**CAMPUS PARK WEST PROJECT**

# APPENDIX H

## CLIMATE CHANGE ANALYSIS REPORT

PDS2005-3813-05-001(SPA); PDS2005-3800-05-003(GPA);
PDS2005-3600-05-005(REZ); PDS2005-3100-5424(TM);
Log No. PDS2005-3910-05-02-009(ER);
State Clearinghouse No. 2009061043

*for the*

## FINAL SUBSEQUENT ENVIRONMENTAL IMPACT REPORT

June 18, 2014

**CAMPUS PARK WEST PROJECT**

# GREENHOUSE GAS ANALYSES REPORT

SPA05-001, GPA05-003, REZ05-005,
TM 5424, ER 05-02-009

July 2013

*Lead Agency*:

**COUNTY OF SAN DIEGO**
**PLANNING AND DEVELOPMENT SERVICES**
5201 Ruffin Road, Suite B
San Diego, CA 92123

# Greenhouse Gas Analyses Report

for the

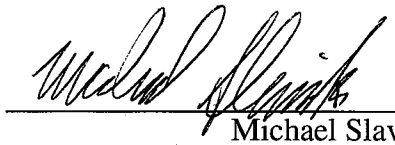
# Campus Park West Project

**GPA 05-003,**
**SPA 05-001,**
**REZ 05-005,**
**TM 5424,**
**ER 05-02-009**

*Prepared for:*
**The County of San Diego**

On behalf of:
**Pappas Investments**
2020 L Street, Fifth Floor
Sacramento, CA 95814

*Prepared by:*
**HELIX Environmental Planning, Inc.**
7578 El Cajon Blvd., Suite 200
La Mesa, CA 91942



Michael Slavick

County of San Diego
Approved Air Quality Consultant

July 2013

# TABLE OF CONTENTS

# TABLE OF CONTENTS (cont.)

**Section** **Page**

# TABLE OF CONTENTS (cont.)



## ATTACHMENTS

## LIST OF TABLES



## LIST OF FIGURES

# GLOSSARY OF TERMS AND ACRONYMS

| | |
|---|---|
| AB | Assembly Bill |
| ADT | Average Daily Traffic |
| AEP | Association of Environmental Professionals |
| AQMD | air quality management districts |
| | |
| BACT | Best Available Control Technology |
| BAU | business-as-usual |
| BMP | best management practices |
| | |
| CAA | Clean Air Act |
| CAFE | Corporate Average Fuel Economy |
| CalEPA | California Environmental Protection Agency |
| CalGreen | California Green Building |
| CalRecycle | California Department of Resources Recycling and Recovery |
| CAP | Climate Action Plan |
| CAPCOA | California Air Pollution Control Officers Association |
| CARB | California Air Resources Board |
| CAT | Climate Action Team |
| CAS | 2009 California Climate Adaptation Strategy |
| CCTP | Climate Change Technology Program |
| CEC | California Energy Commission |
| CEUS | California Commercial End Use Survey |
| CEQA | California Environmental Quality Act |
| CFC | cholorofluorocarbon |
| $CH_4$ | methane |
| CNRA | California Natural Resources Agency |
| CO | carbon monoxide |
| $CO_2$ | carbon dioxide |
| $CO_2e$ | carbon dioxide equivalent |
| cy | cubic yard |
| | |
| EIR | Environmental Impact Report |
| EO | Executive Order |
| EPA | U.S. Environmental Protection Agency |
| EPIC | Energy Policy Initiative Center |
| | |
| GHG | greenhouse gas |
| GWP | global warming potential |

# GLOSSARY OF TERMS AND ACRONYMS (cont.)

| | |
|---|---|
| HFCs | hydrofluorocarbons |
| HVAC | heating, ventilation, and air conditioning |
| ICLEI | International Council on Local Environment Initiatives |
| IPCC | Intergovernmental Panel on Climate Change |
| kBTU | kiloBritish Thermal Units |
| LCFS | Low Carbon Fuel Standard |
| LEED | Leadership in Energy and Environmental Design |
| MMT | million metric tons |
| mph | miles per hour |
| MPOs | Metropolitan Planning Organizations |
| Montreal Protocol | Montreal Protocol on Substances That Deplete the Ozone Layer |
| MT | Metric ton |
| MT $CO_2e$ | Metric tons carbon dioxide equivalent |
| $N_2O$ | nitrous oxide |
| NHTSA | National Highway Traffic Safety Administration |
| $NO_2$ | nitrogen dioxide |
| $NO_x$ | oxides of nitrogen |
| NSHP | New Solar Home Partnership |
| OAL | Office of Administrative Law |
| ODCs | ozone depleting substances |
| OPR | Office of Planning and Research |
| PDF | project design feature |
| PFCs | perfluorocarbons |
| PM | Particulate Matter |
| ppm | parts per million |
| Project | Campus Park West project |
| Protocol | California Climate Action Registry General Reporting Protocol |
| PSD | Prevention of Significant Deterioration |
| PUC | Public Utilities Commission |

# GLOSSARY OF TERMS AND ACRONYMS (cont.)

| | |
|---|---|
| RASS | Residential Appliance Saturation Survey |
| RPS | Renewable Portfolios Strategy |
| RTAC | Regional Targets Advisory Committee |
| SANDAG | San Diego Association of Governments |
| SB | Senate Bill |
| SCAQMD | South Coast Air Quality Management District |
| SDAB | San Diego Air Basin |
| SDCWA | San Diego County Water Authority |
| SDG&E | San Diego Gas and Electric |
| SEP | 2009 County Strategic Energy Plan |
| sf | square feet |
| $SF_6$ | hexafluoride |
| SR | State Route |
| UNEP | United Nations Environment Program |
| UNFCCC | United Nations Framework Convention on Climate Change |
| U.S. | United States |
| VMT | vehicle miles traveled |
| VOCs | Volatile Organic Compounds |

THIS PAGE INTENTIONALLY LEFT BLANK

# EXECUTIVE SUMMARY

This report evaluates the potential greenhouse gas (GHG) emission impacts associated with the Campus Park West Project (Proposed Project). An assessment was made to estimate the total GHG emissions that would be emitted as a result of construction and operation of the Proposed Project. Construction sources of GHG emissions include heavy construction equipment, worker Vehicle Miles Traveled (VMT), and water use. Operational sources of GHG emissions sources include energy, transportation, and solid waste. Two design scenarios are being evaluated for the property. Scenario 1 assumes that the Project would abut the right-of-way owned by Caltrans in its existing configuration. Scenario 2 assumes that the Project could purchase Caltrans right-of-way and use the additional acreage for general commercial uses.

The County of San Diego released a new *Draft Guidelines for Determining Significance for Greenhouse Gas Analyses* (June 20, 2012). The *Draft Guidelines* include an overarching threshold of compliance with the County's Climate Action Plan (CAP) and include additional implementing thresholds. The implementing threshold used for the Proposed Project is the Performance Threshold. The Guidelines establish a "Bright Line Threshold" of 2,500 metric tons of GHGs per year. If a project exceeds the "Bright Line Threshold", it is required to reduce unmitigated emissions by at least 16 percent to ensure that cumulative GHG impacts are less than significant in accordance with the Performance Threshold.

The Project-related construction activities are estimated to generate a total of 20,138 metric tons of carbon dioxide ($CO_{2)}$. Construction emissions are amortized over 20 years, such that the proposed construction activities would contribute an average of 1,006 metric tons per year of $CO_2$ emissions. The unmitigated Project-related operational and amortized construction GHG emissions are estimated to generate approximately 36,474 metric tons of $CO_2$-equivalent emissions ($CO_2e$) per year for Scenario 1 and 37,155 metric tons of CO2e for Scenario 2. Although the GHG emissions estimated for the Proposed Project would exceed the 2,500 metric ton Bright Line threshold, the Project's required compliance with state and federal regulations governing the automobile industry, combined with Project mitigation measures, would allow the Proposed Project to reduce its emissions by more than the required 16 percent below the unmitigated scenario.

The California Air Pollution Control Officers Association (CAPCOA) report "Quantifying Greenhouse Gas Mitigation Measures," dated August 2010, provides a list of measures appropriate for the Proposed Project that would reduce Project-related GHG emissions. The Proposed Project under both scenarios incorporates many of these measures. Statewide measures and the quantifiable Project-related GHG emission reduction measures would reduce the annual emissions by 28 percent in Scenario 1 and 26 percent under Scenario 2.

Implementation of the statewide measures and Project design features would reduce the Project's total GHG by more than 16 percent below unmitigated Project-equivalent levels. The Proposed Project is consistent with the goals of Assembly Bill (AB) 32 within the County of San Diego and would not conflict with a statewide GHG plan or County CAP. Thus, with the statewide and Project design measures identified in this report, it is expected that no significant cumulative impact with respect to Project-related GHG emissions would occur.

THIS PAGE INTENTIONALLY LEFT BLANK

# 1.0 INTRODUCTION AND PROJECT DESCRIPTION

This report evaluates the significance of the Proposed Project's contribution of GHG emissions to statewide GHG emissions and GHG emissions reduction targets. To evaluate the incremental effect of Project development on statewide and global climate change, it is important to have a basic understanding of the nature of the global climate change problem.

## 1.1 Understanding Global Climate Change

Global climate change is a change in the average weather of the earth, which can be measured by wind patterns, storms, precipitation, and temperature. The earth's climate is in a state of constant flux with periodic warming and cooling cycles. Extreme periods of cooling are termed "ice ages," which may then be followed by extended periods of warmth. For most of the earth's geologic history, these periods of warming and cooling have been the result of many complicated, interacting natural factors that include: volcanic eruptions which spew gases and particles (dust) into the atmosphere; the amount of water, vegetation, and ice covering the earth's surface; subtle changes in the earth's orbit; and the amount of energy released by the sun (sun cycles). However, since the beginning of the Industrial Revolution around 1750, the average temperature of the earth has been increasing at a rate that is faster than can be explained by natural climate cycles alone.

With the Industrial Revolution came an increase in the combustion of carbon-based fuels such as wood, coal, oil, natural gas, and biomass. Industrial processes have also created emissions of substances that are not found in nature. This in turn has led to a marked increase in the emissions of gases that have been shown to influence the world's climate. These gases, termed "greenhouse" gases, influence the amount of heat that is trapped in the earth's atmosphere. Because recently observed increased concentrations of GHGs in the atmosphere are related to increased emissions resulting from human activity, the current cycle of "global warming" is generally believed to be largely due to human activity. Of late, the issue of global warming or global climate change has arguably become the most important and widely debated environmental issue in the United States and the world. Because climate change is caused by the collective of human actions taking place throughout the world, it is quintessentially a global or cumulative issue.

## 1.2 Greenhouse Gases of Primary Concern

Global climate change refers to changes in Earth's temperature, wind patterns, precipitation, and storms. Global temperatures are moderated by naturally occurring atmospheric gases, including water vapor, carbon dioxide ($CO_2$), methane ($CH_4$) nitrous oxide ($N_2O$), hydrofluorocarbons (HFCs; such as HFC-23), perfluorocarbons (PFCs; such as CF4), and sulfur hexafluoride ($SF_6$), which are known as GHGs. The potential of a gas to trap heat and warm the atmosphere is measured by its global warming potential (GWP). GHGs either breakdown or are absorbed over time. Thus, the potential of a gas to contribute to global warming is limited by the time it is in the atmosphere, or its "atmospheric lifetime." To account for these effects, GWPs are calculated over a 100-year time horizon (U.S. Environmental Protection Agency [EPA] 2010a). Because of its relative abundance in the atmosphere and its relatively long atmospheric lifetime, carbon

dioxide has been designated the reference gas for comparing GWPs. Thus, the 100-year GWP of $CO_2$ is equal to one (see Table 1).

**Table 1**
**GLOBAL WARMING POTENTIALS (GWP) AND ATMOSPHERIC LIFETIMES (YEARS)**

| Gas | Atmospheric Lifetime (Years) | 100-year GWP[a] |
|---|---|---|
| Carbon Dioxide ($CO_2$) | 50-200 | 1 |
| Methane ($CH_4$)[b] | 9-15 | 21 |
| Nitrous oxide ($N_2O$) | 120 | 310 |
| HFC-23 | 264 | 11,700 |
| HFC-125 | 32.6 | 2,800 |
| HFC-134a | 14.6 | 1,300 |
| HFC-143a | 48.3 | 3,800 |
| HFC-152a | 1.5 | 140 |
| HFC-227ea | 36.5 | 2,900 |
| HFC-236fa | 209 | 6,300 |
| HFC-4310mee | 17.1 | 1,300 |
| $CF_4$ | 50,000 | 6,500 |
| $C_2F_6$ | 10,000 | 9,200 |
| $C_4F_{10}$ | 2,600 | 7,000 |
| $C_6F_{14}$ | 3,200 | 7,400 |
| $SF_6$ | 3,200 | 23,900 |

Source: U.S. EPA 2010a.

a. GWPs used here are calculated over 100-year time horizon.
b. The methane GWP includes the direct effects and those indirect effects due to the production of tropospheric ozone and stratospheric water vapor. The indirect effect due to the production of $CO_2$ is not included.

### 1.2.1 Types of GHGs

Water vapor is the most abundant and variable GHG in the atmosphere. It is not considered a pollutant; it maintains a climate necessary for life. The main source of water vapor is evaporation from the oceans (approximately 85 percent). Other sources include evaporation from other water bodies, sublimation (change from solid to gas) from ice and snow, and transpiration from plant leaves (Association of Environmental Professionals; [AEP] 2007).

$CO_2$ is an odorless, colorless GHG. Natural sources include decomposition of dead organic matter; respiration of bacteria, plants, animals, and fungus; evaporation from oceans; and volcanic outgassing. Anthropogenic (human-caused) sources of $CO_2$ include the burning of fuels such as coal, oil, natural gas, and wood. Concentrations are currently around 379 parts per million (ppm); some scientists say that concentrations may increase to 1,130 $CO_2$ equivalent ($CO_2e$) ppm by 2100 as a direct result of anthropogenic sources (Intergovernmental Panel on

Climate Change; [IPCC] 2007). Some predict that this will result in an average global temperature rise of at least 7.2° Fahrenheit (° F) (IPCC 2007). The GWP of $CO_2$ is defined as one; the GWP of other GHGs is expressed as multiples of the GWP of $CO_2$.

$CH_4$ is a gas and is the main component of natural gas used in homes. It has a GWP of about 21, or 21 times the GWP of $CO_2$. A natural source of $CH_4$ is from the decay of organic matter. Geological deposits known as natural gas fields contain $CH_4$, which is extracted for fuel. Other sources are from decay of organic material in landfills, fermentation of manure, and cattle digestion.

$N_2O$, also known as laughing gas, is a colorless gas and has a GWP of about 310. $N_2O$ is produced by microbial processes in soil and water, including reactions that occur in fertilizer containing nitrogen. In addition to agricultural sources, some industrial processes (e.g., nylon and nitric acid production) also emit $N_2O$. It is used in rocket engines, as an aerosol spray propellant, and in race cars. During combustion, $NO_x$ ($NO_x$ is a generic term for mono-nitrogen oxides, NO and $NO_2$) is produced as a criteria pollutant and is not the same as $N_2O$. Very small quantities of $N_2O$ may be formed during fuel combustion by nitrogen and oxygen (American Petroleum Institute [API] 2004).

Fluorocarbons are gases formed synthetically by replacing all hydrogen atoms in $CH_4$ or ethane with chlorine and/or fluorine atoms. Chlorofluorocarbons are nontoxic, nonflammable, insoluble, and chemically nonreactive in the troposphere (the level of air at earth's surface). Chlorofluorocarbons were first synthesized in 1928 for use as refrigerants, aerosol propellants, and cleaning solvents. They destroy stratospheric ozone; therefore, their production was stopped by requirements of the Montreal Protocol (as described in Section 1.1.1). Fluorocarbons have a GWP of between 140 and 11,700, with the lower end being for HFC-152a and the higher end being for HFC-23.

$SF_6$ is an inorganic, odorless, colorless, nontoxic, nonflammable gas. It has the highest GWP of any gas – 23,900. $SF_6$ is used for insulation in electric power transmission and distribution equipment, in the magnesium industry, in semiconductor manufacturing, and as a tracer gas for leak detection.

Ozone is a GHG, although unlike the other GHGs, it is relatively short-lived in the troposphere and, therefore, is not global in nature. According to the California Air Resources Board (CARB), it is difficult to make an accurate determination of the contribution of ozone precursors ($NO_x$ and Volatile Organic Compounds, also called VOCs) to global warming (CARB 2006).

A summary of the most common naturally occurring and artificial GHGs is provided in Table 1.

Of the gases listed in Table 1, $CO_2$, $CH_4$ and $N_2O$, are produced by both natural and anthropogenic (human) sources. The remaining gases HFCs, CFs, and $SF_6$, are the result of solely human processes.

The increase in the earth's temperature is expected to have wide ranging effects on the environment. Although global climate change is anticipated to affect all areas of the globe, there

are numerous implications of direct importance to California. Statewide average temperatures are anticipated to increase by between 3 and 10.5° F by 2100. Some climate models indicate that this warming may be greater in the summer than in the winter. This could result in widespread adverse impacts to ecosystem health, agricultural production, water use and supply, and energy demand. Increased temperatures could reduce the Sierra Nevada snowpack and put additional strain on the state's water supply. In addition, increased temperatures would be conducive to the formation of air pollutants, resulting in poor air quality.

