4.6 GLOBAL CLIMATE CHANGE AND ENERGY

According to CEQA Guidelines Section 15002(a)(1), one of the basic purposes of CEQA is to, "Inform governmental decision makers and the public about the potential, significant environmental effects of proposed activities." It is the view of the State Legislature (as expressed in its adoption of Assembly Bill (AB) 32, *The California Climate Solutions Act of 2006*) that global climate change poses significant adverse effects to the environment of the State of California. The enactment of AB 32 has no direct regulatory effect on the proposed project and the State of California has not issued guidance about evaluating global climate change in CEQA documents. No thresholds have been established to determine whether greenhouse gas (GHG) emissions from a given project would be significant.

The Air Quality Technical Report (SRA 2009) prepared for the proposed project includes an analysis of global climate change based on relevant available data regarding climate change and a project-specific emissions inventory for GHG. The report is provided as Appendix B of this EIR.

Public Resources Code Section 21100(b)(3) and CEQA Guidelines Section 15126.4 and CEQA Appendix F: Energy Conservation do require an analysis of the proposed project's energy consumption, in order to determine if the construction and operation of the project would employ a wise and efficient use of energy The production of energy is also one of the major generators of GHGs. Therefore, energy usage by the proposed project is a consideration in addressing project impacts to global climate change. The following section includes a discussion of potential global climate change impacts associated with the emission of GHGs and an analysis of the proposed project's energy usage.

4.6.1 EXISTING CONDITIONS

Global climate change is currently an important and controversial environmental, economic, and political issue. It is a recorded change in the average weather of the earth, measured by wind patterns, storms, precipitation, and temperature. Historical records show that global temperature changes have occurred in the past, such as during previous ice ages. Recent scientific research indicates that the rate and magnitude of current global temperature changes are attributable to anthropogenic (human caused) sources.

The United Nations Intergovernmental Panel on Climate Change (IPCC) constructed several emission trajectories of GHGs needed to stabilize global temperatures and climate change impacts. IPCC concluded that a stabilization of GHGs at 400-450 parts per million (ppm) carbon dioxide-equivalent concentration is required to keep global mean warming below two degrees Celsius, which is assumed to be necessary to avoid dangerous climate change (IPCC 2001, as cited in Hendrix et al., 2007).

GHGs and Global Warming Potential (GWP)

GHGs are gases that trap heat in the atmosphere, analogous to the function of a greenhouse. GHGs are emitted by natural processes and human activities. The accumulation of GHGs in the atmosphere regulates the earth's temperature. Without these natural gases, the Earth's surface would be about 61°F cooler (CA 2006, as cited in Hendrix et al., 2007). Emissions from human activities such as electricity production and the operation of motor vehicles have elevated the concentration of these gases in the atmosphere.

GHGs have varying GWP. GWP is the potential of a gas or aerosol to trap heat in the atmosphere; it is the "cumulative radiative forcing effects of a gas over a specified time horizon resulting from the emission of a unit mass of gas relative to a reference gas" (EPA 2006a, as cited by Hendrix et al., 2007). The reference gas for GWP is carbon dioxide; carbon dioxide has a GWP of one. For example, methane has a

GWP of 21, which means that it has a greater global warming effect than carbon dioxide on a molecule per molecule basis.

Below is a list of the most common GHGs. The atmospheric lifetime and GWP of selected GHGs are summarized in Table 4.6-1 As shown in the table, the GWP for common GHGs ranges from 1 (carbon dioxide) to 23,900 (sulfur hexafluoride).

Table 4.6-1. Global Warming Potentials and Atmospheric Lifetimes

Greenhouse Gas	Atmospheric Lifetime (years)	Global Warming Potential (100 year time horizon)
Carbon Dioxide	50 – 200	1
Methane	12 ± 3	21
Nitrous Oxide	120	310
HFC-23	264	11,700
HFC-134a	14.6	1,300
HFC-152a	1.5	140
PFC: Tetrafluoromethane (CF4)	50,000	6,500
PFC: Hexafluoroethane (C2F6)	10,000	9,200
Sulfur Hexafluoride (SF6)	3,200	23,900

Source: USEPA, 2006

Environmental Effects of Global Climate Change

Executive Order #S-3-05 requires the California Environmental Protection Agency (Cal-EPA) to prepare biennial science reports on the potential impact of continued global climate change on certain sectors of the California economy. The first of these reports, *"Scenarios of Climate Change in California: An Overview"* (Climate Scenarios report), was published in February 2006 (California Climate Change Center 2006). The Climate Scenarios report uses a range of emissions scenarios developed by the IPCC to project a series of potential warming ranges (i.e., temperature increases) that may occur in California during the 21st century. Temperature increases are grouped into three ranges: 1) lower warming range (3.0 to 5.5 degrees Fahrenheit (^{o}F)); 2) medium warming range (5.5 to 8.0^{o}F); and 3) higher warming range (8.0 to 10.5^{o}F).

