16.0
GREENHOUSE GAS AND CLIMATE CHANGE

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This section of the Draft Environmental Impact Report ("Draft EIR"; "DEIR") provides a discussion on the project's potential effect on greenhouse gases and climate change. CEQA requires that lead agencies consider the reasonably foreseeable adverse environmental effects of projects they are considering for approval. The reader is referred to Section 10.0, Air Quality, for a discussion of project impacts associated with air quality.

16.1 EXISTING SETTING

16.1.1 Existing Climate Setting

To fully understand global climate change it is important to recognize the naturally occurring "greenhouse effect" and to define the greenhouse gases (GHG) that contribute to this phenomenon. The temperature on Earth is regulated by this greenhouse effect, which is so named because the Earth's atmosphere acts like a greenhouse, warming the planet in much the same way that an ordinary greenhouse warms the air inside its glass walls. Like glass, the gases in the atmosphere let in light yet prevent heat from escaping.

GHG are naturally occurring gases such as water vapor, carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O) that absorb heat radiated from the Earth's surface. Greenhouse gases — carbon dioxide, methane, nitrous oxide, and others — are transparent to certain wavelengths of the sun's radiant energy, allowing them to penetrate deep into the atmosphere or all the way to the Earth's surface. Clouds, ice caps, and particles in the air reflect about 30 percent of this radiation, but oceans and land masses absorb the rest (70 percent of the radiation received from the sun) before releasing it back toward space as infrared radiation. GHG and clouds effectively prevent some of the infrared radiation from escaping; they trap the heat near Earth's surface where it warms the lower atmosphere. If this natural barrier of atmospheric gases were not present, the heat would escape into space, and Earth's average global temperatures could be as much as 61 degrees Fahrenheit cooler (NASA, 2007).

In addition to natural sources, human activities are exerting a major and growing influence on climate by changing the composition of the atmosphere and by modifying the land surface. Particularly, the increased consumption of fossil fuels (natural gas, coal, gasoline, etc.) has substantially increased atmospheric levels of greenhouse gases. Measured atmospheric levels of certain GHG such as carbon dioxide, methane, and nitrous oxide have risen substantially in recent decades (Miller, 2000). This increase in atmospheric levels of GHG unnaturally enhances the greenhouse effect by trapping more infrared radiation as it rebounds from the Earth's surface and thus trapping more heat near the Earth's surface. Prominent GHGs contributing to the greenhouse effect and climate change include carbon dioxide, methane, ozone, nitrous oxide, and chlorofluorocarbons (CFCs). Emissions of these gases are attributable to human activities associated with the industrial/manufacturing, utilities, transportation, residential, and agricultural sectors (CEC, 2006a).

According to the U.S. Environmental Protection Agency (USEPA), the Earth's average surface temperature has increased by about 1.2 to 1.4ºF since 1900. The warmest global average temperatures on record have all occurred within the past 15 years, with the warmest two years being 1998 and 2005. Eleven of the last 13 years rank among the hottest years on record (since 1850, when reliable worldwide temperature measurements

began) (IPCC, 2007). Most of the warming in recent decades is likely the result of human activities. Other aspects of the climate are also changing such as rainfall patterns, snow and ice cover, and sea level.

16.1.2 Global Implications

Recognizing the problem of global climate change, the World Meteorological Organization (WMO) and the United Nations Environment Programme (UNEP) established the Intergovernmental Panel on Climate Change (IPCC) in 1988. It is open to all members of the United Nations and WMO. The role of the IPCC is to assess on a comprehensive, objective, open, and transparent basis the scientific, technical, and socioeconomic information relevant to understanding the scientific basis of risk of human-induced climate change, its potential impacts, and options for adaptation and mitigation. According to climate models, the IPCC projects that the Earth's average surface temperature should rise 1.8–6.3ºF before the year 2100. If the atmospheric concentration of CO_2 doubles from its late 1700s level of 280 parts per million to 560 parts per million, the most likely rise in temperature would be about 3.6ºF. This may not seem like a significant increase, yet even at the lowest projected increase of 1.8ºF, the Earth would be warmer than it has been for 10,000 years (Miller, 2000).

The IPCC Fourth Assessment Report's Working Group I Summary for Policymakers (Report) synthesizes current scientific understanding of global climate change and projects future climate change using the most comprehensive set of well-established global climate models. The Report incorporates findings of the current effects of global climate change. These findings include:

- The intensity of tropical cyclones (hurricanes) in the North Atlantic has increased over the past 30 years, which correlates with increases in tropical sea surface temperatures.
- Droughts have become longer and more intense and have affected larger areas since the 1970s, especially in the tropics and subtropics.
- Since 1900 the Northern Hemisphere has lost 7 percent of the maximum area covered by seasonally frozen ground.
- Mountain glaciers and snow cover have declined worldwide.
- Satellite data since 1978 show that the extent of Arctic sea ice during the summer has shrunk by more than 20 percent.
- Since 1961, the world's oceans have been absorbing more than 80 percent of the heat added to the climate, causing ocean water to expand and contributing to rising sea levels. Between 1993 and 2003, ocean expansion was the largest contributor to sea level rise.
- Melting glaciers and losses from the Greenland and Antarctic ice sheets have also contributed to recent sea level rise.

An enhanced greenhouse effect will generate new patterns of microclimate and will have significant impacts on the economy, environment, and transportation infrastructure and

operations due to increased temperatures, intensity of storms, sea level rise, and changes in precipitation. Impacts may include flooding of tunnels, coastal highways, runways, and railways, buckling of highways and railroad tracks, submersion of dock facilities, and a shift in agriculture to areas that are now cooler. Such prospects will have strategic security as well as transportation implications.

Climate change affects public health and the environment. Increased smog and emissions, respiratory disease, reduction in the state's water supply, extensive coastal damage, and changes in vegetation and crop patterns have been identified as effects of climate change. The impacts of climate change are broad-ranging and interact with other market failures and economic dynamics, giving rise to many complex policy problems. The findings are the latest in a string of reports warning that the rate of carbon dioxide accumulating in the atmosphere is increasing at an alarming pace.

16.1.3 California Implications

Climate change is a global problem, and GHGs are global pollutants, unlike criteria air pollutants, which are pollutants of regional and local concern. Worldwide, California is the 12th to 16th largest emitter of CO_2 and is responsible for approximately 2 percent of the world's CO_2 emissions (CEC, 2006a, 2006b). In 2004, California produced 492 million gross metric tons of carbon dioxide-equivalent (CEC, 2006a).

Increased ocean temperature could result in increased moisture flux into the state; however, since this would likely increasingly come in the form of rain rather than snow in the high elevations, increased precipitation could lead to increased potential for and severity of flood events, placing more pressure on California's flood control system. Sea level has risen approximately 7 inches during the last century and, according to the California Energy Commission (CEC) report, it is predicted to rise an additional 22–35 inches by 2100, depending on the future GHG emissions levels (CEC, 2006c). If this occurs, resultant effects could include increased coastal flooding, saltwater intrusion, and disruption of wetlands (CEC, 2006c). As the existing climate throughout California changes over time, this could also result in mass migration of species, or worse, failure of species to migrate in time to adapt to the perturbations in climate.