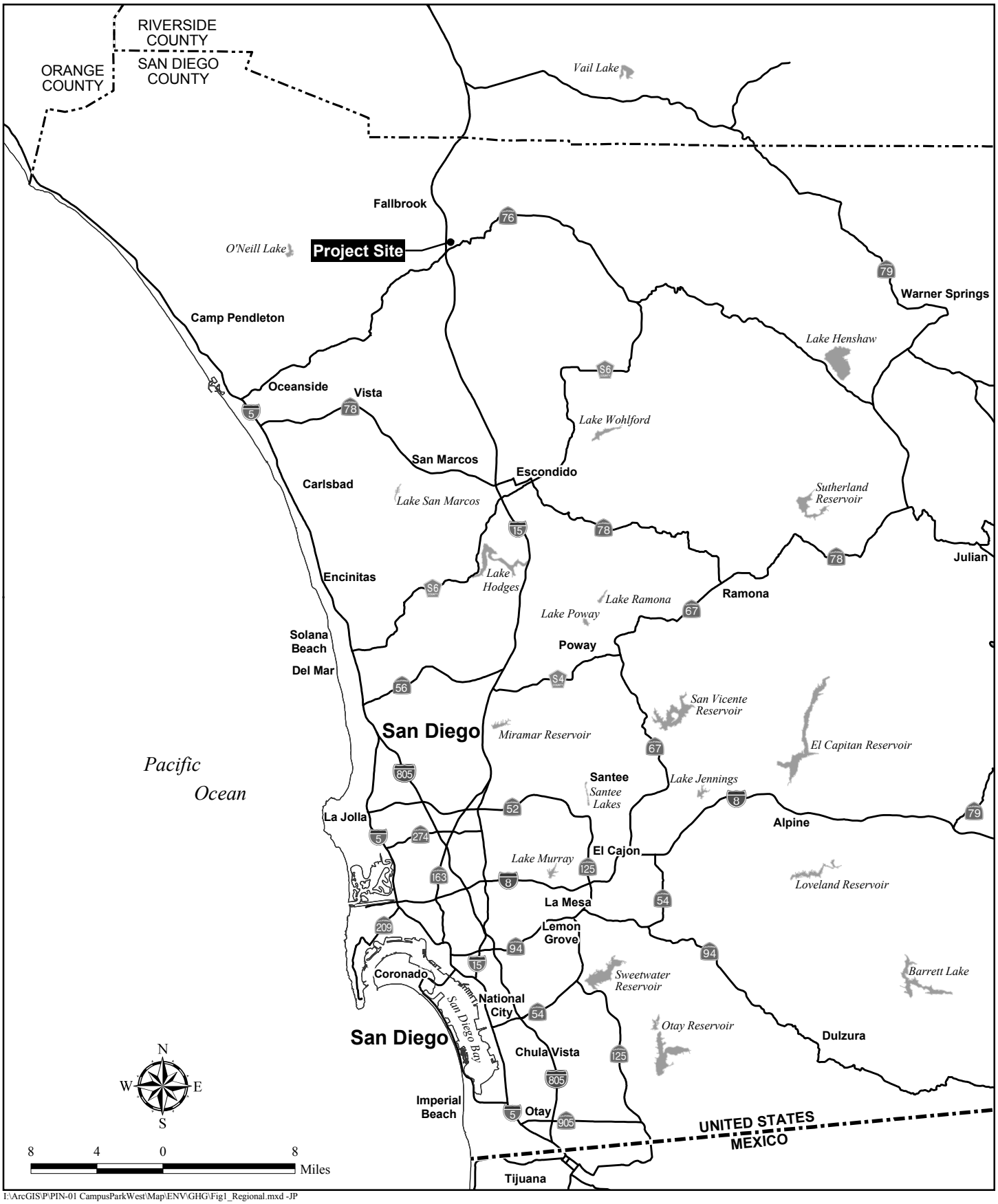
It is also important to note that even if GHG emissions were to be eliminated or dramatically reduced, it is projected that the effect of those emissions would continue to affect global climate for centuries.

## 1.3 Project Location and Description

The Project site is located in the unincorporated portion of San Diego County in the community of Fallbrook, approximately 7 miles southeast of the Fallbrook town center and 46 miles north of downtown San Diego (Figure 1). The Project site is within the northeast and southeast corners of the I-15/SR-76 interchange, with SR-76 separating the northern parcel from the three southern parcels. The western edge of the northern area of the property is bordered by I-15 (Figure 2).

The Project site parcels are situated between several planned projects: Palomar College Campus, Campus Park and Meadowood. The Proposed Project seeks a General Plan Amendment, Specific Plan Amendment, Rezone, and Tentative Map, for the development of a mixed-use residential/retail community consisting of multi-family residential, general commercial, and limited impact industrial office units, and supporting infrastructure uses on the approximately 116.5- to 118.6- acre site.

Two design scenarios are being evaluated for the property. Scenario 1 assumes that the Project would abut the right-of-way owned by Caltrans in its existing configuration. The uses would be divided into six Planning Areas (PAs). Limited impact industrial uses (approximately 120,000 square feet [sf] of light industrial/office space on four lots) would be located within PA 1 on 12.6 acres of land in the northern portion of the Project site, north of Pala Mesa Drive. PA 2 would consist of general commercial uses with a mixed-use core, and it would be sited on approximately 46.1 acres in the southwestern portion of the site north of SR-76 and west of Pankey Road. PA 3 would be dedicated to multi-family residential development and includes a total of 248 units on 12.4 acres of land, in the southeastern portion of the site north of SR-76 and east of Pankey Road. PAs 4 and 5, south of SR-76, would total 6.3 acres, and contain approximately 27,500 sf (9,000 sf and 18,500 sf in PAs 4 and 5, respectively) of commercial space. The mixed-use core integrated into PA 2 would contain general commercial and office space, as well as up to 35 multi-family residences. Three homeowner association-maintained lots (approximately 1.4 acres) would contain manufactured slopes, landscaped areas, and drainage facilities. Four biological open space lots would total approximately 31 acres. In addition to the on-site uses, the Proposed Project would require the construction of on- and off-site infrastructure improvements associated with roads, water, and sewer.



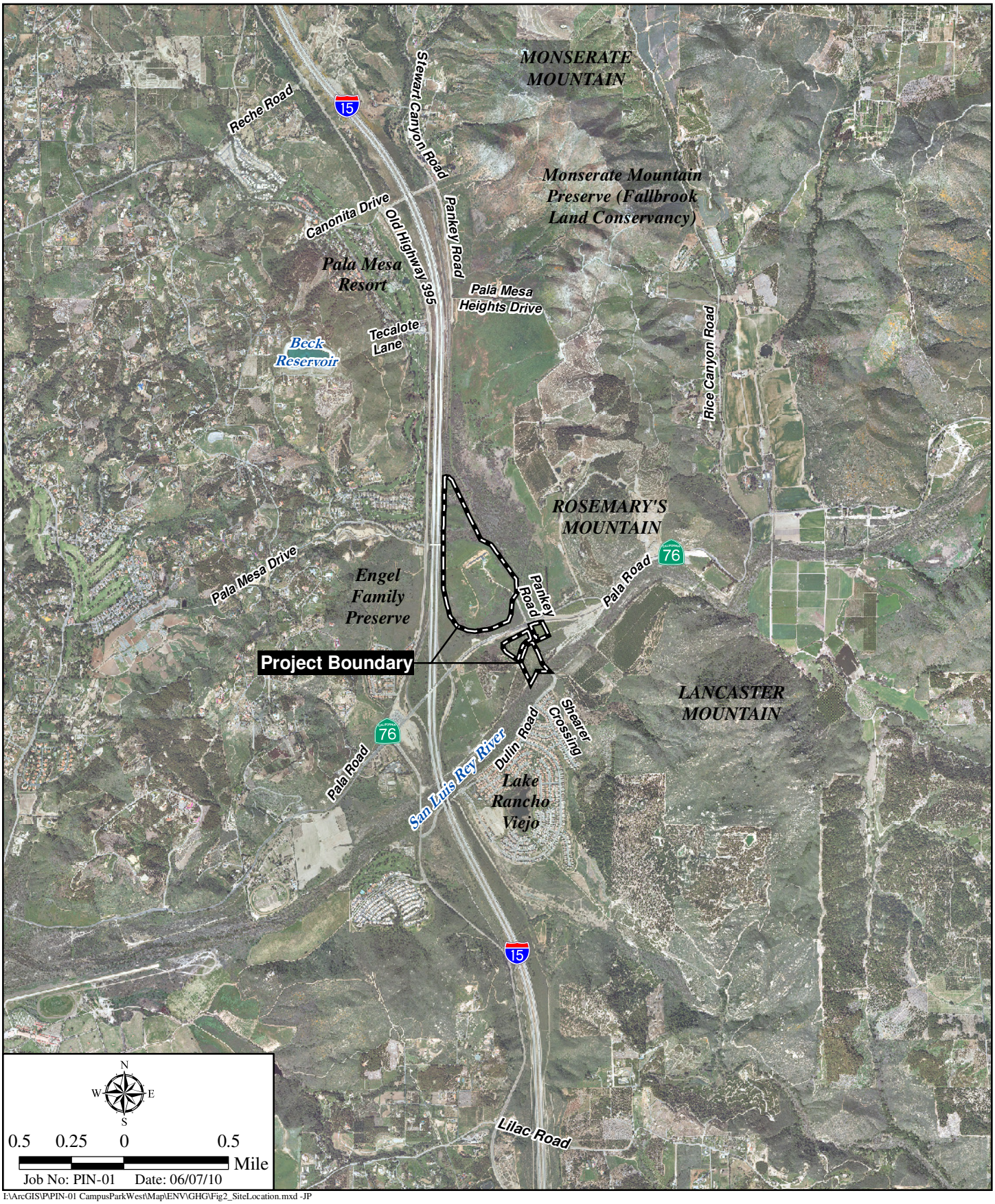

I:\ArcGIS\P\PIN-01 CampusParkWest\Map\ENV\GHG\Fig1_Regional.mxd -JP

# Regional Location Map

CAMPUS PARK WEST

HELIX

Figure 1




I:\ArcGIS\P\PIN-01 CampusParkWest\Map\ENV\GHG\Fig2_SiteLocation.mxd -JP

# Project Site Location Map

CAMPUS PARK WEST

HELIX

Figure 2

Scenario 2 differs from Scenario 1 in that it assumes that Caltrans would release current right-of-way that is no longer planned for potential SR-76 widening (based on recent improvements to SR-76 in conjunction with projected traffic volumes). The potential for this to occur, and the subsequent inclusion of the decertified property into the Proposed Project is one design option. Under that scenario, the Proposed Project Applicant could purchase that decertified right-of-way and the Project would designate that additional acreage for general commercial uses. Decertified Caltrans right-of-way north of SR-76 would remain undeveloped except for a Project monument sign to identify the entrance to Campus Park West.

Decertified right-of-way south of SR-76 (1.2 acres) would be incorporated into PA 5 and developed with an additional 10,000 sf of General Commercial (a new total of 513,500 sf and a new total of 28,500 sf General Commercial for PA 5) uses.

Each of the land uses and design elements discussed below would be the same, regardless of whether Scenario 1 or Scenario 2 is approved by decision makers. As indicated above, the difference would relate only to acreage, with an associated amount of additional ground disturbance and development square footage.

Figure 1 provides a location map of the Project, and Figure 2 provides an aerial photograph of the Project site.

## 1.4 Project Design Features that Reduce GHG Emissions

The Proposed Project would be designed in accordance with the Building Industry Association's California Green Builder (CGB) program, a professionally recognized green building program that identifies building performance standards to achieve improved energy efficiency, water conservation, sustainable materials use, waste reduction, lumber conservation, indoor air quality, and heat island avoidance. The key CGB design features accounted for in the Proposed Project's GHG reduction estimates include: 15 percent greater energy efficiency than the current Title 24 2008 energy code and 20 percent greater water savings than the current plumbing code. The 20 percent greater water savings requirement of the CGB Program reflects early adoption of the same California Green Building (CalGreen) requirement. While the incorporation of the following measures would ensure that the Proposed Project meets the reductions discussed above, these reductions would comply with the County's 16 percent reduction. These design features would be included as building permit conditions and verified prior to the issuance of final certificate of occupancy, as follows:

### 1.4.1 Green Building Standards

The applicant would design and construct the Project in accordance with the CalGreen residential and nonresidential standards of the CGB program. The CGB program was conceived and created by the Building Industry Institute (BII), the research arm of the California Building Industry Association (CBIA). The CGB program sets goals for significant improvements in energy efficiency, water conservation, wood conservation, on-site waste recycling, and indoor air quality. The CGB program is a program recognized by the California Energy Commission as one of several green building performance rating systems available to potentially lower GHG emissions

from buildings (CBSC 2010). While projects are generally not required to enroll in the CGB program, the applicant has made it a requirement of the Campus Park West design feature.

### 1.4.2 Energy Efficiency

CalGreen Building Codes are required to exceed the current 2008 California Energy Code's residential and nonresidential energy efficiency standards by 15 percent at a minimum. The Project would exceed the current 2008 California Energy Code's residential and nonresidential energy efficiency standards by 15 percent as a mandatory Project design feature. It would accomplish this through improved heating, ventilation and air condition (HVAC) systems and duct seals; enhanced ceiling, attic and wall insulation; Energy Star appliances; high-efficiency water heaters; energy-efficient three-coat stucco exteriors; energy-efficient lighting; and high-efficiency window glazing. These energy features would undergo independent third party inspection and diagnostics as part of the CGB verification and commissioning process. The energy features would also be demonstrated/verified in the Project's Title 24 Compliance Report submitted during the building permit process.

### 1.4.3 Water Conservation

CalGreen Building Codes are designed to use less water than non-CalGreen buildings by featuring advanced plumbing systems, such as parallel hot water piping or hot water recirculation systems, and fixtures such as ultra-low flow toilets, water-saving showerheads and kitchen faucets, and buyer-optional high-efficiency clothes washers. Specifically, CalGreen standards reduce the overall use of potable water within each home by 20 percent. In accordance with CalGreen criteria, the 20 percent reduction in potable water use shall be demonstrated by verifying each plumbing fixture and fitting meets the 20 percent reduced flow rate or by calculating a 20 percent reduction in the building water use baseline.

In addition to these indoor water use conservation features, the Project's outdoor landscaping plan minimizes turf, maximizes drought-tolerant plants, and incorporates weather-based irrigation controllers, multi-programmable irrigation clocks, and a high efficiency drip irrigation system. At the time of final inspection, a manual shall be placed in each building that includes, among other things, information about water conservation.

### 1.4.4 Materials Use and Waste Reduction

In accordance with CalGreen criteria and state and local laws, at least 50 percent of on-site construction waste and ongoing operational waste would be diverted from landfills through reuse and recycling. To further minimize waste, the Project would incorporate recycled materials for flooring, and certified sustainable wood products and other recycled or rapidly renewable building materials where possible. Areas for storage and collection of recyclables and yard waste would be provided for each residence.

### 1.4.5 Pollutant Control and Heat Island Reduction

To maximize shade and reduce heat island effects, the landscape plan includes strategic location of deciduous trees and other vegetation. Impervious surfaces, including paved parking areas, would also be minimized and pervious pavers used instead where practical. No CFC-based refrigerants would be used, and interior finishes, adhesives, sealants, paints and coatings, and carpet systems would be low in VOCs, and they would meet the testing and product requirements of one or more nationally recognized green product labeling programs. Compliance with these requirements of the CGB program shall be verified through documentation.

# 2.0 ENVIRONMENTAL SETTING

## 2.1 Worldwide GHG Inventory

The United Nations IPCC constructed several emission trajectories of GHGs needed to stabilize global temperatures and climate change impacts. The IPCC concluded that a stabilization of GHGs at 400 to 450 ppm $CO_2e$ concentration is required to keep global mean warming below 3.6º F, which is assumed to be necessary to avoid dangerous climate change (AEP 2007).

In 2004, total GHG emissions worldwide were estimated at 20,135 million metric ton (MMT) $CO_2e$ emissions (United Nations Framework Convention on Climate Change [UNFCCC] 2006a). The U.S. contributed the largest portion (35 percent) of global GHG emissions in 2004. The California Energy Commission (CEC 2006) identifies the following breakdown of GHG emissions in California: $CO_2$, approximately 84 percent; $CH_4$, approximately 5.7 percent; $N_2O$, approximately 6.8 percent; and other pollutants, approximately 2.9 percent. As noted above, the transportation sector is the single largest category of California's GHG emissions, accounting for 41 percent of emissions statewide. CARB estimates that the year 1990 statewide $CO_2e$ emissions level was 427 MMT (CARB 2007a). In year 2004, California produced 492 MMT of total $CO_2e$ emissions. The total U.S. GHG emissions was 7,260 MMT of $CO_2e$ emissions in 2005, of which 84 percent was $CO_2$ emission (EPA 2006). On a national level, approximately 33 percent of GHG emissions were associated with transportation and about 41 percent were associated with electricity generation (EPA 2006).

## 2.2 State and Regional GHG Inventories

CARB performed statewide inventories for the years 1990 to 2008 (Table 2). The inventory is divided into nine broad sectors of economic activity: agriculture, commercial, electricity generation, forestry, high GWP emitters, industrial, recycling and waste, residential, and transportation. Emissions are quantified in million metric tons of CO2 equivalent (MMTCO2E).

**Table 2**
**CALIFORNIA GHG EMISSIONS BY SECTOR IN 1990, 2000, 2004, AND 2008**

| Sector | 1990 Emissions in $MMTCO_2E$ (% total)[1] | 2000 Emissions in $MMTCO_2E$ (% total)[1] | 2004 Emissions in $MMTCO_2E$ (% total)[1] | 2008 Emissions in $MMTCO_2E$ (% total)[1] |
|---|---|---|---|---|
| **Sources** | | | | |
| Agriculture | 23.4 (5%) | 25.44 (6%) | 28.82 (6%) | 28.06 (6%) |
| Commercial | 14.4 (3%) | 12.80 (3%) | 13.20 (3%) | 14.68 (3%) |
| Electricity Generation | 110.6 (26%) | 103.92 (23%) | 119.96 (25%) | 116.35 (24%) |
| Forestry (excluding sinks) | 0.2 (<1%) | 0.19 (<1%) | 0.19 (<1%) | 0.19 (<1%) |
| High GWP | -- | 10.95 (2%) | 13.57 (3%) | 15.65 (3%) |
| Industrial | 103.0 (24%) | 97.27 (21%) | 90.87 (19%) | 92.66 (19%) |
| Recycling and Waste | -- | 6.20 (1%) | 6.23 (1%) | 6.71 (1%) |
| Residential | 29.7 (7%) | 30.13 (7%) | 29.34 (6%) | 28.45 (6%) |
| Transportation | 150.7 (35%) | 171.13 (37%) | 181.71 (38%) | 174.99 (37%) |
| Unspecified Remaining[2] | 1.3 (<1%) | -- | -- | -- |
| *Subtotal* | *433.3* | *458.03* | *483.89* | *477.74* |
| Sinks | | | | |
| Forestry Sinks | -6.7 (--) | -4.72 (--) | -4.32 (--) | -3.98 (--) |
| **TOTAL** | **426.6** | **453.31** | **479.57** | **473.76** |

Source: CARB 2007b, 2010a

1 Percentages may not total 100 due to rounding.

2 Unspecified fuel combustion and ozone depleting substance (ODS) substitute use, which could not be attributed to an individual sector.

As shown in Table 2, statewide GHG source emissions totaled 433 MMT $CO_2E$ in 1990, 458 MMT $CO_2E$ in 2000, 484 $MMTCO_2E$ in 2004, and 478 $MMTCO_2E$ in 2008. According to data from the CARB, it appears that statewide GHG emissions peaked in 2004, and are now beginning to decrease (CARB 2010a). Transportation-related emissions consistently contribute the most GHG emissions, followed by electricity generation and industrial emissions.

The forestry sector is unique because it not only includes emissions associated with harvest, fire, and land use conversion (sources), but it also includes removals of atmospheric $CO_2$ (sinks) by photosynthesis, which is then bound (sequestered) in plant tissues. As seen in Table 2, the forestry sector consistently removes more $CO_2$ from the atmosphere statewide than it emits. As a result, although decreasing over time, this sector represents a net sink, removing a net 6.7 $MMTCO_2E$ from the atmosphere in 1990, a net 4.7 $MMTCO_2E$ in 2000, a net 4.3 $MMTCO_2E$ in 2004, and a net 4.0 $MMTCO_2E$ in 2008.

