SUBCHAPTER 2.3

AIR QUALITY

2.3 Air Quality

Air quality was addressed in Subchapters 3.7, 4.4, and 5.4 of the 1981 Sycamore Springs EIR, and in Chapter IV.D of the 1983 Campus Park EIR prepared for the Hewlett Packard Project.

The 1981 EIR provided information related to air quality monitoring based on data from the Temecula monitoring station. Incremental impacts related to then-proposed project uses associated with vehicles, electricity generation and wood-burning fireplaces were identified. These effects, as well as those resulting from construction period dust generation and fumes were identified as significant but mitigable. The 1983 EIR provided 1979, 1980, and 1981 air quality data for criteria pollutants based on the Escondido monitoring station. Compliance analysis focused on those data with the remainder of text addressing projected pollutants generation based on the mix of uses proposed (manufacturing, residential, research, etc.). Construction dust and emissions were characterized in 1983 as being "of minor significance."

Criterion pollutant data require updating as basin air quality is in a constant state of flux—it changes from year to year as pollutants from multiple sources within the air basin mix and can be quantified.

Project-specific pollutant generation varies by type of proposed use, and the uses proposed in 1980 (the large-scale mobile-home park and golf course), as well as those proposed in 1983 (the mixed residential, commercial uses and large-scale light industrial/manufacturing complex), would generate both quantities and types that would differ from those generated under the current proposal, which includes different numbers of and types of single- and multi-family residential, commercial, and office professional uses.

Since certification of the 1981 and 1983 documents, the importance of construction-period emissions, as well as some additional categories of pollutants (e.g., particulate matter less than 2.5 microns in diameter [$PM_{2.5}$]) emissions has become better understood. Even more recently, the issue of climate change/greenhouse gases (GHGs) has been incorporated into baseline adequacy requirements.

These issues lead to the need for new subsequent analysis based on substantial changes having occurred with respect to the circumstances under which the Project would be undertaken, and that there is new information of substantial importance which would result in significant effects not previously discussed. The reader is referred to Sections 2.3.1 through 2.3.6 below for a revised evaluation of all issues related to air quality for the Project.

Scientific Resources Associated (SRA) prepared the Air Quality Technical Report (2009a) and the Global Climate Change Evaluation (2009b, as amended) for the Campus Park Specific Plan. These reports are summarized in the following discussion, with the complete reports included as Appendix D of this EIR.

2.3.1 Existing Conditions

Existing Setting

The Project site is located within the San Diego Air Basin (SDAB), which is a generally homogenous climatic zone that includes all of western San Diego County. The climate of the SDAB is dominated by a semi-permanent high-pressure cell located over the Pacific Ocean. This cell influences the direction of prevailing winds (westerly to northwesterly) and maintains clear skies for much of the year. The high-pressure cell also creates two types of temperature inversions that may act to degrade local air quality.

Subsidence inversions occur during the warmer months as descending air associated with the Pacific high-pressure cell comes into contact with cool marine air. The boundary between the two layers of air creates a

temperature inversion that traps pollutants. The other type of inversion—a radiant inversion—develops on winter nights when air near the ground cools by heat radiation and air aloft remains warm. The shallow inversion layer formed between these two air masses also can trap pollutants. As the pollutants become more concentrated in the atmosphere, photochemical reactions occur that produce ozone (O_3), commonly known as smog.

Regulatory Framework

Air Quality

Air quality is defined by ambient air concentrations of specified pollutants identified by the United States Environmental Protection Agency (USEPA) to be of concern with respect to the health and welfare of the general public. The USEPA is responsible for enforcing the federal Clean Air Act (CAA) of 1970 and its 1977 and 1990 amendments. The CAA required the USEPA to establish National Ambient Air Quality Standards (NAAQS), which identify concentrations of pollutants in the ambient air below which no adverse effects on the public health and welfare are anticipated. In response, the USEPA established both "primary" and "secondary" standards for several pollutants (called "criteria pollutants"). Primary standards are designed to protect human health with an adequate margin of safety. Secondary standards are designed to protect property and the public welfare from air pollutants in the atmosphere.

In September 1997, the USEPA promulgated national 8-hour O_3 as well as 24-hour and annual $PM_{2.5}$ standards. Although the United States District Court rescinded these standards and the USEPA's authority to enforce them (due to a lawsuit in May 1999), the United States Supreme Court in February 2001 upheld these standards subsequent to an appeal of this decision by the USEPA. As a result, this action has initiated a new planning process to monitor and evaluate emission control measures for these pollutants.

The CAA allows states to adopt ambient air quality standards and other regulations, provided they are at least as stringent as federal standards. The California Air Resources Board (ARB) has established the more stringent California Ambient Air Quality Standards (CAAQS) for the six criteria pollutants through the California Clean Air Act of 1988 and also has established CAAQS for additional pollutants including sulfates, hydrogen sulfide, vinyl chloride, and visibility-reducing particles. Areas that do not meet the NAAQS or the CAAQS for a particular pollutant are considered to be "nonattainment areas" for that pollutant. On April 15, 2004, the SDAB was designated a basic nonattainment area for the eight-hour NAAQS for O_3. The SDAB is in attainment for the NAAQS for all other criteria pollutants. The SDAB is currently classified as a nonattainment area under the CAAQS for O_3, particulate matter less than 10 microns in diameter (PM_{10}), and $PM_{2.5}$.

The ARB is the state regulatory agency with authority to enforce regulations to both achieve and maintain the NAAQS and CAAQS. The ARB is responsible for the development, adoption, and enforcement of the state's motor vehicle emissions program, as well as the adoption of the CAAQS. The ARB also reviews operations and programs of the local air districts, and requires each air district with jurisdiction over a nonattainment area to develop its own strategy for achieving the NAAQS and CAAQS. The local air district has the primary responsibility for the development and implementation of rules and regulations designed to attain the NAAQS and CAAQS, as well as the permitting of new or modified sources, development of air quality management plans, and adoption and enforcement of air pollution regulations. The Air Pollution Control District (APCD) is the local agency responsible for the administration and enforcement of air quality regulations for San Diego County.

The APCD and SANDAG are responsible for developing and implementing the clean air plan for attainment and maintenance of the ambient air quality standards in the SDAB. The San Diego County RAQS was initially adopted in 1991 and most recently updated in 2004. The RAQS outlines APCD's

plans and control measures designed to attain the state air quality standards for O_3. The APCD has also developed the air basin's input to the State SIP, which is required under the federal CAA for areas that are out of attainment of air quality standards. The SIP includes the APCD's plans and control measures for attaining the eight-hour O3 NAAQS. The most recent SIP submittal for the SDAB, Eight-hour Ozone Attainment Plan for San Diego County, ~~which~~ was submitted to the ARB in 2007.

The RAQS relies on information from ARB and SANDAG, including mobile and area source emissions, as well as information regarding projected growth in the County, to project future emissions and then determine from them the strategies necessary for the reduction of emissions through regulatory controls. The ARB mobile source emission projections and SANDAG growth projections are based on population and vehicle trends and land use plans developed by area cities and by the County as part of the development of the County's General Plan. As such, projects that propose development that is consistent with the growth anticipated by the general plans would be consistent with the RAQS. In the event that a project would propose development that is less dense than that anticipated within the General Plan, the project would likewise be consistent with the RAQS. If a project proposes development that is greater than that anticipated in the General Plan and SANDAG's growth projections, the project might be in conflict with the RAQS and SIP, and might have a potentially significant impact on air quality.

The SIP relies on the same information from SANDAG to develop emission inventories and emission reduction strategies that are included in the attainment demonstration for the air basin. The SIP also includes rules and regulations that have been adopted by the APCD to control emissions from stationary sources. These SIP-approved rules may be used as a guideline to determine whether a project's emissions would have the potential to conflict with the SIP and thereby hinder attainment of the NAAQS for O_3.

Table 2.3-1, Ambient Air Quality Standards, presents a summary of the ambient air quality standards adopted by the CAA and California Clean Air Act, and Table 2.3-2, State Ambient Air Quality Standards With No Federal Counterpart, presents those standards applicable to California that do not have a federally applicable standard.

Climate Change

Gases that trap heat in the atmosphere are often called GHGs. GHGs are emitted by natural processes and human activities. The accumulation of GHGs in the atmosphere regulates the earth's temperature. Without these natural GHGs, the earth's surface would be about 61°F cooler (California Energy Commission [CEC] 2006). Emissions from human activities such as electricity production and vehicle use have elevated the concentration of these gases in the atmosphere.

Recognizing concern regarding climate change and recent California legislation on this topic, this section provides information and analysis on the regulatory setting relevant to analysis of climate change.

International and Federal Legislation

In 1988, the United Nations and the World Meteorological Organization established the Intergovernmental Panel on Climate Change (IPCC) to assess "the scientific, technical and socio-economic information relevant to understanding the scientific basis of risk of human-induced climate change, its potential impacts, and options for adaptation and mitigation" (Association of Environmental Professionals [AEP] 2007). The most recent reports of the IPCC have emphasized the scientific consensus that real and measurable changes to the climate are occurring, that they are caused by human activity, and that significant adverse impacts on the environment, the economy, and human health and welfare are unavoidable.

In October 1993, former President Clinton announced his Climate Change Action Plan, which had a goal to return greenhouse gas emissions to 1990 levels by the year 2000. This was to be accomplished through 50 initiatives that relied on innovative voluntary partnerships between the private sector and government aimed at producing cost-effective reductions in GHG emissions. On March 21, 1994, the United States joined other countries around the world in signing the United Nations Framework Convention on Climate Change (UNFCCC). Under the UNFCCC, governments: gather and share information on GHG emissions, national policies, and best practices; launch national strategies for addressing GHG emissions and adapting to expected impacts, including the provision of financial and technological support to developing countries; and cooperate in preparing for adaptation to the impacts of climate change (AEP 2007).

In the past, the USEPA has not regulated GHGs under the CAA. On April 2, 2007 (in Massachusetts v. U.S. Environmental Protection Agency) the U.S. Supreme Court ruled that CO_2 is an air pollutant, as defined under the CAA, and that the USEPA has the authority to regulate GHG emissions. The USEPA announced on December 7, 2009 that GHGs threaten the public health and welfare of the American people. This finding did not impose any requirements on industry or other entities, but was a prerequisite to the final USEPA's GHG emissions standards for light duty vehicles, which were jointly implemented by the USEPA and the U.S. Department of Transportation's National Highway Traffic Safety Administration on April 1, 2010.

The federal Corporate Average Fuel Economy (CAFE) standard determines the fuel efficiency of certain vehicle classes in the U.S. As part of the Energy and Security Act of 2007, CAFE standards were increased to require new light-duty vehicles to meet an average fuel economy of 35 miles per gallon (mpg) by 2020. In May 2009, President Obama announced plans to increase CAFE standards to require light-duty vehicles to meet 35.5 mpg by 2016.

~~Recently, the United States Supreme Court declared in the court case of Massachusetts et al. vs. the USEPA et al., 549 C.S. 497 (2007) that the USEPA does have the ability to regulate GHG emissions. In addition to the national and international efforts described above, many local jurisdictions have adopted climate change policies and programs.~~

California Legislation

In September 2006, Governor Schwartzenegger signed California Assembly Bill (AB) 32, the Global Warming ~~bill~~Solutions Act, into law. AB 32 directs the ARB to do the following:

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

AB 32 requires that ARB determine what the statewide GHG emissions level was in 1990, and approve a statewide GHG emissions limit equivalent to that level, to be achieved by 2020. ~~While the level of 1990 GHG emissions has not yet been officially approved, t~~The ARB has estimated that the 1990 GHG emissions level was 427 million metric tons (MMT) net carbon dioxide equivalent (CO_2e; ARB ~~2007b~~2007d). In 2004, the emissions were estimated at 480 MMT net CO_2e (ARB 2007b). The ARB estimates that a reduction of ~~173~~ 169 MMT net CO_2e emissions below "business as usual" (BAU) levels of 596 MMT would be required by 2020 to meet the 1990 levels ~~(ARB 2007b)~~. This amounts to a 15 percent reduction from today's levels, and a ~~30~~ 28.3 percent reduction from projected ~~business as usual~~BAU levels in 2020 ~~(ARB 2008)~~. Attainment of GHG-related emissions at 80 percent below 1990 levels by 2050 has been projected as the level at which negative GHG effects could be appropriately controlled.

Following the passage of AB 32, in 2007 the ARB published "Proposed Early actions to Mitigate Climate Change in California." There are no early action measures specific to development projects included in the list of 36 measures identified for the ARB to pursue during calendar years 2007, 2008, 2009, and 2010. In addition, 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. The ARB has, however, initiated a series of "early action measures" to reduce GHG emissions in advance of the full implementation of AB 32 in 2012 (ARB 2007e).

The ARB 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 (VMT) by state residents increasing three-fold during the period of 1975 to 2004. Scoping Plan 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 integration of development patterns and the transportation network to reduce vehicle travel, as identified in Senate Bill (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 GHG Targets, which relies on SB 375 implementation to reduce GHG emissions from passenger vehicles through reducing 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.

S~~enate~~ B~~ill~~ 97, enacted in 2007, amended~~s~~ the CEQA statutes to clearly state that GHG emissions and the effects of GHG emissions are appropriate subjects for CEQA analysis. It directed~~s~~ the State Office of Planning and Research to develop draft CEQA guidelines "for the mitigation of greenhouse gas emissions or the effects of greenhouse gas emissions" by July 1, 2009 and directed~~s~~ the Resources Agency to certify

and adopt the CEQA guidelines by January 1, 2010. ~~Some literature equates these reductions to 11 percent by 2010 and 25 percent by 2020.~~

The Resources Agency certified and adopted the guidelines on December 31, 2009. The new CEQA guidelines provide lead agencie with broad discretion in determining what methodology is used in assessing the impacts of GHG emissions in the context of a particular project. Although the new CEQA Guidelines did not establish a threshold of significance, the OPR guidance does state that the lead agency can rely on qualitative or other performance based standards for estimating the significance of GHG emissions.

