, the project's contribution to GHG emissions would not be cumulatively considerable and the project impacts to GHG emission would be considered ***less than significant***.

4.13.8 References

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