Potential environmental effects from global climate change include increased temperature and a resultant rise in sea level, increased incidences of extreme weather events, and worsened air quality. Under the highest anticipated warming scenario, sea level is anticipated to rise 22 to 35 inches by 2100. Health effects for people living in warmer climates could include more heat-related problems such as heat rash and heat stroke. Under the higher warming scenario, there could be up to 100 more days per year with temperatures above 90^{o}F in Los Angeles and 95^{o}F in Sacramento by Year 2100. This is a large increase over historical patterns. Diseases such as malaria, dengue fever, yellow fever, and encephalitis, which are spread by mosquitoes and other insects whose populations are affected by climate patterns, may also increase. Extreme weather events such as flooding and hurricanes may displace people and agricultural operations. Droughts may increase in some areas, decreasing water supply and food availability.

The current water distribution system in California relies, in part, on Sierra Nevada mountain snowpack to supply water during the dry spring and summer months. If GHG emissions continue unabated, more precipitation will fall as rain instead of snow, and the snow that does fall will melt earlier, reducing the

Sierra Nevada spring snowpack by as much as 70 to 90 percent. The combination of reduced water supply and rising sea level would allow for an influx of saltwater that could degrade California's estuaries, wetlands, and groundwater aquifers. Saltwater intrusion caused by rising sea levels is a major threat to the quality and reliability of water within the southern edge of the Sacramento/San Joaquin River Delta, a major State fresh water supply. Global climate change may also contribute to air quality problems from increased frequency of smog and particulate air pollution (EPA, 2006c, as cited in Hendrix et al, 2007). Higher temperatures are expected to increase the frequency, duration, and intensity of conditions conducive to air pollution formation. For example, days with weather conducive to ozone formation are projected to increase from 25 to 35 percent under the lower warming range to 75 to 85 percent under the medium warming range.

4.6.2 REGULATORY STANDARDS

Federal

As of the date of this EIR, there are no adopted federal plans, policies, regulations or laws addressing global warming. However, several federal policies and regulations regulate energy use and consumption through various programs. Federal agencies including the United States (U.S.) Department of Transportation (DOT), the U.S. Department of Energy (DOE), and the U.S. Environmental Protection Agency (EPA) influence and regulate energy consumption through the establishment and enforcement of fuel economy standards for automobiles and light trucks.

Federal Energy Policy and Conservation Act

The Federal Energy Policy and Conservation Act of 1975 sought to ensure that all vehicles sold in the U.S. would meet certain fuel economy goals. Through this Act, Congress established the first fuel economy standards for on-road motor vehicles in the U.S. Pursuant to the Act, the National Highway Traffic and Safety Administration, which is part of the DOT, is responsible for establishing additional vehicle standards and for revising existing standards. Since 1990, the fuel economy standard for new passenger cars has been 27.5 miles per gallon. Since 1996, the fuel economy standard for new light trucks (gross vehicle weight of 8,500 pounds or less) has been 20.7 miles per gallon. Heavy-duty vehicles (i.e., vehicles and trucks over 8,500 pounds gross vehicle weight) are not currently subject to fuel economy standards. Compliance with federal fuel economy standards is not determined for each individual vehicle model; rather, compliance is determined on the basis of each manufacturer's average fuel economy for the portion of their vehicles produced for sale in the U.S. The Corporate Average Fuel Economy (CAFE) program, which is administered by EPA, was created to determine vehicle manufacturers' compliance with the fuel economy standards. The EPA calculates a CAFE value for each manufacturer, based on city and highway fuel economy test results and vehicle sales. On the basis of the information generated under the CAFE program, the DOT is authorized to assess penalties for noncompliance. Over the last 30 years, this regulatory program has resulted in vastly improved fuel economy throughout the nation's vehicle fleet.

State

Executive Order S-3-05

California Governor Arnold Schwarzenegger announced new GHG emissions reduction targets on June 1, 2005 through Executive Order S-3-05. These targets are a reduction of GHG emissions to 2000 levels by 2010; a reduction of GHG emissions to 1990 levels by 2020; and a reduction of GHG emissions to 80 percent below 1990 levels by 2050 (CA, 2005). Some literature equates these reductions to 11 percent by 2010 and 25 percent by 2020 (Hendrix et al, 2007).