Executive Order (EO) S-3-05, signed by Governor Schwartzenegger on June 1, 2005, calls for a reduction in GHG emissions to 1990 levels by 2020 and for an 80 percent reduction in GHG emissions by 2050. E~~xecutive Order~~ S-3-05 also calls for the California Environmental Protection Agency to prepare biennial science reports on the potential impact of continued global climate change on certain sectors of the California economy. The first of these reports, "Our Changing Climate: Assessing Risks to California," and its supporting document "Scenarios of Climate Change in California: An Overview" were published by the California Climate Change Center in 2006. According to the report, projected 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 include, but are not limited to, public health, biology, rising sea levels, hydrology and water quality, and water supply.

Although not originally intended to reduce GHG emissions, California Code of Regulations Title 24 Part 6, California's Energy Efficiency Standards for Residential and Non-residential Buildings, were first established in 1978 in response to a legislative mandate to reduce California's energy consumption. The standards are updated periodically to allow consideration and possible incorporation of new energy efficiency technologies and methods. ~~The latest amendments were made in September 2006.~~ Energy efficient buildings require less electricity, natural gas, and other fuels. Electricity production from fossil fuels and on-site fuel combustion (typically for water heating) results in GHG emissions. Therefore, increased energy efficiency results in decreased GHG emissions.

The 2008 Energy Efficiency Standards went into effect January 1, 2010. The 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. The Draft 2010 California Green Building Standards Code proposes measures required by the code as well as potential voluntary green building measures that local cities and counties may adopt. These draft standards, also referred to as CALGreen, are anticipated to become effective January 1, 2011.

California A~~ssembly Bill~~ 1493 (Pavley), enacted on July 22, 2002, required the ARB to develop and adopt regulations that reduce GHGs emitted by passenger vehicles and light duty trucks. Regulations adopted by ARB ~~will~~ apply to 2009 and later model year vehicles. ~~ARB estimates that the regulation will reduce statewide climate change emissions from light duty passenger vehicle fleet by an estimated 18 percent in 2020 and by 27 percent in 2030 (AEP 2007).~~ To set its own GHG emissions limits on motor vehicles, California required a waiver from the USEPA; this waiver was issued in June 2009. When fully phased in, the near-term (2009 to 2012) standards would reduce GHG emissions by approximately 22 percent compared to the emissions from the 2002 fleet, while the mid-term (2013 to 2016) standards would result in a reduction of approximately 30 percent. Once implemented, emissions from new light-duty vehicles are expected to be reduced in San Diego County by 21 percent by 2020 (University of San Diego 2008). ~~The federal Corporate Average Fuel Economy (CAFE) standard determines the fuel~~

~~efficiency of certain vehicle classes in the U.S. 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.~~

E~~xecutive Order~~ S-01-07 was enacted by the Governor on January 18, 2007. Essentially, the order mandates that a statewide goal be established to reduce the carbon intensity of California's transportation fuels by at least 10 percent by 2020 and a Low Carbon Fuel Standard (LCFS) for transportation fuels be established for California. It is assumed that the effects of the LCFS would be a 10 percent reduction in GHG emissions from fuel use by 2020.

The California Renewables Portfolio Standard (RPS) Program was adopted under SB 1078, which was enacted in 2002. SB 1078 initially set a target of 20 percent of energy to be sold by retail sellers of electricity from renewable sources by the year 2017. In 2006 the schedule for implementation of the RPS was accelerated with the Governor's signing of SB 107, which accelerated the 20-percent RPS goal from 2017 to 2010. On November 17, 2008, the Governor signed EO S-14-08, which requires all retail sellers of electricity to serve 33 percent of their load with renewable energy by 2020. The Governor signed EO S-21-09 on September 15, 2009, directing ARB to implement a regulation consistent with the 2020 33-percent renewable energy target by July 31, 2010.

Local Regulations and Standards

~~Guidance is not currently provided in CEQA regarding this topic. It is not included in the Environmental Checklist Form provided in Appendix G of the CEQA Guidelines and significance thresholds for this topic have yet to be adopted by the County. CEQA does, however, provide guidance regarding topics such as climate change. Sections 15144 and 15145 of the CEQA Guidelines address forecasting and speculation. Section 15144 notes that drafting an EIR necessarily involves some degree of forecasting. While forecasting the unforeseeable is not possible, an agency must use its best efforts to find out and disclose all that it can within reason. (The Lead Agency is not required to engage in idle speculation.) Section 15145 deals with the difficulty in forecasting where a thorough investigation is unable to resolve an issue and the answer remains purely speculative.~~

~~Section 15146 of the CEQA guidelines relates to informed decision-making. The California Office of Planning and Research's commentary for this section notes that the rule of reason applies and the analysis must be specific enough to permit informed decision making and public participation. An EIR, however, does not need to engage in a speculative analysis of environmental consequences.~~

~~The County is working to develop a comprehensive strategy that will enhance the sustainability of County business operations and communities, building on the energy efficient and environmentally sound practices already in place in County departments. Additionally, the County is working on the General Plan Update. The Update includes smart growth and land planning principles that will reduce vehicle miles traveled and thus result in a reduction in GHG emissions. The General Plan Update will result in development of an implementation plan for GHG reduction measures, which will include the following actions:~~

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

The County ~~also~~ has implemented a number of outreach programs such as the Green Building Program, lawn mower trade-in program, and reduction of solid waste by recycling to reduce air quality impacts, as well as GHG emissions.

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 infrastructure from climate impacts, and assisting SANDAG and other local agencies in reducing GHG emissions from their operations.

With regard to the topic of climate change, it is possible to document the current state of research regarding this topic and to forecast an emissions inventory for GHGs associated with the Proposed Project at build out. These data are provided below to allow for informed decision making and public participation regarding this topic.

Background Air Quality

The APCD operates a network of air monitoring stations throughout San Diego County to measure ambient concentrations of pollutants and determine whether the ambient air quality meets the CAAQS and NAAQS. The nearest ambient monitoring stations to the Project site are the Escondido East Valley Parkway station and the San Diego 12th Avenue station (which is the closest station that measures sulfur dioxide [SO_2]). Because both the Escondido and San Diego 12th Avenue monitoring stations are located in areas where there is substantial traffic congestion, it is likely that pollutant concentrations measured at those monitoring stations are higher than concentrations that would be observed or measured in the Project area, thereby providing a conservative estimate of background ambient air quality. Ambient concentrations of pollutants over the last three years are presented in Table 2.3-3, Ambient Background Concentrations.

The federal eight-hour O_3 standard, which was formally adopted in 2001 after legal arguments with the USEPA, was exceeded at the Escondido monitoring station twice in 2004 and twice in 2006. The more stringent California Standard was exceeded in 2004, 2005, and 2006. The federal 24-hour $PM_{2.5}$ standard was exceeded once in 2004. The Escondido monitoring station measured exceedances of the state PM_{10} and $PM_{2.5}$ standards during 2004 to 2006. The data from the monitoring stations indicate that air quality is in attainment of all other federal standards.

Concentrations of carbon monoxide (CO) at the Escondido monitoring station tend to be among the highest in the San Diego Air Basin because the monitor is located along East Valley Parkway in a congested area in downtown Escondido. As noted above, the station experiences higher concentrations of CO than have historically been measured elsewhere in San Diego County, and the background data are

not likely to be representative of background ambient CO concentrations at the Project site due to the site's location in a less developed area. Since 2000, CO has not been monitored at other stations in northern San Diego County.

Climate Change

This topic is new since 2007 and currently is under evaluation. The County's approach to this information and analysis is based on relevant available data regarding climate change and a project-specific emissions inventory for GHGs.

Global climate change alleged to be caused by GHGs is currently one of the most important and widely debated scientific, economic, and political issues in the U.S. Global climate change is a change in the average weather of the earth, which can be measured by wind patterns, storms, precipitation, and temperature. Historical records have shown that temperature changes have occurred in the past, such as during previous ice ages. Some data indicate that the current temperature record differs from previous climate changes in rate and magnitude.

The United Nations Intergovernmental Panel on Climate Change constructed several emission trajectories of GHGs needed to stabilize global temperatures and climate change impacts. It concluded that a stabilization of GHGs at 400 to 450 ppm CO_2e concentration is required to keep global mean warming below 2°C, which is assumed to be necessary to avoid dangerous climate change (AEP 2007).

GHGs have varying global warming potential (GWP). The GWP is the "cumulative radiative forcing effects of a gas over a specified time horizon resulting from the emission of a unit mass of gas relative to a reference gas" (AEP 2007); it is the potential of a gas or aerosol to trap heat in the atmosphere. The reference gas for GWP is CO_2, which has a GWP of one. For example, methane has a GWP of 21, which means that it has a greater global warming effect than carbon dioxide on a molecule per molecule basis. One teragram carbon dioxide equivalent (Tg CO_2e) is the emissions of the gas multiplied by the GWP. One Tg is equivalent to one MMT. The CO_2e is a good way to assess emissions because it gives weight to the GWP of the gas. The atmospheric lifetime and GWP of selected greenhouse gases are summarized in Table 2.3-4, Global Warming Potentials and Atmosphere Lifetimes. As shown in the table, GWP ranges from 1 for CO_2 to 23,900 for sulfur hexafluoride.

In 2004, the U.S. contributed the most GHG emissions of any other country (35 percent of global emissions), with U.S. GHG of 7,074.4 Tg CO_2e, (an increase of 15.8 percent from 1990 emissions; AEP 2007).

California is a substantial contributor of global GHGs; it is the second largest contributor in the U.S. and the sixteenth largest in the world (AEP 2007). In 2004, California produced 492 Tg CO_2e (AEP 2007), which is approximately 7 percent of U.S. emissions. The major source of GHG in California is transportation, contributing 41 percent of the state's total GHG emissions. Electricity generation is the second largest source, contributing 22 percent of the state's GHG emissions (AEP 2007).

Existing On-site Conditions Relating to Climate Change

The Project site currently is undeveloped and includes disturbed areas and native vegetation. It is being used as pasture/grazing land for approximately ~~40 to 80~~50 head of cattle. According to the USEPA (2010), adult cows produce 80 to 110 kilograms of methane annually. Assuming the average cow produces 95 kilograms of methane, a total of 4,750 kilograms of methane are produced annually at the Project site due to livestock grazing. Methane's GWP is 21; therefore, it is estimated that livestock produce approximately 100 metric tons annually of CO_2e at the site. Additional GHG emissions would

be associated with vehicles and farming equipment used at the site; however, specific information is not available that would allow the calculation of GHG emissions from these sources. ~~Cattle themselves are a source of GHG emissions; however, it is not possible to quantify the emissions associated with the current site uses at this time due to the difficulty in estimating emissions from grazing cattle and other sources, such as vehicles associated with the uses at the site.~~

Natural vegetation and soils temporarily store carbon as part of the terrestrial carbon cycle. Carbon is assimilated into plants and animals as they grow and then dispersed back into the environment when they die. There are two existing sources of carbon storage at the Project site: natural vegetation and soils.

Living vegetation stores carbon; however, it is difficult to assess net changes in carbon storage associated with the Project site. The key issue is the balance between the loss of natural vegetation and future carbon storage associated with landscaping. For example, the community's landscaping palette would feature shrubs and trees that may provide equal or greater carbon storage on a per acre basis. The situation is further complicated by changes in fire regime. Carbon in natural vegetation is likely to be released into the atmosphere through wildfire every 20 to 150 years. Carbon in landscaped areas would be protected from wildfire. The balance between these factors will influence the long-term carbon budget on the site.

The majority of carbon within the Project site is stored in the soil. Soil carbon accumulates from inputs of plant and animal matter, roots, and other living components of the soil ecosystem (e.g., bacteria, worms, etc.). Soil carbon is lost through biological respiration, erosion, and other forms of disturbance. Overall, soil carbon moves more slowly through the carbon cycle, and it offers greater potential for long-term carbon storage. Field observations suggest that urban soils can sequester relatively large amounts of carbon, particularly in residential areas where management increases inputs to the soil and reduces disturbance. Observations from across the U.S. suggest that cities in warmer and drier climates (such as southern California and, more specifically, San Diego) may have slightly higher soil organic matter levels when compared to equivalent areas before development.

2.3.2 Guidelines for the Determination of Significance

Guidelines of Significance

A significant air quality impact would occur if the Proposed Project would:

1. Obstruct or conflict with the implementation of the San Diego RAQS or applicable portions of the SIP.

2. Result in emissions that would violate any air quality standard or contribute substantially to an existing or projected air quality violation.

3. Result in a cumulatively considerable net increase of PM_{10} or exceed quantitative thresholds for O_3 precursors, PM_{10}, $PM_{2.5}$, nitrogen oxides (NO_x), and volatile organic compounds (VOCs).

4. Expose sensitive receptors (including, but not limited to, schools, hospitals, resident care facilities, or day-care centers) to substantial pollutant concentrations.

5. Create objectionable odors or place sensitive receptors next to existing objectionable odor, which would affect a substantial number of people or the public.

A significant climate change impact would occur if the Proposed Project would:

6. Generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment.

7. Conflict with any applicable plan, policy, or regulation of an agency adopted for the purpose of reducing the emissions of GHGs, including conflicting with ~~Interfere with California's ability to achieve GHG reduction~~ goals and strategies ~~as identified in~~ of AB 32 to reduce GHGs to 1990 levels by 2020.

Guideline Sources

Guidelines 1, 2, 3, and 5 are taken from the County of San Diego Guidelines for Determining Significance – Air Quality (March 19, 2007).