According to the California Environmental Protection Agency, the climate changes for global warming could affect agriculture, the fishing industry, California's coastline, forests, and ecosystems, increase air pollution, and energy production (CalEPA, 2007).

Agriculture

Potential impacts, such as reduced water supply, more severe droughts, more winter floods, and drier growing seasons will affect California's agriculture. Many farms, especially in the fruit and nut business, require long-term investments, making fast adaptation difficult, and could thus experience serious losses if decisions continue to be made with no regard to expected climate changes.

Fishing

Studies found that as a result of changes in ocean conditions, the distribution and abundance of major fish stocks will change substantially. Changes to fisheries that occurred during the El Niño/Southern Oscillation illustrate how climate directly impacts

marine fisheries on a short-term scale. Higher sea surface temperatures in 1997–1998 during the El Niño had a great impact on market squid, California's largest fishery by volume. The California Regional Assessment reports that landings fell to less than 1,000 metric tons in that season, down from 110,000 tons in the 1996–1997 season. Other unusual events also occurred such as poor salmon returns, a series of plankton blooms, and seabird die-offs.

Coastline

With climate changes, recreational facilities and developed coastlines will also be more vulnerable to hurricanes, storm surges, and flooding. Increasing population growth in coastal areas is a reason for further concern, since these areas could be more vulnerable to climate change impacts. Impacts of expected sea level rise and increased storm surges are numerous. Beachfront homes and harbors as well as wetlands may flood. Sewage systems may be overwhelmed by storm runoff and high tides. Jetties and seawalls may have to be raised and strengthened to protect harbors which are used for shipping, recreation, and tourism.

Forests

The California Regional Assessment notes an increase in the number and extent of areas burned by wildfires in recent years, and modeling results under changing climate conditions suggest that fires may be hotter, move faster, and be more difficult to contain under future climate conditions. The factors which contribute to the risk of catastrophic fires (fuel loads, high temperatures, dry conditions, and wind) are typically present already in summer and fall seasons in California, but can exist at other times of the year, especially in drought conditions. Public safety is an issue as more home and tourist developments occur on coastal hills and mountains, and the foothills and higher elevations in the Sierra Nevada are highly susceptible to catastrophic wildfires.

Ecosystems

The current distribution, abundance, and vitality of species and habitats are strongly dependent on climatic (and microclimatic) conditions. Climate change is expected to result in warmer temperatures year-round, accompanied by substantially wetter winters. Rising sea level will significantly affect coastal wetlands because they are mostly within a few feet of sea level. As the sea rises, these wetlands will move inland. The overall acreage of wetlands will be reduced due to constraints posed by existing urban development and steeper slopes immediately inland of existing wetlands. Tidal rivers, estuaries, and relatively flat shoreline habitats will be more subject to damage by flooding and erosion. More severe storm surges from the ocean, due to higher sea levels, combined with higher river runoff could significantly increase flood levels by more than the rise in sea level alone. Erosion of beaches would decrease habitat for beach-dependent species, such as seals, shorebirds, and endangered species (for example, snowy plover and least tern).

The timing and amounts of water released from reservoirs and diverted from streams are constrained by their effects on various native fish, especially those that are listed under the federal and state endangered species acts as threatened or endangered. Several potential hydrological changes associated with global climate change could influence the ecology of aquatic life in California and have several negative effects on cold-water fish

(DWR, 2006). For example, if climate change raises air temperature by just a few degrees Celsius, this change could be enough to raise the water temperatures above the tolerance of salmon and trout in many streams, favoring instead non-native fishes such as sunfish and carp (DWR, 2006). Unsuitable summer temperatures would be particularly problematic for many of the threatened and endangered fish that spend summers in cold-water streams, either as adults, juveniles, or both (DWR, 2006). In short, climate change could significantly affect threatened and endangered fish in California. It could also cause non-threatened and non-endangered fish to reach the point where they become designated as such (DWR, 2006).

Changes in temperature and precipitation patterns would also shift California's current climate zones, and thus habitats associated with these zones, northward by approximately 100–400 miles, as well as upwards in elevation by 500–1,500 feet. Global climate change would alter the composition, structure, and arrangement of the vegetation cover of the state (forest and wildland). Species distribution would move geographically as the climate changes, with forest stands, woodlands, and grassland species predicted to move northward and higher in elevation. The entire vegetative community may be affected if non-native invasive species occupy sites and replace native plants. Outbreaks of insects and diseases could compromise forest health and the capability of the forest stands to reproduce and to store carbon on a landscape basis. Forest fires are likely to become more frequent and severe if soils become drier. Changes in pest populations could further increase the stress on forests.

Air Quality

Projected climate changes will impact the quality of California's air, public health, and environment. Higher temperatures increase the formation of ground-level ozone and particulate matter, making it more difficult to meet the health-base air quality standards for these pollutants. Ground-level ozone has been shown to aggravate existing respiratory illnesses such as asthma, reduce lung function, and induce respiratory inflammation. Ambient ozone also reduces agricultural crop yields and impairs ecosystem health.

The particulate matter of most concern — PM_{10} — has a diameter smaller than 10 micrometers and can easily pass into the lungs, contributing to the development of lung tissue damage. PM_{10} has been implicated in exacerbation of cardiovascular disease, asthma, and other respiratory diseases and associated with increased mortality. Air pollution is also made worse by increases in natural hydrocarbon emissions and evaporative emissions of fuels and solvents which lead to higher levels of ozone and PM_{10} during hot weather. Warmer temperatures that cause increased use of air conditioners can cause increased air pollutants from power plants and from vehicle operation. In addition, warming, drying, and increased winds could mean hotter, harder-to-control wildfires. These wildfires could result in increased levels of fine particulate matter that could also exceed state and federal standards and harm public health.

Electricity Generation

California's electricity generation is currently relatively efficient when it comes to emissions of greenhouse gases. The national average for the electricity generation share of total greenhouse gas emissions is approximately 40 percent, while California electricity accounts for only 16 percent of statewide emissions. This is in part due to California's significant amount of imported electricity, mild climate, and lack of energy-

intensive industry. Over the past two decades, California has developed one of the largest and most diverse renewable electricity generation industries in the world. However, changes in climate of the magnitude predicted by the Intergovernmental Panel of Climate Change would substantially affect electricity generation throughout California and the entire western states grid, particularly for hydroelectric facilities.

Less snowpack would result in lower levels of hydro-generation in the summer and fall seasons due to reduced runoff in those seasons. Additional hydropower may be available during the winter and the spring. However, on balance hydropower is more useful and valuable within the grid mix of generation sources when it is available throughout the peak summer and fall seasons. Flooding could also impact pipelines, wells, and related petroleum extraction equipment. Warmer weather would result in an increased demand for electricity for cooling appliances in homes and businesses.