AB 32

In 2006, the California State Legislature adopted AB 32. AB 32 requires CARB to adopt rules and regulations that would achieve GHG emissions equivalent to statewide levels in 1990 by 2020. In October 2007, CARB published an expanded list of discrete GHG emission reduction measures for early implementation. Emission reductions included carbon sequestration projects and best management practices that are technologically feasible and cost-effective. GHGs, as defined under AB 32, include carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride.

On November 16, 2007, the California ARB made publicly available the staff report *California 1990 Greenhouse Gas Emissions Level and 2020 Emissions Limit* that determined the statewide levels of GHG emissions in 1990, and recommended 427 million metric tons of CO_2 as the total statewide aggregated GHG 1990 emissions level and 2020 emissions limit.

Executive Order S-01-07

Executive Order S-01-07 was enacted by the Governor on January 18, 2007, which mandates that: 1) a statewide goal be established to reduce the carbon intensity of California's transportation fuels by at least 10 percent by 2020; and 2) a low carbon fuel standard for transportation fuels be established for California.

Senate Bill (SB) 97

SB 97 (2007) requires the State Office of Planning and Research (OPR) to draft CEQA guidelines for the mitigation of GHG emissions or the effects of GHG emissions by July 1, 2009 and adopt guidelines by January 1, 2010. OPR is currently developing these guidelines.

California Air Pollution Control Officers Association (CAPCOA) Report

In January 2008, CAPCOA prepared the report *CEQA & Climate Change*, which is a guide to evaluating and addressing GHG emissions from projects subject to CEQA. This report provides a common platform of information and tools to support local governments.

State of California Energy Plan

The California Energy Commission (CEC) is responsible for preparing the State Energy Plan, which identifies emerging trends related to energy supply, demand, conservation, public health and safety, and the maintenance of a healthy economy. The Plan calls for the State to assist in the transformation of the transportation system to improve air quality, reduce congestion, and increase the efficient use of fuel supplies with the fewest environmental and energy costs. To further this policy, the plan identifies a number of strategies, including providing assistance to public agencies and fleet operators, encouraging urban designs that reduce vehicle miles traveled, and accommodating pedestrian and bicycle access.

Title 24, Energy Efficiency Standards

Title 24 of the California Building Code governs all aspects of building construction and provides energy efficiency standards for residential and nonresidential buildings. Standards mandating energy efficiency measures in new construction are included in Part 6 of Title 24. The energy efficiency standards require mandatory measures to be installed in new construction. These standards are designed to (1) respond to California's energy crisis to reduce energy bills, increase energy delivery system reliability, and contribute to an improved economic condition for the State; (2) respond to the AB 970 (Statutes of 2000) urgency legislation to adopt and implement updated and cost-effective building energy efficiency standards; (3) respond to the SB 5X (Statutes of 2001) urgency legislation to adopt energy efficiency building standards

for outdoor lighting; and (4) emphasize energy efficiency measures that save energy at peak periods and seasons, improve the quality of installation of energy efficiency measures, incorporate recent publicly funded building science research, and collaborate with California utilities to incorporate results of appropriate market incentive programs for specific technologies. Title 24 is designed to provide certainty and uniformity throughout the State while ensuring that the efficient and non-wasteful consumption of energy is carried out through project design features. Energy efficiency standards went into effect in 1978; in 2005, the CEC adopted new energy efficiency standards. All projects that apply for a building permit on or after October 2005 must adhere to the new 2005 standards.

4.6.3 IMPACT SIGNIFICANCE CRITERIA

Notwithstanding the regulations listed above in Section 4.6.2, there are no federal or State laws, executive orders, agency rules or agency reports that provide any required standards or methodologies by which to evaluate the level of a project's GHG emissions. Accordingly, currently there are no applicable significance standards or criteria relating to GHG emissions that can be utilized to determine the impacts of a project on global climate change or to determine the significance of any such impacts under CEQA.

However, based on Public Resources Code Section 21100(b)(3), CEQA Guidelines Section 15126.4, and CEQA Appendix F: Energy Conservation, the proposed project would have a significant impact associated with energy conservation if it would result in the wasteful, inefficient, and unnecessary consumption of energy.