Guideline No. 4 addresses whether the project would have a significant impact on sensitive receptors. Air quality regulators typically define sensitive receptors as schools (preschool through 12th grade), hospitals, resident care facilities, day care centers, or other facilities that may house individuals with health conditions that would be adversely impacted by changes in air quality. In addition to impacts from criteria pollutants, project impacts may include emissions of pollutants identified by the state and federal governments as toxic air contaminants (TACs) or hazardous air pollutants (HAPs). County DPLU identifies an excess cancer risk level of 1 in 1 million or less for projects that do not implement Toxics Best Available Control Technology (T-BACT), and an excess cancer risk level of 10 in 1 million or less for projects that do implement T-BACT. The significance guideline for non-cancer health effects is a health hazard index of one or less. These significance guidelines are consistent with the San Diego APCD's Rule 1210 requirements for stationary sources. Any project that has the potential to directly impact a sensitive receptor located within a one-mile radius and results in a health risk greater than the risk significance guidelines discussed above, would be deemed to have a potentially significant impact.

Guideline No. 6 is based on Appendix G of the State CEQA Guidelines and informed by AB 32. That is, to evaluate the Proposed Project's emissions under this significance criterion, the anticipated emissions are compared with ARB's emission inventory projections in order to determine if the Project is likely to be consistent with rules propagated for California to meet its 2020 emissions reduction mandate. ~~a cumulative threshold based on California AB 32, which requires the ARB to adopt regulations by January 1, 2008, requiring reporting and verification of GHG emissions. The California Air Pollution Control Officers Association (CAPCOA) has identified a 900 metric ton screening threshold for residential projects (roughly 50 single family homes) as one approach to capture 90 percent or more of likely future discretionary projects. Until more direction is provided by the state, the County is suggesting that projects utilize the aforementioned screening threshold identified by CAPCOA. Additionally, the California Office of Planning and Research (OPR) has acknowledged that the global nature of climate change makes it difficult for lead agencies to rely on local or regional definitions for determining "significance." Accordingly, OPR has asked ARB technical staff to recommend a method for setting thresholds that will encourage consistency and uniformity in the CEQA analysis of GHG emissions. In the interim, however, OPR recommends that lead agencies develop their own approach for analyzing climate change that includes the following three steps: (1) identify and quantify the GHG emissions; (2) assess the significance of impact on climate change; and (3) if the impact is found to be significant, identify alternatives and/or mitigation measures that will reduce the impact below significance. The GHG analysis conducted for the Proposed Project is consistent with the approach outlined by OPR.~~

Guideline No. 7 is based on Appendix G of the State CEQA Guidelines.

2.3.3 Analysis of Project Effects and Determination as to Significance

The analysis of emissions of pollutants of concern from the Proposed Project includes long-term operational emissions (e.g., traffic associated with the Project) and short-term construction emissions.

Obstruction of or Conflict with Implementation of the RAQS or Applicable Portions of the SIP (Guideline No. 1)

The Project site is primarily vacant land that is designated as *Specific Planning Area* within the Community Plan. The Project proposes more intense development than accounted for in the current General Plan and therefore in the SIP. The Project site is located in the North County East Major Statistical Area, in the Fallbrook Subregional Area. The total cumulative housing projected for the Fallbrook Subregional Area for 2030, according to SANDAG projections, is an additional 9,630 dwelling units. The Project's projected growth of ~~1,076~~751 dwelling units, when added to the cumulative housing units projected for the Fallbrook Subregional Area (based on the Campus Park Traffic Impact Study [TIS; LOS Engineering 2009, as amended]), totals ~~3,887~~3,652 dwelling units. The projected ~~3,887 unit~~ total attributable to the Proposed Project and cumulative projects within the Fallbrook Subregional Area is below SANDAG's 2030 projected growth for the North County East Major Statistical Area of 54,251 dwelling units and less than SANDAG's 2030 projected growth of 9,630 dwelling units for the Fallbrook Subregional Area. While the Project does propose more intense development on the Project site than previously accounted for, when considered in a regional context with other cumulative projects, it would not result in the construction of dwelling units in excess of that anticipated for the North County East Major Statistical Area or for the Fallbrook Subregional Area. For this reason, the Project would be consistent with the RAQS and SIP, and the growth projected for the Proposed Project would result in a **less than significant impact**.

Violation of Any Air Quality Standard or Contribution to an Air Quality Violation (Guideline No. 2)

Impacts associated with the violation of air quality standards include both operational (long-term) and construction (short-term) impacts. Operational impacts include emissions associated with the Project at full buildout, including traffic; construction impacts include emissions associated with construction of the Proposed Project.

Long-term (Operational) Emissions Air Quality Impacts

The main operational impacts associated with the Project would include impacts associated with traffic as well as area sources such as energy use, landscaping, and the use of fireplaces in residences.

Project-generated traffic was addressed in the Campus Park ~~Traffic Impact Study~~TIS and assumed 1,076 residential units as opposed to the 751 units assumed under the refined Project (LOS Engineering, Inc. 2009, as amended; Appendix C to this EIR). Based on that analysis, at full buildout the Project would generate 19,941 ADT (as opposed to the 17,341 trips currently anticipated), resulting in a conservative analysis. These trips would be associated with the residential development, commercial facilities, recreational facilities, and office professional uses. To estimate emissions associated with Project-generated traffic, the EMFAC2007 model was used. It was assumed that Project-related traffic would be comprised of light duty autos and light duty trucks (i.e., small trucks, sport utility vehicles, and vans). Based on recommendations in the Caltrans Intelligent Transportation Systems Transportation Project-Level Carbon Monoxide Protocol (Protocol; Caltrans 1998, Appendix B, Page B-3), it was assumed that the vehicle mix, when distributed between light duty autos and light duty trucks, would be 78 percent light duty autos and 22 percent light duty trucks.

For estimating emission factors associated with light duty autos and light duty trucks, it was assumed that these vehicles would be a mix of non-catalytic, catalytic, and diesel vehicles, as indicated in the EMFAC2007 outputs. For additionally conservative modeling purposes, factors representing the vehicle mix for 2015 (assumed to be the first year of full occupancy) were used to estimate emissions. (Based on the results of the EMFAC2007 model for subsequent years, emissions would decrease on an annual basis from 2015 onward due to phase-out of higher polluting vehicles and implementation of more stringent emission standards that are taken into account in the EMFAC2007 model.) Vehicle speed was assumed to be 33 mph, based on an average free-flow speed of 45 mph on main roadways and using the recommended average cruise speed in Appendix B of the Caltrans Protocol, Table B.10, Average Cruise Speed, as a Function of Arterial Classification and Free-Flow Speed, for a minor, suburban arterial. Based on the Campus Park ~~Traffic Impact Study~~TIS (LOS Engineering, Inc. 2009, as amended), the internal capture rate is assumed to be 30 percent. The internal capture rate accounts for trips that would remain within the traffic analysis zones. The external trip ADT is therefore estimated to be 13,959, while internal trips would total 5,982 ADT. The average vehicle miles traveled was assumed to be approximately 17.1 miles, based on the average distance that would be traveled for the residential, commercial, and park uses (which account for 13,959 ADT) from the Project to the nearest commercial/occupational nodes, including San Marcos (20.1 miles), Vista (12.6 miles), Escondido (17.6 miles), and Oceanside (18.1 miles). Trip lengths would be greater traveling to San Diego, but shorter traveling to Temecula or the workplaces, commercial development (shopping), and recreational facilities available to Campus Park residents; therefore, use of a travel distance of 17.10 miles provides a conservative estimate of vehicle miles traveled. The internal trips that would remain within the traffic analysis zone (5,982 ADT) were assumed to travel approximately 0.5 mile per trip. These trips were represented as a mix of all vehicles, including heavy trucks, based on the default vehicle mix in the EMFAC2007 model.

Operational impacts associated with energy use were estimated based on the South Coast Air Quality Management District's (SCAQMD's) emission factors for residential use. All units were assumed to have natural gas fireplaces. Area source emissions, including emissions from energy use, fireplaces, landscaping, and maintenance use of architectural coatings were calculated using the URBEMIS model. Operational emission calculations and URBEMIS model outputs are provided in Appendix D.

The results of the operational emission calculations, in pounds per day and tons per year, are summarized in Table 2.3-5, Total Operational Emissions Year 2015, along with emissions associated with area sources and a comparison with the County of San Diego significance criteria. The EMFAC2007 model outputs are presented in Appendix D. Table 2.3-5 presents a conservative estimate of emissions, because it assumes that all Project-related trips would occur by Year 2015.

Based on the estimates of emissions associated with Project operations, VOCs emissions would exceed 2015 significance criteria, resulting in an ultimately temporary, but **significant impact**. (**Impact AQ-1)**

Future emissions (assumed as Year 2040) also were calculated, and the results of the calculations are shown in Table 2.3-6, Total Operational Emissions Year 2040. By 2040, VOCs emissions would be reduced to less than significant levels due to the phase-out of older vehicles and increasingly stringent vehicle emission standards. Because the Proposed Project would not exceed the growth projections in the SANDAG growth forecasts for the Fallbrook Subregional Area, the Project would not result in an exceedance of the O_3 standard and impacts associated with Project operations would be **less than significant**.

Similarly, based on the estimates of the emissions associated with Project operations, emissions would exceed the significance criteria established for Year 2015 for CO, potentially resulting in a significant

impact. Also as shown in Table 2.3-6 for 2040, CO would be the only pollutant exceeding thresholds, potentially resulting in a significant impact.

Because CO is associated with traffic impacts, an evaluation of the potential for CO "hot spots" was conducted in accordance with Caltrans guidance. As discussed below, because CO "hot spots" modeling indicated that, even without mitigation, traffic congestion at those intersections experiencing a direct project impact would not result in exceedances of the CO standard, the Proposed Project would result in a **less than significant impact** for CO.

CO "Hot Spots"

An evaluation of the potential for CO "hot spots" was conducted in accordance with Caltrans guidance to determine whether CO emissions would cause a ground-level exceedance of the NAAQS or CAAQS for CO. According to the Protocol, CO hot spots are typically evaluated when (a) the LOS of an intersection or roadway decreases to E or worse; (b) signalization and/or channelization is added to an intersection (because intersection traffic is subject to congestion and idling); and (c) sensitive receptors such as residences, commercial developments, schools, hospitals, etc., are located in the vicinity of the affected intersection or roadway segment.

The ~~Traffic Impact Study~~TIS evaluated whether or not there would be a decrease in the level of service at the roadways and/or intersections affected by the Project. The ~~Traffic Impact Study~~TIS evaluated intersections, roadway segments, and freeway segments in the Project vicinity to evaluate the LOS for Existing, Existing Plus Project, Existing Plus Other Projects Plus Project, Year 2030 Without Project, and Year 2030 With Project. Refer to Subchapter 2.2, Transportation/Traffic of this EIR, for further details on the transportation analysis performed.

Several area intersections and roadway segments currently operate at LOS E or F and would operate in future years at LOS E or F with or without Project traffic. Based on the traffic analysis, the Project would result in a direct significant impact at the following intersections:

- SR 76 (Pala Road) and I-15 NB Ramps
- Old Highway 395 and Reche Road

According to the ~~Traffic Impact Study~~TIS, however, traffic impacts resulting from the Proposed Project ultimately would be mitigable such that LOS would not degrade to E or F due to Project-related traffic at any of the intersections evaluated. Because Project-direct traffic impacts would be mitigated to below a level of significance, implementation of the Proposed Project would not exceed the CO standard, and the Project would not result in a significant impact for CO. Some of the traffic mitigation measures would be dependent on fair share contributions. Regardless, due to reductions in CO emissions over time, CO hot spots would not occur at affected intersections.

As recommended in the Protocol, CALINE4 modeling was conducted for the Project plus cumulative traffic scenario intersections to calculate maximum predicted 1- and 8-hour CO concentrations. Inputs to the CALINE4 model were obtained from the ~~Traffic Impact Study~~TIS (LOS Engineering, Inc. 2009, as amended). For conservative purposes, average approach and departure speeds were assumed to be one mph, which results in higher CO emission rates and a conservative estimate of potential impacts. CALINE4 model outputs are provided in Attachment A of Appendix D of this EIR, and a summary of predicted CO concentrations is shown in Table 9 of Appendix D of this EIR. The predicted CO concentrations would be substantially below the 1- and 8-hour NAAQS and CAAQS for CO shown in

Table 2.3-1; therefore, no exceedances of the CO standard are predicted. Impacts related to CO during Project operations would be **less than significant**.

Short-term Construction Emissions Air Quality Impacts

Emissions from the construction phase of the Proposed Project (e.g., fugitive dust and heavy equipment exhaust) were estimated through the methodologies recommended in the SCAQMD's CEQA Air Quality Handbook (1993). Fleet-averaged emission factors for San Diego County for the year 2010 were provided by the ARB OFFROAD model (ARB 2007a) and were used to estimate emissions from heavy equipment. Emissions of fugitive dust were estimated based on methodologies recommended in the Urban Emission 2007 (URBEMIS2007) model (Rimpo and Associates 2007) and in the SCAQMD's CEQA Air Quality Handbook for earthmoving activities. The construction scenario assumed that site grading would represent the worst-case emissions for construction of the Project.

Construction emission calculations were based on construction phases and related equipment and crew requirements. Table 2.3-7, Construction Phases and Equipment/Crew Requirements, presents a summary of the construction phases and equipment needs for each construction phase for the Proposed Project. Table 2.3-8, Maximum Daily Estimated Construction Emissions, provides a summary of the emission estimates for each individual construction phase of the Proposed Project. Refer to the appendices of Appendix D for detailed emission calculations.

According to the proposed construction scenario, required personnel would include 20 operators and 6 additional personnel for most of the construction period; a maximum number of 80 workers would be on site at any one time. For modeling purposes, it was assumed that 80 workers would travel to the site and that workers would travel 36 miles round trip to the site (the approximate travel distance to Escondido). Actual travel distances could be shorter, so this is assumed to provide a worst-case estimate of worker travel emissions. It was also assumed that trucks delivering construction materials would travel approximately 36 miles round trip to and from the site, a worst-case estimate of distances traveled to bring construction materials to the site. Actual travel distances could be shorter depending on the source of construction materials to be used at the site. Based on information for similar projects, it was assumed that a maximum of 25 trucks per day would transport materials to the site for each construction phase.