Water Supply

While most climate model simulations project relatively moderate changes in precipitation over this century, rising global temperatures are expected to result in reductions in snowpack for the Sierra Nevada (i.e., precipitation changing in the form of rain from snow). By the 2035 to 2064 period, the Sierra Nevada snowpack could decrease from 12 percent to 40 percent as compared to historic levels (depending on the climate scenario) (CalEPA, 2007). The Sierra Nevada snowpack currently acts as natural water storage by holding winter precipitation and releasing it during the spring and early summer months as the snow melts. According to the California Natural Resources Agency (2009), nearly 75 percent of California's available water supply originates in the northern third of the state (north of Sacramento), mainly from water stored in the Sierra Nevada snowpack. Reduction of this natural water storage during the winter could mean water shortages in the future and would require the alteration of the management of existing reservoirs (while not losing flood control capacity or hydropower generation capacity) and/or the construction of additional human-made reservoirs to compensate for this storage loss.

The state's water supply system already faces challenges to provide water for California's growing population. Climate change is expected to exacerbate these challenges through increased temperatures and possible changes in precipitation patterns. The trends of the last century, especially increases in hydrologic variability, will likely intensify in this century (California Natural Resources Agency, 2009). Californians can expect to experience more frequent and larger floods and deeper droughts. Increasing average temperatures may have several impacts on water supply and demand, affecting California's farms, municipalities, and ecosystems.

Increasing winter and early spring temperatures will cause earlier melting of the Sierra Nevada snowpack, the most important seasonal surface reservoir of water in California. Historically this snowpack has released about 15 million acre-feet of water slowly over the warming spring and summer months (1 acre-foot provides the annual water needs of one to two families) (California Natural Resources Agency, 2009). California's water storage and conveyance infrastructure gathers this melting snow in the spring and delivers it for use during the drier summer and fall months. This same infrastructure is also used for flood control in the winter and early spring by keeping lower reservoir levels. With earlier snowmelt and heavy winter/spring rains possibly coinciding, difficult tradeoffs may need to be made between water storage and flood protection.

Concerns over the availability, quality, and distribution of water are not new to California, but these concerns are growing and solutions are becoming more complex as water managers navigate competing interests and regulations to reliably provide quality water to farms, businesses, and homes, while also protecting the environment and complying with legal and regulatory requirements. Water adaptation strategies are primarily driven by the possibility of reduced future water supplies and increased flood threat brought about by climate change.

The Placer County Water Agency (PCWA) provides water service to the Project area and would serve the Project site. The PCWA service area is currently divided into five zones. The proposed Project site is located in Zone 1, which is the largest of the five zones and extends north from the northern boundary of the City of Roseville to the City of Auburn and extends to the northwest to include the City of Lincoln (Brown & Caldwell, 2005). The main source of water supply in Zone 1, as well as in the entire PCWA service area, is from the Yuba/Bear River System (Brown & Caldwell, 2006) (see Section 14.0, Public Services and Utilities). No detailed analysis of climate change impacts on PCWA's water sources has been conducted. However, based on consideration of the recent regional and local climate change studies noted above (e.g., CalEPA, 2007 and California Natural Resources Agency, 2009), PCWA's surface source is anticipated to largely remain intact (though the form of precipitation is expected to come more from rain rather than snow).

Increased Flooding

Currently, there is no information to accurately assess the impact of climate change for flood frequency or severity, because of the absence of detailed regional precipitation information from climate models and because water-management choices can substantially influence overall flood risk. However, increased amounts of winter runoff could be accompanied by increases in flood event severity and warrant additional dedication of wet season storage space for flood control as opposed to water supply storage. This need to manage water storage facilities to handle increased runoff could in turn lead to water shortages during high water demand. It is recognized that these impacts would result in increased challenges for reservoir management and balancing the competing concerns of flood protection and water supply.

Sudden Climate Change

Most global climate models project that anthropogenic climate change will be a continuous and fairly gradual process through the end of this century (DWR, 2006). California is expected to be able to adapt to the water supply challenges posed by climate change, even at some of the warmer and drier projections for change. Sudden and unexpected changes in climate, however, could leave water managers unprepared and could, in extreme situations, have significant implications for California and its water supplies. For example, there is speculation that some of the recent droughts that occurred in California and the western United States could have been due, at least in part, to oscillating oceanic conditions resulting from climatic changes. The exact causes of these events are, however, unknown, and evidence suggests such events have occurred during at least the past 2000 years (DWR, 2006).

16.2 REGULATORY FRAMEWORK

16.2.1 Federal

Federal Regulation and the Clean Air Act

In the past, the USEPA has not regulated GHGs under the Clean Air Act (CAA) because it asserted that the act did not authorize the USEPA to issue mandatory regulations to address global climate change and that such regulation would be unwise without an unequivocally established causal link between GHGs and the increase in global surface air temperatures. However, the U.S. Supreme Court held that the USEPA must consider regulation of motor vehicle GHG emissions. In *Massachusetts v. Environmental Protection Agency et al.*, twelve states and cities, including California, together with several environmental organizations, sued to require the USEPA to regulate GHGs as pollutants under the Clean Air Act (127 S. Ct. 1438 [2007]). The Court ruled that GHGs fit within the Clean Air Act's definition of a pollutant and that the USEPA did not have a valid rationale for not regulating GHGs. In response to this ruling, the USEPA has recently made an endangerment finding that GHGs pose a threat to the public health and welfare. This is the first step necessary for the establishment of federal GHG regulations under the Clean Air Act.

16.2.2 State

Assembly Bill 1493

Assembly Bill (AB) 1493 (Pavley) of 2002 (Health and Safety Code Sections 42823 and 43018.5) requires the California Air Resources Board (ARB) to develop and adopt the nation's first GHG emission standards for automobiles. These standards are also known as Pavley I. The California Legislature declared in AB 1493 that global warming is a matter of increasing concern for public health and the environment. It cites several risks that California faces from climate change, including a reduction in the state's water supply, an increase in air pollution caused by higher temperatures, harm to agriculture, an increase in wildfires, damage to the coastline, and economic losses caused by higher food, water, energy, and insurance prices. The bill also states that technological solutions to reduce GHG emissions would stimulate California's economy and provide jobs. In 2004, the State of California submitted a request for a waiver from federal clean air regulations, as the State is authorized to do under the CAA, to allow the State to require reduced tailpipe emissions of CO_2. In late 2007, the USEPA denied California's waiver request and declined to promulgate adequate federal regulations limiting GHG emissions. In early 2008, the State brought suit against the USEPA related to this denial.

In January 2009, President Obama instructed the USEPA to reconsider the Bush Administration's denial of California's and 13 other states' requests to implement global warming pollution standards for cars and trucks. In June 2009, the USEPA granted California's waiver request enabling the State to enforce its GHG emissions standards for new motor vehicles beginning with the current model year.

Also in 2009, President Obama announced a national policy aimed at both increasing fuel economy and reducing GHG pollution for all new cars and trucks sold in the United States. The new standards would cover model years 2012 to 2016 and would raise passenger vehicle fuel economy to a fleet average of 35.5 miles per gallon (mpg) by

2016. When the national program takes effect, California has committed to allowing automakers who show compliance with the national program to also be deemed in compliance with state requirements. California is committed to further strengthening these standards beginning in 2017 to obtain a 45 percent GHG reduction from the 2020 model year vehicles.