4.6.4 ISSUES 1 AND 2 – PROJECT CONTRIBUTION TO GLOBAL CLIMATE CHANGE AND IMPACTS OF GLOBAL CLIMATE CHANGE ON THE PROPOSED PROJECT

Would implementation of the proposed project contribute significantly to global climate change?

Would of the proposed project be impacted by the effects of global climate change?

4.6.4.1 IMPACT ANALYSIS

Project Contribution to Global Climate Change

Implementation of the proposed project would increase GHG emissions associated with project construction and operation, particularly from energy usage and vehicle operations. GHG emissions anticipated from the project are primarily from carbon dioxide (CO_2), nitrogen dioxide (N_2O) and methane (CH_4).

The project applicant would have operational control over certain project features that generate GHG emissions, including the consumption of natural gas and electricity during project operation and water usage from interior fixtures and exterior landscaping. Vehicle emissions are also a contributor to new GHG emissions, however, the project applicant is not considered to have operational control over vehicular emissions since they do not control emissions standards for vehicles, vehicle purchase choices or the driving habitats of employees who work onsite.

The project's contribution to global climate change has been grouped into two impact categories: construction of the project and completed site operations.

GHG Emissions from Project Construction

GHG emissions of CO_2 would be associated with the construction phase of the project through the use of heavy equipment and employee vehicle trips to and from the project site. Construction-related CO_2 emissions would be temporary in nature since construction would be divided into three phases and would last a total of about three years. Emissions of CO_2 were estimated for each phase of project construction using the URBEMIS model. The resulting emissions, in metric tons per phase, are listed in Table 4.6-2. Emissions of N_2O, and CH_4 have not been provided due to the short term nature of construction impacts and the limited emissions levels of these pollutants resulting from construction activities.

Table 4.6-2. Construction GHG Emissions (metric tons)

Construction Phase	CO_2 Emissions, metric tons
Phase 1	1,624
Phase 2	754
Phase 3	582

Source: Scientific Resources Associated, 2009

GHG Emissions from Project Operation

GHG emissions associated with the operation of the proposed project were estimated separately for two sources: (1) increases in emissions due to energy usage at the proposed industrial development; and (2) vehicle use. Mobile source GHG emissions were estimated for operation of the proposed project based on the vehicle emissions predicted by the EMFAC2007 model. In addition, there would be some indirect emissions associated with the procurement, use, and disposal of potable water; however, it was assumed that these emissions would be included as part of the energy use emissions estimated for the proposed project. Operational GHG emissions of CO_2, N_2O, and CH_4 resulting from the project are listed in Table 4.6-3.

Table 4.6-3. Operational GHG Emissions (metric tons/year)

Emission Source	Annual Emissions (tons/year)		
	CO_2	N_2O	CH_4
Electricity Use Emissions	2,390	0.010	0.018
Natural Gas Use Emissions	273	0.005	0.03
Vehicular Use Emissions	12,113	-	0.68
Total	**14,776**	**0.015**	**0.68**
Global Warming Potential Factor[(1)]	1	310	21
CO_2 Equivalent Emissions[(2)]	14,776	5	14
TOTAL CO_2 Equivalent Emissions	**14,795**		

(1) Global Warming Potential (GWP) is a relative scale which compares other GHG to that of the same mass of carbon dioxide (whose GWP Factor is by definition 1). This allows for a measure of how much a given mass of a GHG is estimated to contribute to global warming.

(2) CO_2 Equivalent Emissions are the total emissions of a pollutant multiplied by the GWP of the pollutant.

Source: Scientific Resources Associated, 2009

Project Features that Reduce GHG Emissions

The proposed project's vehicular emissions would be reduced through the use of public transit instead of personal vehicles by future employees. The project's proximity to the Gillespie Field Transit Station would provide an alternative means of transportation for future industrial park employees and would also reduce GHG emissions. In addition, an existing bicycle path is located to the northeast of the project site adjacent to Forrester Creek channel. This provides another opportunity for an alternative mode of transportation for future employees. The project would also provide bicycle parking onsite and an onsite pedestrian access network that would encourage bicycling and walking instead of driving motor vehicles.

The project would also provide approximately 28.9 percent landscape cover on the project site, which is significantly greater than the City's requirement of 10.7 percent. The additional landscaping would reduce the urban heat island effect at the project site by reducing heat transfer to the surrounding air, thereby reducing the need to use building cooling systems. In addition, the proposed landscape design includes a mix of both native trees and trees with low Ozone Forming Potential (OFP). Low OFP trees and shrubs emit reduced volumes of volatile organic compounds emissions which react with nitrous oxide emissions to produce ozone (the main component of smog). Approximately 28 native Coast Live Oak trees would be planted on the site, along with approximately 35 California Pepper Trees, which are categorized as having a low OFP. This provides a balance of native, drought tolerant vegetation and vegetation that has a low potential to contribute to ozone.