A San Diego regional emissions inventory was prepared by the University of San Diego School of Law, Energy Policy Initiative Center (EPIC) that took into account the unique characteristics of the region. Their 2006 emissions inventory for San Diego is duplicated below in Table 3. The sectors included in this inventory are somewhat different from those in the statewide inventory.

According to the San Diego County GHG Inventory prepared by the EPIC in 2008, San Diego County emitted 34 MMT of $CO_2e$ emissions in 2006. The largest contributor of GHGs in San Diego County was the on-road transportation category, which comprised 45 percent (16 MMT $CO_2e$) of the total amount. The second highest contributor was the electricity category, which contributed 9 MMT $CO_2e$, or 25 percent of the total. Together, the on-road transportation and electricity categories comprised 70 percent of the total GHG emissions for the County. The remaining amount was contributed by natural gas consumption, civil aviation, industrial processes, off-road equipment, waste, agriculture, rail, water-borne navigation, and other fuels. By 2020, regional GHG emissions are expected to be 43 MMT of $CO_2e$.

**Table 3**
**SAN DIEGO COUNTY GHG EMISSIONS BY SECTOR IN 2006**

| Sector | 2006 Emissions in MMTCO2E (% total)[1] |
|---|---|
| Agriculture/Forestry/Land Use | 0.7 (2%) |
| Waste | 0.7 (2%) |
| Electricity | 9 (25%) |
| Natural Gas Consumption | 3 (8%) |
| Industrial Processes & Products | 1.6 (5%) |
| On-Road Transportation | 16 (45%) |
| Off-Road Equipment & Vehicles | 1.3 (4%) |
| Civil Aviation | 1.7 (5%) |
| Rail | 0.3 (<1%) |
| Water-Borne Navigation | 0.127 (<0.5%) |
| Other Fuels/Other | 1.1 (3%) |
| **Total** | **35.5** |

SOURCE: USD EPIC 2008. San Diego County Greenhouse Gas Inventory: An Analysis of Regional Emissions and Strategies to Achieve AB 32 Targets. Prepared by the University of San Diego School of Law, Energy Policy Initiative Center (EPIC), and available online at http://www.sandiego.edu/ epic/ghginventory/.

[1] Percents may not total 100 due to rounding.

Similar to the statewide emissions, transportation-related GHG emissions contributed the most countywide, followed by emissions associated with energy use.

## 2.3 On-site GHG Inventory

The existing Project site is currently vacant. There are no current significant sources of on-site GHG emissions. Natural vegetation and soils temporarily store carbon as part of the terrestrial carbon cycle. Carbon is assimilated into plants as they grow and then dispersed back into the environment when they die. Soil carbon accumulates from inputs of plants, roots, and other living components of the soil ecosystem (i.e., bacteria, worms, etc.). Soil carbon is lost through biological respiration, erosion, and other forms of disturbance. The existing GHG emissions are likely to be negligible.

## 2.4 Consequences of Global Climate Change

CARB projects a future statewide GHG emissions increase of more than 23 percent (from 2004) by 2020 given current trends (CARB 2008a). The 2008 EPIC study predicts a countywide increase to 43 MMT $CO_2E$, or roughly 20 percent (from 2006) by 2020. Global GHG emissions forecasts also predict similar substantial increases.

The anticipated consequences of global climate change have the potential to result in adverse impacts. Any increase in statewide average temperatures could result in widespread adverse impacts to ecosystem health, agricultural production, water use and supply, and energy demand. Increased temperatures could also reduce the Sierra Nevada snowpack and put additional strain on the region's water supply. In addition, increased temperatures would be conducive to the formation of air pollutants resulting in poor air quality.

To effectively address the challenges that a changing climate will bring, the State of California strengthened its commitment to climate adaptation and mitigation (i.e., reducing state GHG emissions) policies when Governor Arnold Schwarzenegger signed Executive Order (EO) S-13-08 on November 14, 2008. The order called on state agencies to develop California's first-ever strategy to identify and prepare for these expected climate impacts. The California Natural Resources Agency (CNRA) has taken the lead in developing this adaptation strategy, working through the Climate Action Team (CAT). Seven sector-specific working groups led by 12 state agencies, boards and commissions, and numerous stakeholders were convened for this effort. Adaptation is a relatively new concept in California policy. The *2009 California Climate Adaptation Strategy (CAS)* report summarizes the best known science on climate change impacts in the state to assess vulnerability and outline possible solutions that can be implemented within and across state agencies to promote resiliency (CNRA 2009). This is the first step in an ongoing, evolving process to reduce California's vulnerability to climate impacts.

Future residents of the Proposed Project site could be exposed to increased risk of dehydration, heat stroke, heat exhaustion, heart attack, stroke, and respiratory disease. These risks, however, would be no different from those experienced by the San Diego region as a whole under the described scenario. Increased temperatures would result in more frequent use of air conditioning that would increase energy costs to residents, and could put a strain on the area's energy supplies. Because the Proposed Project is located inland well above sea level, no impacts related to sea level rise are anticipated.

# 3.0 REGULATORY SETTING

All levels of government have some responsibility for the protection of air quality, and each level (international, federal, state, and regional/local) has specific responsibilities relating to air quality regulation. GHG emissions and the regulation of GHGs is a relatively new component of air quality.

## 3.1 International Greenhouse Gas Legislation

### 3.1.1 Montreal Protocol

The Coordinating Committee on the Ozone Layer was established by the United Nations Environment Program (UNEP) in 1977, and UNEP's Governing Council adopted the World Plan of Action on the Ozone Layer in 1977. Continuing efforts led to the signing of the Vienna Convention on the Protection of the Ozone Layer in 1985. This in turn led to the creation of the Montreal Protocol on Substances That Deplete the Ozone Layer (Montreal Protocol), an international treaty designed to protect the stratospheric ozone layer by phasing out production of ozone-depleting substances (ODCs). The Montreal Protocol was adopted on September 16, 1987 and became effective on January 1, 1989.

By the end of 2006, the 191 parties to the treaty had phased out over 96 percent of ODCs (UNEP 2007a). Because of this success, scientists are now predicting that the ozone hole will "heal" later this century (UNEP 2007b). The substantial reduction of ODCs also has benefits relative to global climate change, because these substances are potent GHGs. As noted, however, the phasing out of the ODCs has led to increased use of non-ozone depleting substances, such as HFCs, which, although not detrimental to the ozone layer, are also potent GHGs.

### 3.1.2 United Nations Framework Convention on Climate Change (UNFCCC)

The United States participates in the United Nations Framework Convention on Climate Change, which was signed on March 21, 1994. The Kyoto Protocol is a treaty adopted under the UNFCCC and was the first-ever international agreement to regulate GHG emissions. It has been estimated that if the commitments outlined in the Kyoto Protocol are met, global GHG emissions could be reduced by an estimated five percent from 1990 levels during the first commitment period of 2008-2012. Notably, while the United States is a signatory to the Kyoto Protocol, Congress has not ratified the Protocol and the United States is not bound by the Protocol's commitments.

In December 2009, the United Nations representatives met in Copenhagen to attempt to develop a framework for addressing global climate change issues in the future. The Copenhagen Accord was not ratified with a binding accord, however, and no further measures were adopted at that meeting.

## 3.2 Federal Greenhouse Gas Regulations

In the past, the U.S. Environmental Protection Agency (EPA) has not regulated GHGs under the Clean Air Act (CAA). The U.S. Supreme Court, however, ruled on April 2, 2007 (in *Massachusetts v. U.S. Environmental Protection Agency)* that $CO_2$ is an air pollutant, as defined under the CAA, and that the EPA has the authority to regulate GHG emissions. After a thorough examination of the scientific evidence and careful consideration of public comments, the EPA announced on December 7, 2009 that GHGs threaten the public health and welfare of the American people (with the associated findings summarized below).

> *Endangerment Finding*: The EPA Administrator finds that the current and projected concentrations of the six key well-mixed GHGs – $CO_2$, $CH_4$, $N_2O$, HFC, PFC, and $SF_6$ – in the atmosphere threaten the public health and welfare of current and future generations.
>
> *Cause or Contribute Finding*: The EPA Administrator finds that the combined emissions of these well-mixed GHGs from motor vehicles and motor vehicle engines contribute to the GHG pollution which threatens public health and welfare.

The endangerment findings do not themselves impose any requirements on industry or other entities. This action was a prerequisite to the final EPA's GHG emissions standards for light duty vehicles, which are jointly implemented by EPA and the Department of Transportation's National Highway Safety Administration on April 1, 2010.

### 3.2.1 Mandatory Reporting Rule of GHGs

On January 1, 2010, the EPA started, for the first time, requiring large emitters of heat-trapping emissions to begin collecting GHG data under a new reporting system. This new program covers approximately 85 percent of the nation's GHG emissions and applies to roughly 10,000 facilities. Fossil fuel and industrial GHG suppliers, motor vehicle and engine manufacturers, and facilities that emit 25,000 metric tons or more of $CO_2$ equivalent per year will be required to report GHG emissions data to the EPA annually. This reporting threshold is equivalent to the annual GHG emissions from approximately 4,600 passenger vehicles. Vehicle and engine manufacturers outside of the light-duty sector began phasing in GHG reporting with vehicle/engine model year 2011.

### 3.2.2 Corporate Average Fuel Economy Standards

The federal Corporate Average Fuel Economy (CAFE) standard determines the fuel efficiency of certain vehicle classes in the United States. First enacted by Congress in 1975, CAFE's purpose is to reduce energy consumption by increasing the fuel economy of cars and light trucks. National Highway Transportation Safety Administration (NHTSA) has set standards to increase CAFE levels rapidly over the next several years, which will improve the fuel consumption rates in motor vehicles across the United States. In 2007, as part of the Energy and Security Act of 2007, CAFE standards were increased for new light-duty vehicles to 35 miles per gallon by 2020. In May 2009, President Obama announced plans to increase CAFE standards to require light-duty vehicles to meet an average fuel economy of 35.5 miles per gallons by 2016. On

May 21, 2010, following the direction set by President Obama, NHTSA and EPA have issued joint Final Rules for CAFE and GHG emissions regulations for model years 2017 and beyond.

### 3.2.3 Prevention of Significant Deterioration/Title V Greenhouse Gas Tailoring Rule

The EPA will apply a tailored approach to the applicability major source thresholds for GHGs under the Prevention of Significant Deterioration (PSD) and Title V programs of the Clean Air Act (CAA or Act) by temporarily raising those thresholds and setting a PSD significance level for greenhouse gases. EPA is anticipating that GHG emissions may soon be subject to regulation pursuant to the CAA. One consequence of subjecting GHG emissions to regulatory controls is that the requirements of existing air permit programs, namely the PSD preconstruction permitting program for major stationary sources and the Title V operating permits program, would be triggered for GHG emission sources. At the current applicability levels under the CAA, tens of thousands of projects every year would need permits under the PSD program, and millions of sources would become subject to the Title V program. These numbers of permits are orders of magnitude greater than the current number of permits under these permitting programs and would vastly exceed the administrative capacity of the permitting authorities. By tailoring the applicability thresholds, actions can be taken by the EPA and states to build capacity and streamline permitting.

## 3.3 California Greenhouse Gas Regulations

### 3.3.1 California Code of Regulations, Title 24, Part 6

California Code of Regulations, Title 24, Part 6, is the California Energy Code. This code, originally enacted in 1978 in response to legislative mandates, establishes energy-efficiency standards for residential and non-residential buildings to reduce California's energy consumption. The Code is updated periodically to incorporate and consider new energy-efficiency technologies and methodologies as they become available. The 2008 Standards went into effect January 1, 2010, and supersede the 2005 Standards. Projects that apply for a building permit on or after this date must comply with the 2008 Standards. The Building Energy Efficiency Standards will continue to be upgraded over time to reduce electricity and peak demand, and California recognizes the role of the Standards in reducing energy related to meeting the state's water needs and in reducing GHG emissions.

### 3.3.2 California Code of Regulations, Title 24, Part 11

California Code of Regulations, Title 24, Part 11, outlines the CalGreen code. The CalGreen code aims to make building designs more sustainable, and to incorporate more efficient and responsible practices into development. This code is intended to: reduce energy and water consumption; cause a reduction in GHG emissions from buildings; promote environmentally responsible, cost-effective, and healthier places to work and live; and respond to directives by the Governor. According to the CARB, an estimated three MMT reduction of greenhouse gases will occur by the year 2020 as a result of the mandatory provisions in the code. This number is expected to increase in the future, as it will apply to nonresidential additions and alterations. The current 2010 CalGreen Standards went into effect January 1, 2011. Prior to the updated 2010

edition, this code contained only voluntary standards; however, the 2010 version of the standards include mandatory and voluntary standards related to the both the design and construction of buildings, and construction site management. A supplement to this code (effective July 1, 2012) modifies some of the incorporated provisions (both voluntary and mandatory) of the previously approved 2010 edition.

### 3.3.3 Executive Order D-16-00

This EO was signed by Governor Gray Davis on August 2, 2000, and established a statewide sustainable building goal. Specifically, this goal is to "site, design, deconstruct, construct, renovate, operate, and maintain state buildings that are models of energy, water, and materials efficiency; while providing healthy, productive and comfortable indoor environments and long term benefits to Californians." As with the California Energy Code, reductions in energy usage provided by sustainable building design would result in reduced GHG emissions.

### 3.3.4 Senate Bill 1771

Senate Bill (SB) 1771 (Sher) was enacted on September 30, 2000, and requires the Secretary of the Resources Agency to establish a nonprofit public benefit corporation, to be known as the "California Climate Action Registry," for the purpose of administering a voluntary GHG emission registry. The California Energy Commission (CEC) is required to develop metrics for use by the Registry and to update the State's inventory of GHG emissions by January 1, 2002, and every five years thereafter.

### 3.3.5 Executive Order S-7-04

This EO, signed by Governor Schwarzenegger on April 20, 2004, designated California's 21 interstate freeways as the "California Hydrogen Highway Network," and directed the California Environmental Protection Agency (CalEPA) and all other relevant state agencies to "…plan and build a network of hydrogen fueling stations along these roadways and in urban centers that they connect, so that by 2010, every Californian will have access to hydrogen fuel, with a significant and increasing percentage from clean, renewable sources."

The EO also directed the CalEPA, in concert with the State Legislature and in consultation with the CEC and other relevant state and local agencies, to develop the California Hydrogen Economy Blueprint Plan by January 1, 2005. The Plan is to be updated biannually, with recommendations to the Governor and State Legislature to include the following:

> Promoting environmental benefits (including global climate change) and economic development opportunities resulting from increased utilization of hydrogen for stationary and mobile applications; policy strategies to ensure hydrogen generation results in the lowest possible emissions of GHGs and other air pollutants.

### 3.3.6 Executive Order S-3-05

EO S-3-05, signed by Governor Schwarzenegger on June 1, 2005, calls for a reduction in GHG emissions to year 1990 levels by the year 2020, and for an 80 percent reduction in GHG emissions below 1990 levels by the year 2050.

EO S-3-05 also calls for the CalEPA to prepare biennial science reports on the potential impact of continued global warming on certain sectors of the California economy. The first of these reports, "Scenarios of Climate Change in California: An Overview," was published in February 2006. The 2006 report used 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. Specifically, these include a lower warming range (3.0-5.5°F); medium warming range (5.5-8.0°F); and higher warming range (8.0-10.5°F). The report then presents analyses of future climate in California under each warming range.

As noted above, each emissions scenario would result in substantial temperature increases for California. According to the report, these substantial temperature increases would result in a variety of impacts to the people, economy, and environment of California in association with a projected increase in extreme conditions. While the severity of these impacts would depend upon actual future emissions of GHGs and associated warming, identified potential impacts from global warming in California include, but are not limited to, public health, biology, rising sea levels, hydrology and water quality, and water supply.

### 3.3.7 Assembly Bill 32 – Global Warming Solutions Act of 2006

Governor Schwarzenegger signed California Assembly Bill (AB) 32, the Global Warming Solutions Act, into law in 2006. AB 32 required the CARB to determine what the statewide GHG emissions level was in 1990, and to approve a statewide GHG emissions limit that is equivalent to that level. The determination of a statewide 1990 GHG levels was required to be completed by January 1, 2008, with the related emissions limit to be achieved by 2020. Key AB 32 milestones are as follows:

- June 20, 2007 – Identification of "discrete early action greenhouse gas emission reduction measures."
- January 1, 2008 – Identification of the year 1990 baseline GHG emission levels and approval of a statewide limit equivalent to that level. Adoption of reporting and verification requirements concerning GHG emissions.
- January 1, 2009 – Adoption of a scoping plan for achieving GHG emission reductions.
- January 1, 2010 – Adoption and enforcement of regulations to implement the "discrete" actions.
- January 1, 2011 – Adoption of GHG emission limits and reduction measures by regulations.
- January 1, 2012 – GHG emission limits and reduction measures adopted in 2011 become enforceable.

Since the passage of AB 32, CARB published Proposed Early Actions to Mitigate Climate Change in California (CARB 2007c). There are no early action measures specific to development projects included in the list of 36 measures identified for CARB to pursue during calendar years 2007, 2008, 2009 and 2010. Also, this publication indicated that the issue of GHG emissions in CEQA and General Plans was being deferred for later action, so the publication did not discuss any early action measures generally related to CEQA or to land use decisions.

CARB has determined that the 1990 level of greenhouse gas emissions was 427 MMT of $CO_2$ equivalent emissions (CARB 2007a). CARB estimated that a reduction of 169 MMT net carbon dioxide equivalent ($CO_2e$) emissions below GHG levels of 569 MMT would be required by the year 2020 to meet 1990 levels. This amounts to a 15-percent reduction from today's levels, and a 28.3-percent reduction from projected GHG levels in year 2020. Furthermore, CARB has initiated a series of "early action measures" to reduce GHG emissions in advance of the full implementation of AB 32 in the year 2012 (CARB 2007d). CARB also adopted its Scoping Plan in December 2008, which provided estimates of the year 1990 GHG emissions level, and identified sectors for the reduction of GHG emissions.

According to the CEC, transportation accounted for approximately 41 percent of California's GHG emissions in 2004 (CEC 2006). Growth in California has resulted in vehicle miles traveled by state residents increasing three-fold during the period of 1975 to 2004. To reduce the use of carbon-based fuels, Governor Schwarzenegger signed EO S-01-07, calling for a 10-percent reduction in carbon intensity in fuels by the year 2020. In addition, President Bush signed new fuel-efficiency standards (aka CAFE standards) that would increase vehicle mileage to 35 miles per gallon by year 2020. All of these measures are designed to reduce emissions of greenhouse gases.