Assembly Bill 32, the California Global Warming Solutions Act of 2006

Assembly Bill 32 (AB 32) (Health and Safety Code Sections 38500, 38501, 28510, 38530, etc.[1]) requires that statewide GHG emissions be reduced to 1990 levels by the year 2020. The gases that are regulated by AB 32 include CO_2, CH_4, N_2O, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride. The reduction to 1990 levels will be accomplished through an enforceable statewide cap on GHG emissions that will be phased in starting in 2012. To effectively implement the cap, AB 32 directs ARB to develop and implement regulations to reduce statewide GHG emissions from stationary sources. AB 32 specifies that regulations adopted in response to AB 1493 should be used to address GHG emissions from vehicles. However, AB 32 also includes language stating that if the AB 1493 regulations cannot be implemented, then ARB should develop new regulations to control vehicle GHG emissions under the authorization of AB 32.

AB 32 requires that ARB adopt a quantified cap on GHG emissions representing 1990 emissions levels and disclose how it arrives at the cap, institute a schedule to meet the emissions cap, and develop tracking, reporting, and enforcement mechanisms to ensure that the state achieves reductions in GHG emissions necessary to meet the cap. AB 32 also includes guidance to institute emissions reductions in an economically efficient manner and conditions to ensure that businesses and consumers are not unfairly affected by the reductions.

Climate Change Proposed Scoping Plan

In October of 2008, ARB published its Climate Change Scoping Plan, which is the State's plan to achieve GHG reductions in California required by AB 32. The Scoping Plan contains the main strategies California will implement to achieve reduction of 169 million metric tons (MMT) of CO_2e, or at least 29 percent from the state's projected 2020 emission level of 596 MMT of CO_2e under a business-as-usual scenario (this is a reduction of 42 MMT CO_2e, or almost 10 percent, from 2002–2004 average emissions). The Scoping Plan also includes ARB-recommended GHG reductions for each emissions sector of the state's GHG inventory. The largest GHG reduction recommendations are from improving emission standards for light-duty vehicles (estimated reductions of 31.7 MMT CO_2e), implementation of the Low-Carbon Fuel Standard (15.0 MMT CO_2e), energy efficiency measures in buildings and appliances and the widespread development of combined heat and power systems (26.3 MMT CO_2e), and a renewable portfolio standard for electricity production (21.3 MMT CO_2e). The Scoping Plan identifies the local equivalent of AB 32 targets as a 15 percent reduction below baseline greenhouse gas emissions level, with baseline interpreted as greenhouse gas emissions levels between 2003 and 2008. The Scoping Plan states that land use planning and urban growth decisions will play an important role in the state's GHG reductions because local

[1] Assembly Bill 32 is codified at Health and Safety Code Sections 38500, 38501, 28510, 38530, 38550, 38560, 38561–38565, 38570, 38571, 38574, 38580, 38590, 38592–38599.

governments have primary authority to plan, zone, approve, and permit how land is developed to accommodate population growth and the changing needs of their jurisdictions. (Meanwhile, ARB is also developing an additional protocol for community emissions.) ARB further acknowledges that decisions on how land is used will have large impacts on the GHG emissions that will result from the transportation, housing, industry, forestry, water, agriculture, electricity, and natural gas emission sectors. The Scoping Plan states that the ultimate GHG reduction assignment to local government operations is to be determined. With regard to land use planning, the Scoping Plan expects approximately 5.0 MMT CO_2e will be achieved associated with implementation of SB 375, which is discussed further below. The Climate Change Scoping Plan was approved by ARB on December 11, 2008.

Although the Climate Change Scoping Plan was challenged in the case of *Association of Irritated Residents v. California Air Resources Board* (San Francisco Superior Court Case No. CPF-09-509562), the trial court did not reject any of the substantive aspects of the Scoping Plan. In any event, ARB has revised its CEQA review (a functional equivalent document) in order to comply with the court's decision. Thus, any thresholds determined under the Scoping Plan remain valid. This is especially true since no challenge to the revised functional equivalent document has been filed.

Senate Bill 1368

Senate Bill 1368 (SB 1368) (codified at Public Utilities Code Chapter 3) is the companion bill of AB 32. SB 1368 required the California Public Utilities Commission (CPUC) to establish a greenhouse gas emission performance standard for baseload generation from investor-owned utilities by February 1, 2007. The bill also required the California Energy Commission (CEC) to establish a similar standard for local publicly owned utilities by June 30, 2007. These standards cannot exceed the greenhouse gas emission rate from a baseload combined-cycle natural-gas-fired plant. The legislation further requires that all electricity provided to California, including imported electricity, must be generated from plants that meet the standards set by CPUC and CEC.

Senate Bill 1078, Governor's Order S-14-08, and Senate Bill 2X (California Renewable Portfolio Standards)

Senate Bill 1078 (SB 1078) (Public Utilities Code Sections 387, 390.1, 399.25 and Article 16) addresses electricity supply and requires that retail sellers of electricity, including investor-owned utilities and community choice aggregators, provide a minimum 20 percent of their supply from renewable sources by 2017. SB 1078 changed the target date of this bill's implementation to 2010. This Senate Bill will affect statewide GHG emissions associated with electricity generation. In 2008, Governor Schwarzenegger signed Executive Order S-14-08, which set the Renewable Portfolio Standard target to 33 percent by 2020. It directed state government agencies and retail sellers of electricity to take all appropriate actions to implement this target.

In March 2011, Senate Bill 2X established S-14-08 as law. While Senate Bill 2X contains the same targets as Governor's Order S-14-08 (33 percent of their supply from renewable sources by 2020), as an executive order it did not have the force of law (a Governor's Order can be reversed by future governors).

Senate Bill 375

Senate Bill 375 (SB 375) (codified at Government Code and Public Resources Code[2]), signed in September 2008, aligns regional transportation planning efforts, regional GHG reduction targets, and land use and housing allocation. SB 375 requires metropolitan planning organizations (MPOs) to adopt a Sustainable Communities Strategy (SCS) or Alternative Planning Strategy (APS), which will prescribe land use allocation in that MPO's Regional Transportation Plan. ARB, in consultation with MPOs, will provide each affected region with reduction targets for GHGs emitted by passenger cars and light trucks in the region for the years 2020 and 2035. These reduction targets will be updated every eight years, but can be updated every four years if advancements in emissions technologies affect the reduction strategies to achieve the targets. ARB is also charged with reviewing each MPO's SCS or APS for consistency with its assigned targets. If MPOs do not meet the GHG reduction targets, transportation projects would not be eligible for funding programmed after January 1, 2012.

Executive Order S-3-05

Executive Order S-3-05 proclaims that California is vulnerable to the impacts of climate change. It declares that increased temperatures could reduce the Sierra's snowpack, further exacerbate California's air quality problems, and potentially cause a rise in sea levels. To combat those concerns, the Executive Order established total greenhouse gas emission targets. Specifically, emissions are to be reduced to the 2000 level by 2010, the 1990 level by 2020, and to 80 percent below the 1990 level by 2050.