Impacts of Global Climate Change on the Proposed Project

In addition to contributing to global climate change, projects can be exposed to impacts from global climate change as well. Acknowledging the global climate change trends described above, it is reasonably foreseeable that temperatures locally in San Diego County will increase over the course of this century in the range of 3-10 degrees Fahrenheit with or without the proposed Forrester Creek Industrial Park project (California Climate Change Center, 2006). This warming could lead to other climate effects that may affect the proposed project site, including, but not limited to, impacts to biological resources, sea level rise, increases in natural disasters, and possible decreases in potable water supply.

Biology

Changes in climate alter habitats and their biological dynamics, making them uninhabitable for some species, and allow other species to move in. However, the area surrounding the project site is highly developed and biological resources on the proposed project site would not be negatively affected as temperatures continue to rise. The proposed project site contains sensitive vegetation communities, including disturbed Diegan coastal sage scrub, non-native grassland habitat and jurisdictional waters of the U.S. that would be impacted by the proposed project. In addition, the project would result in a significant direct impact to approximately 250 stems of San Diego ambrosia, raptor foraging habitat including non-native grassland and raptor nesting habitat including eucalyptus woodland. Removal of these habitats could negatively impact wildlife species and reduce the ability of these species to adapt to global climate change. However, implementation of the mitigation measures identified in Section 4.3, Biological Resources, would address the impacts to biological resources. Removal of disturbed Diegan coastal sage scrub and non-native grassland habitat would be replaced off-site at a 1:1 and 0.5:1 ratio, respectively. The wildlife agencies and the City would have authority over the location and habitat quality of the off-site mitigation site and, therefore, could choose a mitigation site that would provide better quality habitat for wildlife species than the current project site, improving the adaptive capabilities of local wildlife with respect to climate change. Impacts to jurisdictional waters would be mitigated through the Clean Water Act Section 404 permitting process before any fill is placed in jurisdictional waters of the U.S., including wetlands. Impacts to the federally-endangered San Diego ambrosia would be mitigated

through compliance with either Section 7 or Section 10(a) of the Endangered Species Act. Additionally, construction of the proposed project would not block any existing wildlife corridors that would negatively impact the ability of wildlife to adapt to global climate change.

Rising Sea Levels

Under the higher warming scenario, the IPCC anticipates sea level to rise 4 to 30 inches in San Diego by 2100. In general, sea level elevation change of this magnitude would inundate coastal areas with salt water, accelerate coastal erosion, threaten vital levees and inland water systems, and disrupt wetlands and natural habitats. The project site is located inland, and after construction would be elevated to a minimum of 350 feet above mean sea level (AMSL). Based on the site's geographic location, rising sea level would have less than significant impacts to the proposed project site.

Natural Disasters

Climate change could result in increased flooding and weather-related disasters. The frequency of large floods on rivers and streams could increase, which could affect the channelized portion of Forrester Creek that borders the proposed project site to the northeast. The channelized portion of Forrester Creek is lined with concrete, which could collect more water with increased precipitation events. The northeastern portion of the project site is located in Flood Hazard Zone X (shaded) and the remainder of the site is located in Zone X (unshaded). Both of these zones (Zone X shaded and Zone X unshaded) are located above the base flood elevation. Neither Zone X (shaded) or Zone X (unshaded) is located within the 100-year floodplain. The proposed project site would be graded to an elevation of 350 feet or above. According to Panel 1653 of 2375 for San Diego County and incorporated areas (Map No. 06073C1653F, June 19, 1997, revised March, 2002), the base flood elevation in the project area is 348 feet. Therefore, the graded elevation of the project site would be at least two foot above the base flood elevation, which would avoid impacts from flooding and weather-related disasters as a result of global climate change.

Water Supply

Changes in precipitation would have the potential to alter the sources of water that currently serve the City of El Cajon, and the rest of southern California. A network of man-made reservoirs and aqueducts capture and transport water throughout the State from northern California rivers and the Colorado River to southern California. The current distribution system relies on the Sierra Nevada mountain snowpack to supply water during the dry spring and summer months. Rising temperatures, potentially compounded by decreases in precipitation, could severely reduce spring snowpack, increasing the risk of summer water shortages.