In March 2011, a San Francisco Superior Court enjoined the implementation of ARB's Scoping Plan, finding the alternatives analysis and public review process violated both CEQA and ARB's certified regulatory program (*Association of Irritated Residents, et al v. California Air Resources Board,* Case No. CPF-09-509562, March 18, 2011). In response to this litigation, the ARB adopted the new CEQA document (*Final Supplement to the AB32 Scoping Plan Functional Equivalent Document*) on August 24, 2011. ARB staff re-evaluated the baseline in light of the economic downturn and updated the projected 2020 emissions to 545 $MMTCO_2e$. Two reduction measures (Pavley I and the Renewables Portfolio Standard [12% – 20%]) not previously included in the 2008 Scoping Plan baseline were incorporated into the updated baseline, further reducing the 2020 Statewide emissions projection to 507 $MMTCO_2e$. The updated forecast of 507 $MMTCO_2e$ is referred to as the AB 32 2020 baseline. Reduction of an estimated 80 $MMTCO_2e$ are necessary to reduce Statewide emissions to the AB 32 target of 427 $MMTCO_2e$ by 2020 (CARB 2011).

### 3.3.8 Assembly Bill 1493 – Vehicular Emissions of Greenhouse Gases

In a response to the transportation sector accounting for more than half of California's $CO_2$ emissions, AB 1493 (Pavley) was enacted on July 22, 2002. AB 1493 (also referred to as Pavley or the California Light-Duty Vehicle Greenhouse Gas Standards) requires the CARB to set

statewide GHG emission standards for passenger vehicles and light-duty trucks (and other vehicles determined to be vehicles whose primary use is noncommercial personal transportation) manufactured in model year 2009 and all subsequent model years. These standards were adopted in September 2004, and considered cost effectiveness, technological feasibility, and economic impacts. When fully phased in, the near-term (years 2009 to 2012) standards would reduce GHG emissions by approximately 22 percent compared with the emissions from the year 2002 fleet, while the mid-term (years 2013 to 2016) standards would result in a reduction of approximately 30 percent. Some currently used technologies that achieve GHG reductions include small engines with superchargers, continuously variable transmissions, and hybrid electric drives. To set its own GHG emissions limits on motor vehicles, California required a waiver from the EPA, and this waiver was issued in June 2009. With this action, it was expected in 2008 that the new regulations (Pavley I and II) would reduce GHG emissions from California passenger vehicles by about 18 percent statewide.

### 3.3.9 Assembly Bill 75

AB 75 was passed in 1999 and mandates state agencies to develop and implement an integrated waste management plan to reduce GHG emissions related to solid waste disposal and diversion (recycling). In addition, the bill mandates that community service districts providing solid waste services report the disposal and diversion information to the appropriate city, county, or regional jurisdiction. Since 2004, the bill requires diversion of at least 50 percent of the solid waste from landfills and transformation facilities, and submission to the California Integrated Waste Management Board of an annual report describing the diversion rates.

### 3.3.10 Senate Bill 1368

In 2006, the California Legislature passed SB 1368, which requires the Public Utilities Commission (PUC) to develop and adopt a "GHGs emission performance standard" by February 1, 2007 for the private electric utilities under its regulation. On November 14, 2011, the Natural Resources Defense Council (NRDC) and Sierra Club jointly filed a Petition requesting the CEC initiate a rulemaking proceeding to ensure the current practices of California publicly owned utilities (POUs) meet the requirements of Senate Bill 1368 and California's Emission Performance Standard. On January 12, 2012, the CEC adopted the Emission Performance Standard. These standards apply to all long-term financial commitments (five years or longer) entered into by electric utilities and the emissions must be limited to 1,100 pounds of $CO_2$ per megawatt-hour of electricity delivered (California SB 2006).

### 3.3.11 Senate Bill 1505

Largely in response to EO S-7-04, SB 1505 (Lowenthal) requires the CARB to adopt regulations by July 1, 2008 that ensure the production and use of hydrogen for transportation purposes contributes to the reduction of GHG emissions, criteria air pollutants, and toxic air contaminants. SB 1505 was passed by the legislature and signed by the governor on September 30, 2006.

### 3.3.12 Executive Order S-01-07

This EO was signed by Governor Schwarzenegger on January 18, 2007 and directs that a statewide goal be established to reduce the carbon intensity of California's transportation fuels by at least 10 percent by 2020. It orders that a Low Carbon Fuel Standard (LCFS) for transportation fuels be established for California and directs CARB to determine whether a LCFS can be adopted as a discrete early action measure pursuant to AB 32. The CARB approved the LCFS as a discrete early action item with a regulation adopted and implemented in 2010. It was expected to result in a reduction of 15 MMT $CO_2E$ by 2020 (based on the original 2008 Scoping Plan estimates). On December 29, 2011, District Judge Lawrence O'Neill in the Eastern District of California issued a preliminary injunction blocking CARB from implementing LCFS for the remainder of the *Rocky Mountain Farmers Union* litigation. Plaintiffs argued that the LCFS is unconstitutional because it violates the interstate commerce clause, which was intended to stop states from introducing laws that would discriminate against businesses located in other states.

In January 2012, however, the CARB appealed that decision to the Ninth Circuit Court of Appeals (Ninth Circuit), and then moved to stay the injunction pending resolution of the appeal. On April 23, 2012, the Ninth Circuit granted the CARB's motion for a stay of the injunction while it continues to consider CARB's appeal of the lower court's decision. Therefore, the LCFS enforcement injunction is lifted, and CARB is continuing to implement the LCFS statewide.

### 3.3.13 Senate Bill 97 – CEQA: Greenhouse Gas Emissions

In August 2007, Governor Schwarzenegger signed into law SB 97 – CEQA: Greenhouse Gas Emissions, stating, "This bill advances a coordinated policy for reducing GHG emissions by directing the Office of Planning and Research (OPR) and the Resources Agency to develop CEQA guidelines on how state and local agencies should analyze, and when necessary, mitigate GHG emissions." Specifically, SB 97 requires the OPR to prepare, develop, and transmit to the Resources Agency guidelines for the feasible mitigation of GHG emissions or the effects of GHG emissions, as required by CEQA, including but not limited to, effects associated with transportation or energy consumption. The Resources Agency certified and adopted the guidelines on December 31, 2009. The new CEQA guidelines provide the lead agency with broad discretion in determining what methodology is used in assessing the impacts of GHG emissions in the context of a particular project. This guidance is provided because the methodology for assessing GHG emissions is expected to evolve over time. The OPR guidance also states that the lead agency can rely on qualitative or other performance based standards for estimating the significance of GHG emissions, although the new CEQA Guidelines did not establish a threshold of significance.

### 3.3.14 Senate Bill 375

SB 375 was signed and passed into law on September 30, 2008 to enhance the CARB's ability to reach AB 32 goals. Specifically, SB 375 requires CARB to set regional targets for the purpose of reducing GHG emissions from passenger vehicles for years 2020 and 2035. If regions

develop integrated land use, housing and transportation plans that meet the SB 375 targets, new projects in these regions can be relieved of certain CEQA review requirements. The targets apply to the regions in the state covered by 18 Metropolitan Planning Organizations (MPOs).

Per SB 375, CARB appointed a Regional Targets Advisory Committee (RTAC) on January 23, 2009 to provide recommendations and methodologies to be used in the CARB's target setting process. The RTAC provided its recommendations in a report to the CARB on September 29, 2009. The CARB released its draft targets on June 30, 2010, and adopted its final targets on September 23, 2010. For the San Diego area, CARB and the San Diego Association of Governments (SANDAG) agreed to adopt 7 percent and 13 percent in per capita GHG emission reductions from passenger vehicles by the years 2020 and 2035, respectively. If MPOs had not met the GHG reduction targets, transportation projects would not be eligible for funding programmed after January 1, 2012.

On December 4, 2012, Superior Court ruled that the SANDAG violated state law by failing to fully account for, and take steps to reduce, climate change in its environmental review of the region's long-term transportation plan. At the time of this writing, the plan is being revised.

### 3.3.15 Executive Order S-13-08

EO S-13-08, signed by Governor Schwarzenegger on November 14, 2008, enhances the state's management of climate impacts from sea level rise, increased temperatures, shifting precipitation and extreme weather events. One key benefit of EO S-13-08 is that it has facilitated California's first comprehensive climate adaptation strategy. This strategy will improve coordination within state government so that better planning can more effectively address climate impacts to human health, the environment, the state's water supply, and the economy. Another benefit of EO S-13-08 includes providing consistency and clarity to state agencies on how to address sea level rise in current planning efforts, thus reducing time and resources unnecessarily spent on developing different policies using different scientific information.

## 3.4 California Greenhouse Gas Programs and Plans

### 3.4.1 California Energy Commission: New Solar Homes Partnership

The New Solar Homes Partnership (NSHP) is a component of the California Solar Initiative, and has a goal to produce 400 megawatts of solar electricity on approximately 160,000 homes by the year 2017. To qualify for the program, a new home must achieve energy-efficiency levels greater than the requirements of the year 2005 Building Title 24 Standards. The builder can choose to comply with either of two tiers of energy-efficiency measures: Tier I, which requires a 15-percent reduction from Title 24 Standards; or Tier II, which requires a 35-percent reduction overall and 40-percent reduction in the building's space cooling (air conditioning) energy compared to Title 24 (CEC 2008). In addition, all appliances must have an Energy Star rating, which indicates that the appliance is consistent with the international standard for energy-efficient consumer products.

### 3.4.2 California Air Resources Board: Interim Significance Thresholds

In October 2008, the CARB released draft interim guidance on significance thresholds for industrial, commercial and residential projects (CARB 2008a). The draft proposal for residential and commercial projects states that a project would not be significant if it complies with a previously approved plan that addresses GHG emissions or meets an energy use performance standard defined as CEC's Tier II Energy Efficiency goal (specified as 35 percent above Title 24 requirements). However, CARB did not "define" the performance standards for water, waste, and transportation nor "develop" threshold for GHG emissions in tons per year in the interim guidance. As such, CARB did not establish a threshold of significance. As of January 22, 2009, CARB has halted all work efforts on the draft *GHG Threshold of Significance under CEQA.*

### 3.4.3 California Air Resources Board: Scoping Plan

On December 11, 2008, CARB adopted a Scoping Plan (CARB 2008b), as directed by AB 32. The Scoping Plan proposes a set of actions designed to reduce overall GHG emissions in California to the levels required by AB 32. The measures in the Scoping Plan approved by the Board are in place, with further implementation details and regulations to be developed, followed by the rulemaking process to meet the 2012 deadline. Measures applicable to development projects include the following:

- Maximum energy-efficiency building and appliance standards, including more stringent building codes and appliance efficiency standards, and solar water heating;
- Use of renewable sources for electricity generation, such as photovoltaic solar associated with the Million Solar Roofs program;
- Regional transportation targets, including the integration of development patterns and the transportation network to reduce vehicle travel, as identified in SB 375; and
- Green Building strategy, including siting near transit or mixed-use areas; zero-net-energy buildings; "beyond-code" building efficiency requirements; and the use of the CEC's Tier II Energy Efficiency goal.

Relative to transportation, the Scoping Plan includes nine measures or recommended actions. One of these is measure T-3, Regional Transportation-Related Greenhouse Gas Targets, which relies on SB 375 implementation to reduce GHG emissions from passenger vehicles through reducing Vehicle Miles Traveled (VMT). The other measures are related to vehicle GHG emissions, fuel, and efficiency measures and would be implemented statewide rather than on a project-by-project basis.

In order to assess the scope of the reductions needed to return to 1990 emissions levels, CARB first estimated 2020 business as usual (BAU) GHG emissions. These are the GHG emissions that would be expected to occur in the absence of any state GHG reduction measures. In 2008, after estimating that statewide 2020 BAU GHG emissions would be 596 metric tons, CARB developed a Scoping Plan that identified measures to reduce BAU emissions by approximately 174 metric tons (an approximate 29 percent reduction) by 2020. As indicated in Table 4, the majority of reductions are directed at the sectors with the largest GHG emissions contributions

(transportation and electricity generation) and involve statutory mandates affecting vehicle or fuel manufacture, public transit, and public utilities.

**Table 4**
**CARB SCOPING PLAN RECOMMENDED GHG REDUCTION MEASURES**

| Recommended Reduction Measures | Reductions Counted Towards 2020 Target In $MMTCO_2E$ (% total)[2] |
|---|---|
| California Light-Duty Vehicle Greenhouse Gas Standards<br>• Implement Pavley I Standards<br>• Develop Pavley II light-duty vehicle standards | 31.7 (18.22%) |
| Energy Efficiency<br>• Building/appliance efficiency, new programs, etc.<br>• Increase CHP generation by 30,000 GWh<br>• Solar Water Heating (AB 1470 goal) | 26.3 (15.11%) |
| Renewables Portfolio Standard (33% by 2020) | 21.3 (12.24%) |
| Low Carbon Fuel Standard | 15 (8.62%) |
| Regional Transportation-Related GHG Targets[1] | 5 (2.87%) |
| Vehicle Efficiency Measures | 4.5 (2.59%) |
| Goods Movement<br>• Ship Electrification at Ports<br>• System-Wide Efficiency Improvements | 3.7 (2.13%) |
| Million Solar Roofs | 2.1 (1.21%) |
| Medium/Heavy-Duty Trucks<br>• Heavy-Duty Vehicle Greenhouse Gas Emissions Reduction (Aerodynamic Efficiency)<br>• Medium- and Heavy-Duty Vehicle Hybridization | 1.4 (0.80%) |
| High Speed Rail | 1.0 (<1.0%) |
| Industrial Measures (for sources covered under cap and trade program)<br>• Refinery Measures<br>• Energy Efficiency and Co-Benefits Audits | 0.3 (<0.5%) |
| Additional Reductions Necessary to Achieve the Cap | 34.4 (20%) |
| Industrial Measures (for sources not covered under cap and trade program)<br>• Oil and Gas Extraction and Transmission | 1.1 (<1%) |
| High Global Warming Potential Gas Measures | 20.2 (12%) |
| Sustainable Forests | 5.0 (3%) |
| Recycling and Waste (landfill methane capture) | 1.0 (0.6%) |
| **TOTAL ESTIMATED REDUCTIONS COUNTED TOWARDS 2020 TARGET** [3] | **174** |

**Table 4 (cont.)**
**CARB SCOPING PLAN RECOMMENDED GHG REDUCTION MEASURES**

| Other Recommended Measures | Estimated 2020 Reductions ($MMTCO_2E$) |
|---|---|
| State Government Operations | 1-2% |
| Local Government Operations | TBD |
| Green Building | 26 (14.94%) |
| Recycling and Waste | 9 (5.17%) |
| Water Sector Measures | 4.8 (2.76%) |
| Methane Capture at Large Dairies | 1.0 (<1%) |

Source: CARB 2008b

Note: CARB's 2010 revised BAU 2020 projections of 507 MMT $CO_2e$, based on the economic downturn and incorporation of Pavley I and 20% Renewable Portfolios Strategy (RPS), indicate the total reduction for the recommended measures is now 80 $MMTCO_2E$.

1. This number represents an estimate of what may be achieved from local land use changes. It is not the SB 375 regional target. CARB will establish regional targets for each MPO following input of the Regional Targets Advisory Committee and a public stakeholders' consultation process per SB 375.
2. Percentages are relative to the total of 174 MMT $CO_2e$ and may not total 100 due to rounding.
3. The total reduction for the recommended measures slightly exceeds the 169 MMT $CO_2e$ of reductions estimated in CARB's BAU 2020 Emissions Forecast of 596 $MMTCO_2e$ made in 2008. This is the net effect of adding several measures and adjusting the emissions reduction estimates for some other measures.

In August 2011, CARB revised its 2020 BAU projections to account for the economic downturn and other factors in their *Supplement to the AB 32 Scoping Plan Functional Equivalent Document* (CARB 2011). As previously mentioned in Section 3.3.7, CARB's revised estimate calculated that BAU 2020 emissions would be approximately 507 $MMTCO_2E$ per year. Thus, in order to reach the 1990 emissions level of 427 $MMTCO_2E$, an 80 $MMTCO_2E$ (16 percent) reduction was determined to be needed by 2020 (CARB 2011).

It was expected that the new regulations (Pavley I) would reduce GHG emissions from California passenger vehicles by about 31.7 $MMTCO_2E$ (or 18 percent) counted toward the total statewide reduction target (CARB 2008) (see Table 4). However, the revised 2011 projections estimate that Pavley I will reduce GHG emissions from passenger vehicles by about 29.9 $MMTCO_2E$ (or 17 percent), for 37 percent of the total 80 $MMTCO_2E$ reduction target.

CARB has adopted a second, more stringent, phase of the Pavley regulations, termed "Pavley II" [now known as "Low Emission Vehicle (LEV) III"], that covers model years 2017 to 2025. Pavley II was estimated in 2008 to add an additional 4.0 $MMTCO_2E$ for 2.3 percent of the then-estimated 174 $MMTCO_2E$ reduction total. The revised 2010 projections estimate that Pavley II will reduce GHG emissions from passenger vehicles by 3.8 $MMTCO_2E$, or 4.75 percent of the total 80 $MMTCO_2E$ reduction target (per CARB's 2010 revised projections). These reductions are to come from improved vehicle technologies such as small engines with superchargers, continuously variable transmissions, and hybrid electric drives.

An 18 percent reduction in the intensity of transportation fuels is expected to equate to a reduction of 16.5 $MMTCO_2E$ in 2020 (based on the original 2008 Scoping Plan estimates). However, in order to account for possible overlap of benefits between LCFS and the Pavley GHG standards, CARB has discounted the contribution of LCFS to 15 $MMTCO_2E$ (CARB 2008).

This year (as of June 2013), CARB has initiated workshop activities to update the AB 32 Scoping Plan for 2013. The 2013 Update will have both a 2020-element and the post-2020 element. The 2020 element will focus on State, regional, and local initiatives that are being implemented now to assist the state of California in meeting the 2020 goal. The post-2020 element will provide a high level view of a long-term strategy for meeting the 2050 GHG goals. It is anticipated that CARB will release a draft 2013 Update by Fall 2013.

## 3.5 Local Policies and Plans: County of San Diego

### 3.5.1 County of San Diego General Plan

The County 2011General Plan includes a plan to balance population growth and development with infrastructure needs and resource protection. The current General Plan is based on smart growth and land planning principles that will reduce VMT, and thus result in a reduction of GHGs. This will be accomplished by locating future development within and near existing infrastructure. The General Plan resulted in an implementation plan related to the reduction of GHGs, which includes the following actions:

- Prepare a climate change action plan based on this inventory and emissions reduction targets for GHG emissions from all sources (adopted June 2012);
- Develop regulations and procedures to encourage the design and construction of new buildings in accordance with "green building" programs; and
- Develop regulations that encourage the use of energy recovery, as well as photovoltaic and wind energy in appropriate areas.

More specifically, the General Plan will direct population capacity to the western portions of the County and reduce the potential for growth in the eastern areas. The general population distribution is intended to: 1) facilitate efficient, orderly growth by containing development within areas potentially served by the San Diego County Water Authority (SDCWA) and in proximity to existing infrastructure; 2) protect natural resources through the reduction of population capacity in sensitive areas; 3) reduce overall VMT and associated GHG emissions that contribute to climate change; and 4) retain or enhance the character of communities within the unincorporated County.