The Executive Order directed the Secretary of the California Environmental Protection Agency (CalEPA) to coordinate a multi-agency effort to reduce greenhouse gas emissions to the target levels. The Secretary will also submit biannual reports to the governor and state legislature describing (1) progress made toward reaching the emission targets, (2) impacts of global warming on California's resources, and (3) mitigation and adaptation plans to combat these impacts. To comply with the Executive Order, the Secretary of the CalEPA created a Climate Action Team (CAT) made up of members from various state agencies and commission. CAT released its first report in March 2006. The report proposed to achieve the targets by building on voluntary actions of California businesses, local government and community actions, as well as through state incentive and regulatory programs.

Executive Order S-13-08: The Climate Adaptation and Sea Level Rise Planning Directive[3]

On November 14, 2008, Governor Arnold Schwarzenegger issued Executive Order (EO) S-13-08 in order to reduce and assess California vulnerability to climate change and sea level rise. The EO initiated the following major actions:

[2] Senate Bill 375 is codified at Government Code Sections 65080, 65400, 65583, 65584.01, 65584.02, 65584.04, 65587, 65588, 14522.1, 14522.2, and 65080.01 as well as Public Resources Code Sections 21061.3, 21159.28, and Chapter 4.2.

1) Initiate California's first statewide climate change adaptation strategy that will assess the state's expected climate change impacts, identify where California is most vulnerable and recommend climate adaptation policies;

2) Request the National Academy of Science establish an expert panel to report on sea level rise impacts in California to inform state planning and development efforts;

3) Issue interim guidance to state agencies for how to plan for sea level rise in designated coastal and floodplain areas for new projects; and

4) Initiate a report on critical existing and planned infrastructure projects vulnerable to sea level rise.

The EO will provide consistency and clarify to state agencies on how to address sea level rise in current planning efforts (California Climate Change Portal, 2009).

California Building Energy Efficiency Standards

Title 24, Part 6 of the California Code of Regulations, known as the Building Energy Efficiency Standards, was 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. On January 12, 2010, the California Building Standards Commission adopted CALGreen and became the first state in the United States to adopt a statewide green building standards code. CALGreen will require new buildings to reduce water consumption by 20 percent, divert 50 percent of construction waste from landfills, and install low pollutant-emitting materials.

16.2.3 Local

Placer County Code

There are no local regulations or law pertaining to climate change and greenhouse gas emissions.

16.3 IMPACTS

16.3.1 Standards of Significance

The state has identified 1990 emission levels as a goal through adoption of AB 32. To meet this goal, California would need to generate lower levels of GHG emissions than current levels. Per Appendix G of the California Environmental Quality Act (CEQA) Guidelines recommendations, impacts related to climate change are considered significant if implementation of the proposed Project would result in any of the following:

1) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment.

2) Conflict with any applicable plan, policy, or regulation of an agency adopted for the purpose of reducing the emissions of greenhouse gases.

Emitting CO_2 into the atmosphere is not itself an adverse environmental effect. It is the increased concentration of CO_2 in the atmosphere resulting in global climate change and the associated consequences of climate change that results in adverse environmental affects (e.g., sea level rise, loss of snowpack, severe weather events). Although it is possible to generally estimate a project's incremental contribution of CO_2 into the atmosphere, it is typically not possible to determine whether or how an individual project's relatively small incremental contribution might translate into physical effects on the environment. Given the complex interactions between various global and regional-scale physical, chemical, atmospheric, terrestrial, and aquatic systems that result in the physical expressions of global climate change, it is impossible to discern whether the presence or absence of CO_2 emitted by a project would result in any altered conditions. When considered in the context of global or statewide GHG emissions, it is unlikely that any nonindustrial project would generate sufficient GHG emissions to be considered environmentally significant. GHG emissions are therefore considered a cumulative, rather than an individual, impact. This is not to suggest, however, that changes to individual projects may not, over the long term, result in lower GHG emissions.

Thresholds of significance illustrate the extent of an impact and are a basis from which to apply mitigation measures. It has largely been left to regional air districts to determine whether implementation of proposed land use projects would be consistent with the state's ability to attain the goals identified in AB 32 (i.e., reduction of statewide GHG emissions to 1990 levels by 2020). The Placer County Air Pollution Control District (PCAPCD) has not yet established significance thresholds for greenhouse gas emissions from project operations in order to determine consistency with the state's ability to attain the goals identified in AB 32. Therefore, for the purposes of evaluating the proposed Project's greenhouse gas impacts, emissions resulting from the proposed Project were quantified and the quantified emissions were then compared with the San Joaquin Valley Air Pollution Control District's (SJVAPCD) GHG significance threshold. The SJVAPCD threshold of significance is represented as the achievement of at least a 29 percent reduction in GHG emissions by 2020 as compared to business as usual (BAU).[4] SJVAPCD has determined that this reduction is consistent with the GHG emission reduction targets established in the California Air Resources Board's AB 32 Scoping Plan. Using the SJVAPCD GHG threshold of significance and associated guidelines was considered an appropriate method analysis given that the general climate conditions, urban to rural land use patterns and density, and transportation systems in the Project area are similar to those found in the SJVAPCD.

16.3.2 Methodology

GHG emissions associated with the Project were estimated for the GHGs that the California Air Resources Board finds are generated from indirect sources like the proposed Project, such as carbon dioxide (CO_2), nitrous oxide (N_2O), and methane (CH_4). This analysis assesses CO_2, N_2O, and CH_4 emissions for other primary source categories of emissions (e.g., motor vehicles and energy use associated with long-term operation of the Project). It is important to note that while other GHGs, such as hydrofluorocarbons

[4] Business as usual (BAU) is the project's projected GHG emissions level in 2020 under the assumption that consumption patterns and efficiencies are maintained at their 2008 levels. Under a BAU scenario, state, regional, and project-level efforts to reduce GHG emissions are not taken into consideration; rather, the BAU assumes the status quo.

(HFCs), have a higher global warming potential than CO_2, they emit negligible emissions from land use developments like the proposed Project under typical operations.

URBEMIS 2007 was used to estimate the Project's CO_2 emissions from construction and mobile sources.[5] Nitrous oxide and methane emissions resulting from project construction were analyzed using the California Climate Action Registry General Reporting Protocol Version 3.1 (January 2009). The General Reporting Protocol, produced by the California Registry and developed with recommendations and technical and policy guidance from the California Energy Commission, is a document designed to support the accurate reporting of GHG emissions in a quantifiable manner. CO_2, N_2O, and CH_4 emissions resulting from the Project's projected energy demand (electricity and natural gas) were analyzed using the California Energy Commission's California Commercial End Use Survey (CEC, 2006d).

GHG emission reductions resulting from such Project components were quantified using SJVAPCD-identified GHG mitigation measures and associated point reduction methodology. This GHG analysis also adjusts projected GHG emissions resulting from the project for state regulations, specifically California's Senate Bill 2X (known as the Renewable Portfolio Standard) and Pavley regulations.