The proposed industrial project is anticipated to generate a small demand for water due to operations uses. Also, the proposed project would not directly induce population growth, which could result in a significant increase in the demand for water. To reduce water use, the proposed project would install drought-tolerant native plant materials for landscaping, which would require less water than non-native landscape materials. These efforts would reduce the magnitude of the impact that a water shortage would have on the proposed project.

4.6.4.2 SIGNIFICANCE OF IMPACT

Although implementation of the proposed project would result in a new source of GHG emissions from project construction and operation, it would not result in emissions of criteria pollutants levels above screening level thresholds. Criteria pollutant emissions levels from all phases of project construction and project operation would be significantly below the screening level thresholds. In addition, the proposed project would include design features to reduce GHG emissions, including proximity to transit and

landscape cover on 28.9 percent of the site. Therefore, implementation of the proposed project would not generate enough GHG emissions to individually influence global climate change.

Operation of the proposed project would ultimately be required to meet the regulatory requirements of AB 32 for reductions in GHG emissions. Reductions below the AB 32 guidelines and compliance with future statewide and San Diego County programs would substantially lessen the project's contribution to global climate change. Because specific industrial uses and tenants are not known at this time, it is not possible to determine the precise reductions in GHGs that could be realized through policies or requirements implemented through AB 32. However, as described above, the proposed project would implement design features to reduce the emission of GHGs. Therefore, impacts would be less than significant.

Due to the location and elevation of the proposed project site, the cumulative effect of global climate change, including sea level rise, natural disasters and flooding, and water supply, would have a less than significant impact on the proposed project.

4.6.4.3 MITIGATION, MONITORING, AND REPORTING

Because proposed project would not result in a significant impact associated with global climate change, no mitigation is recommended.

4.6.5 ISSUE 3 – PROJECT IMPACTS TO ENERGY CONSUMPTION

Would implementation of the proposed project result in the wasteful, inefficient and unnecessary consumption of energy?

4.6.5.1 IMPACT ANALYSIS

The California Energy Code (Title 24, Part 6, of the California Code of Regulations) identifies energy efficiency standards for residential and non-residential buildings. Compliance with Title 24 would ensure that the proposed project would not result in the wasteful, inefficient and unnecessary use of energy with respect to the proposed industrial buildings. However, Title 24 does not apply to project construction, vehicle trips generated by project traffic, or areas of the project that do not contain buildings such as parking areas, driveways, landscape areas. A discussion of the proposed project's features and estimates of its energy demand are provided below. Project impacts to energy consumption have been grouped into two categories: construction of the project and completed site operations.

Project Construction

Project construction would be conducted in three phases:

- Phase 1: March 2010 to July 2011, includes grading and site preparation plus building construction and paving (198,482 square feet)
- Phase 2: July 2011 to April 2012, includes building construction and paving (191,473 square feet)
- Phase 3: April 2012 to February 2013, includes building construction and paving (75,000 square feet)

Construction of the proposed project would result in the consumption of fuel associated with the operation of construction equipment. Due to a number of unknown factors including the specific site conditions, the horsepower of the engine, the load factor of each machine, and the number of days each

piece of equipment would be used, it is not possible to determine the precise total fuel consumption that would occur during construction at this time. However, there are no unusual project site characteristics that would necessitate the use of construction equipment that would be less energy-efficient than at comparable construction sites in other parts of the region and the State. Therefore, it is expected that construction fuel consumption associated with the proposed project would not be any more inefficient, wasteful, or unnecessary than at other construction sites in the region.

Project Operation

Transportation Energy Demand

Traffic generated by the proposed project was calculated in the Traffic Impact Analysis included in Appendix F (LLG 2009). Based on the Traffic Impact Analysis, the project would generate 3,334 average daily trips (ADT) from passenger vehicles and 370 ADT from large trucks. The passenger vehicles were represented as a mix of light-duty autos and light-duty trucks (78 percent autos and 22 percent trucks); the large truck trips were represented as heavy-duty trucks. The average vehicle miles traveled was assumed to be 20 miles per trip.

The information in the Traffic Impact Analysis was used to determine the proposed project's fuel consumption from project operation. Vehicle fuel economy standards were used to estimate vehicular fuel consumption associated with trips to and from the proposed project. Since 1990, the fuel economy standard for new passenger cars has been 27.5 miles per gallon (mpg) (Bureau of Transportation Statistics, 2008). Since 1996, the fuel economy standard for new light trucks (gross vehicle weight of 8,500 pounds or less) has been 20.7 mpg. Heavy-duty vehicles (vehicles and trucks over 8,500 pounds gross vehicle weight) are not currently subject to fuel economy standards. Table 4.6-5 provides an estimate of the daily fuel consumed by vehicles traveling to and from the proposed project.