### 3.5.2 County of San Diego: The Climate Action Plan

The 2011 County General Plan Environmental Impact Report (EIR) outlined a specific mitigation measure (Mitigation Measure CC-1.2) that called for the preparation of a Climate Action Plan (CAP) as discussed above; the County is complying with this measure with the implementation of the CAP. The County of San Diego developed and adopted (June 2012) the

CAP to address the issues of climate change as it relates to growth in the County, and to protect the environment for visitors and residents alike (County of San Diego 2012b). The plan will help reduce traffic congestion and solid waste generation, improve air quality, increase safety for pedestrians and cyclists, and encourage more efficient use of energy and water. Additionally, this CAP requires meaningful GHG reductions, in accordance with the guidelines of AB 32, the governor's EO S-305, and CEQA guidelines, which will help improve the quality of life in the County. The implementation of the CAP will also help lead agencies to assess cumulative impacts of a project, and provide a means for future projects to address GHG impacts under CEQA in accordance with the 2011 statement by the Attorney General. A lead agency may conclude that a project's GHG impact is not cumulatively significant if the project demonstrates consistency with this CAP (CEQA Guidelines Section 15183.5[h][3]), thereby reducing overall project costs.

The CAP incorporates County goals related to climate change that were outlined in the General Plan and the 2009 County Strategic Energy Plan (SEP), and attempts to define a long-term strategy to tackle climate change. The CAP defines a baseline GHG inventory, utilizing 2005 for the County's unincorporated communities and 2006 for local government operations. The baseline is established in order to provide a starting point for the formation of emissions-reduction targets. Future projections of GHG emissions were determined for 2020, 2035, and 2050, along with the accompanying reduction goals. The CAP includes more specific approaches for the actions discussed in the General Plan, and outlines measures which would help the region attain the reduction goals; it details what specifically should be done, along with the community participation level required to see actual results. The County has demonstrated, with the creation and implementation of this CAP, its commitment to mitigating GHG emissions.

### 3.5.3 County of San Diego Climate Action Plan – Table of 2020 Greenhouse Gas Reduction Measures

- W1 – Water conservation: Assuming 100% participation rate and 20% per capita reductions in terms of performance level for this measure, the 2020 reductions (from BAU 2020) would be 20,200 Annual Metric Ton Carbon Dioxide Equivalent (MT $CO_2E$), which is a 1.4% reduction in GHG emissions in terms of scaled measure performance.

- E1 – Energy-Efficient New Development: Assuming 10% participation rate until 2015 and 100% participation rate after 2015, and a 15% performance level above 2008 Title 24 energy-efficiency standards, the 2020 reductions (from BAU 2020) would be 12,997 MT $CO_2E$ annually, which is a 0.9% reduction in GHG emissions in terms of scaled measure performance.

- E3- Appliance upgrades: Assuming a participation rate of 95% of new homes, and an average saving of 380 kilowatt hours (kWh) per appliance and a 32 kWh per light bulb replaced, a 1.4% reduction in GHG emissions, or 20,060 MT $CO_2E$ annually, would be achieved.

- E4-Smart Meters: Assuming a participation rate of 10% of residents with SDG&E accounts, the utilization of Smart Meters (and the associated enhanced energy monitoring compatibilities) will reduce energy usage; in addition, it will result in annual GHG reductions of 8,800 MT $CO_2E$ or of 0.6% in terms of scaled measure performance.

- R1 – Solar Water Heating (Residential and Commercial): Assuming a participation rate of 19% of commercial and residential units, the utilization of solar water heating will result in an annual GHG reduction of 37,618 MT $CO_2E$ or of 2.6% in terms of scaled measured performance.

- R2 – Alternative Energy Systems (Residential and Commercial): Assuming 5% of residential and 8% of commercial energy will be supplied through renewable sources, and that this will entail 10 watts per square foot, 5 hours per day, the utilization of alternative energy systems will result in an annual GHG reduction of 45,290 MT $CO_2E$ or 2.9% in terms of scaled measure performance.

- LU1 – Mixed-Use Development: Assuming that 25% of new development will occur in high-density areas, and that this will involve a 4% reduction in vehicle miles traveled (VMT), an annual GHG reduction of 124,180 MT $CO_2E$, or 8.5% in terms of scaled measure performance, would be expected.

- T2 – Increase walking and biking: Assuming a 50% increase in bicycle and pedestrian facilities, and an associated 3% reduction in VMT, an increase in walking and biking will result in annual GHG reductions of 93,135 MT $CO_2E$, or 6.4% in terms of scaled measure performance.

- LS1 – Plant Trees: Assuming 10,000 trees planted, this measure will result in annual GHG reductions of 2,475 MT $CO_2E$, or 0.3% reduction in terms of scaled measure performance

### 3.5.4 San Diego Association of Governments (SANDAG): Climate Action Strategy

The SANDAG Climate Action Strategy serves as a guide to help policymakers address climate change as they make decisions to meet the needs of growing populations, as well as to maintain and enhance quality of life and promote economic stability (SANDAG 2010). The purpose of the strategy is to identify land use, transportation, and other related policy measures that could reduce GHG emissions from passenger cars and light-duty trucks as part of the development of the Sustainable Communities Strategy for the 2050 Regional Transportation Plan in compliance with SB 375. Additional policy measures are identified for buildings and energy use, protecting transportation and energy infrastructures from climate impacts, and assisting SANDAG and other local agencies in reducing GHG emissions from their operations.

## 4.0 GUIDELINES FOR DETERMINING SIGNIFICANCE

The CEQA Guidelines allow lead agencies to develop a significance threshold for GHG emissions. When adopting these thresholds, the amended Guidelines allow lead agencies to consider thresholds of significance adopted or recommended by other public agencies, or recommended by experts, provided that the thresholds are supported by substantial evidence, and/or to develop their own significance threshold. The County has established guidance to address GHG and climate change in CEQA documents (County of San Diego 2012a). Given the

emissions generated by typical development in comparison with the total amount of GHG emissions, however, emissions from typical development projects would not constitute a direct, significant impact. On the other hand, given the magnitude of the impact of GHG emissions on the global climate, GHG emissions from new development could result in significant, cumulative impacts with respect to climate change.

## 4.1 Guideline for Determining Significance

Based on Appendix G.VII of the State CEQA Guidelines, a project would have a significant environmental impact if it would:

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

As discussed in Section 15064.4 of the CEQA Guidelines, the determination of the significance of GHG emissions calls for a careful judgment by the lead agency consistent with the provisions in Section 15064. A lead agency should make a good faith effort, based on the extent possible on scientific and factual data, to describe, calculate or estimate the amount of GHG emissions resulting from the project. A lead agency shall have discretion to determine, in the context of a particular project, whether to:

(1) Use a model or methodology to quantify GHG emissions resulting from a project, and which model or methodology to use. The lead agency has discretion to select the model or methodology it considers most appropriate provided it supports its decision with substantial evidence. The lead agency should explain the limitations of the particular model or methodology selected for use; and/or
(2) Rely on a qualitative analysis or performance based standards.

A lead agency should consider the following factors, among others, when assessing the significance of impacts from GHG emissions on the environment:

(1) The extent to which the project may increase or reduce GHG emissions as compared with the existing environmental setting;
(2) Whether the project emissions exceed a threshold of significance that the lead agency determines applies to the project;
(3) The extent to which the project complies with regulations or requirements adopted to implement a statewide, regional, or local plan for the reduction or mitigation of GHG emissions. Such requirements must be adopted by the relevant public agency through a public review process and must reduce or mitigate the project's incremental contribution of GHG emissions. If there is substantial evidence that the possible effects of a particular project are still cumulatively considerable, notwithstanding compliance with the adopted regulations or requirements, an EIR must be prepared for the project.

In order to serve as a guide for determining when a project triggers the need for a GHG significance determination, the County of San Diego Planning and Development Services has established a Bright Line Threshold for GHG emission analysis (County of San Diego 2012a).

For the operational GHG emissions, the County recommended the 2,500 MT $CO_2e$ per year as a Bright Line threshold for requiring further GHG analysis and mitigation. This emission level is based on the amount of vehicle trips, the typical energy and water use, and other factors associated with projects. Table 5 identifies project typical types and sizes that are expected to emit approximately 2,500 metric tons or more of GHGs.

**Table 5**
**PROJECT TYPES THAT REQUIRE GHG ANALYSIS**

| Project Type | Project Size that Generates Approximately 2,500 Metric Tons of GHGs per Year |
|---|---|
| Single-family Residential | 86 dwelling units |
| Low-Rise Apartment Housing | 121 dwelling units |
| Mid-Rise Apartment Housing | 136 dwelling units |
| High-Rise Apartment Housing | 144 dwelling units |
| Condominiums or Townhouse Housing | 120 dwelling units |
| Congregate Care (Assisted Living) Facility | 239 dwelling units |
| Elementary or Middle School | 91,000 square feet |
| High School | 103,000 square feet |
| University/College (four years) | 336 students |
| Library | 81,000 square feet |
| Restaurant | 12,000 square feet |
| Hotel | 106 rooms |
| Free-Standing Retail Store | 31,000 square feet |
| Shopping Center | 33,000 square feet |
| Convenience Market (24 hour) | 2,000 square feet |
| Office Building | 61,000 square feet |
| Office Park | 56,000 square feet |
| Hospital | 47,000 square feet |
| Warehouse | 141,000 square feet |
| Light Industrial Facility | 74,000 square feet |

Source: County of San Diego 2012a.

Note: For project types that do not fit the categories in this table, a determination on the need for a GHG analysis will be made on a case-by-case basis, based on whether the project could generate 2,500 metric tons or more of GHGs.

Based on this guidance, the GHG emissions from the Campus Park West Project would be greater than 2,500 metric tons per year and would be above the Bright Line threshold regularly analyzed.

According to the County of San Diego's *Guidelines for Determining Significance for Climate Change* (County of San Diego 2012a), the Performance Threshold goal of reducing GHGs to year 1990 levels by year 2020 would amount to a 16 percent reduction in emissions below the unmitigated scenario, accounting for growth and economic downturns in the state of California. The County's Performance Threshold states that:

> A proposed project would have a cumulatively considerable contribution to climate change impacts if it would result in a net increase of construction and operational greenhouse gas emissions, either directly or indirectly, and if the project would incorporate mitigation that achieves less than a 16 percent total reduction compared to unmitigated emissions.

The 16 percent threshold is based on current adjustments to the 2008 Scoping Plan forecasts for 2020 that adjusted the quantities of reductions coming from the Scoping Plan GHG reduction measures. Per the County's new draft GHG guidelines, unmitigated Project GHG emissions attributable to the Project at full buildout are compared to Project GHG emissions with mitigation. Unmitigated GHG emissions represent the Proposed Project in compliance with any applicable standards and regulations. This would include effects on vehicle emissions due to Pavley I, and effects on energy emissions due to current energy code enforcements and the RPS (to 20 percent). This means that electricity and natural gas emissions reductions (on the order of 15 percent) due to stricter energy-efficiency standards in the current 2008 Title 24 energy code compared to the older 2005 Title 24 energy code are to be accounted for in the baseline emissions estimate and not to be counted as mitigation.

Project mitigation identified toward the 16 percent requirement thus cannot also include the effects of the Pavley I or the 20 percent RPS because these programs are already included in the calculations that support the 16 percent reduction requirement. Other statewide measures, however, can be included without risk of double counting. This includes the RPS beyond 20 percent (up to 33 percent), the LCFS and Pavley II, which can be included toward the minimum 16 percent mitigation requirement for the Project with mitigation.

Using this threshold and the calculation methodology, unmitigated and mitigated Project emissions were calculated and are provided here for informational purposes.

# 5.0 IMPACT ANALYSIS

Emission estimates were calculated for the three GHGs of primary concern ($CO_2$, $CH_4$, and $N_2O$) that would be emitted from Project construction and from the Project's five sources of operational emissions including on-road vehicular traffic, electricity generation, natural gas consumption, water usage, and solid waste disposal.

## 5.1 Methodology and Assumptions

The method of quantifying GHG emissions in this analysis was based on methodologies recommended and used by several California air quality management districts (AQMDs), including the South Coast (SCAQMD) and Bay Area AQMD; as well as CARB. To evaluate the reductions in GHG emissions from Project design features relative to the unmitigated scenario,

emissions from each source of GHGs were estimated for two methods: first, the Project without GHG-reducing design features (i.e., the unmitigated Project-Equivalent) and; second, the Project with GHG-reducing green building design. Emissions calculations for both methods started with the following land use assumptions: the construction of 503,500 sf of commercial, a mixed use development (including up to 35 residential units), 248 multi-family residential units, 120,000 SF of industrial office space, and 3,419 parking spaces. Table 6 presents a summary of the land use designation, sizes and other metrics used for the California Emission Estimator Model (CalEEMod) (SCAQMD 2011).

**Table 6**
**LIST OF LAND USE, SIZE, AND METRIC USED AS INPUTS TO CalEEMod**

| Planning Areas | Land Uses | Size | Metric |
|---|---|---|---|
| PA -1 | Industrial Park | 120 | 1000 sf |
| | Parking Lot | 720 | Space |
| PA - 2 | Regional Shopping Center | 476 | 1000 sf |
| | Condo/Townhouse | 35 | Dwelling Unit |
| | Parking Lot | 2,526 | Space |
| PA - 3 | Condo/Townhouse | 248 | Dwelling Unit |
| PA – 4 & 5 | Convenience Market (24 Hour) | 15 | 1000 sf |
| | Gasoline/Service Station | 16 | Pump |
| | Fast Food Restaurant with Drive Thru | 7.0 | 1000 sf |
| | Parking Lot | 173 | Space |

Note: For the purpose of estimating worst-case emissions, Scenario 2 is the addition of another Gasoline Service Station with 16 pumps. Under Scenario 2, a total of 32 pumps is assumed for the PA 4 & 5.

### 5.1.1 Vehicle Emissions

Vehicle emissions were estimated through a series of calculations based on the following equation derived from the CalEEMod, EMFAC2007 and OFFROAD2007 computer models:

$E = EF \times Fuel \times C \times GWP$

Where,

*E* = emission in metric tons per year

*EF* = an emission factor normalized for engine fuel consumption and expressed in units of pounds of GHG per gallon of transportation fuel

*Fuel* = the total quantity of fuel consumed per year

*C* = a constant reflecting the conversion of pounds to metric tons

*GWP* = the global warming potential of each GHG

CalEEMod is a computer model developed by a SCAQMD consultant with the input of several air quality management and pollution control districts to estimate criteria air pollutant emissions from various urban land uses (SCAQMD 2011). CalEEMod has the ability to calculate both mobile (i.e., vehicular) and some area source or stationary sources of emissions. It incorporates the two CARB off-road and on-road emissions models in its mobile emissions component and regional trip length and vehicle trip generation data from the participating air districts.

As allowed by the County, a reduction of 2.3 percent for Pavley II and a reduction of 10 percent for LCFS was credited towards "mitigated" emissions. Because CalEEMod already includes the LCFS reduction in its model defaults, the unmitigated vehicle emissions were increased by 10 percent to allow the reductions to be applied to the mitigated condition (and avoid double-counting the reduction).

The County does not allow a credit for Pavley I regulations as they are already in place. The CalEEMod program already takes Pavley I into account in its model defaults, so it is accounted for in both the unmitigated and mitigated condition.

### 5.1.2 Building Use Emissions

For estimates of non-transportation related emissions, similar equations were used whereby total projected energy, water, and waste demands were multiplied by emission factors for each emission source and each GHG. The subsequent revised 2011 Scoping Plan noted the potential to reduce GHG emissions through iterative updates to the Title 24 Energy Efficiency Standards. The now-current Title 24 2008 includes standards to achieve a minimum 15 percent greater energy efficiency than Title 24 2005; thus, in the 16 percent Performance Threshold Analysis, estimates of energy emissions from the Project with GHG-reducing design features incorporates a 15 percent improvement in energy use rates in order to reflect the improvement over current 2008 energy code standards.

As described in Section 1.4, Project Design Features, the Project incorporates green building design that would exceed the current 2008 California Energy Code's residential energy efficiency standards by 15 percent. It would accomplish this through improved HVAC systems and duct seals; enhanced ceiling, attic, and wall insulation; Energy Star appliances; high-efficiency water heaters; energy-efficient three-coat stucco exteriors; energy-efficient lighting; and high-efficiency window glazing. The 16 percent Performance Threshold Analysis additionally incorporated a 13 percent reduction in energy associated GHGs due to implementation of the RPS beyond the already mandated (and accounted for in the baseline estimates) 20 percent renewable energy mix requirement for electricity providers. This improved energy efficiency was incorporated into the Project with GHG reducing features calculations where appropriate.

### 5.1.3 Construction Emissions

Construction activities emit GHGs primarily though the combustion of fuels (mostly diesel) in the engines of off-road construction equipment and through the combustion of diesel and gasoline in the on-road construction vehicles and in the commute vehicles of the construction

workers. Smaller amounts of GHGs are also emitted through the energy use embodied in any water use (for fugitive dust control) and lighting for the construction activity. Every phase of the construction process, including grading, building, and paving emits GHG emissions, in volumes proportional to the quantity and type of construction equipment used. The heavier equipment typically emits more GHGs per hour of use than the lighter equipment because of their greater fuel consumption and engine design.

Emissions associated with the construction of the Proposed Project were calculated using the CalEEMod computer program, assuming that construction duration period would begin in January 2015 and last until 2025. Construction activities are assumed to occur in three separate phases. For the purpose of assessing two mass grading options, separate mass grading options (i.e., Option 1 and Option 2) were analyzed.

Phase 1 (Option 1) would involve the mass grading of the entire Project site and Phase 2 would involve utility installation at the Project site. This Option 1 phase would include the mass grading of the entire site over a four- to six-month period with 30,000 to 50,000 cy of soil being moved within the Project site per week. Soil removed from the north and central portions of the Project would be used to raise pad elevations above the flood plain in the southern portion of the Project, resulting in balanced grading on site. At any given time, the maximum acreage disturbed would be up to 29 acres per day (i.e., up to 25 percent of the site). Following the mass grading, backbone infrastructure would be installed. This would consist of all the elements necessary to support developed uses on site, such as construction of Pankey Road, intersection improvements along SR-76, road connections to Pala Mesa Drive, off-site connections to a potable water source and sewer lines to ensure redundancy, the construction of a pump station, and the connection of all utility lines between these facilities and the Project boundary. The sewer main in Pankey Road also would be installed. The detention basins and storm drains in Pankey Road, Pala Mesa Drive, and SR-76 would be completed during this backbone infrastructure phase.

Dedication of Project biological open space areas would also occur as a first action during this phase, with concurrent monitoring of construction activities adjacent to any open space set aside.