SJVAPCD has published guidelines for addressing greenhouse gas emissions in the environmental review of proposed projects. These guidelines include a tiered system of project analysis to determine whether a project will attain the goals identified in AB 32 and have a significant cumulative impact on the environment. In order to ascertain the achievement of a 29 percent reduction compared to BAU, quantification of project-specific GHG emissions was required. Projects demonstrated to have reduced or mitigated project-specific operational GHG emissions by at least 29 percent compared to BAU would be determined to have a less than significant individual and cumulative impact on global climate change.

SJVAPCD does not have an adopted threshold of significance for construction-related GHG emissions. However, quantification and disclosure of construction-generated GHG emissions that would occur during construction is considered appropriate for this analysis.

For the purposes of evaluating the proposed Project's greenhouse gas impacts, construction and operational emissions resulting from implementation of the proposed Project will be quantified and GHG emission reduction strategies will be identified. The quantified operational emissions will then be compared with the SJVAPCD GHG threshold in order to ascertain compliance with AB 32.

16.3.3 Operational and Construction-Level Impacts and Mitigation Measures

IMPACT 16.1: Generate Greenhouse Gas Emissions During Project Construction That May Have a Significant Impact on the

[5] URBEMIS is software that uses the URBEMIS land use emissions inventory model to estimate greenhouse gas and criteria pollutant emissions under particular scenarios involving construction, area, and other sources. It has been designed specifically for California, though a 49-state version is in development, and uses California-specific road and construction emissions factors. The URBEMIS 2007 model uses the California Air Resources Board's EMFAC2007 model for on-road vehicle emissions and the OFFROAD2007 model for off-road vehicle emissions.

Environment or Conflict with an Applicable Adopted Reduction Plan, Policy, and/or Regulation

Development proposed under the Project would result in direct emissions of GHGs from construction. As stated above, SJVAPCD does not have an adopted threshold of significance for construction-related GHG emissions. However, quantification and disclosure of construction-generated GHG emissions that would occur during construction is considered appropriate for this analysis given that construction activities can be a large (though temporary) source of GHG.

The approximate quantity of daily GHG emissions generated by construction equipment utilized to build each phase of the proposed Project is depicted in **Table 16-1**. The table indicates that CO_2 would be the primary GHG emitted. Construction activities would emit GHGs as a result of vehicle activity (gas-powered construction vehicles and equipment) associated with various phases of construction.

The proposed project would be constructed in two phases. Each phase of construction would not be occurring simultaneously and therefore a totaling of the construction-related GHG emissions would not be the true indication of short-term emissions.

The first phase of the project includes site preparation of 17 acres, along with the construction of a house of worship facility and ministry offices. This phase was assumed to occur between July 2012 and August 2013. The second phase of the project includes construction of an additional house of worship building. As stated in Section 3.0 of this DEIR, Phase II is planned to be constructed once it is anticipated that the congregation will exceed Phase I capacity. The second phase is assumed to occur between July 2018 and August 2019. For the purposes of this analysis, it is assumed that each phase of construction will be completed. As shown in **Table 16-1**, GHG emissions are anticipated to decrease each year over the years of phased construction.

A major contributor to GHG emissions is construction-related traffic, the bulk of which is due to the potential trips required to export excess material generated from grading operations. As much as 40,000 cubic yards of excess soil material are projected to be generated from construction activities, and the Project proposes that this material be exported off-site. While the exact destination of the exported soil is not known at the drafting of this EIR, the analysis depicted in **Table 16-1** assumes 59 round trips per day, each totaling 20 miles in distance, during Phase I, per URBEMIS 2007 defaults.

TABLE 16-1
ESTIMATED PROJECT GREENHOUSE GAS EMISSIONS PER PHASE – CONSTRUCTION PHASES (POUNDS PER DAY)

Phase	Carbon Dioxide (CO_2)	Methane (CH_4)	Nitrous Oxide (N_2O)	Hydrofluoro carbons (HFCs)	Perfluoro carbons (PFCs)	Sulfur Hexafluoride (SF_6)	Carbon Dioxide Equivalent (CO_2e)
Phase I	6,184	0.35	0.16	Negl.	Negl.	Negl.	6,240
Phase II	2,357	0.14	0.06	Negl.	Negl.	Negl.	2,378

Source: URBEMIS 2007 v. 9.2.4 Outputs. California Climate Action Registry General Reporting Protocol Version 3.1. See Appendix 16.0 for modeling assumptions. Assumes 40,000 cubic yards of fill to be exported in Phase I with 59 20-mile round trips per day

during this phase. Phase I includes mass grading of entire 17-acre area proposed for development. Negl. – Emissions of this GHG would be negligible from this source category.

Heavy-duty construction vehicles idle during loading/unloading and during layovers or rest periods with the engine still on. Idling requires fuel use and results in emissions. The California Air Resources Board (ARB) Heavy-Duty Vehicle Idling Emission Reduction Program limits diesel-fueled commercial motor vehicles idling time to 5 minutes. There are some exceptions to the regulation such as positioning or providing a power source for equipment or operations such as lift, crane, pump, drill, hoist, or other auxiliary equipment. Adherence to this regulation would reduce fuel consumption and thus emissions.

The Project site totals approximately 74.2 acres while the proposed area of disturbance is 17 acres, with less than 5 acres proposed for actual building construction. Therefore, even with the addition of parking and landscaping, there would appear to be areas on-site which would accommodate some of the excess soil material generated during construction. Since the export of soil material requires the use of heavy-duty trucks which emit significant amounts of GHG emissions, attaining at least a partial balancing of the excess soil material on-site would reduce fuel consumption and thus GHG emissions. However, the exact amount of excess soil material that could be balanced on-site cannot be determined at the time of drafting this DEIR because in part the excess soil may not be suitable for compacted fill for site development.

Mitigation Measure 16-1 Limit Construction Equipment Idling

The Project applicant shall commit to enforce idling period of the state-mandated maximum of 5 minutes for heavy-duty trucks regulated under the ARB Idling Emission Reduction Program in order to reduce emissions for all pollutants from idling emissions.

The Project applicant shall provide a detailed plan that discusses a construction vehicle inventory tracking system to ensure compliance with this requirement. The system should include strategies such as requiring engine run-time meters on diesel-fueled commercial motor vehicles and daily logging of the operating hours of the vehicles.

SIGNIFICANCE AFTER MITIGATION

Mitigation measure **16-1** would reduce the Project's carbon footprint during construction activities during Phase I. This would not offset GHG emissions from construction. While GHG emissions from construction are a temporary condition, there are no established standards of significance for construction GHG emissions to determine if this impact is mitigated. Thus, this impact is considered **significant and unavoidable**.

IMPACT 16.2: Generate Greenhouse Gas Emissions During Project Operation that May Have a Significant Impact on the Environment or Conflict with Applicable Adopted Reduction Plan, Policy, and/or Regulation

Long-term operations of the Project would emit CO_2e from mobile and area sources, potentially contributing to global climate change and the associated consequences of climate change. This impact is potentially significant.