The largest contributor to construction PM_{10} would be grading. Assuming a maximum of 100 acres would be graded in a single day, the daily PM_{10} emissions would be as much as 1,000 pounds per day. Dust control measures would be implemented to reduce emissions of fugitive dust during grading. Such measures, incorporated into the Project design, include the following, with corresponding measures of dust control efficiency also provided in parentheses:

- Multiple applications of water during grading between dozer/scraper passes (at least three times daily) (34 to 68 percent)
- Paving, chip sealing, and chemical stabilization of internal roadways after completion of grading (92.5 percent)
- Use of sweepers or water trucks to remove 'track-out' at any point of public street access (25 to 60 percent)
- Termination of grading if winds exceed 25 mph (not quantified)
- Stabilization of dirt storage piles by chemical binders, tarps, fencing, or other method of erosion control (30 to 65 percent)

- Hydroseeding of graded residential slopes if lots are not developed immediately after grading (30 to 65 percent)

Based on the URBEMIS model, Version 9.2.4, the control efficiency for watering three times daily is 61 percent. Assuming only the application of water as a control for particulates, emissions of fugitive dust during grading would be approximately 390 pounds per day for major grading. In addition to the PM_{10} BMPs noted above, construction equipment is also expected to use low sulfur fuels.

Minor amounts of blasting may be required at the site during initial site preparation. Fugitive dust emissions associated with blasting were estimated based on the USEPA's emission factor for blasting for coal mining to remove overburden, which is a similar process.

It was estimated that a maximum area of 40,000 square feet per day of blasting could be required to remove overburden prior to Project construction, for total PM_{10} emissions of 58.24 pounds per day. Blasting was assumed to occur during the grading phase.

The Project would utilize ammonium nitrate/fuel oil (ANFO) explosives to conduct blasting on site. Emissions from use of ANFO are estimated at 67 pounds of CO per ton of explosive, and 17 pounds of NO_x per ton of explosive. Based on typical construction projects, it was estimated that a maximum of 10,000 pounds per day could be used at the site; thus, the maximum daily emissions due to the use of ANFO would be 335 pounds per day of CO and 85 pounds per day of NO_x.

Emissions from asphalt offgassing[1] were estimated using the URBEMIS model, which assumed an emission rate of 2.62 pounds per acre of area to be paved (estimated at one acre per day during the paving construction phase). Estimates of emissions from the application of architectural coatings assumed that water-based coatings would be used for both exterior and interior surfaces, and that coatings would be applied using electrostatic spray guns and/or brushes. It was assumed that the architectural coatings application would take place during the residence construction phase. The methodology presented in Table A11-13-D of the SCAQMD CEQA Air Quality Handbook was used to estimate emissions from the use of water-based coatings.

Emissions associated with worker travel to and from the construction site and construction truck deliveries were calculated using the on-road motor vehicle emission factor model, EMFAC2007 (ARB 2007) and travel distances noted above. The number of workers for each construction phase was used to estimate emissions for each phase associated with worker commutes during the construction period. Where numbers of workers were not provided, estimates were developed based on the methodology recommended in the SCAQMD CEQA Air Quality Handbook, Table A9-17.

Considering the above controls, maximum daily estimated construction emissions for CO, VOCs, and SO_x, fall within screening thresholds, and no significant impact would result. Emissions of NO_x, $PM_{2.5}$ and PM_{10} during construction, however, would exceed the established significance guidelines. Thus, construction NO_x, $PM_{2.5}$, and PM_{10} criteria pollutants emissions would constitute a temporary but **significant impact** on the ambient air quality. (**Impact AQ-2**)

Cumulatively Considerable Net Increase of PM_{10} or Exceedence of Quantitative Thresholds for O_3, NO_x, and VOCs (Guideline No. 3)

Refer to Section 2.3.4, Cumulative Impact Analysis, for a discussion of potential cumulative impacts associated with the Proposed Project.

[1] Offgassing is defined as the emission of especially noxious gases.

Exposure of Sensitive Receptors to Substantial Pollutant Concentrations (Guideline No. 4)

Air quality regulators typically define "sensitive receptors" as schools, hospitals, resident care facilities, day-care centers, or other facilities that may house individuals with health conditions that would be adversely impacted by changes in air quality. For the purpose of CEQA analysis, the County definition of "sensitive receptors" also includes residences (County of San Diego Guidelines for Determining Significance – Air Quality [March 19, 2007]). The two primary emissions of concern for impacts to sensitive receptors are CO and diesel particulate matter.

As discussed under Guideline No. 2, operational impacts would not result in CO "hot spots" because Project-direct impacts to intersections would be mitigated to LOS D or better and CALINE4 modeling shows that no exceedances of the CO standard are predicted. This analysis therefore focuses on diesel particulate matter.

Diesel exhaust particulate matter is considered by California to be a carcinogenic compound. The risks associated with exposure to substances with carcinogenic effects are typically evaluated based on a lifetime of chronic exposure, which is defined in the Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments (Office of Environmental Health Hazard Assessment [OEHHA] 2003a), as 24 hours per day, 7 days per week, 365 days per year, for 70 years.

Long-term Operational Impacts

Because vehicular traffic may result in minor amounts of TACs, a quantitative evaluation of the potential for risks associated with exposure to diesel particulate emissions generated by vehicles from the proposed residences was conducted, based on EMFAC2007 outputs for 2015. The total percent of trips for diesel light-duty autos would be approximately 0.2 percent, and the total percent of trips for diesel light-duty trucks would be approximately 0.5 percent, considering only light-duty autos and light-duty trucks. There would be approximately 22 trips per day out of 11,028 total light-duty external auto trips attributable to diesel light-duty auto and approximately 16 trips per day out of 3,311 total light-duty truck trips attributable to external trips for diesel light duty trucks for the Project. An additional 9 light-duty internal auto trips and 7 light-duty internal truck trips would be attributable to diesel vehicles. Allocating the diesel particulate daily trips to the two sets of travelers, daily emissions of diesel particulate for the mixed-use development were calculated to be 0.00197 pound per day.

Potential impacts to sensitive receptors were evaluated based on the SCAQMD's "Health Risk Assessment Guidance for Analyzing Cancer Risks from Mobile Source Diesel Emissions" (SCAQMD 2002). According to the Guidance, the ISCST3 model should be used to estimate impacts associated with diesel particulate exhaust emissions. The Guidance recommends the use of multiple adjacent volume sources to represent emission sources along the roadway; therefore, to model the potential impacts associated with emissions of diesel particulate from light duty autos and light duty trucks traveling through the residential and commercial development, a series of 72 volume sources was placed along 1.6 miles on Horse Ranch Creek Road, and a series of 19 volume sources was placed along 0.43 mile on SR 76. Each of the volume sources was assumed to be 118 by 118 feet and was assumed to be at ground level. Emissions were divided among the volume sources equally. Annual average concentrations were calculated at each sensitive receptor identified in the Project vicinity.

The Hot Spots Analysis and Reporting Program was used to estimate the high-end excess cancer risks associated with exposure to diesel particulate from on-site traffic. The high-end excess cancer risk was calculated based on guidance from OEHHA (2003b), using the 80th percentile exposure assumptions for inhalation risks (ARB 2003). The risks were calculated based on 70 years of exposure.

As estimated, the maximum excess cancer risk associated with exposure to diesel particulate from Project-generated trips was estimated to be 0.0202 in one million, which is below the County significance threshold of one in one million. In addition, impacts farther from the roadway would be lower, as concentrations decrease with increasing distance from roads.

Therefore, it can be concluded that Project impacts relating to exposure of sensitive receptors to substantial pollutant concentrations would be **less than significant**.

Short-term Construction Impacts

To assess whether there is a potential for a significant impact associated with exposure to diesel exhaust particulate matter during construction, a health risk evaluation was conducted on the particulate emissions. The amount of diesel particulate would vary with the Project schedule and construction phasing. For conservative modeling purposes, it was assumed that all construction would be completed within a two-year period. Emissions from heavy equipment for each Project phase were estimated, as shown on Table 2.3-9, Diesel Exhaust Particulate Emissions.

Because construction would occur throughout much of the site, heavy equipment locations were represented as five separate point sources within the Project site. Emissions were allocated to these sources based on the estimated maximum emission rates during construction.[2] The nearest existing receptors were located based on the site map and the USGS 7.5-minute quadrangle maps for the Project area. Discrete receptors were placed at locations along I-15 and SR 76.

The USEPA's approved air dispersion model, ISCST3 (USEPA 1999b), was used to estimate the downwind impacts at the closest receptors to the construction site. The model was run using preprocessed meteorological data from the Escondido surface meteorological monitoring station and the Marine Corps Air Station Miramar upper air meteorological monitoring station for 2000. Escondido is the closest meteorological monitoring station for which pre-processed surface meteorological data are available from the APCD. Risk was estimated using OEHHA's unit risk factor for diesel particulate (2005), which is an upper-bound cancer risk estimate based on 70 years of exposure. Because the unit risk factor is based on 70 years (25,550 days) of exposure for 24 hours per day, 365 days per year, the results of the analysis were scaled to account for exposure for the assumed duration of each construction phase, as shown in the calculation below.

Risk = Excess cancer risk for 70 years x days of construction ÷ 25,550 days

Based on the above risk equation, the maximum excess cancer risk predicted would be 0.667 in one million. This value is below the County's recommended significance threshold of one in one million, without application of T-BACT, resulting in a **less than significant impact**.

As stated above, the above risk assessment assumes that an individual would be present for 24 hours per day, 7 days per week, during the entire construction period without ever leaving the receptor location. Actual risks to individuals would likely be lower.

[2] The emission sources were represented as a point source 10 feet high, with a stack diameter of six inches, a stack exit temperature of 300°F, and a stack exit velocity of one meter per second, which is considered to be a minimum stack velocity. It was assumed that the equipment would operate for eight hours per day, six days per week.

Creation of Objectionable Odors (Guideline No. 5)

Long-term Operational Impacts

The Project is a mixed-use (i.e., residential, commercial, office professional) development. The County Zoning Ordinance, Section 6318, applies to odor emission (perceptible to the average person at [or beyond] the lot line) from commercial and industrial land uses following development. According to the SCAQMD CEQA Air Quality Handbook, land uses associated with odor complaints include agricultural uses, WTPs, food-processing plants, chemical plants, composting activities, refineries, landfills, dairies, and fiberglass molding operations, none of which are proposed for the Project. While neighborhood commercial uses could have operations that result in odor emissions, such as dry cleaners, restaurants, and manicure facilities, these facilities are not considered land uses that are sources of nuisance odors (SCAQMD 1993); emissions of substances with odors would be minor. Thus, odor impacts, if generated from the neighborhood commercial use, would not be significant. Due to the type of land uses proposed for the development, there are no significant odor impacts associated with normal operations at the Campus Park development; impacts would be **less than significant**.

The greatest potential odor source for the Proposed Project would be odors from the sewer pump station. Odors generated from wastewater usually result from gases produced by naturally decaying organic matter in wastewater. Occasionally when wastewater is subject to an anaerobic decomposition (lack of oxygen), the water turns septic and can cause the release of hydrogen sulfide and other odor-causing, reduced-sulfur-containing compounds. This can occur when low wastewater flows are present in the sewer system.

The proposed system would be designed to pump out wastewater several times per hour. The system would be equipped with two redundant pumps allowing for backup operation of the pumps in the event that one pump is out of service. The wastewater system also would include chemical feed addition at the pump stations to minimize odors. A back-up chemical injection system would be included for further odor control redundancy. Therefore, a **less than significant impact** would result from wastewater pump station odors.

The adjacent proposed Meadowood project proposes a WTP immediately east of future Horse Ranch Creek Road near SR 76.~~the Proposed Project's PA MF-4.~~ As discussed in the 2009 Meadowood Draft EIR, structures associated with the WTP would be enclosed and air within the structures would be deodorized prior to release. Wastewater treatment processes that would not be enclosed within buildings, such as aeration and disinfection basins, would be covered. Pursuant to Section 6300 of the County Zoning Ordinance, no unpleasant odors perceptible to the average person would be emitted from the WTP past its lot boundary. As a result, the Meadowood proposed WTP odor impacts to Campus Park residents, visitors, and/or users of the trail staging area would be **less than significant**.

~~Under Wastewater Management Option 2, the Proposed Project site would contain a wet weather storage pond just north of PA MF-4 and Pankey Place. When needed (potentially during the rainy season), this storage pond would be used to hold effluent until such time as it would be utilized for irrigation. Effluent from the WTP would undergo a tertiary treatment process and meet Title 22, Division 4 of the California Administrative Code for unrestricted irrigation reuse. Effluent is used throughout the region for irrigation and is not associated with odor impacts. Therefore, odor impacts associated with the use of effluent on site would be **less than significant**.~~

Short-term Construction Impacts

Project construction could result in minor amounts of odor compounds associated with diesel heavy equipment exhaust. During construction, diesel equipment operating at the site may generate some nuisance odors; however, due to the distance of sensitive receptors to the Project site and the temporary nature of construction, odors associated with Project construction would not be significant. Thus, because the construction equipment would be operating at various locations throughout the construction site and because any operation near existing receptors would be temporary, impacts associated with odors during construction would be **less than significant**.

The Project could produce objectionable odors, which would result from volatile organic compounds, ammonia, carbon dioxide (CO_2), hydrogen sulfide, methane, alcohols, aldehydes, amines, carbonyls, esters, disulfides dust, and endotoxins from both the construction and operational phases. However, these substances, if present at all, would only be in trace amounts (less that one microgram per cubic meter). Subsequently, no significant air quality odor impacts are expected to affect surrounding receptors. For the aforementioned reasons, odor impacts associated with the Proposed Project would be **less than significant**.