Once the above construction grading and backbone infrastructure efforts are completed, vertical construction could begin (Phase 3). This phase is anticipated to take 10 to 15 years regardless of whether Scenario 1 or Scenario 2 of the Proposed Project is approved. Phase 3 would involve the "vertical construction of all of the structures required for the mixed use, residential, general commercial retail and industrial office development, as well as interior site roads, installation of Project streetscape, etc. Utilities and storm drains within development sites, as well as associated parking areas and landscaping would be implemented concurrently with build out of the specific use areas. Although there is a logical projection of the order of development involving the development of the residential buildings later so as not to subject the residents to potential construction impacts, the specific order of development would be market driven and cannot be specified at this time. This plan anticipates that the commercial parcels south of SR-76 would be developed first (PAs 4 and 5), the general commercial retail area north of SR-76 (PA 2) would be developed second, the residential area (PA 3) would be developed third, and the light industrial/office area (PA 1) would be developed last. In order to provide conservative

environmental evaluation, Project analyses assume that residents associated with multi-family or mixed-use core portions of the Project would be on site while adjacent Project construction would be ongoing.

The following four options were selected in the CalEEMod model: mass site grading, building construction, paving, and architectural coatings. Grading activity would be substantially balanced, meaning that no significant quantity of soil would be transported off site for disposal nor would soil be transported on site for use in construction activities. Beginning January 1, 2015, CARB requires all off-road equipment greater than 50 hp to comply with the U.S. EPA Tier 4 emission standards and install particulate matter (PM) filter devices. Table 7 presents a summary of the assumed equipment that would be involved in construction.

**Table 7**
**CONSTRUCTION PHASES AND EQUIPMENT REQUIREMENTS**

| Off-road Equipment Type | Horsepower | Grading | | Backbone Infrastructure | | Building Construction | | Architectural Coatings | | Paving | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Pieces | Hours | Pieces | Hours | Pieces | Hours | Pieces | Hours | Pieces | Hours |
| Aerial Lift | 34 | - | - | - | - | 10 | 8 | 3 | 8 | - | - |
| Air Compressors | 78 | - | - | - | - | 2 | 8 | 1 | 8 | - | - |
| Bore/Drill Rigs | 82 | - | - | 1 | 8 | - | - | - | - | - | - |
| Cement and Mortar Mixers | 9 | - | - | - | - | 2 | 8 | 1 | 8 | 1 | 8 |
| Cranes | 208 | - | - | - | - | 2 | 4 | - | - | - | - |
| Crawler Tractors | 82 | 5 | 8 | - | - | - | - | - | - | 4 | 8 |
| Dumpers/Tenders | 16 | 20 | 4 | - | - | - | - | - | - | 20 | 4 |
| Excavators | 157 | - | - | 3 | 8 | 1 | 4 | - | - | - | - |
| Forklifts | 149 | - | - | 1 | 8 | 4 | 8 | 1 | 8 | - | - |
| Generator Sets | 84 | - | - | - | - | 3 | 8 | - | - | - | - |
| Graders | 162 | 2 | 8 | - | - | - | - | - | - | 1 | 8 |
| Off-Highway Tractors | 160 | 1 | 8 | 1 | 8 | 1 | 8 | - | - | 1 | 4 |
| Off-Highway Trucks | 381 | 10 | 8 | 2 | 8 | - | - | - | - | 1 | 4 |
| Other Construction Equipment | 327 | 2 | 4 | 2 | 4 | 2 | 4 | - | - | 2 | 4 |
| Other General Industrial Equipment | 150 | 1 | 4 | 1 | 4 | 4 | 4 | - | - | - | - |
| Pavers | 89 | - | - | - | - | - | - | - | - | 2 | 8 |
| Paving Equipment | 82 | - | - | - | - | - | - | - | - | 4 | 8 |
| Plate Compactors | 8 | - | - | - | - | 2 | 8 | - | - | 2 | 8 |
| Pressure Washers | 13 | - | - | - | - | 2 | 8 | - | - | - | - |
| Pumps | 84 | - | - | - | - | 1 | 8 | - | - | - | - |
| Rollers | 84 | 2 | 8 | - | - | - | - | - | - | 3 | 8 |

**Table 7 (cont.)**
**CONSTRUCTION PHASES AND EQUIPMENT REQUIREMENTS**

| Off-road Equipment Type | Horsepower | Grading | | Backbone Infrastructure | | Building Construction | | Architectural Coatings | | Paving | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Pieces | Hours | Pieces | Hours | Pieces | Hours | Pieces | Hours | Pieces | Hours |
| Rough Terrain Forklifts | 83 | - | - | - | - | 2 | 8 | 1 | 8 | - | - |
| Rubber Tired Dozers | 358 | 12 | 4 | - | - | - | - | - | - | 2 | 4 |
| Rubber Tired Loaders | 87 | 2 | 8 | - | - | - | - | - | - | 2 | 8 |
| Scrapers | 356 | 12 | 8 | - | - | - | - | - | - | - | - |
| Signal Boards | 6 | - | - | - | - | - | - | - | - | - | - |
| Skid Steer Loaders | 37 | 2 | 8 | - | - | 1 | 8 | - | - | 2 | 8 |
| Sweepers/Scrubbers | 88 | - | - | - | - | 1 | 4 | - | - | 1 | 4 |
| Tractors/Loaders/Backhoes | 75 | 2 | 8 | 2 | 8 | 2 | 8 | - | - | 2 | 8 |
| Trenchers | 69 | - | - | 1 | 8 | - | - | - | - | - | - |
| Welders | 46 | - | - | - | - | 8 | 8 | - | - | - | - |

**Option 1 – Mass Grading and Backbone Infrastructure**

Under Option 1, Phase 1 would involve the mass grading of the entire Project site area and Phase 2 would involve the utility installation at the Project site. Table 8, *Estimated Construction Emissions – Option 1,* presents a summary of the GHG emissions resulting from construction activities. Attachment A contains the CalEEMod output file for the Proposed Project construction, and provides a detailed breakdown of the calculations.

It is mandatory for all construction equipment to comply with CARB emission standards for implementing best management practices (BMPs) to minimize impacts:

- Control Measure 1 – All construction equipment operating on the project site should meet EPA-Certified Tier 4 emissions standards. In addition, all construction equipment shall be outfitted with best available control technology (BACT) devices certified by the CARB. Any emissions control device used by the contractor shall achieve emissions reductions that are no less than what could be achieved by a Level 2 diesel emissions control strategy for a similarly sized engine as defined by the CARB regulations.

**Table 8**
**ESTIMATED CONSTRUCTION EMISSIONS**
**OPTION 1 (MT/YR)**

| | | $CO_2$ | $CH_4$ | $N_2O$ | $CO_2e$ |
|---|---|---|---|---|---|
| **PA** | **Year** | **MT/yr** | | | |
| Mass Grading for All PAs | 2015 | 6,069.48 | 0.50 | 0.00 | 6,079.94 |
| 4 & 5 | 2016 | 409.98 | 0.04 | 0.00 | 410.81 |
| 2, 4 & 5 | 2017 | 3,137.59 | 0.22 | 0.00 | 3,142.24 |
| 2 | 2018 | 3,526.92 | 0.23 | 0.00 | 3,531.69 |
| 2 | 2019 | 3,356.96 | 0.20 | 0.00 | 3,361.12 |
| 2 | 2020 | 338.99 | 0.02 | 0.00 | 339.48 |
| 2 & 3 | 2021 | 1,805.23 | 0.10 | 0.00 | 1,807.50 |
| 2 & 3 | 2022 | 663.24 | 0.05 | 0.00 | 664.18 |
| 1 | 2023 | 785.92 | 0.03 | 0.00 | 786.59 |
| 1 | 2024 | 14.53 | 0.00 | 0.00 | 14.55 |
| **TOTAL CONSTRUCTION GHG EMISSIONS** | | | | | **20,138.10** |

Amortized over 20 years, construction equipment would contribute 1,006.91 metric tons per year of $CO_2e$ emissions to the Project's total. These emissions are added to the expected annual operational GHG emissions below and then compared to the 16 percent reduction in significance criterion.

For off-road construction equipment, all off-road diesel equipment would use engines compliant with EPA's Tier 4 emissions standards for non-road diesel equipment. Emissions were estimated based on phasing and equipment data assumed for the Project and the respective emission factors from OFFROAD2007 data module in CalEEMod model. Note that Tier 4 emissions standards for $CO_2$ are based on fuel consumption, and the EPA assumes the same fuel consumption for engines of all tier categories. Therefore, there are no Tier 4 emission reductions as seen in criteria air pollutants, so $CO_2$ emission factors are essentially the same as Tier 2 and 3 fleet average emission factors.

The Project-related construction activities are estimated to generate approximately 20,138 metric tons of $CO_2e$ emissions. For construction emissions, the County guidance recommends that the emissions be amortized over 20 years and added to operational emissions, as appropriate. Amortized over 20 years, construction equipment would contribute 1,006.91 metric tons per year of $CO_2e$ emissions to the Project's total. These emissions are added to the expected annual operational GHG emissions below and then compared to the 16 percent reduction in significance criterion.

**Option 2 – Mass Grading**

Under Option 2, the first part of the mass grading would include the commercial parcels south of SR-76, the commercial parcel north of SR-76 and west of Pankey Road, and Pankey Road and Pala Mesa Drive. The first part of mass grading includes approximately 500,000 cubic yards of cut and fill, which includes approximately 50,000 cubic yards of borrow from the multifamily parcel east of Pankey Road. Soil removed from the area north of SR-76 would be used to raise pad elevations above the floodplain in the southern portion of the project site. During earth-moving operations, grading quantities would be balanced on-site and there would be no need to import or export soil off-site. Construction vehicles would access the site via SR-76, with staging and storage areas located within the proposed grading areas for the project. Since the site is designed to balance, project-related traffic would be restricted to construction workers and supplies for construction. Following the first grading phase, backbone infrastructure would be installed. This would include all necessary elements to support developed uses on site; such as widening, improvement, and signalization of SR-76 and Old Highway 395, installation of a traffic signal at Old Highway 395 and Reche Road, construction of Pankey Road, connections to a potable water source, construction of sewer pump station(s), installation of utility lines, and completion of drainage infrastructure. During the Phase 1 (Option 2), mass grading and backbone infrastructure activities may occur or overlap on any single peak day during the construction period.

The second part of the mass grading plan includes approximately 300,000 cubic yards of cut and fill to complete the grading of the multifamily parcel and the parcels north of Pala Mesa Drive The second part of mass grading would occur after the completion of Planning Area 2, which includes the mixed use commercial and residential parcel north of SR-76 and west of Pankey Road. As noted above, it was assumed that dust control measures (watering a minimum of three times daily) would be employed to reduce emissions of fugitive dust during site grading.

Table 9, *Estimated Construction Emissions – Option 2*, presents a summary of the GHG emissions resulting from construction activities. Attachment A contains the CalEEMod output file for the Proposed Project construction, and provides a detailed breakdown of the calculations.

**Table 9**
**ESTIMATED CONSTRUCTION EMISSIONS**
**OPTION 2 (MT/YR)**

| | | $CO_2$ | $CH_4$ | $N_2O$ | $CO_2e$ |
|---|---|---|---|---|---|
| **PA** | **Year** | **MT/yr** | | | |
| Mass Grading 1st Part | 2015 | 4,576.12 | 0.38 | 0.00 | 4,584.20 |
| 4 & 5 | 2016 | 409.98 | 0.04 | 0.00 | 410.81 |
| 2, 4 & 5 | 2017 | 3,137.59 | 0.22 | 0.00 | 3,142.24 |
| 2 | 2018 | 3,526.92 | 0.23 | 0.00 | 3,531.69 |
| 2 | 2019 | 3,356.96 | 0.20 | 0.00 | 3,361.12 |
| 2 | 2020 | 338.99 | 0.02 | 0.00 | 339.48 |
| Mass Grading 2nd Part | 2020 | 840.73 | 0.06 | 0.00 | 841.96 |
| 2 & 3 | 2021 | 1,805.23 | 0.10 | 0.00 | 1,807.50 |
| 2 & 3 | 2022 | 663.24 | 0.05 | 0.00 | 664.18 |
| 1 | 2023 | 785.92 | 0.03 | 0.00 | 786.59 |
| 1 | 2024 | 14.53 | 0.00 | 0.00 | 14.55 |
| **TOTAL CONSTRUCTION GHG EMISSIONS** | | | | | **19,484.32** |

Amortized over 20 years, construction equipment would contribute 974.22 metric tons per year of $CO_2e$ emissions to the Project's total. Since Option 1 reflects the more conservative amount of construction emissions, it was the option used to add to the operational emissions.

## 5.2 Unmitigated Operational (Baseline) Emissions

Tables 10 and 11 include the unmitigated, or baseline, emissions for the Project under Scenario 1 and Scenario 2. Both scenarios include the amortized annual construction emissions for Option 1, which is the more conservative estimate under either construction option.

**Table 10**
**SCENARIO 1 - ESTIMATED UNMITIGATED OPERATIONAL EMISSIONS (MT/yr)**

| | $CO_2$ | $CH_4$ | $N_2O$ | $CO_2e$ |
|---|---|---|---|---|
| **Source** | **MT/yr** | | | |
| Amortized Construction | 1,005.44 | 0.07 | 0.00 | 1,006.91 |
| Area | 1,209.30 | 0.02 | 0.05 | 1,226.71 |
| Energy | 4,213.23 | 0.15 | 0.06 | 4,235.49 |
| Mobile | 25,256.44 | 1.045 | 0 | 25,278.46 |
| Waste | 454.95 | 26.89 | 0.00 | 1,019.57 |
| Water | 3,124.73 | 19.86 | 0.53 | 3,707.32 |
| **TOTAL** | 35,264.09 | 48.035 | 0.64 | 36,474.46 |

Source: HELIX 2012 – CalEEMod results are provided in Attachment A.

**Table 11**
**SCENARIO 2 - ESTIMATED UMITIGATED OPERATIONAL EMISSIONS (MT/YR)**

| | $CO_2$ | $CH_4$ | $N_2O$ | $CO_2e$ |
|---|---|---|---|---|
| **Source** | **MT/yr** | | | |
| Amortized Construction | 1,005.44 | 0.07 | 0.00 | 1,006.91 |
| Area | 1,209.30 | 0.02 | 0.05 | 1,226.71 |
| Energy | 4,221.85 | 0.15 | 0.06 | 4,244.16 |
| Mobile | 25,927.35 | 1.078 | 0 | 25,950.10 |
| Waste | 454.95 | 26.89 | 0.00 | 1,019.57 |
| Water | 3,124.73 | 19.86 | 0.53 | 3,707.32 |
| **TOTAL** | 35,943.62 | 48.068 | 0.64 | 37,154.77 |

Source: HELIX 2012 – CalEEMod results are provided in Attachment A.

### 5.2.1 Vehicle Emissions

The Project without GHG-reducing design features would generate 36,206 Average Daily Traffic ([ADT] LLG Engineers 2013). This volume reflects the gross trip generation rate used for the GHG emission calculations; the amount does not account for the 30% internal capture rate included in the traffic study. As identified in Section 3.2 Regulatory Background, there are several plans, policies, and regulations aimed at reducing transportation-related GHG emissions statewide by 2020. These regulations would reduce statewide transportation-related GHG emissions by increasing average vehicle fuel economy, decreasing engine combustion emissions, and decreasing average VMT and trip length.

The key regulations affecting vehicle emissions include the national CAFE Standards that would increase average fuel economy to 35 mpg by 2020; the state Pavley I and Pavley II GHG Vehicle Emissions Standards, which require improved vehicle engine technologies to reduce GHG emissions from vehicles; and the LCFS, which reduce the carbon content of the fuel vehicles burn. The Vehicle Efficiency Measure and the national CAFE Standards, while not quantified in the CARB Scoping Plan, would likely contribute to further reductions in statewide vehicle GHG emissions.

It can be assumed that vehicles associated with the Project would benefit from the new regulations, and associated vehicle emissions would accordingly decrease. As noted earlier in the Methodology section of this report (Section 5.1), since Pavley I is already in place, it is already accounted for in the CalEEMod model and is not a credit allowable for the Project. Adjustments were made to the model to allow the Project to take credit for Pavley II and LCFS in the mitigated condition.

CalEEMod assumed an annual total of 60,668,556 miles would be traveled each year by Project residents. This total annual VMT was based on the CalEEMod default trip lengths and the gross daily ADT (approximately 36,200), multiplied by 365 days per year (to obtain an annual value for the project). The unmitigated baseline condition would result in the emissions of 25,278.46 $MTCO_2E$ annually for Scenario I and 25,950 $MTCO_2E$ annually for Scenario 2. A detailed breakdown of the emissions for the mobile source category between the CalEEMod output values and the addition of LCFS and the reduction of Pavley II is provided in Attachment C.

### 5.2.2 Energy Emissions

Electric power generation accounted for the second largest sector contributing to both inventoried and projected statewide GHG emissions, comprising 24 percent of the projected total 2020 statewide BAU emissions (CARB 2008b). Buildings use electricity for lighting, heating and cooling. Electricity generation entails the combustion of fossil fuels, including natural gas and coal, which are then stored and transported to end users. A building's electricity use is thus associated with the off-site or indirect emission of GHGs at the source of electricity generation (power plant). Due to the nature of the electrical grid, it is not possible to say with certainty where energy consumed will be generated. Therefore, GHG emissions resulting from electricity generation were estimated using the CalEEMod default values for the San Diego Gas and Electric (SDG&E) region. The electricity energy use is in kilowatt hours per size metric for each land use subtype and natural gas use is in kiloBritish Thermal Units (kBTU) per size metric for each land use subtype. The CalEEMod model default values are based on the CEC-sponsored California Commercial End Use Survey (CEUS) and Residential Appliance Saturation Survey (RASS) studies (SCAQMD 2011).

For the calculations for the Project with GHG-reducing design features, a 15 percent improvement in building energy efficiency over Title 24, 2008 was factored into the equation.

### 5.2.3 Water Use Emissions

The provision of potable water consumes large amounts of energy associated with source and conveyance, treatment, distribution, end use, and wastewater treatment. This type of energy use is known as embodied energy. The electricity intensities are multiplied by the utility intensity factors for the GHGs and are classified as indirect emissions. The default electricity intensity is from the CEC's 2006 Refining Estimates of Water-Related Energy Use in California using the average values for Northern and Southern California. The GHG emissions associated with water use are calculated by multiplying the embodied energy in a gallon of potable water by the total number of gallons projected to be consumed by the Project and then by the electricity generation GHG emissions factors.

### 5.2.4 Solid Waste Emissions

The disposal of solid waste produces GHG emissions from anaerobic decomposition in landfills, incineration, and transportation of waste. For the Project calculations with and without GHG-reducing design features, a countywide average waste disposal rate was used and was obtained from the California Department of Resources Recycling and Recovery (CalRecycle). While the Proposed Project would implement lumber and other materials conservation (see Section 2.2) and likely generate less landfill waste than average, these savings cannot be estimated at this time.