The cumulative increase in GHG concentrations in the atmosphere has resulted in and will continue to result in increases in global average temperatures and associated shifts in climatic and environmental conditions. Multiple adverse environmental effects are attributable to global climate change, such as sea level rise, increased incidence and intensity of severe weather events (e.g., heavy rainfall, droughts), and extirpation or extinction of plant and wildlife species. Given the significant adverse environmental effects linked to global climate change induced by GHGs, a substantial increase in the emission of GHGs is considered a significant impact.

For the purpose of analyzing this land use development project, the threshold of significance for operational-related GHG emissions is represented as the achievement of at least a 29 percent reduction in GHG emissions as compared to BAU, as described above. In order to ascertain the achievement of a 29 percent reduction compared to BAU, quantification of project-specific GHG emissions is required. Projects demonstrated to have reduced or mitigated project-specific GHG emissions by at least 29 percent compared to BAU, consistent with GHG emission reduction targets established in the ARB AB 32 Scoping Plan, would be determined to have a less than significant individual and cumulative impact on global climate change. As shown in **Table 16-2**, the long-term operations of the project could produce 6,132 metric tons of CO_2e annually, primarily from motor vehicles that travel to and from the site. This would contribute to a net increase in GHGs from the proposed project.

TABLE 16-2
ESTIMATED PROJECT GREENHOUSE GAS EMISSIONS – PROJECT OPERATION UNDER BAU OPERATIONS (CO_2E METRIC TONS PER YEAR)

Emission Source		Carbon Dioxide (CO_2)	Methane (CH_4)	Nitrous Oxide (N_2O)	Hydrofluoro-carbons (HFCs)	Perfluoro-carbons (PFCs)	Sulfur Hexafluoride (SF_6)	CO_2e
Mobile Source[1] (vehicle)		4,838	N/A	N/A	N/A	N/A	N/A	4,838
Area Source (on-site heating and cooling equipment, landscaping, consumer products)		400	N/A	N/A	N/A	N/A	N/A	400
Stationary Source	Electricity	556	Negl	Negl.	Negl.	Negl.	Negl.	556
	Natural Gas	268	Negl.	Negl.	Negl.	Negl.	Negl.	268
Water and Wastewater Conveyance/Treatment		37	Negl.	Negl.	Negl.	Negl.	Negl.	37
Solid Waste		33	Negl.	Negl.	Negl.	Negl.	Negl.	Negl.
Total CO_2e Emissions (BAU)		**6,132**						

Source: URBEMIS ver. 9.2.4; CEC 2006d; CEC 2006e; BAAQMD, 2010. See Appendix 16.0 for modeling assumptions.
Negl – Emissions of this GHG would be negligible from this source category.
N/A – Not available
BAU – The projected emissions in 2020 of the proposed Project without any greenhouse gas reduction measures.
[1] Emissions presented are not adjusted for future improved CAFÉ standards (Pavley I) and Low Carbon Fuel Standards. Trip generation rates from Traffic Impact Analysis for Amazing Facts Church Placer County (KD Anderson, 2010).

For purposes of this analysis, the total emissions of 6,132 metric tons of CO_2e per year are considered the BAU figure. Changes to regulations will take effect in the near future (year 2020 and beyond) that will substantially reduce GHG emissions. Implementation of AB 1493 (Pavley) will significantly reduce the amount of GHGs emitted from passenger

vehicles. According to the URBEMIS model prepared for the proposed Project, 87.4 percent of vehicle trips related to the project are from passenger cars, light-duty trucks, and medium-duty trucks, all of which are subject to Pavley. ARB's Post-Processor tool estimates an 18 percent reduction in GHGs in these vehicle classes by 2020. As passenger vehicles represent the single largest source of GHGs associated with the proposed Project, the anticipated reduction represents 766 fewer metric tons per year of GHGs attributed to the Project.

In terms of energy, the Project will at minimum meet the 2008 Title 24 energy efficiency standards, which went into effect January 1, 2010. These standards reduce electricity by 4.9 percent below BAU and reduce natural gas by 9.4 percent below BAU. In March 2011, Senate Bill 2X established the Renewable Portfolio Standard as law (33 percent of energy supply from renewable sources by 2020). Senate Bill 2X would reduce project emissions by 117 metric tons annually by 2020. These regulations and others will further reduce GHGs as shown in **Table 16-3**.

TABLE 16-3
GHG REDUCTIONS FROM APPLICATION OF NEW REGULATIONS

California Legislation	CO_2e Emissions Reductions (Metric Tons/Year)
AB 1493 (Pavley)	766
Title 24 (CALGreen) Standards	52
Senate Bill 2X – Renewable Portfolio Standard	117
Total	**935**

Source: See Appendix 16.0

Implementation of State-led GHG reduction measures such as Pavley, 2008 Title 24 energy efficiency standards, and Senate Bill 2X would reduce project GHG emissions 15 percent compared with BAU. Therefore, the following mitigation is required:

Mitigation Measure 16-2a Reduce Emissions

The following on-site circulation design elements shall be implemented:

- Passenger loading and unloading zones shall contain signs stating a required maximum of 3 minutes for passenger loading and unloading activities;

- The Project shall provide for adequate pedestrian crosswalks and walkways between the parking lot areas and the house of worship facilities to the satisfaction of the Placer County Public Works Department in order to reduce vehicle queuing and improve the pedestrian environment.

Mitigation Measure 16-2b Reduce VMT

The Project applicant shall:

- Include facilities on-site to encourage bicycle and pedestrian travel to the Project by including facilities that are considered equal to or better than bicycle lockers and/or racks and facilities for personal showers and lockers. These requirements shall be included in building design plans for the Project prior to the issuance of any building permits.

- The Project site design and building placement shall minimize barriers to pedestrian access and interconnectivity. Physical barriers such as walls, berms, landscaping, and slopes between Project facilities and Sierra College Boulevard that impede bicycle or pedestrian circulation are eliminated. Barriers to pedestrian access of neighboring facilities and sites are minimized. This measure is not meant to prevent the limited use of barriers to ensure public safety by prohibiting access to hazardous areas, etc.

- The Project shall be designed to support existing bicycle and pedestrian facilities (i.e., bike lanes on Sierra College Boulevard). The setback distance between Project facilities and Sierra College Boulevard shall be minimized to the minimum allowed under the Placer County Code. Setback distance between different buildings on the Project site shall also be reduced to the minimum allowed under the Placer County Code. Project buildings shall be oriented toward street frontage. Primary entrances to buildings shall be located facing the public street frontage.

- The proposed Project shall implement bus stop improvements. The Project will be required to include provisions for a curbside bus stop on Sierra College Boulevard along the site frontage. The Project will also be required to provide a concrete pad for the future placement of a bus stop bench. The exact location and design of these improvements shall be determined by Placer County Transit staff in conjunction with the developer prior to or during construction activities. In addition, the Project shall provide a parking lot design that includes clearly marked and shaded pedestrian pathways between the bus stop and main building entrances.