Global Climate Change (Guideline No. 6)

This section presents an assessment of potential global climate change impacts associated with the Proposed Project. The evaluation addresses the potential for GHG emissions during construction and after full buildout of the Project.

GHG emissions have been calculated for ~~business as usual~~BAU conditions and for conditions with implementation of GHG emission reduction measures proposed by the Project Applicant. The Project has been evaluated as to whether it would meet the goals of California AB 32, the Global Warming Solutions Act.

Emissions Inventory

GHG emissions associated with the Proposed Project were estimated separately for four categories of emissions: (1) construction, (2) energy use, including electricity and natural gas usage, (3) water consumption, and (4) transportation. The analysis includes a baseline estimate assuming Title 24-compliant buildings, which is considered ~~business as usual~~BAU for the Project. Emissions were estimated based on emission factors from the California Climate Action Registry General Reporting Protocol (California Climate Action Registry [CCAR] 2008). This inventory presents emissions based on ~~"business as usual"~~BAU assumptions. The results of the inventory for operational emissions for ~~business as usual~~BAU are presented in Table 2.3-10, Summary of Estimated Operational GHG Emissions Associated with the Proposed Project. These include GHG emissions associated with buildings (natural gas, purchased electricity) and water consumption (energy embodied in potable water).

The California Renewable Portfolio Standard is a state policy that requires electricity providers to obtain a minimum percentage of their power from renewable energy resources by a certain date. The inventory assumed full implementation of the California Renewable Portfolio Standard (20 percent renewable electric power by 2017 and 33 percent by 2020). A utility company reduces GHG emissions by replacing fossil fuel-generated energy with GHG-free sources, such as wind and photovoltaics. This is a baseline estimate assuming Title 24-compliant buildings and mandated improvements in the statewide electricity supply (e.g., implementation of an expanded Renewable Portfolio Standard). Since California already generates about 10 percent of its electricity consumption by renewables, the new law will nearly double the state's existing base of wind, geothermal, biomass, and solar energy resources. For conservative

modeling purposes, it was assumed that an additional 10 percent reduction in GHG would be achieved through implementation of the California Renewable Portfolio Standard.

Emissions were estimated based on emission factors from the California Climate Action Registry General Reporting Protocol (CCAR 2008). The complete emissions inventory is summarized below and included in the Global Climate Change Evaluation (Appendix D of the EIR).

Construction Emissions

Construction GHG emissions include emissions from heavy construction equipment, truck traffic, and work trips. Based on emission factors from the OFFROAD model for heavy construction equipment, and from the EMFAC2007 model for on-road vehicles, total GHGs associated with construction are estimated at 16,052 tons (14,562 metric tons) of CO_2 total for the duration of construction. Construction emissions would be temporary.

Energy Use Emissions

The Project proposes to develop ~~1,076~~751 residential dwelling units. According to the CEC (2006), the average annual residential ~~energy~~ electricity use rate is 5,914 kilowatt hours (kWh) per residential unit.

Natural gas use was estimated based on average gas consumption per square foot as reported by SCAQMD (1993). Natural gas consumption was multiplied by the CCAR emission factors for CO_2 equivalents per therm. CO_2 emissions for household electricity and natural gas use were combined and converted to metric tons for reporting.

Electricity usage rates from the retail and office developments were projected based on estimated annual rates of 13.55 kWh per square foot for retail space and 12.95 kWh per square foot of office space (SCAQMD 1993). Emissions of GHG were then calculated using emission factors from the California Climate Action Registry General Reporting Protocol (CCAR 2008), which provide an estimate of pounds of emissions for a given amount of annual electricity usage. Natural gas usage was estimated based on estimated annual natural gas consumption of 2.0 cubic feet of gas per square foot per month for office space and 2.9 cubic feet of gas per square foot per month of retail space (SCAQMD 1993).

Water Consumption

Water use and energy use are often closely linked. The provision of potable water to commercial users and residents consumes large amounts of energy associated with five stages: source and conveyance, treatment, distribution, end use, and wastewater treatment. This inventory estimated that delivered water for the Project would have an embodied energy of 2,779 kWh/acre foot or 0.0085 kWh/gallon (Wilkinson and Wolfe 2005). Water demand estimates were based on estimates for the Proposed Project. GHG emissions were calculated based on an average consumption of 578,300 gallons per day. The embodied energy demand associated with this water use was converted to GHG emissions with the same electrical grid coefficients as the other purchased electricity.

Transportation

On-road vehicle emissions account for 46 percent of existing GHG emissions in San Diego County. Several regulatory initiatives have been passed to reduce emissions from on-road vehicles. These initiatives include improvements in the federal CAFE standard included in Title 49 of the Energy Independence and Security Act of 2007, AB 1493 (Pavley Bill), and the LCFS. The federal CAFE standard determines the fuel efficiency of certain vehicle classes in the U.S., and has remained largely

unchanged since 1990; however, federal initiatives have increased CAFE standards for new light-duty vehicles to 35 miles per gallon by 2020. The new CAFE standards will take effect no sooner than 2011, which was the start date used in the San Diego County Greenhouse Gas Inventory. It is anticipated that CAFE standard improvements would reduce GHG emissions by 5 percent by 2016, and by 12 percent by 2020. For the purpose of this analysis, CAFE standard reductions were not taken into account.

The Global Climate Change Evaluation took into account implementation of both the Pavley fuel efficiency standards and the LCFS to calculate reductions from BAU vehicle emissions. ~~AB 1493 is a standard for new light-duty passenger vehicles. AB 1493 has not been implemented due to legal challenges, but requires automobile manufacturers to reduce vehicle emissions of GHGs in light-duty vehicles, which are defined as light-duty passenger cars, light-duty trucks, and medium-duty trucks/vehicles. If implemented, ARB estimates that the regulation will~~ The Pavley fuel efficiency standards are anticipated to reduce climate change emissions from light-duty passenger vehicle fleet by ~~an estimated 18~~ 20 percent in 2020 ~~and by 27 percent in 2030 (AEP 2007). Once implemented, emissions from new light-duty vehicles are expected to be reduced in San Diego County by 21 percent by 2020. For the purpose of this analysis, it was assumed that an 18 percent reduction in GHG emissions would occur~~. The LCFS was included in E~~xecutive Order~~ S-01-07, and addresses the type of fuel used in vehicles. The LCFS seeks to reduce the carbon content of the fuel therefore reducing GHG emissions even if the total fuel consumption is not reduced. The LCFS has been approved by ARB as a discrete early action item under AB 32 and implementing regulations are currently under development. The San Diego County Greenhouse Gas Inventory assumed a 10 percent reduction in GHG emissions in San Diego County by 2020 due to the LCFS. ~~For the purpose of this analysis, a 10 percent reduction in GHG was assumed due to the LCFS.~~

In the Global Climate Change Evaluation, for purposes of conservative modeling, these measures were assumed to result in a 28 percent reduction in GHG emissions; however, as discussed, the state of California anticipates these programs will reduce vehicular GHG emissions by 30 percent.

In addition to the Pavley fuel efficiency standards and the LCFS, included in the ARB's Scoping Plan (ARB 2008) are strategies to reduce emissions by increasing efficiency, optimizing aerodynamics, and converting combustion-only vehicles to hybrids. According to the San Diego County Greenhouse Gas Inventory, although these on-road emissions reduction measures are intended for implementation at the state level, several on-road transportation strategies were scaled down to San Diego County using data related to CO_2e emissions, vehicle population, and vehicle type. When scaled down, the ARB's transportation efficiency, aerodynamics, and hybrid conversion strategies translate to an emissions reduction of 0.6 MMT CO_2e for San Diego County by 2020, which amounts to a reduction in vehicle emissions of approximately three percent. The Scoping Plan measures apply to both light-duty vehicles (Measure T-4) and medium and heavy-duty vehicles (Measures T-7 and T-8). Measure T-4 includes such vehicle efficiency measures as implementation of a properly inflated tire program, use of low-friction engine oils, requiring solar-reflective automotive paints and window glazing, and implementing a tire tread program that develops and adopts tire rolling resistance standards. Measure T-7 would require existing trucks and trailers to be retrofitted with the best available technology and/or ARB approved technology. The retrofits would improve fuel efficiency of trucks by including devices that reduce aerodynamic drag and rolling resistance. Measure T-8 would require medium and heavy-duty vehicles to be converted to hybrid vehicles; these vehicles include parcel delivery trucks and vans, utility trucks, garbage trucks, buses, and other vocational work trucks.

According to the Scoping Plan, Measure T-4 would result in a reduction in GHG emissions from light-duty vehicles of 4.5 MMT CO_2e by 2020 (a reduction of 2.0 percent from BAU emissions); Measure T-7 would result in a reduction in GHG emissions from heavy-duty vehicles of 0.93 MMT CO_2e by 2020 (a reduction of 0.4 percent from BAU emissions); and Measure T-8 would result in a reduction in GHG

emissions from medium- and heavy-duty vehicles of 0.5 MMT CO_2e by 2020 (a reduction of 0.2 percent from BAU emissions). Because the project would not generate substantial heavy-duty truck traffic, it is appropriate to include the reductions in GHG emissions associated with Measures T-4 and T-8, but not with Measure T-7. The associated GHG emission reductions would be 2.2 percent from BAU.

A summary of the specific transportation emission reductions that would be achieved is provided in Table 2.3-11.

Anticipated Emissions Reductions with Project Design Features

Project design features proposed by the Project Applicant are presented in Table 2.3-~~11~~12, Proposed Project Design Features to Reduce GHG Emissions. As shown in Table 2.3-~~11~~12, a wide range of Project design features are incorporated in the Project, ranging from water use efficiency to building energy efficiency and landscaping, to smart growth land use patterns, solid waste diversion, and education. These include measures that are listed in the CAPCOA document (2008), as well as other measures that may be applicable to the Proposed Project. Table 2.3-~~11~~ 12 presents the design feature, citation (if applicable), and estimated range of GHG reductions that would be achievable from the design feature.

Not all of the GHG reductions that would be realized through implementation of the Project design features identified in Table 2.3-~~11~~ 12 are quantifiable. Because many of the PDFs are not quantifiable as to their percent reduction of GHG emissions from specific energy efficiency measures, no credit was taken for other GHG reduction measures identified as PDFs, nor was credit taken for the RPS program.~~To calculate emissions of GHGs that take into account specific quantifiable reductions, it was assumed that achieving energy performance equivalent to 20 percent better than current Title 24 standards would reduce emissions of GHG from electricity and natural gas usage by 20 percent. It was further assumed that state and federal vehicle programs would reduce GHG emissions from vehicles by 28 percent, and a further 8 percent would be realized through by virtue of the Project's design as a mixed-use development goals and bicycle/pedestrian access.~~ According to the San Diego County Greenhouse Gas Inventory prepared by the University of San Diego, implementation of the 20 percent RPS goal by 2010 would reduce GHG emissions by a further 14 percent from 2006 levels; the inventory estimated that SDG&E was providing 6 percent of its electricity from renewable resource in 2006. Implementation of the 33 percent target by 2020 would increase the renewable percentage and thereby reduce GHG emissions by an additional 13 percent. Thus, implementation of EO S-21-09 would serve to reduce GHG emissions by a total of 27 percent below 2006 levels. Implementation of the RPS would affect indirect GHG emissions associated with electricity use for the Campus Park Project because electricity would be purchased from SDG&E. To account for the implementation of the RPS as specified in SB 1078, a 14 percent reduction in GHG emissions was assumed. While implementation of EO S-21-09 would result in additional GHG reductions of 27 percent below 2006 levels, no additional credit was taken for these reductions because they have not yet been promulgated or adopted by the ARB. No additional measures were included in the calculation of GHG emissions for natural gas usage beyond Campus Park's commitment to exceed Title 24 standards by 15 percent.

The Project would use reclaimed water to the extent possible. While it is impossible at this time to precisely estimate the amount of reclaimed water that would be available; it is appropriate to assume that water conservation measures overall (including the use of reclaimed water), would reduce GHG by at least 12 percent below ~~business as usual~~BAU. This reduction does not take into account other PDFs that were identified by the Project as listed below:

- Installation of water-saving irrigation systems.
- Project developer installation of landscapes that meet the requirements of the California Model Water Efficient Landscape Ordinance in accordance with Section 6717c.1 of the County's Zoning Ordinance on developer-installed residential landscapes in common areas. (The County's Water Conservation and Landscape Design Manual implements Zoning Ordinance Section 6712(d) which requires efficient irrigation uses (including rain sensors), transitional zones, use of native plantings, restriction on turf, use of mulch, the preservation of existing vegetation and natural features, and the use of recycled water when available.) Use of recycled water for irrigation where available.
- Compliance with state and local ordinances requiring water conservation, including California Plumbing Code Section 402, which requires the installation of water conserving fixtures in new construction and Section 67.101 of the County's Code of Regulatory Ordinances, which prohibits water waste.

Outdoor water use accounts for 58 percent of average U.S. residential water use. Based on a study conducted by the Irvine Ranch Water District, use of drought-resistant plants reduced irrigation water usage by 29 percent from BAU conditions (defined as landscaping with predominantly turfgrass). According to a 2001 study by the Irvine Ranch Water District and other water resource agencies in southern California, use of weather-based irrigation controllers that are designed to operate based on water needs reduced residential water usage by 7 percent overall, and residential irrigation water use by 16 percent. According to a study by Consol, the use of Weather Based Irrigation Controllers can reduce the amount of landscape over-watering by 85 percent.

The 2008 California Green Building Standards Code sets new standards for the flow rate of fixtures in new construction. These standards come into effect in 2011 and will call for a 20 percent reduction in indoor water use. Campus Park has committed to installing low-flow appliances (toilets and shower heads) in the Campus Park Project. According to the Consol study, water use reduction in a current new home versus a home that meets the Green Building Standards will reduce water use by 22 percent. No credit was taken for this reduction in water usage in the Project's GHG analysis, however.