CalRecycle maintains a list of different waste generation rates for residential, commercial, and industrial uses from a variety of sources. The single family residential waste generation rates range from 7.8 to 11.4 pounds per unit per day (CalRecycle 2009). To be conservative, the higher generation rate of 11.4 pounds per unit per day was used to determine the total volume of waste by weight. This value was then multiplied by emissions factors obtained from the U.S. EPA report *Solid Waste Management and Greenhouse Gases* (U.S. EPA 2006b) for the different material classes (glass, metal, plastic, etc) and two different waste streams (to landfill or to recycling). For the landfill estimates, landfill gas recovery for energy was assumed for both the landfill and recycling estimates. Local recycling and disposal (to landfill) percentages (of total waste generated) were also obtained from CalRecycle and reflect current waste disposal practice in accordance with the statutory 50 percent diversion mandate.

As shown in Table 4, the CARB Scoping Plan includes Recycling and Waste measures that would reduce statewide emissions by roughly 1.0 MMT $CO_2e$ by 2020. This is to be achieved through improved landfill methane capture. Also, while not shown in Table 4, the CARB Scoping Plan includes other waste sector reduction strategies not counted toward the statewide 2020 emissions reduction target. CARB estimates that these additional waste and recycling sector measures would provide up to an additional 10 MMT $CO_2e$ reduction by 2020. Thus, it is possible that the embodied energy and emissions resulting from disposing of the Proposed Project's solid waste related GHG emissions would achieve approximately 126 MT $CO_2e$ reduction by 2020 due to these measures.

Attachment A contains the CalEEMod output files for both the Proposed Project. The annual unmitigated GHG emissions are presented in Tables 9 and 10 for Scenario 1 and Scenario 2.

## 5.3 16 Percent Performance Threshold Analysis

The Performance Threshold provided in the County of San Diego *Guidelines for Determining Significance* (County of San Diego 2012a) states that:

> A proposed project would have a cumulatively considerable contribution to climate change impacts if it would result in a net increase of construction and operational greenhouse gas emissions, either directly or indirectly, and if the project would incorporate mitigation that achieves less than a 16 percent total reduction compared to unmitigated emissions.

As described above in Section 4.1.1, the 16 percent threshold is based on current adjustments to the 2011 Scoping Plan forecasts for 2020 that adjusted the quantities of reductions coming from the Scoping Plan GHG reduction measures. Per the County's draft GHG guidelines, unmitigated Project GHG emissions attributable to the Project at full buildout are compared to Project GHG emissions with mitigation.

Unmitigated GHG emissions represent the Proposed Project in compliance with any current applicable standards and regulations. This would not include effects on vehicle emissions due to LCFS, and effects on energy emissions due to current energy code enforcements and the RPS (above and beyond 20 percent). This means that electricity and natural gas emissions reductions (on the order of 15 percent) due to stricter energy-efficiency standards in the current 2008 Title 24 energy code are to be accounted for in the emissions estimate and improvements over the 2008 code can be credited toward mitigated emissions. Project mitigation identified toward the 16 percent requirement cannot include the effects of the Pavley I or the 20 percent RPS because these programs are already included in the calculations that support the 16 percent reduction requirement. Other statewide measures, however, can be included towards the required reduction target without risk of double counting. This includes the RPS beyond 20 percent (up to 33 percent), LCFS and Pavley II.

Using this threshold and the calculation methodology discussed in Section 4.2 above, unmitigated and mitigated Project emissions were calculated and are provided here for informational purposes. Calculations are contained in Attachment 3.

### 5.3.1 Vehicle Emissions

The Project would have a gross trip generation rate of 36,206 ADT. As discussed above, Pavley II and LCFS can be included toward the minimum 16 percent mitigation requirement. Further, the Project would incorporate a mix of uses that would reduce overall VMT and corresponding GHG vehicular emissions. According to the CAPCOA methodology, a land use index measurement can be applied to the Proposed Project, based on Measure LUT-3 (CAPCOA 2010). The land use index measurement is based on the mix of land uses associated with a development. An index of zero indicates a single land use while 1 indicates a full mix of uses. The Proposed Project would change the land use from a single commercial office land uses into a mix of industrial office, commercial retail, and residential land uses. The Proposed Project land use index was determined to be 0.69. The calculations of the land use index emission reduction

credit measurements are provided in Attachment B. The combined Pavley II (2.3%) and land use reductions (31%) would result in 32.3% reduction in vehicular emissions. However, since 30% is the maximum reduction credit allowed, the mitigated condition only reflects a reduction of 6,894 MT CO2e towards vehicular emissions.

Tables 11 and 12 present the reductions attributed to the Project from the LCFS, Pavley II, and the mixed use characteristics of the Project. This would result in the emission of 16,086 MT $CO_2$e annually from the Project for Scenario 1 and 16,514 MT CO2e for Scenario 2.

### 5.3.2 Energy Emissions

The Proposed Project would be constructed in accordance with the current 2008 Title 24. The RPS beyond 20 percent (up to 33 percent) can be included toward the minimum 16 percent mitigation requirement. Therefore, the electricity emissions calculated for the unmitigated project were reduced by an additional 13 percent to account for further implementation of the RPS. Additionally, the project would exceed the current 2008 California Energy Code's energy efficiency standards by 15 percent. Implementation of these measures would result in the emission of 4,022 MT $CO_2$e annually for the mitigated condition for Scenario 1 and 4,031 MT $CO_2$e for Scenario 2.

### 5.3.3 Water Emissions

Because the unmitigated Project would be constructed in accordance with the current Title 24, the unmitigated water emissions were adjusted to account for the recent CalGreen mandate to reduce water consumption by 20 percent. This would result in the emission of 2,993 MT $CO_2$e annually under the mitigated condition for Scenario 1 and 3,707 MT $CO_2$e for Scenario 2.

### 5.3.4 Solid Waste Emissions

The Proposed Project solid waste emissions would be the same as the emissions calculated in Tables 10 and 11 above. This would result in the emission of 1,020 MT $CO_2$E annually under both Scenarios under the mitigated condition.

**Table 12**
**SCENARIO 1 - ESTIMATED OPERATIONAL EMISSIONS WITH PROJECT DESIGN FEATURES**
**(MT/yr)**

| | $CO_2$ | $CH_4$ | $N_2O$ | $CO_2e$ |
|---|---|---|---|---|
| **Source** | **MT/yr** | | | |
| Amortized Construction | 1,005.44 | 0.07 | 0.00 | 1,006.91 |
| Area | 1,209.30 | 0.02 | 0.05 | 1,226.71 |
| Energy | 4,001.22 | 0.14 | 0.06 | 4,022.32 |
| Mobile | 16,072.28 | 0.91 | 0.00 | 16,086.29 |
| Waste | 454.95 | 26.89 | 0.00 | 1,019.57 |
| Water | 2,526.58 | 15.89 | 0.43 | 2,992.79 |
| **TOTAL** | **25,269.77** | **43.92** | **0.54** | **26,354.59** |

Source: HELIX 2012 – CalEEMod results are provided in Attachment A

**Table 13**
**SCENARIO 2 - ESTIMATED OPERATIONAL EMISSIONS WITH PROJECT DESIGN FEATURES**
**(MT/yr)**

| | $CO_2$ | $CH_4$ | $N_2O$ | $CO_2e$ |
|---|---|---|---|---|
| **Source** | **MT/yr** | | | |
| Amortized Construction | 1,005.44 | 0.07 | 0.00 | 1,006.91 |
| Area | 1,209.30 | 0.02 | 0.05 | 1,226.71 |
| Energy | 4,009.58 | 0.14 | 0.06 | 4,030.73 |
| Mobile | 16,499.22 | 0.98 | 0.00 | 16,513.70 |
| Waste | 454.95 | 26.89 | 0.00 | 1,019.57 |
| Water | 3,124.73 | 19.86 | 0.53 | 3,707.32 |
| **TOTAL** | 26,303.22 | 47.97 | 0.64 | 27,504.94 |

Source: HELIX 2012 – CalEEMod results are provided in Attachment A.

## 5.4 Significance of Impacts

Tables 10 and 11 summarize the unmitigated Project emissions and Tables 12 and 13 summarize the Proposed Project with Project Design Features (PDF) emissions. As shown, the Proposed Project with statewide measures and PDFs would reduce emissions in Scenario 1 from 36,474 MT CO2e to 26,354 MT CO2e, a reduction of 10,120 MT or 28 percent. For Scenario 2, emissions would be reduced from 37,158 MT CO2e to 27,505 MT CO2e, a reduction of 9,653 MT or 26 percent. Under either scenario, the Project would exceed the required reduction target of 16 percent. Therefore, impacts associated with GHG emissions would be less than significant.

# 6.0 PROJECT CONSISTENCY WITH ADOPTED PLANS, POLICIES, AND REGULATIONS

The regulatory plans and policies discussed extensively in Section 3.0 above aim to reduce national, state, and local GHG emissions by primarily targeting the largest emitters of GHGs: the transportation and energy sectors. Plan goals and regulatory standards are thus largely focused on the automobile industry and public utilities. For the transportation sector, the reduction strategy is generally three-pronged: to reduce GHG emissions from vehicles by improving engine design; to reduce the carbon content of transportation fuels through research, funding and incentives to fuel suppliers; and to reduce the miles these vehicles travel through land use change and infrastructure investments.

For the energy sector, the reduction strategies aim to reduce energy demand; impose emission caps on energy providers; establish minimum building energy and green building standards; transition to renewable non-fossil fuels; incentivize homeowners and builders; fully recover landfill gas for energy; expand research and development; and so forth.

## 6.1 Local Plans

As discussed above in Section 1, the Project would achieve substantial GHG reductions through green building design that includes improved energy efficiency, water conservation, sustainable materials use, and waste reduction. In addition to the County's discretionary review process, the CAP compliance checklist was prepared that compares the Project consistency with the measures in the CAP. The CAP compliance checklist is presented in Attachment B. Verification and commissioning of these features would occur through independent third-party inspection and diagnostics. The Project would be consistent in achieving a 16 percent reduction relative to an unmitigated project, and would thus be consistent with the County's General Plan and anticipated CAP goals for private land use development.

## 6.2 State Plans

EO S-3-05 established GHG emission reduction targets for the state, and AB 32 launched the Climate Change Scoping Plan that outlined the reduction measures needed to reach these targets. The Scoping Plan and its implementing and complementary regulations are discussed at length in Section 1. As described in Section 4.1.1, the 16 percent target in GHG emissions goal relative to an unmitigated/baseline project is derived from CARB's 2010 updated 2020 emissions projections and revised 2011 Scoping Plan. The revised projections and Scoping Plan account for less overall growth and less energy/fuel consumption due to the long-term dampened economic conditions. Thus, by achieving a 16 percent reduction relative to unmitigated/baseline project emissions, the Project would be considered consistent with the revised 2011 Scoping Plan and AB 32's 2020 reduction target.

# 7.0 RESIDUAL IMPACTS AND CONCLUSIONS

As summarized in Tables 12 and 13, implementation of the Project would result in 28 and 26 percent reduction in unmitigated project-equivalent emissions for Scenario 1 and 2, respectively. This exceeds the 16 percent reduction target currently established by the County. Therefore, the Proposed Project GHG emissions would be less than significant.

As evaluated per the County's GHG guidelines, the Project would achieve the County's GHG reduction goals, and, therefore, would be consistent with the goals and strategies of local and state plans, policies, and regulations aimed at reducing GHG emissions from land use and development.

# 8.0 REFERENCES


Association of Environmental Professionals (AEP). 2007 (June). Recommendations by the Association of Environmental Professionals (AEP) on How to Analyze Greenhouse Gas Emissions and Global Climate Change in CEQA Documents.

American Petroleum Institute (API). 2004. API Compendium of GHG Emissions Estimation Methodologies for the Oil and Gas Industry.

California Air Pollution Control Officers Association (CAPCOA). 2010 (August). *Quantifying Greenhouse Gas Mitigation Measures,*

California Air Resources Board (CARB). 2011 (August 19). Final Supplement to the AB 32 Scoping Plan Functional Equivalent Document. Available at: http://www.arb.ca.gov/cc/scopingplan/document/final_supplement_to_sp_fed.pdf Accessed May 9, 2012.

California Air Resources Board (CARB). 2010a (Last update May 12, 2010). *Greenhouse Gas Inventory Data – 2000 to 2008*. Available at: http://www.arb.ca.gov/cc/inventory/data/data.htm. Accessed December 28.

California Air Resources Board (CARB). 2010b. Climate Car Standards – Pavley, Assembly Bill 1493. Available at: http://www.arb.ca.gov/cc/ccms/ccms.htm. Accessed April 22, 2010.

California Air Resources Board (CARB). 2010c. Senate Bill 375 – Regional Targets Available at: http://www.arb.ca.gov/cc/sb375/sb375.htm. Accessed October 29.

California Air Resources Board (CARB). 2010d (June 30, 2010). Draft Regional Greenhouse Gas Emission Reduction Targets for Automobiles and Light Trucks Pursuant to Senate Bill 375.

California Air Resources Board (CARB), 2010e (May). Local Government Operations Protocol for the Quantification and Reporting of Greenhouse Gas Emissions Inventories, Version 1.1. Developed in partnership by California Air Resources Board, California Climate Action Registry, ICLEI – Local Governments for Sustainability, The Climate Registry,

California Air Resources Board (CARB). 2008a. Preliminary Draft Staff Proposal: *Recommended Approaches for Setting Interim Significance Thresholds for Greenhouse Gases under the California Environmental Quality Act*, October 24, 2008. http://www.arb.ca.gov/cc/localgov/ceqa/ceqa.htm. Accessed March 12, 2009.

California Air Resources Board (CARB). 2008b (December). AB 32 Climate Change Scoping Plan Document. Available at: http://www.arb.ca.gov/cc/scopingplan/document/scopingplandocument.htm Accessed January 10, 2010.

California Air Resources Board (CARB). 2007a (November 16). Staff Report: California 1990 Greenhouse Gas Emissions Level and 2020 Emissions Limit.

California Air Resources Board (CARB). 2007b (November 16). California 1990 Greenhouse Gas Emissions Level and 2020 Emissions Limit. November 16.

California Air Resources Board (CARB). 2007c. *Climate Change: Information Regarding ARB's Climate Change Program Pursuant to 2006 Assembly Bill 32.* Available at: http://www.arb.ca.gov/cc/cc.htm. Accessed July 17, 2007

California Air Resources Board (CARB). 2007d (October). Expanded List of Early Action Measures to Reduce Greenhouse Gas Emissions in California Recommended for Board Consideration.

California Air Resources Board (CARB). 2006 (December 1). Public Workshop to Discuss Establishing the 1990 Emission Level and the California 2020 Limit and Developing Regulations to Require Reporting of Greenhouse Gas Emissions, Sacramento, CA..

California Building Standards Commission (CBSC). 2010. California Green Building Standards Code (CalGreen). Effective January 1, 2011 Available at: http://www.documents.dgs.ca.gov/bsc/CALGreen/2010_CA_Green_Bldg.pdf

California Energy Commission. 2006 (December). Inventory of California Greenhouse Gas Emissions and Sinks: 1990 to 2004.

California Energy Commission. 2008 (August). New Solar Homes Partnership Guidebook Revised Second Edition.

California Environmental Protection Agency (CalEPA), Climate Action Team. 2006 (March). Executive Summary, Climate Action Team Report to Governor Schwarzenegger and the California Legislature, Sacramento, CA.

California Natural Resources Agency (CNRA). 2009. California Climate Adaptation Strategy: A Report to the Governor of the State of California in Response to Executive Order S-13-2008. Available at: http://resources.ca.gov/climate_adaptation/docs/Statewide_Adaptation_Strategy.pdf

CalRecycle (California Department of Resources Recycling and Recovery). 2010. Solid Waste Characterization: Guidelines for Preparation of Environmental Assessment for Solid Waste Management.

CalRecycle (California Department of Resources Recycling and Recovery). 2009 (Updated December 30). Estimated Solid Waste Generation Rates for Residential and Commercial Establishments. Available at: http://www.calrecycle.ca.gov/wastechar/wastegenrates

CalRecycle (California Department of Resources Recycling and Recovery). 2008 (April). Statewide Waste Characterization Study. Contractors Report to the California Integrated Waste Management Board.

County of San Diego. 2012a (June 20). Guidelines for Determining Significance: Climate Change. Land Use and Environment Group.

County of San Diego. 2012b. Climate Action Plan. Available at: http://www.sdcounty.ca.gov/dplu/advance/Climate_Action_Plan.pdf

County of San Diego 2009. Strategic Energy Plan. Available at: http://sustainca.org/sites/default/files/County_of_San_Diego_2009_Strategic_Energy_Plan.pdf

Intergovernmental Panel on Climate Change (IPCC). 2007 (February). Climate Change 2007: The Physical Science Basis, Summary for Policy Makers (Working Group Fourth Assessment Report). Available at: http://www.ipcc.ch/SPM2feb07.pdf

Linscott, Law and Greenspan (LLG) Engineers. 2013 (September) Traffic Impact Analysis – Campus Park West.

Marten Law Group. 2008. *California Sues EPA over Vehicle Emissions Standards.* Available at: http://www.martenlaw.com/news/?20080109-calif-sues-epa Accessed May 19, 2008

South Coast Air Quality Management District (SCAQMD). 2011. California Emission Estimator Model (CalEEMod). (Released February 2011). Prepared by ENVIRON under contract with South Coast Air Quality Management District. Version 2001.1.1. Available at: http://www.aqmd.gov/caleemod/default.htm

San Diego Association of Governments. 2010 (February 1). Climate Action Strategy. Preliminary Draft Available at: http://www.sandag.org/uploads/publicationid/publicationid_1481_10940.pdf

San Diego Association of Governments. 2008 (April). 2030 Regional Growth Forecast Update: Process and Model Documentation. Available at http://www.sandag.org/uploads/publicationid/publicationid_833_3750.pdf

United Nations Framework Convention on Climate Change (UNFCCC). 2009 *Status of Ratification*. Available At: http://unfccc.int/kyoto_protocol/background/status_of_ratification/items/2613.php Accessed July 24, 2009.

United Nations Environment Programme. 2007a (February). Scientific Assessment of Ozone Depletion*: 2006*. Pursuant to Article 6 of the Montreal Protocol on Substances that Deplete the Ozone Layer.

United Nations Environment Programme (UNEP). 2007b. Achievements in Stratospheric Ozone Protection, The Montreal Protocol on Substances that Deplete the Ozone Layer, Progress Report 1987–2007. Available at: http://ozone.unep.org/Publications/MP_Acheivements-E.pdf. Accessed May 23, 2007.

United Nations Framework Convention on Climate Change (UNFCCC). 2007a. The United Nations Framework Convention on Climate Change. Available at: http://unfccc.int/essential_background/convention/items/2627.php Accessed May 23, 2007.

United Nations Framework Convention on Climate Change (UNFCCC). 2007b. Kyoto Protocol. Available at: http://unfccc.int/kyoto_protocol/items/2830.php. Accessed May 24, 2007.