Table 4.6-5. Project Operation Fuel Consumption

Vehicle Type	Average Daily Trips Generated	Daily Vehicle Miles Traveled	Average Fuel Economy (Miles per gallon)	Total Daily Fuel Consumption (Gallons)
Passenger Cars	3,334	66,680	27.5	2,425
Trucks	370	7,400	20.7	357
Total	3,704	74,080	N/A	2,782

Source: Bureau of Transportation Statistics, 2008.

As illustrated in Table 4.6-5 above, operation of the proposed project would consume approximately 2,782 gallons of fuel per day. However, the project's overall fuel consumption would be reduced due to the project's close proximity to the Gillespie Field Transit Station and Forrester Creek bicycle path, which would allow future employees to utilize alternative modes of transportation, thereby reducing the project's consumption of fuel. This trip reduction was not accounted for in the traffic study because it analyzed a worst case scenario; however, proximity to transit is likely to result in a decrease of approximately 5 percent or more in vehicle trips and is a principle of smart growth planning. Therefore, the proposed project's transportation energy demand would not result in the wasteful, inefficient and unnecessary consumption of energy.

Building Energy Demand

Electricity Demand

The proposed project would contain 462,975 square feet of total building space. For the purposes of this analysis, this total square footage is divided into the three separate use categories of Manufacturing, Warehouse and Office to reflect the different energy consumption uses associated with each. The consumption rates of each use are listed in Table 4.6-6. Consumption rates for interior electricity demand were derived from similar previous projects featuring manufacturing facilities, provided by MPE Consulting, Inc. (personal communication, Dan Mayorgas, October 28, 2008). Exterior lighting energy demand was calculated based on the proposed site lighting design plan. The proposed project would feature 32 wall mounted area lighting fixtures and 51 pole top lighting fixtures. All exterior lighting would be operated with automatic lighting controls. Some would provide direction shielding, as necessary.

Table 4.6-6. Total Energy Demand of the Proposed Project

	Project Square Footage	Electricity Consumption Rate (watts/square foot)	Electricity Demand (Kilowatts)
Manufacturing	226,986	25	5,977
Warehouse	181,123	10	1,811
Office	54,846	15	821
Exterior Lighting			33
Total Energy Demand			**8,642**

Source: MPE Consultants, 2008.

Operation of the proposed project is estimated to result in a total electrical demand of 8,642 kilowatts. San Diego Gas and Electric (SDG&E) has provided a "will-serve" letter, dated October 29, 2008, indicating that the electrical loads of the proposed project are within the parameters of projected energy load growth in the area. Therefore, the proposed project would not result in the wasteful, inefficient and unnecessary consumption of energy.

Natural Gas Energy Demand

Unlike electricity consumption rates, there is no industry standard for estimating natural gas consumption rates for future buildings. Natural gas consumption rates can vary widely depending on the specific use of each individual manufacturing facility and, therefore, cannot be approximated based on square footages of future buildings. The proposed project site would be zoned for manufacturing purposes; however, at this time, the exact use and tenants of the buildings are unknown. Natural gas consumption of the project would ultimately depend on the specific manufacturing processes that take place. For the purposes of estimating the possible natural gas use of the proposed project, average natural gas consumption rates from the South Coast Air Quality Management District (SCAQMD) CEQA Air Quality Handbook were used (SCAQMD 1993).

Using the consumption rate of 2.0 cubic feet per month per square foot for a manufacturing facility, the proposed project would use approximately 925,000 cubic feet of natural gas per month. The "will-serve" letter provided by SDG&E on October 29, 2008, indicates that the proposed natural gas loads of the project are within the parameters of projected load growth in the region. Natural gas use by future tenants of the proposed project would be subject to approval by SDG&E and the conditions of the original "will-

serve" letter. Therefore, the proposed project would not result in the wasteful, inefficient and unnecessary consumption of energy.

Project Energy Conservation Features

The proposed project would include several measures that would result in a reduction in energy consumption required by construction and operation of the project. The design and incorporation of energy-efficient measures within the proposed project buildings and outdoor lighting plan would comply with California Energy Code (Title 24 Part 6 of the California Code of Regulations) and, in some cases, exceed the requirements of this code. The project would also incorporate energy efficient features into its landscape design and would reduce energy demand through its close proximity to the Gillespie Field Transit Station and Forrester Creek bicycle path. The design features of the proposed project are listed in Table 4.6-7.