Implementation of the RPS also would affect indirect GHG emissions associated with water usage because the embodied energy of water takes into account the utility energy required to obtain, transport, treat, and dispose of potable water. Implementation of the RPS would reduce the GHGs associated with the embodied energy of water by 14 percent.

Building energy efficiency measures include overall building energy performance equivalent to 20 percent below current Title 24 standards. This would be achieved through a variety of measures in the design of the residences. The residents at Campus Park would be offered a choice of energy efficient appliances (including washers/dryers and refrigerators) and appliances installed by builders would be Energy Star (including dishwashers).

The analysis assumed that the "current" Title 24 standards were the 2005 standards in effect when the ARB developed its initial 1990 and 2004 Greenhouse Gas Inventory, which was published in November 2007. The ARB projected out to 2020 using those standards, and assuming that they would remain current. Title 24 is modified every few years, however, and increasingly stringent energy efficiency measures are incorporated. Current (2008) Title 24 standards are approximately 15 percent more efficient than the 2005 Title 24. Electricity and natural gas BAU emissions are therefore calculated using 2005 Title 24 standards, and reductions are credited based on the Project's compliance with 2008 Title 24 standards. The Project will exceed 2005 Title 24 standards by 15 percent by complying with 2008 Title 24 standards.

The use of smart growth land use patterns that reduce the amount of land being developed would reduce GHG emissions. The Project Applicant also would provide educational materials for residents and commercial tenants discussing strategies to reduce GHG emissions consistent with ARB's Early Action Guidance regarding reduction of GHG emissions.

The Project Climate Change analyses identified PDFs that would serve to further reduce VMT, and used the URBEMIS 2007 Model to calculate VMT reductions anticipated from the following PDFs:

- Having at least three of the following on site and/or off site within one-quarter mile: residential development, retail development, park, open space, or office (all would be located on site).
- Including local-serving retail (included).
- Siting the Project within one-half mile of an existing/planned Class I or Class II bike lane and including a comparable network that connects the Project to the existing off-site facility. (Project design includes a designated bicycle route connecting all units, on-site bicycle parking facilities, off-site bicycle facilities, site entrances, and primary building entrances to existing Class I or Class II bike lane(s) within one-half mile. Bicycle route connects to all streets contiguous with project site. Bicycle route has minimum conflicts with automobile parking and circulation facilities. All streets internal to the project wider than 75 feet have Class II bicycle lanes on both sides.)

The analysis indicates that these VMT reduction measures would reduce GHG emissions by an additional 8.25 percent from BAU levels beyond the reductions anticipated for implementation of the Pavley fuel efficiency standard and the LCFS.

Summary of Impacts

The Proposed Project would generate GHG emissions associated with natural gas, purchased electricity, energy embodied in water, and transportation. Project design features are incorporated in the Project to reduce GHG emissions under the operational control of the Project Applicant. As shown in Table 2.3-10, significant direct impacts associated with those emissions are not anticipated due to features incorporated in the Project that would achieve the goal of 33 percent below BAU. Project features~~that~~ would result in an approximately ~~34~~ 33.8 percent reduction in emissions compared to ~~"business as usual~~BAU,~~"~~ thereby supporting AB 32~~1~~ goals to achieve emissions at 1990 levels by 2020. Accordingly, impacts associated with global climate change would be **less than significant**.

2.3.4 Cumulative Impact Analysis

Air Quality

With regard to past and present projects, the background ambient air quality, as measured at the monitoring stations maintained and operated by the APCD, measures the concentrations of pollutants from existing sources. Past and present project impacts are, therefore, included in the background ambient air quality data. The projects listed in Table 1-14, Cumulative Projects in the Vicinity of Campus Park, are planned or reasonably foreseeable, and, as such, are subject to CEQA. The locations of all cumulative projects are provided in Figure 1-38. For the purpose of nonattainment pollutants, the cumulative study area would be the entire air basin; however, contributions from individual projects on basin-wide nonattainment pollutants cannot be determined through modeling analyses.

In analyzing cumulative impacts for air quality, specific evaluation must occur regarding a project's contribution to the cumulative increase in pollutants for which the SDAB is listed as "non-attainment" for the CAAQS and/or NAAQS. A project that has a significant impact on air quality with regard to emissions of PM_{10}, $PM_{2.5}$, NO_x, and/or VOCs, as determined by the screening criteria outlined above,

would have a significant cumulative effect. In the event direct impacts from the project are less than significant, a project still may have a cumulatively considerable impact on air quality if the emissions from the project, in combination with the emissions from other proposed, or reasonably foreseeable, future projects are in excess of screening levels identified above.

PM_{10} and $PM_{2.5}$ emissions associated with construction generally result in near-field impacts. As shown in the construction emissions evaluation above, the emissions of PM_{10} and $PM_{2.5}$ would be below significance levels for all Project-related activities but grading. Although it is unlikely that construction for all cumulative projects would occur at the same time, criteria non-attainment pollutants that have been identified as exceeding the screening-level thresholds create a significant cumulative impact, regardless of ground-level concentrations. Thus, Project construction would result in a cumulatively considerable net increase in NO_x, $PM_{2.5}$, and PM_{10}. This temporary impact is identified as a cumulatively **significant impact**. (**Impact AQ-3**)

With regard to cumulative impacts associated with O_3 precursors (i.e., NO_x and VOCs**)**, in general, provided a project is consistent with the community and general plans, it has been accounted for in the O_3 attainment demonstration contained within the SIP and would not cause a cumulatively significant impact on the ambient air quality for O_3. The Proposed Project involves a Specific Plan Amendment and a General Plan Amendment and is proposing denser development than accounted for in the current General Plan and, therefore, the SIP. The projected cumulative housing units totals ~~4,416~~4,772 to 4,814 dwelling units, which is significantly lower than SANDAG's 2030 projected growth for the North County East Major Statistical Area of 54,251 dwelling units, and less than SANDAG's 2030 projected growth of 9,630 dwelling units for the Fallbrook subregional area. Thus, because cumulative growth would be within the range projected by SANDAG, and the Project would be consistent with the RAQS and SIP, growth projected for the proposed plus cumulative projects would not result in a cumulatively considerable contribution and impacts would be **less than significant**.

The planned or reasonably foreseeable projects were accounted for in the ~~Traffic Impact Study~~TIS prepared by LOS Engineering. As such, cumulative projects were considered in the evaluation of CO hot spots above. Based on the CO hot spots evaluation, cumulative impacts associated with Project traffic and CO hot spots would be **less than significant**.

Odors

In consideration of cumulative odor contributions, the effects of objectionable odors are typically localized to the immediate surrounding area specific to each Project site. Thus, the Project's cumulative contributions to odor impacts would not be considerable and impacts would be **less than significant**.

Global Climate Change

~~A forecast for GHG emissions in the SDAB or in California is not currently available.~~ As noted above, it is estimated that California produces about 7 percent of U.S. GHG emissions with about 41 percent of those emissions related to transportation and about 22 percent related to electricity. The ARB has recently completed a statewide emissions inventory and projection as part of its GHG Inventory Forecast. The state produced approximately 468.8 MMT of CO_2e emissions in 2002-03 and is forecasted to produce 596.4 MMT of CO_2e emissions by 2020 (ARB 2008c). Within San Diego County, 43 MMT of net CO_2e are predicted by 2020 under BAU conditions. ~~As noted above, AB 32 calls for ARB to have a state-wide emissions inventory completed by July 1, 2008. The statewide inventory may be helpful in establishing a baseline forecast for analysis of GHG emissions in CEQA documents.~~

Implementation of the Proposed Project would result in GHG emissions as documented ~~above~~in Section 2.3.3. The Project would be consistent with the goals of AB 32 to reduce emissions of GHG, and projected GHG reductions would ~~exceed~~ meet goals to ~~AB 32 guidelines by~~ provide~~ing~~ reductions ~~greater~~

~~than 25 percent~~ of 33 percent below ~~"business as usual."~~BAU. The Project would implement all feasible measures to reduce GHG emissions to the extent possible. The Project also would comply with any state-mandated requirements resulting from AB 32. ~~and the statewide emissions inventory expected to be completed by January 2008, as well as any County requirements resulting from the GP process~~ Project-specific reductions below the AB 32 guidelines and compliance with future statewide and County programs would avoid cumulatively substantial effects and impacts would be **less than significant** related to GHG emissions.

2.3.5 Significance Prior to Mitigation

The following significant impacts related to air quality would occur with Project implementation:

Impact AQ-1 Based on the estimates of the emissions associated with Project operations, VOC emissions would exceed the significance criteria established for Year 2015.

Impact AQ-2 NO_x, $PM_{2.5}$, and PM_{10} criteria pollutants emissions during construction would constitute a temporary but significant impact on the ambient air quality.

Impact AQ-3 Project construction would result in a cumulatively considerable net increase in NO_x, $PM_{2.5}$, and PM_{10}; impacts would be cumulatively significant.

2.3.6 Mitigation

Project criteria pollutants emissions during construction would constitute a significant, albeit largely temporary, impact on the ambient air quality for impacts AQ 1-, AQ-2, or AQ-3. No feasible mitigation measures are currently available to address criteria pollutant emissions generated during construction beyond Project design features already incorporated into the Project and described above, as well as summarized below in Section 2.3.7 and Chapter 8.0. Therefore, these impacts would remain significant and unmitigable. Operational impacts would constitute a significant and unmitigable impact in Year 2015, but by Year 2040, impacts would no longer be significant and the Project would conform to standards for all criteria pollutants. Even with the application of best management practices to control emissions of fugitive dust and the design features for use of 10 percent of the construction fleet retrofit and/or repowered and use of low-VOC coatings, emissions of NO_x, $PM_{2.5}$, and PM_{10} during construction would exceed the screening-level thresholds. Extending the construction schedule to reduce emissions would not be feasible as it would require the construction schedule to be lengthened by more than 4.5 times its current schedule (or approximately 22 years, at a minimum). Therefore, no mitigation measures have been identified.

2.3.7 Conclusion

The Proposed Project would conform with the RAQS and SIP. The Project would not expose sensitive receptors to substantial pollutant concentrations. Long-term and construction-period odor impacts associated with the Proposed Project would not be significant.

Operational emissions would be associated with traffic accessing the Proposed Project site as well as area sources such as fireplaces, energy use and landscaping. Based on the evaluation of air emissions, the Project emissions would exceed the screening-level thresholds for the criteria pollutants CO and VOCs in 2015 (VOCs meet standards by 2040) and for CO in 2040. Specifically with regard to CO, the "hot spots" analysis completed for the Project show that all impacts, when added to background CO concentrations, would be below the CAAQS for both one and eight-hour averaging periods. No significant impact would occur. Furthermore, emissions associated with traffic would decrease with time as older vehicles are phased out and more stringent emission standards are applied to new vehicles. Emission calculations

based on 2040 emission factors indicate that the emissions would be less than the significance thresholds by 2040.

Construction emissions would include emissions associated with fugitive dust, heavy construction equipment, and construction workers commuting to and from the Project site. The emissions associated with construction are above the significance criteria for the maximum construction scenario and would therefore pose a temporary but significant impact to ambient air quality during construction. Measures incorporated into the Project design to reduce impacts associated with construction include the following:

- Multiple applications of water during grading between dozer/scraper passes
- Paving, chip sealing, or chemical stabilization of internal roadways after completion of grading
- Use of sweepers or water trucks to remove "track-out" at any point of public street access
- Termination of grading if winds exceed 25 mph
- Stabilization of dirt storage piles by chemical binders, tarps, fencing, or other erosion control
- Hydroseeding of graded residential slopes, unless lots are developed immediately after grading
- Use of low-sulfur fuels in construction equipment
- Where possible, the Project has incorporated use of low-VOC coatings that meet the requirements of APCD Rule 67.0
- The Project would require 10 percent of the construction fleet to use any combination of diesel catalytic converters, diesel oxidation catalysts, diesel particulate filters, and/or ARB certified Tier I, II, or III equipment

These measures constitute BMPs for dust control and construction equipment emissions. Despite implementation of these measures to reduce construction emissions, temporary construction impacts related to NO_x and PM_{10} would remain significant. In order to fully mitigate construction impacts, the Proposed Project would be required to extend the construction schedule by more than 4.5 times its current schedule, which is not feasible.

The County has determined that conversion of 10 percent of the construction fleet comprises a reasonable (feasible) percent given cost prohibitions. Ten percent also was determined to be a reasonable requirement based on the number of contractors whose fleets have already been retrofitted and engines repowered as a result of the local and neighboring Carl Moyer Programs. With 10 percent of the construction fleet retrofitted and/or repowered and use of low-VOC coatings, the Project would mitigate emissions to the extent feasible.

The Proposed Project would generate GHG emissions associated with natural gas, purchased electricity, energy embodied in water, and transportation. GHG emissions were identified as less than significant on both a direct and cumulative level due to incorporation of design features that would result in an approximately ~~34~~33.8 percent reduction in emissions compared to ~~doing "business as usual."~~BAU conditions.