United Nations Framework Convention on Climate Change. 2006a. Greenhouse Gas Emissions Data, Predefined Queries, Annex I Parties – GHG total without LULUCF (land-use, land-use change and forestry). Available at http://unfccc.int/ghg_emissions_data/predefined_queries/items/3841.php

United Nations Framework Convention on Climate Change. 2006b. Kyoto Protocol Third Session of the Conference of the Parties (COP) to the UNFCCC.

United States Environmental Protection Agency (U.S. EPA). 2010. *Amendments to the Montreal Protocol*. Available at: http://www.epa.gov/ozone/intpol/history.html. Accessed December 28.

United States Environmental Protection Agency (U.S. EPA). 2010a. *Inventory of Greenhouse Gas Emissions and Sinks: 1990 to 2008.* U.S. EPA #430-R-10-066. http://epa.gov/climatechange/emissions/usinventoryreport.html

United States Environmental Protection Agency (U.S. EPA). 2006 (September). Solid Waste Management and Greenhouse Gases: A Life-Cycle Assessment of Emissions and Sinks. 3rd Edition.

United States Environmental Protection Agency (U.S. EPA). 2006a. The U.S. Inventory of Greenhouse Gas Emissions and Sinks: Fast Facts. Available at: www.epa.gov/climatechange/emissions/downloads06/06FastFacts.pdf

University of San Diego School of Law Energy Policy Initiative Center (EPIC). 2008 (September) Anders, S., D. De Haan, N. Silva-Send, S. Tanaka, and L. Tyner. San Diego County Greenhouse Gas Inventory: An Inventory of Regional Emissions and Strategies to Achieve AB32 Targets. Available at http://www.sandiego.edu/epic/ghginventory.

# 9.0 LIST OF PREPARERS AND PERSONS AND ORGANIZATIONS CONTACTED

**Preparer:**

Michael Slavick
Joanne Dramko, AICP
Elizabeth Scott
Lisa Capper
Rose Wojnar-Dillon
HELIX Environmental Planning, Inc.
7578 El Cajon Blvd., Suite 200
La Mesa, CA 91942

**Contacts:**

Kristin Blackson
Poonam Boparai
Planning and Development Services
5510 Overland Avenue, Suite 310
San Diego, CA 92123

# ATTACHMENT A

EMISSION CALCULATIONS

(Found on CD in Back of Report)

# ATTACHMENT B

## CAP COMPLIANCE CHECKLIST

# County of San Diego CAP Compliance Checklist for Greenhouse Gas Analysis for the Campus Park West Project

**PROJECT INFORMATION**

**Date:** April 3, 2013

**Project Number:** ER 05-02-009

**Project Name:** Campus Park West

**Project Applicant:** Pappas Investments

**GHG Specialist:** Michael Slavick

**Project Owner:** Thad Johnson

**Does this project meet the screening criteria listed in Table 3 of the County of San Diego's Guidelines for Determining Significance for Climate Change, or has the project demonstrated that it is below the Bright Line Threshold, as described in the Guidelines for Determining Significance?**

☐ **Yes** ☒ **No**

**If Yes, project must complete the following checklist and comply with one or more (or equivalent combination[1]) of the applicable Climate Action Plan (CAP) measures beyond any applicable County of San Diego (County) standards. Specify the measure(s) below.**

**If No, project must complete the following checklist and should comply with applicable measures listed below for the relevant project type. The project proponent must conduct a technical analysis to demonstrate that the project's design features, along with CAP measures, and, if necessary, additional measures, are incorporated to reduce emissions below the Bright Line Threshold, the Efficiency Threshold, or the Performance Threshold. The Applicability Table may be used as guidance for CAP measures, but any GHG-reducing measures may be included that achieve the Bright Line, Efficiency, or Performance Threshold.**

**Through the County's discretionary review process and completion of the CAP Compliance Checklist, the design features or mitigation measures applied to individual development projects are considered binding and enforceable, including those applied to projects with GHG emissions that are either above or below the Bright line Threshold.**

[1] A project must demonstrate compliance with a single CAP measure beyond any applicable County standards and requirements. If the project demonstrates one-half of one CAP measure and one-half of another CAP measure, or similar compliance with multiple CAP measures, the project may be determined to be equivalent to complying with one full measure. In these instances, the measure(s) will be subject to approval by the project reviewer. Construction-only projects that meet the Construction Screening Criteria do not need to implement a CAP measure.

**General Guidance for Use in Determining Applicability of CAP Measures for Projects Under the Bright Line Threshold[1]**

| Project Type | CAP Measures | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | E1: Energy Efficiency for New Development | E2: Building Energy Retrofits | E3: Energy Star Appliances | E4: Smart Meters | R1: Solar Water Heating | R2: Alternative Energy Systems | LU1: Mixed-Use Development | T1: Increase Transit Use | T2: Increase Walking and Biking | T3: Increase Ridesharing | T4: Alternative Fuel Vehicles | LS1: Tree Planting | A1: Nitrogen Optimization | A2: Field Equipment Fuel Efficiency | A3: Agricultural Irrigation Pump Efficiency |
| New Residential | | | | | | | | | | | | | | | |
| New Commercial | | | | | | | | | | | | | | | |
| Industrial | | | | | | | | | | | | | | | |
| Mixed-Use | ● | | ● | | | | ● | | ● | | | ● | | | |
| Agriculture + Residential | | | | | | | | | | | | | | | |
| Other[3] | | | | | | | | | | | | | | | |

[1] The determination of applicability will be made by the County Department of Planning and Land Use (DPLU) with the project applicant at the time of scoping/review; however, for most projects under the Bright Line Threshold, unchecked measures (e.g., as LU1, T1-4) will not result in measurable GHG emissions reductions and, therefore, will likely not be applicable at the project level.

[2] Depending on whether residential is new or existing, this measure may not apply.

[3] For other project types, project reviewer will determine which measures are applicable to the project.

**CHECKLIST**

Instructions: All projects must complete this checklist for the relevant project type and fill in "Details of Compliance." For projects below the Bright Line Threshold, a description of how the project will achieve conformance with the CAP measure is provided in "Description"; for projects above the Bright Line Threshold, the applicant may comply with each measure at any performance level, but must demonstrate achievement of the Bright Line Threshold, Efficiency Threshold, or Performance Threshold.[1]

**Type of Project Mixed Use Development (Suburban) Project Number ER 05-02-009**

| CAP # | Measure | Description[2] | Details of Compliance | % Reduction (for Projects Exceeding the Performance Threshold) | Percentage of Measure Compliance (for Projects under the Bright Line Threshold) |
|---|---|---|---|---|---|
| E1 | Energy Efficiency for New Development | 10% of square footage (commercial/industrial) or 10% of units (residential) exceeds Title 24 (2008) standards by 15% for projects scoped through Dec. 31, 2014;100% of square feet per unit exceeding Title 24 (2008) standards by 15% for projects scoped after Dec. 31, 2014 | 100% of 503,500 square footage (commercial), 100% of 120,000 square footage (industrial office), and 100% of multi-family units (residential) exceeds Title 24 (2008) standards by 15% for projects scoped after Dec. 31, 2014. | 15% | N/A |

[2] Description details compliance with the CAP measure. Projects must meet an equivalent of one CAP measure as described here; for projects over the Bright Line Threshold, any level of compliance is acceptable that results in meeting the threshold, and the applicant must provide substantial evidence to support reduction.

| CAP # | Measure | Description[2] | Details of Compliance | % Reduction (for Projects Exceeding the Performance Threshold) | Percentage of Measure Compliance (for Projects under the Bright Line Threshold) |
|---|---|---|---|---|---|
| E3 | Appliance Upgrades | Energy Star appliances in 95% of new residential units and 40% of existing residential units; appliances include light bulbs, clothes washers, dishwashers, and refrigerators | Energy Star appliances in 100% of new residential units; appliances include light bulbs, clothes washers, dishwashers, and refrigerators | Energy Star appliances would be in conjunction with the 15% improvements in CAP Measure E1. | N/A |
| T2 | Increase Walking and Biking | The Proposed Project will provide housing, retail, and jobs so that residents have an opportunity to work and shop within a walkable/bikeable distance to their homes. To encourage walkability along roadways, the Project would include a mix of land uses within a comfortable walking distance. Bicycle parking facilities would be provided to encourage alternative transit, particularly for employees, shoppers, and residents. | The furthest in-site walking distance (from the southern-most residential use to the northernmost light industrial use) would be just over a half mile (0.6 mile). Sidewalks along Project roads would be linked to walkways within the separate land uses as well as trails and pathways. | 50% increase of bicycle and pedestrian facilities | 3% reduction in VMT |

| CAP # | Measure | Description[2] | Details of Compliance | % Reduction (for Projects Exceeding the Performance Threshold) | Percentage of Measure Compliance (for Projects under the Bright Line Threshold) |
|---|---|---|---|---|---|
| LU1 | Mixed-Use Development | The proposed Project will include residential and commercial uses within the same development bubble in the mixed-use core area, and placing multi-family residential uses directly across the street (proposed Pankey Road) from general commercial and light industrial office uses. | The mixed-use core area could contain residential, commercial land uses and office spaces. The intent of the mixed-use core district is to provide a centrally located mix of uses with pedestrian and vehicular connections to the commercial and residential land uses. This mixed-use core is intended to be a pedestrian-oriented community center characterized by wide sidewalks and smaller scale buildings lining a two-lane roadway/drive aisle, large storefront | New mixed use development will occur on-site.<br><br>Based on the GHG reduction measures under LUT-3 in the CAPCOA's guidance, the mixed use index measurement can be applied to the Proposed Project. Based on the CAPCOA methodology, the Proposed Project land use index was determined to be 0.69, which resulted in an estimated 30 percent reduction in vehicle miles traveled (VMT) for the vehicle emission category. | N/A |

| | | | | | |
|---|---|---|---|---|---|
| | | | windows on the ground floor with retail, office, or residential uses on the second/third stories, sidewalk cafes, pedestrian plazas, and shade trees, street lamps, benches, bike racks, and other amenities that encourage pedestrian activity. This mixed-use core would be within a 5-to-10 minute walk from anywhere within the Campus Park West community and would be accessed via one drive aisle, edged by 15-foot wide sidewalks on either side. | | |

| CAP # | Measure | Description[2] | Details of Compliance | % Reduction (for Projects Exceeding the Performance Threshold) | Percentage of Measure Compliance (for Projects under the Bright Line Threshold) |
|---|---|---|---|---|---|
| T2 | Increase Walking and Biking | The Proposed Project will provide housing, retail, and jobs so that residents have an opportunity to work and shop within a walkable/bikeable distance to their homes. To encourage walkability along roadways, the Project would include a mix of land uses within a comfortable walking distance. Bicycle parking facilities would be provided to encourage alternative transit, particularly for employees, shoppers, and residents. | The furthest in-site walking distance (from the southern-most residential use to the northernmost light industrial use) would be just over a half mile (approximately 0.6 mile). Sidewalks along Project roads would be linked to walkways within the separate land uses as well as trails and pathways, where possible. | 50% increase of bicycle<br>and pedestrian facilities | 3% reduction in VMT |
| LS1 | Tree Planting | Shade trees would be planted throughout landscaping and parking areas. | A minimum of five percent of the total 116-acre area would be planted with a combination of trees and shrubs. | Approximately 100 trees to be planted. Approximately 7.79 MT CO2e sequestration benefit | N/A |

| Other measures, not described in the CAP, which would achieve GHG reductions in the proposed project (for projects over the Bright Line Threshold). This includes reductions taken for statewide regulations[3] | | | | | |
|---|---|---|---|---|---|
| | **Measure** | **Description** | **Details of Compliance** | **% Reduction** | |
| No other measures are required. | | | | | |

| **Total Reduction %**<br>**(for Project Exceeding the Performance Threshold)**<br>**Must Equal 16% or more** | **Compliance for Projects under the Bright Line Threshold)**<br>**Must Equal 100% or More** |
|---|---|
| 20% | N/A |

[3] Refer to the County of San Diego Guidelines for Determining Significance for Climate Change for methodology in applying statewide measures. The Performance Threshold includes 20% Renewable Portfolio Standard (RPS) and Pavley I as pre-mitigation; therefore, no additional credit may be taken for these measures by the project. The Bright Line and Efficiency Thresholds do not include statewide measures and, therefore, can be calculated for credit by the project.

Proposed Project Mixed Use Development

Total mixed use development is approximately 5,070,384 gross square feet (sf).

2,206,314 gross sf (50.65 acres) of commercial retail, percent of total = 43.51%

561,924 gross sf (12.9 acres) of industrial office = 11.08%

616,374 gross sf (14.15 acres) of 283 multi-family residential units = 12.16%

291,852 gross sf (6.7 acres) of right-of-way = 5.76%.

1,393,920 sf (32 acres) of total open space = 27.49%.

LUT – 3 Mitigation Method:

Percent VMT Reduction = Land Use * B [not to exceed 30%]

Where:

Land Use = Percentage increase in land use index versus single use development

= (project land use index – single land use index) / single land use index.

= (land use index – 0.15)/0.15.

B = 0.09, elasticity of VMT with respect to land use index

Land use index = -a / ln (6)

Land use index = -[0.4351*ln(0.4351) + 0.1108*ln(0.1108) + 0.1216 *ln(0.1216) + 0.3325 *ln(0.3325)] / ln(6)

= -[-0.362081252 + -0.243763158 + -0.256213426 + -0.366120877] / 1.791759469

= 1.228078713 / 1.791759469 = 0.68540378 = 0.69

Land Use = (0.69 – 0.15)/0.15 = 3.57 or 357%

Percent VMT Reduction = 3.57 * 0.09 = 0.321 or 32.1% = max 30%

# ATTACHMENT C

# EMISSION REDUCTIONS IN MOBILE SOURCE CATEGORY

# EMISSION REDUCTIONS IN MOBILE SOURCE CATEGORY FOR CAMPUS PARK WEST PROJECT

**Pavley I**

It is expected that the new regulations (Pavley I) will reduce GHG emissions from California passenger vehicles by about 31.7 MMTCO2E (or **18.22** percent) counted toward the total statewide reduction target of 174 MMTCO2E. However, the revised 2011 projections estimate that Pavley I will reduce GHG emissions from passenger vehicles by about 29.9 MMTCO2E, for 37 percent of the total 80 MMTCO2E reduction target.

**Pavley II**

CARB has adopted a second, more stringent, phase of the Pavley regulations, termed "Pavley II" [now known as "Low Emission Vehicle (LEV) III"], that covers model years 2017 to 2025. Pavley II was estimated in 2008 to add an additional 4.0 MMTCO2E for **2.3 percent** of the then-estimated 174 MMTCO2E reduction total. The revised 2011 projections estimate that Pavley II will reduce GHG emissions from passenger vehicles by 3.8 MMTCO2E, for **4.75** percent of the total 80 MMTCO2E reduction target (per CARB's 2010 revised projections).

**LCFS**

A 10 percent reduction in the intensity of transportation fuels is expected to equate to a reduction of 16.5 MMTCO2E in 2020 (based on the original 2008 Scoping Plan estimates). However, in order to account for possible overlap of benefits between LCFS and the Pavley GHG standards, CARB has discounted the contribution of LCFS to 15 MMTCO2E. A **10 percent** reduction in the intensity of transportation fuels were not changed in the 2011 Revised Scoping Plan projections.

**Table 1**
**STATEWIDE TRANSPORTATION REDUCTION MEASURES**

| Source | Percent reductions based on 2008 Scoping Plan | Percent reductions based on 2011 Revised Scoping Plan |
|---|---|---|
| Pavley I | 18.22% | 37.4% |
| Pavley II | 2.3% | 4.75% |
| LCFS | 10% | 10% |

**Methodology for Calculating Unmitigated and Mitigated Mobile Emissions**

The reductions associated with Pavley I are not allowable reduction credits for the Project, consistent with the revised CARB projection that determined the 16 percent reduction relative to BAU goal. CalEEMod defaults already account for Pavley I; therefore, neither the unmitigated or mitigated model scenarios were adjusted with respect to Pavley I. However, County of San Diego Guidelines allow the Project to apply GHG reduction credits for LCFS and Pavley II towards the 16% reduction target. Therefore, adjustments were made to the CalEEMod model outputs to account for the allowable reductions. The raw and corrected results are shown in Table 2.

CalEEMod defaults also take into account reduced emissions from LCFS; therefore the unmitigated emissions were corrected to increase mobile emissions by10 percent to allow reduction credit for LCFS in mitigated scenario.

The mitigated CalEEMod emissions include the model defaults for LCFS. Note that these emissions also reflect reduced emissions associated with the "increased diversity" reduction measure box checked.

The corrected mitigated CalEEMod emissions include a reduction based on CAPCOA Measure LUT-3 that applies towards projects that include a mix of uses that would reduce overall vehicle trips. The land use index measurement is based on the mix of land uses associated with a development. The land use index for the Campus West Project was determined to be 0.69. The combined Pavley II (2.3%) and land use reductions (31%) would result in 32.3% reduction in vehicular emissions. However, since 30% is the maximum reduction credit allowed, the mitigated condition only reflects a reduction of 6,894 MT $CO_2e$ towards vehicular emissions. Note that the corrected mitigated condition also eliminates the CalEEMod "increased diversity" reduction, to avoid double-counting with the CAPCOA measure.

To use Scenario 1 as an example, the reductions were as follows:

25,278 MT $CO_2e$ (corrected unmitigated emissions)
- 2,298 MT $CO_2e$ (LCFS reduction)
- 6,894 MT $CO_2e$ (combined Pavley II and mixed land use reductions)
16,086 MT $CO_2e$ (mitigated emissions)

**Table 2.**
**UNCORRECTED AND CORRECTED CALEEMOD OUTPUTS FOR UNMITIGATED AND MITIGATED PROJECT EMISSIONS (ANNUAL MT $CO_2e$)**

| Source | Unmitigated CalEEMod Emissions (uncorrected) | Unmitigated CalEEMod Emissions (corrected) [1] | Mitigated CalEEMod Emissions [2] (uncorrected) | Mitigated CalEEMod Emissions (corrected)[3] |
|---|---|---|---|---|
| Scenario 1 – Mobile Emissions | 22,980.42 | 25,278.46 | 21,887.23 | 16,086.29 |
| Scenario 2 - Mobile Emissions | 23,591.00 | 25,950.10 | 22,471.22 | 16,513.70 |

Notes:
All model results include built in emission reductions for Pavley I regulations (model default).
[1] Increases mobile emissions by10 percent to adjust model default to allow reduction credit for LCFS in mitigated scenario.
[2] Includes LCFS reduction (model default) and CalEEMod "increase diversity" reduction measure
[3] Includes reduction of **2.3%** for Pavely II regulations and reduction for Land Use Index reduction credit (CAPCOA Measure LUT-3); total combined reduction applied is the maximum-allowed 30%. The CalEEMod "increased diversity" reduction measure was eliminated to avoid double-counting.

THIS PAGE INTENTIONALLY LEFT BLANK