Mitigation Measure 16-2c Energy-Efficient Building Design

The Project applicant shall include the following energy efficiency measures in each of the buildings proposed for the Project:

- Provide shade tree plantings in parking lots to reduce evaporative emissions from parked vehicles. Tree plantings for parking lots shall be in compliance with the Placer County Design Guidelines Manual and Placer County Landscape Guidelines.

- Include a “white” membrane roof versus most applications that are a darker color and strategically place shade trees to the satisfaction of the Placer County Planning Department.

- Install an energy-efficient cooling system rated above Energy Efficiency Ratio 10 and "Energy Star" compliant.[6]

- Include the use of LED lighting for all internally illuminated building signage.[7]

- Include occupancy sensors in the office, reception, Sabbath school classrooms, and recording studio uses. These sensors detect activity in a room and automatically turn off the light when the space is unoccupied.

- All building plans submitted to the Building Division must clearly show the features listed above. Substitutions for the energy efficiency methods listed above may be allowed (if equal in points from the PCAPCD Green Points Checklist) but only with approval of the PCAPCD prior to the issuance of a building permit.

Mitigation Measure 16-2d Energy-Efficient Building Paths

The Project applicant shall include energy-efficient building measures from one of the three paths below (Path 1 or Path 3) to be applied to each of the buildings proposed for the Project as determined feasible.

Path 1

1) All new fixtures installed within any of the buildings associated with the Project shall meet or exceed the minimum standards as specified below:[8]

   a) Toilets: High Efficiency Toilets (HETs) with flush rate <1.28 gallons per flush (gpf)

   b) Urinals: waterless or low-flow with flush rate < 0.5 gpf

   c) Faucets: flow rates < 1.5 gallons per minute (gpm) for all faucets except kitchen sinks

   d) Pre-rinse Spray Valves: flow rates < 2.0 gpm

2) All new HVAC equipment must comply with the Consortium for Energy Efficiency (CEE) Tier 1 commercial HVAC standards.

3) High efficiency heating: If new furnaces are specified, they will have a minimum energy efficiency of 92 AFUE.

[6] An Energy Efficiency Ratio (EER) is the ratio of the cooling capacity of an air conditioner in British Thermal Units (BTU) per hour, to the total electrical input (in watts) under certain specified tests. Air conditioner EER ratings higher than 10 are considered most energy effective. The higher the ratio, the less energy to operate. Energy Star is a program that was first developed in 1992 by the US Environmental Protection Agency (EPA) as a method to identify and promote products that are energy efficient.

[7] The application of LED technology is over 80 percent more energy-efficient that standard illumination and the lamp life ranges up to 6 to 10 times longer, which reduces the need to manufacture and dispose standard illuminated lamps (Underwood, 2007).

[8] According to Consumer Reports (2008), low flow faucets reduce water usage by 30 percent over traditional faucets. Furthermore, all restroom urinals will use 0.125 gallons per flush and toilets will use 1.25 gallons per flush.

4) Install Energy Star rated office equipment and appliances. For eligible equipment, at least 75 percent of all new office equipment and 90 percent of all new appliances must be Energy Star rated.

5) Pre-plumb for solar hot water heater.

Path 3

Exceed California minimum energy efficiency standards (Title 24, Part 6) by 15 percent or more.

All building plans submitted to the Building Division must clearly show the feasible features listed. Substitutions for the energy efficiency methods listed above may be allowed (if equal in points from the PCAPCD Green Points Checklist) but only with approval of the PCAPCD prior to the issuance of a building permit.

Mitigation Measure 16-2e Reduce Waste Flows

The Project shall provide interior and/or exterior storage areas where appropriate for recyclables and green waste and adequate recycling containers located in public areas if such recycling programs are available.

Based on the SJVAPCD guidelines described above (project compliance with SJVAPCD guidelines equates to compliance with AB 32), **Table 16-4** below provides estimates of the emissions reductions that will result from implementation of the proposed Project's GHG-reducing mitigation. For example, as shown, bicycle, pedestrian, and transit measures would reduce emissions by 224 metric tons per year (mitigation measures **16-2a** and **b**), while parking component measures would result in another 24 metric tons of annual emission reductions (mitigation measure **16-2b**). However, it should be noted that the emissions reductions resulting from mitigation measure **16-2d** could not be quantified as the Project applicant will include energy-efficient building measures from a choice of one of three different paths (Path 1 or Path 3). Until such time that it is known which path the applicant shall employ, emission reduction quantification resulting from mitigation measure **16-2d** would be speculative. Therefore, it should be further noted that the emissions reductions presented in **Table 16-4** are a conservative projection, and reductions will most likely be higher.

TABLE 16-4
SAN JOAQUIN VALLEY AIR POLLUTION CONTROL DISTRICT QUANTIFIED GHG REDUCTION ESTIMATES FOR PROJECT EMISSION-REDUCING DESIGN FEATURES

Measure (Numbers from SJVAPCD Report)	SJVAPCD Emission Reduction Factor	CO_2e Emission Reduction (Metric Tons/Year)
Bicycle, Pedestrian, Transit Measures (SJVAPCD Measures 1,2, 4, 5, 6, & 8)	3.6	224
Building Component Measures (SJVAPCD Measure 27)	0.5	4
Parking Measures (SJVAPCD Measure 13)	0.5	24

Measure (Numbers from SJVAPCD Report)	SJVAPCD Emission Reduction Factor	CO_2e Emission Reduction (Metric Tons/Year)
Site Design Measure (SJVAPCD Measure 16)	0.5	72
Total	**5.1**	**324**

Source: SJVAPCD, 2009, pp. 242–262 for detailed assumptions and modeling output files; also see Appendix 16.0

SIGNIFICANCE AFTER MITIGATION

Reductions achieved through state-led GHG reducing regulations are shown in **Table 16-3**. **Table 16-4** provides estimates of the emissions reductions that will result from implementation of the proposed Project's GHG-reducing mitigation. When the reductions from **Table 16-3** and **Table 16-4** are totaled (see **Table 16-5**), the amount of GHG reduction is 1,259 metric tons of CO_2e per year. This amount represents a reduction of 20 percent from the BAU figure of 6,132 metric tons of CO_2e per year.

TABLE 16-5
SUMMARY OF PROJECT GHG REDUCTIONS

Emissions Reduction Summary	CO_2 Emissions (Metric Tons/Year)
Total Business-as-Usual (BAU) Emissions	6,132
Project-Related CO_2e Reduction (mitigation measures 16-2a – 16-2f)	324
Regulatory Reduction	935
Total GHG Emission Reduction	1,259
Remaining Emissions	**4,873**
Percentage Reduction from Business as Usual	20
District Percentage Reduction Threshold for Less than Significant Determination	29

The GHG emissions from the proposed Project are projected to result in 4,873 metric tons of CO_2e per year (**Tables 16-2** through **16-5**). As the proposed Project would reduce projected BAU emissions by just 20 percent, the Project is not considered consistent with the State of California's ability to meet its AB 32 goals (project compliance with SJVAPCD guidelines equates to compliance with AB 32). Thus, the proposed Project's contribution to cumulative GHG emissions is considered **cumulatively considerable** and a **significant and unavoidable** impact.