Table 2.3-1
AMBIENT AIR QUALITY STANDARDS

Pollutant	Average Time	California Standards		National Standards		
		Concentration	Measurement Method	Primary	Secondary	Measurement Method
O_3	1 hour	0.09 ppm[1] (180 µg/m^3)[2]	Ultraviolet Photometry	--	--	Ethylene Chemiluminescence
	8 hour[3]	0.070 ppm (137 µg/m^3)		0.075 ppm (147 µg/m^3)	0.075 ppm (147 µg/m^3)	
CO	8 hours	9.0 ppm (10 mg/m^3)[3]	Non-Dispersive Infrared Spectroscopy (NDIR)	9 ppm (10 mg/m^3)	None	NDIR
	1 hour	20 ppm (23 mg/m^3)		35 ppm (40 mg/m^3)		
NO_2	Annual Average	--	Gas Phase Chemiluminescence	0.053 ppm (100 µg/m^3)	0.053 ppm (100 µg/m^3)	Gas Phase Chemiluminescence
	1 hour	0.18 ppm (338 µg/m^3)		--	--	
SO_2	Annual Average	--	Ultraviolet Fluorescence	0.03 ppm (80 µg/m^3)	--	Pararosaniline
	24 hours	0.04 ppm (105 µg/m^3)		0.14 ppm (365 µg/m^3)	--	
	3 hours	--		--	0.5 ppm (1300 µg/m^3)	
	1 hour	0.25 ppm (655 µg/m^3)		--	--	
PM_{10}	24 hours	50 µg/m^3	Gravimetric or Beta Attenuation	150 µg/m^3	150 µg/m^3	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	20 µg/m^3		--	--	
$PM_{2.5}$	Annual Arithmetic Mean	12 µg/m^3	Gravimetric or Beta Attenuation	15 µg/m^3	15 µg/m^3	Inertial Separation and Gravimetric Analysis
	24 hours	--		35 µg/m^3	35 µg/m^3	
Sulfates	24 hours	25 µg/m^3	Ion Chromatography	--	--	--
Lead (Pb)	30-day Average	1.5 µg/m^3	Atomic Absorption	--	--	Atomic Absorption
	Calendar Quarter	--		0.15 µg/m^3	0.15 µg/m^3	
Hydrogen Sulfide (H_2S)	1 hour	0.03 ppm (42 µg/m^3)	Ultraviolet Fluorescence	--	--	--
Vinyl Chloride	24 hours	0.010 ppm (26 µg/m^3)	Gas Chromatography	--	--	--

Source: ARB 2008
[1]ppm= parts per million
[2]µg/m^3 = micrograms per cubic meter
[3] mg/m^3= milligrams per cubic meter

Table 2.3-2
STATE AMBIENT AIR QUALITY STANDARDS WITH NO FEDERAL COUNTERPART

Pollutant	Averaging Time	California Standards	Federal Standards	
		Concentration	Primary	Secondary
Sulfates	24 Hour	25 µg/m^3	No Federal Standards Apply	
H_2S	1 Hour	0.03 ppm (42 µg/m^3)		
Visibility Reducing Particulates	8 Hour (10 AM to 6 PM, PST*)	In sufficient amount to produce an extinction coefficient of 0.23 per kilometer—visibility of ten miles or more (0.07—30 miles or more for Lake Tahoe) due to particles when the relative humidity is less than 70 percent.		
Vinyl Chloride	24 Hour	0.01 ppm (26 µg/m^3)		

Source: ARB 2003
* PST = Pacific Standard Time

Table 2.3-3
AMBIENT BACKGROUND CONCENTRATIONS
(PPM, UNLESS OTHERWISE INDICATED)

Pollutant	Averaging Time	2004	2005	2006	Most Stringent AAQS	Monitoring Station
O_3	8 hour	0.086	0.079	0.096	0.08 µg/m^3	Escondido
	1 hour	0.099	0.095	0.108	0.09 µg/m^3	
PM_{10}	Annual	27.5 µg/m^3	23.9 µg/m^3	24.1 µg/m^3	20 µg/m^3	
	24 hour	57 µg/m^3	42 µg/m^3	51 µg/m^3	50 µg/m^3	
$PM_{2.5}$	Annual	13.5 µg/m^3	12.3 µg/m^3	11.5 µg/m^3	12 µg/m^3	
	24 hour	67.3 µg/m^3	43.1 µg/m^3	40.6 µg/m^3	35 µg/m^3	
NO_2	Annual	0.018	0.016	0.017	0.030	
	1 hour	0.080	0.076	0.071	0.17	
CO	8 hour	3.81	3.10	3.61	9.0	
	1 hour	6.3	5.9	5.7	20	
SO_2	Annual	0.003	0.002	0.004	0.03	San Diego
	24 hour	0.015	0.007	0.009	0.04	
	3 hour	0.21	0.019	0.030	0.5*	
	1 hour	0.042	0.040	0.034	0.25	

Sources: www.arb.ca.gov/aqd/aqd.htm (Measurements of all pollutants at Escondido-E Valley Pkwy station, except SO_2)
www.epa.gov/air/data/monvals.html (1-hour and 3-hour SO_2 and 1-hour CO; 2004 annual measurements)
*Secondary NAAQS

Table 2.3-4
GLOBAL WARMING POTENTIALS AND ATMOSPHERIC LIFETIMES

Greenhouse Gas	Atmospheric Lifetime (years)	Global Warming Potential (100 year time horizon)
Carbon Dioxide	50 – 200	1
Methane	12 ± 3	21
Nitrous Oxide	120	310
HFC-23	264	11,700
HFC-134a	14.6	1300
HFC-152a	1.5	140
PFC: Tetrafluoromethane (CF4)	50,000	6,500
PFC: Hexafluoroethane (C2F6)	10,000	9,200
Sulfur Hexafluoride (SF6)	3,200	23,900

Source: USEPA 2006

Table 2.3-5
TOTAL OPERATIONAL EMISSIONS YEAR 2015

Emission Source	CO	VOCs	NO_x	SO_x	PM_{10}	$PM_{2.5}$
LBS/DAY						
Energy Use	5.94	0.95	12.35	-	0.02	0.02
Fireplace – Natural Gas	3.14	0.43	7.39	0.05	0.60	0.59
Landscaping	27.89	4.57	0.32	0.00	0.08	0.08
Architectural Coatings Use	-	6.78	-	-	-	-
Vehicular Emissions – External Trips	1,238.16	93.07	109.69	1.76	17.57	17.39
Road Dust- External Trips	-	-	-	-	23.12	4.85
Vehicular Emissions – Internal Trips	114.27	28.45	6.03	0.05	0.41	0.41
Road Dust- Internal Trips	-	-	-	-	0.29	0.06
TOTAL	**1,389.4**	**134.25**	**135.78**	**1.86**	**42.09**	**23.40**
Screening-Level Thresholds	550	75	250	250	100	55
Above Screening-Level Thresholds?	*Yes*	*Yes*	*No*	*No*	*No*	*No*
TONS/YEAR						
Energy Use	1.08	0.17	2.25	-	0.00	0.00
Fireplace Wood Burning	0.00	0.00	0.00	0.00	0.00	0.00
Landscaping	2.51	0.41	0.03	0.00	0.01	0.01
Architectural Coatings Use	-	1.24	-	-	-	-
Vehicular Emissions – External Trips	**225.96**	16.98	20.02	0.32	3.11	3.08
Road Dust – External Trips	-	-	-	-	4.22	0.05
Vehicular Emissions – Internal Trips	20.85	5.19	1.10	0.01	0.08	0.08
Road Dust – Internal Trips	-	-	-	-	0.05	0.01
TOTAL	**250.40**	**23.99**	**23.40**	**0.32**	**7.47**	**3.23**
Screening-Level Thresholds	100	13.7	40	100	15	10
Above Screening-Level Thresholds?	*Yes*	*Yes*	*No*	*No*	*No*	*No*

Source: SRA 2009a
Shaded cells represent those pollutants for which the significance threshold has been exceeded.

Table 2.3-6
TOTAL OPERATIONAL EMISSIONS YEAR 2040

Emission Source	CO	VOCs	NOx	SOx	PM_{10}	$PM_{2.5}$
LBS/DAY						
Residential Energy Use	5.94	0.95	12.35	--	0.02	0.02
Fireplace – Natural Gas	3.14	0.43	7.39	0.05	0.60	0.59
Landscaping	27.89	4.57	0.32	0.00	0.08	0.08
Architectural Coatings	-	6.78	-	-	-	-
Vehicular Emissions – External Trips	479.390	31.28	43.70	1.76	17.02	16.85
Road Dust – External Trips	-	-	-	-	23.12	4.85
Vehicular Emissions – Internal Trips	39.17	8.51	1.65	0.05	0.41	0.41
Road Dust – Internal Trips	-	-	-	-	0.29	0.06
TOTAL	**555.53**	**52.52**	**65.41**	**1.86**	**41.54**	**22.86**
Screening-Level Thresholds	550	75	250	250	100	55
Above Screening-Level Thresholds?	*Yes*	*No*	*No*	*No*	*No*	*No*
TONS/YEAR						
Residential Energy Use	1.08	0.17	2.25	-	0.00	0.00
Fireplace – Natural Gas	0.00	0.00	0.00	0.00	0.00	0.00
Landscaping	2.51	0.41	0.03	0.00	0.01	0.01
Architectural Coatings	-	1.24	-	-	-	-
Vehicular Emissions – External Trips	87.49	5.71	7.97	0.32	3.11	3.08
Road Dust – External Trips	-	-	-	-	4.22	0.05
Vehicular Emissions – Internal Trips	7.15	1.55	0.30	0.01	0.07	0.07
Road Dust – Internal Trips	-	-	-	-	0.05	0.01
TOTAL	**98.23**	**9.08**	**10.55**	**0.33**	**7.46**	**3.22**
Screening-Level Thresholds	100	13.7	40	100	15	10
Above Screening-Level Thresholds?	*No*	*No*	*No*	*No*	*No*	*No*

Source: SRA 2009a
Shaded cells represent those pollutants for which the significance threshold has been exceeded.

Table 2.3-7
CONSTRUCTION PHASES AND EQUIPMENT/CREW REQUIREMENTS

Construction Phase	Duration (Days)	Equipment/Crew	Number
Grading	180	D-6 Dozers	2
		D-8 Dozers	
		D-9 Dozers	6
		834 Rubber-tire Dozers	4
		657 Scrapers	12
		16-6 Blades	2
		Water Trucks	8
		Dump Trucks	4
Paving	180	Concrete Trucks	2
		Pavers	
		Backhoes	
		Trackhoes	
Off-site Road Improvements	180	Dozers	2
		Front-end Loader	1
		Scrapers	4
		Tractor	1
		Backhoes	2
		Pavers/Rollers	
		Dump Trucks	4
		Water Trucks	2
		Concrete Mixers	
		Jackhammers	8
House Construction	500	Cranes	2
		Generators	4
		Forklifts	8
		Crew Trucks	2
Commercial/Industrial Construction	500	Cranes	2
		Generators	4
		Forklifts	8
		Crew Trucks	2

Source: SRA 2009a

Table 2.3-8
MAXIMUM DAILY ESTIMATED CONSTRUCTION EMISSIONS
(LBS/DAY)

Emission Source	CO	VOCs	NO_x	SO_x	PM_{10}	$PM_{2.5}$
GRADING						
Fugitive Dust—Grading	-	-	-	-	390.00	81.90
Fugitive Dust—Blasting	-	-	-	-	58.24	12.23
Explosives Emissions	335.00	-	85.00	-	-	-
Heavy Equipment Exhaust	147.40	20.88	668.10	0.73	16.62	14.97
Worker Travel—Vehicle Emissions	25.13	1.66	2.45	0.03	0.22	0.22
Construction Truck Travel—Vehicle Emissions	11.36	2.33	31.67	0.04	1.40	1.39
TOTAL	**518.89**	**24.87**	**787.22**	**0.80**	**466.48**	**110.71**
Screening-Level Thresholds	550	75	250	250	100	55
Above Screening-Level Thresholds?	*No*	*No*	*Yes*	*No*	*Yes*	*Yes*
PAVING						
Heavy Equipment Exhaust	17.09	1.35	38.61	0.04	1.47	1.31
Asphalt Offgassing	-	2.62	-	-	-	-
Worker Travel—Vehicle Emissions	25.13	1.66	2.45	0.03	0.22	0.22
Construction Truck Travel—Vehicle Emissions	11.36	2.33	31.67	0.04	1.40	1.39
TOTAL	**53.58**	**7.96**	**72.73**	**0.11**	**3.09**	**2.92**
Screening-Level Thresholds	550	75	250	250	100	55
Above Screening-Level Thresholds?	*No*	*No*	*No*	*No*	*No*	*No*
OFF-SITE ROAD IMPROVEMENTS						
Heavy Equipment Exhaust	61.42	7.65	234.94	0.25	6.79	6.04
Asphalt Offgassing	-	2.62	-	-	-	-
Worker Travel—Vehicle Emissions	25.13	1.66	2.45	0.03	0.22	0.22
Construction Truck Travel—Vehicle Emissions	11.36	2.33	31.67	0.04	1.40	1.39
TOTAL	**97.91**	**14.26**	**269.06**	**0.32**	**8.41**	**7.65**
Screening-Level Thresholds	550	75	250	250	100	55
Above Screening-Level Thresholds?	*No*	*No*	*Yes*	*No*	*No*	*No*
HOUSE CONSTRUCTION						
Heavy Equipment Exhaust	12.63	0.94	25.15	0.03	1.11	0.99
Worker Travel—Vehicle Emissions	25.13	1.66	2.45	0.03	0.22	0.22
Construction Truck Travel—Vehicle Emissions	11.36	2.33	31.67	0.04	1.40	1.39
Architectural Coatings	-	43.50	-	-	-	-
TOTAL	**49.12**	**48.43**	**59.27**	**0.10**	**2.73**	**2.60**
Screening-Level Thresholds	550	75	250	250	100	55
Above Screening-Level Thresholds?	*No*	*No*	*No*	*No*	*No*	*No*
COMMERCIAL/INDUSTRIAL CONSTRUCTION						
Heavy Equipment Exhaust	13.98	1.14	31.89	0.03	1.27	1.13
Worker Travel—Vehicle Emissions	25.13	1.66	2.45	0.03	0.22	0.22
Construction Truck Travel—Vehicle Emissions	11.36	2.33	31.67	0.04	1.40	1.39
Architectural Coatings	-	26.65	-	-	-	-
TOTAL	**50.47**	**31.78**	**66.01**	**0.10**	**2.89**	**2.74**
Screening-Level Thresholds	550	75	250	250	100	55
Above Screening-Level Thresholds?	*No*	*No*	*No*	*No*	*No*	*No*

Source: SRA 2009a
Shaded cells represent those pollutants for which the significance guideline has been exceeded.