4.6.5.2 SIGNIFICANCE OF IMPACT

Construction and operation of the proposed project would result in the consumption of energy; however, this consumption would be similar to other projects in the region and not be wasteful, inefficient or unnecessary. The project applicant is committed to the incorporation of several energy-efficient measures within the proposed project which would either meet or exceed Title 24 Energy Efficiency Standards. In addition, the project's close proximity to alternative modes of transportation and efficient landscape design would reduce its overall energy demand. Therefore, the proposed project would not result in a significant impact to energy consumption.

4.6.5.3 MITIGATION, MONITORING, AND REPORTING

Because proposed project would not result in a significant impact to energy consumption, no mitigation is recommended.

Table 4.6-7. Project Energy Conservation Features

Energy Conservation Strategy	Proposed Project Features
Use Recycled Building Materials	Proposed project would use concrete and steel containing recycled materials.
Installation of Skylights	Proposed project would install 460 skylights, which would reduce the lighting needs of the project as well as reduce heating and cooling needs.
Use Cool Roofing Material	Proposed project would incorporate GlasKap roofing material which would reflect solar energy and decrease the heat island effect.
Window Pane Material	Proposed project would use double pane windows with Low-E glass. Low-E glass reflects radiant heat four to 20 times better than uncoated glass, which would reduce heating and cooling needs.
Install Efficient Space Conditioning Systems	Proposed project would install high efficiency heating, ventilation, and air conditioning (HVAC) systems. These systems would include variable speed drives for fan and pump motors greater than 10 horsepower, electronically-commutated motors for series fan boxes, improved controls, efficient cooling towers, and water-cooled chillers for large systems. The proposed HVAC system would not require an air-cooled chiller. The air conditioning system would use refrigerant (R-410A) which meets both the U.S. EPA and the Montreal Protocol requirements.
Use Recycled Landscaping Materials	Landscaping of the project site would utilize several design features which would reduce the energy demand of the project. Landscape materials used such as boulders and rock linings would be salvaged from the project site, reducing the energy consumed in process and transport of these materials.
Use of Plant Vegetation With Low Ozone Forming Potential (OFP)	The proposed landscaping design includes approximately 35 California Pepper Trees, which are categorized as having a low Ozone Forming Potential (OFP).
Install Low Water Use Landscaping	The proposed project would use native plants with low or zero water requirements. Landscaping requiring irrigation would be concentrated around the building perimeters and along frontage roads. Irrigation using reclaimed water would occur via a low precipitation rate sprinkler, equipped with a smart controller with a flow sensing valve, as well as an automatic rain shut-off device. This system would serve to conserve water and reduce erosion on the project site. Furthermore, portions of the project site landscaping would not require any irrigation. These areas would be designed to adapt to the local environmental conditions without the need for an additional irrigation source.
Exceeding Minimum Landscaped Area Requirements	The City of El Cajon's requirement for landscaping on the proposed project site is about 10.7 percent, which equates to approximately 146,110 square feet (sf) of landscaped area, based on Manufacturing zone requirements. The proposed project would install a total of approximately 396,168 sf of landscaping, which would provide approximately 28.9 percent landscape cover over the project site, thus exceeding the City's requirement of 10.7 percent landscape cover. In addition, 179,617 sf of the landscaped area would feature native vegetation to the San Diego region. The use of landscaping would reduce the urban heat island effect by reducing heat transfer to the surrounding air and result in a decrease in demand for building cooling systems.
Use of Low Energy Stormwater Drainage Plan	The proposed project would use an open drainage and swale system which would conserve energy by reducing the need for manufactured conventional stormwater infrastructure and filtration systems. Stormwater and nuisance flow runoff would first pass through a series of rock and plant material swales to utilize the well draining alluvial deposits found on site. The remaining project water would be directed into underground detention basins and eventually be discharged into the Forrester Creek channel.
Reducing the Heat Island Effect	Proposed project would incorporate vines on retaining and site perimeter walls, wherever feasible, which would lessen the heat island effect by reducing heat transfer to the surrounding air.

Source: Benjamin and Winer, 1998; California EPA, Climate Action Team Proposed Early Actions to Mitigate Climate Change in California, 2007; CAPCOA, January 2008.

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