Table 2.3-9
DIESEL EXHAUST PARTICULATE EMISSIONS

Construction Phase	Diesel Particulate Emissions, Total Pounds	Days
Grading	2,990.76	180
Paving	263.94	180
Off-site Road Improvements	1,221.37	180
House Construction	555.39	500
Commercial/Industrial Buildings Construction	318.16	250

Source: SRA 2009a

Table 2.3-10
SUMMARY OF ESTIMATED OPERATIONAL GHG EMISSIONS ASSOCIATED WITH THE PROPOSED PROJECT

Emission Source	Annual Emissions (Metric tons/year)		
	CO_2	CH_4	N_2O
Business as Usual (BAU)			
Electricity Use Emissions	~~3,677~~2,915	0.02~~8~~2	0.01~~5~~2
Natural Gas Use Emissions	~~1,416~~ 2,072	~~0.016~~0.023	~~0.003~~ 0.0039
Water Consumption Emissions	715	0.005	0.003
Vehicle Emissions	~~30,956~~ 26,920	~~2~~ 1.45	~~2~~1.58
TOTAL	**~~36,764~~ 32,662**	**~~2.05~~ 1.71**	**~~2.02~~1.60**
Global Warming Potential Factor	1	21	310
CO_2 Equivalent Emissions	~~36,764~~ 32,662	~~43~~36	~~627~~496
TOTAL CO_2 Equivalent Emissions	**~~37,434~~ 33,194**		
With GHG Reduction Measures			
Electricity Use Emissions	~~2,647~~2,128	0.016~~20~~	0.009~~11~~
Natural Gas Use Emissions	~~1,133~~1,761	0.1~~3~~20	0.00~~2~~33
Water Consumption Emissions	~~629~~616	0.005	0.003
Vehicle Emissions*	~~19,812~~ 17,062	~~1.3~~0.96	1.21~~3~~
TOTAL	**~~24,221~~ 21,567**	**~~1.4~~ 1.18**	**1.21~~3~~**
Global Warming Potential Factor	1	21	310
CO_2 Equivalent Emissions	~~24,221~~ 21,567	~~29~~25	~~403~~375
TOTAL CO_2 Equivalent Emissions	**~~24,653~~21,967**		
Percent Reduction from ~~Business as Usual~~BAU	**~~3~~33.8%**		

Source: SRA 2009b

* Accounting for reductions estimated through state vehicle emission reduction programs amounting to 28 percent reduction in GHG, and through mixed-use development goals and bicycle/pedestrian access, assumed to reduce vehicle emissions by an additional 8 percent based on URBEMIS Model assumptions.

Table 2.3-11
SUMMARY OF TRANSPORTATION EMISSION REDUCTIONS WITH IMPLEMENTATION OF GHG REDUCTION MEASURES

Business as Usual, CO_2e		**27,441**
Reductions due to Statewide Measures		
Measure	**Percent Reduction**	**Emissions Reduction**
Pavley Motor Vehicle Standards	20%	5,690
Improved Vehicle Efficiency/Hybridization	2.20%	578
Low Carbon Fuel Standard	10% (CO_2 and CH_4)	2,264
Mix of Uses	Negative (-0.73)	
Local Serving Retail	2.24%	
Bike and Pedestrian	6.74%	
Total Project Design Features	8.25%	1,457
Total Reductions	**40.45%**	**9,989**
Net Transportation Emissions		**17,452**

Source: SRA 2010

Table 2.3-~~11~~12
PROPOSED PROJECT DESIGN FEATURES TO REDUCE GHG EMISSIONS

GHG Reduction Measure	Citation*	Minimum % Reduction	Maximum % Reduction
The Project would provide plentiful short- and long-term bicycle parking facilities to meet peak season maximum demand (e.g., one bike rack space per 20 vehicle/employee parking spaces).	T-1	1%	5%
The Project is located within one-half mile of an existing/planned Class I or II bike lane and Project design includes a comparable network that connects the Project to the existing off-site facility. Project design includes a designated bicycle route connecting all units, on-site bicycle parking facilities, off-site bicycle facilities, site entrances, and primary building entrances to existing Class I or II bike lanes within one-half mile. Bicycle route connects to all streets contiguous with the Project site. Bicycle route has minimum conflicts with automobile parking and circulation facilities. All streets internal to the Project wider than 75 feet have Class II bicycle lanes on both sides.	T-4	1%	5%
The Project would provide a pedestrian access network that internally links all uses and connects to all existing/planned external streets and pedestrian facilities contiguous with the Project site. Project design includes a designated pedestrian route interconnecting all internal uses, site entrances, primary building entrances, public facilities, and adjacent uses to existing external pedestrian facilities and streets. Route has minimal conflict with parking and automobile circulation facilities. Streets within the Project site have sidewalks on both sides. All sidewalks are a minimum of five feet wide and feature vertical curbs. Pedestrian facilities and improvements such as grade separation, wider sidewalks, and traffic calming are implemented wherever feasible to minimize pedestrian barriers. All site entrances would provide pedestrian access.	T-5	1%	10%
Site design and building placement would minimize barriers to pedestrian access and interconnectivity. Physical barriers such as walls, berms, landscaping, and slopes between residential and non-residential uses that impede bicycle or pedestrian circulation are eliminated.	T-6	1%	10%
Bus services would provide headways (the time or distance between buses) of one hour or less for stops within one-quarter mile; the Project would provide safe and convenient bicycle/pedestrian access to transit stop(s) and provides essential transit stop improvements (i.e., shelters, route information, benches, and lighting).	T-7	1%	2%

Table 2.3-~~11~~ 12 (cont.)
PROPOSED PROJECT DESIGN FEATURES TO REDUCE GHG EMISSIONS

GHG Reduction Measure	Citation*	Minimum % Reduction	Maximum % Reduction
Project design would include pedestrian/bicycle safety and traffic calming measures in excess of jurisdiction requirements. Roadways would be designed to reduce motor vehicle speeds and encourage pedestrian and bicycle trips by featuring traffic calming features. All sidewalks internal and adjacent to the Project site would be a minimum of five feet wide. All sidewalks would feature vertical curbs. Roadways that converge internally within the Project would be routed in such a way as to avoid "skewed intersections," which are intersections that meet at acute, rather than right, angles. Intersections internal and adjacent to the Project would feature one or more of the following pedestrian safety/traffic calming design techniques: marked crosswalks, count-down signal timers, curb extensions, speed tables, raised crosswalks, raised intersections, median islands, tight corner radii, and roundabouts or mini-circles. Streets internal and adjacent to the Project would feature pedestrian safety/traffic calming measures such as on-street parking, planter strips with street trees, and chicanes/chokers (variations in road width to discourage high-speed travel).	T-8	1%	10%
The Project would provide the minimum amount of parking required. Once land uses are determined, the trip reduction factor associated with this measure can be determined by utilizing the Institute of Transportation Engineers (ITE) parking generation publication. The reduction in trips can be computed as shown below by the ratio of the difference of minimum parking required by code and ITE peak parking demand to ITE peak parking demand for the land uses multiplied by 50 percent. Percent Trip Reduction = 50 x [(minimum parking required by code – ITE peak parking demand)/(ITE peak parking demand)]	T-10	1%	30%
Provide preferential parking space locations for electric vehicles/compressed natural gas vehicles.	T-17	Unknown	Unknown
The Project would provide a reduced/no parking fee for electric vehicles/compressed natural gas vehicles.	T-18	Unknown	Unknown
The Project would be oriented towards existing transit, bicycle, or pedestrian corridor. Setback distance between Project and existing or planned adjacent uses would be minimized or non-existent. Setback distance between different buildings on the Project site would be minimized. Setbacks between Project buildings and planned or existing sidewalks would be minimized. Buildings would be oriented towards existing or planned street frontage. Primary entrances to buildings would be located along planned or existing public street frontage. The Project would provide bicycle access to any planned bicycle corridor(s). The Project would provide pedestrian access to any planned pedestrian corridor(s).	D-2	0.4%	1%

Table 2.3-~~11~~ 12 (cont.)
PROPOSED PROJECT DESIGN FEATURES TO REDUCE GHG EMISSIONS

GHG Reduction Measure	Citation*	Minimum % Reduction	Maximum % Reduction
The Project would provide high-density residential development. Transit facilities would be within one-quarter mile of the Project border. The Project would provide safe and convenient bicycle/pedestrian access to all transit stop(s) within one-quarter mile of the Project border. (The Project would be conditioned to participate, along with the other projects in the vicinity, to contribute funds for the acquisition, design, and construction of a Transit Node.)	D-4	1%	40%
Multiple and direct street routing (grid style) would be implemented. This measure only applies to projects with an internal CF $\geq$ 0.80, and an average of one-quarter mile or less between external connections along perimeter of project. (CF= number of intersections / [number of cul-de-sacs + intersections].) Cul-de-sacs with bicycle/pedestrian through access may be considered "complete intersections" when calculating the Project's internal connectivity factor. External connections are bike/pedestrian pathways and access points, or streets with safe and convenient bicycle and pedestrian access that connect the Project to adjacent streets, sidewalks, and uses. If the Project site is adjacent to undeveloped land; streets, pathways, access points, and right-of-ways that provide for future access to adjacent uses may count for up to 50 percent of the external connections. Block perimeter (the sum of the measurement of the length of all block sides) would be limited to no more than 1,350 feet. Streets internal to the Project would connect to streets external to the Project whenever possible.	D-5	1%	1%
The Project would provide residential buildings with a space for recharging batteries, whether for use in a car, electric lawnmower, other electric landscaping equipment, or even batteries for small items such as flashlights.	D-8	Unknown	Unknown
The Project would have at least three of the following on site and/or off site within one-quarter mile: residential development, retail development, park, open space, and/or office.	D-10	3%	3%
The Project would use drought-resistant native trees and trees with low emissions and high carbon sequestration potential. Evergreen trees on the north and west sides afford the best protection from the setting summer sun and cold winter winds. Additional considerations include the use of deciduous trees on the south side of houses that will admit summer sun; evergreen plantings on the north side that will slow cold winter winds; and constructing a natural planted channel to funnel summer cooling breezes into the house. Neighborhood CCRs not requiring that front and side yards of single-family homes be planted with turf grass. Vegetable gardens, bunch grass, and low-water landscaping also would be permitted, or even encouraged.	D-17	Unknown	Unknown
The Project would feature only natural gas or electric stoves in residences.	E-3	Unknown	Unknown

Table 2.3-~~11~~ 12 (cont.)
PROPOSED PROJECT DESIGN FEATURES TO REDUCE GHG EMISSIONS

GHG Reduction Measure	Citation*	Minimum % Reduction	Maximum % Reduction
The project will provide shade and will use light-colored/high albedo materials for at least 30 percent of the site's nonroof impervious surfaces.	E-8	1%	1%
The Project would provide electrical outlets at building exterior areas.	E-15	Unknown	Unknown
The Project would use energy efficient appliances (e.g., Energy Star).	E-16	Unknown	Unknown
The Project would install energy-reducing programmable thermostats that automatically adjust temperature settings.	E-20	Unknown	Unknown
The Project would install energy-reducing passive heating and cooling systems (e.g., insulation and ventilation).	E-21	Unknown	Unknown
The Project would install energy-reducing day lighting systems (e.g., skylights, light shelves, and interior transom windows).	E-22	Unknown	Unknown
The Project would increase exterior wall insulation.	NA	0.14%	2.35%
The Project would increase roof insulation.	NA	0.11%	2.96%
The Project would install low-energy traffic signals and energy efficient (sodium) street lighting.	NA	Unknown	Unknown
Buildings would be designed utilizing double-paned windows.	NA	Unknown	Unknown
Buildings would be designed utilizing door sweeps and weather stripping.	NA	Unknown	Unknown
Buildings would be designed utilizing electric light dimming controls where feasible.	NA	Unknown	Unknown
Buildings would be designed to utilize high efficiency heating and cooling systems.	NA	Unknown	Unknown
The Project would install water-saving irrigation systems.	NA	Unknown	Unknown
The Project would install drought-resistant plants in lieu of turf where feasible and appropriate.	NA	Unknown	Unknown
The Project would use recycled water for irrigation where available.	NA	Unknown	Unknown
The Project would achieve 50 percent Statewide Diversion Goal – Campus Park would provide residents with separate recycling and waste receptacles to support the 50 percent state-wide solid waste diversion goal (AB 939).	NA	Unknown	Unknown
The Project would strive for a 50 percent reduction in residential water use through features such as low-flow appliances (including toilets, shower heads, washing machines), a drought-tolerant landscape palette, weather-based irrigation controllers, and other water conservation measures.	NA	Unknown	Unknown
The Project would provide educational materials for residents discussing strategies for reducing GHG emissions associated with the operation of their buildings (ARB Early Action Measure/Education 2-7).	NA	Unknown	Unknown
The Project would include residential, retail, and office uses that encourage reduction in vehicle miles traveled and the use of alternative transportation to access the retail and office centers through pedestrian and bicycle access.	NA	Unknown	Unknown

Table 2.3-~~11~~ 12 (cont.)
PROPOSED PROJECT DESIGN FEATURES TO REDUCE GHG EMISSIONS

GHG Reduction Measure	Citation*	Minimum % Reduction	Maximum % Reduction
The Project would use reclaimed water, if available, to the extent possible.	NA	Unknown	Unknown
Buildings at Campus Park would achieve energy performance equivalent to 20 percent better than current Title 24 standards.	NA	20% of electricity and natural gas emissions	20% of electricity and natural gas emissions

Source: SRA 2009b
*CAPCOA 2008