APPENDIX B

GLOBAL CLIMATE CHANGE ANALYSIS

GLOBAL CLIMATE CHANGE ANALYSIS

NORTH SAN PEDRO APARTMENT PROJECT

SAN JOSÉ, CALIFORNIA

LSA

June 2011

GLOBAL CLIMATE CHANGE ANALYSIS

NORTH SAN PEDRO APARTMENT PROJECT

SAN JOSÉ, CALIFORNIA

Prepared for:

City of San José
Department of Planning, Building, and Code Enforcement, City of San José
200 East Santa Clara Street, 3rd Floor Tower
San José, California
(408) 535-7800

Prepared by:

LSA Associates, Inc.
5084 N. Fruit Avenue, Suite 103
Fresno, California 93711
(559) 490-1210

LSA Project Number: FCY1101

LSA

June 2011

TABLE OF CONTENTS

1.0 INTRODUCTION 1

2.0 BACKGROUND 2

3.0 CRITERIA AND METHODOLOGY 14

4.0 IMPACTS AND MITIGATION MEASURES 16

5.0 GLOBAL CLIMATE CHANGE IMPACTS ON PROJECT 19

APPENDICES

Appendix A: Construction-Related GHG Emissions Estimates
Appendix B: Operation-Related GHG Emissions Estimates

TABLES

Table 1: Global Warming Potential of Greenhouse Gases 4

Table 2: San José Greenhouse Gas Emissions as Compared to National and State Levels..... 7

Table 3: Greenhouse Gas Emissions 17

1.0 INTRODUCTION

CEQA requires that lead agencies consider the reasonably foreseeable adverse environmental effects of projects considered for approval. Global climate change is considered an "effect on the environment" and an individual project or plan's incremental contribution to global climate change can have a cumulatively significant impact. Cumulative impacts are the collective impacts of one or more past, present, or future projects, that when combined, result in adverse changes to the environment. Climate change is a global environmental issue in which: (a) any given development project contributes only a small portion of any net increase in greenhouse gases (GHGs) and (b) global growth is continuing to contribute large amounts of GHGs across the world. Therefore, this report addresses climate change primarily as a cumulative impact.

The proposed project, located in the City of San José, California, is intended to address the housing needs of lower income families who work in San José, or families who are already living in San José but paying large percentages of their income for rent. The proposed project would accommodate low to very low-income individuals, earning 30 to 50 percent of the area's median income. The residential units would be included on floors two through six. The project would include 135 affordable for-rent residential units in a 75,626 square foot, six-story building.

The 0.73-acre project site is located at the southeast corner of Bassett and Terraine Streets in downtown San José. The project site is bounded by the Union Pacific Railroad line to the north, a segment of Terraine Street to the east, Bassett Street to the south and State Route (SR) 87 to the west. The southern portion of the site along Basset Street consists of an unpaved lot surrounded by chain link fencing. The northern and easternmost portions of the site along the Union Pacific Railroad line consist of an unpaved dirt lot with an asphalt road that intersects with the end of Terraine Street. The proposed project would have a total residential density of approximate of 185 units per acre. The second floor would include the building manager's unit, a community room, gym, laundry area, computer lounge, a social services office, and a manager's office.

This report begins by providing general background information on climate change and meteorology. It then discusses the regulatory framework for global climate change, provides data on the existing global climate setting, and evaluates potential greenhouse gas emissions associated with the proposed project. Modeled project emissions are estimated based on the land uses proposed as part of the project, and project trip generation, among other variables. The information and analysis provided in this report relies primarily on the Climate Action Team 2006 Final Report[1], Intergovernmental Panel on Climate Change (IPCC) Assessment Reports[2], various California Air Resources Board (ARB) staff reports and other related global climate change documents that provide background information on the impacts of greenhouse gas emissions.

---

[1] California Climate Change Center, 2006. *Our Changing Climate. Assessing the Risks to California.* July.

[2] Intergovernmental Panel on Climate Change (IPCC), 2007. *Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the IPCC.*

2.0 BACKGROUND

The following discussion provides an overview of global climate change, its causes, and its potential effects. The regulatory framework relating to global climate change is also summarized.

GLOBAL CLIMATE CHANGE

Global climate change is the observed increase in the average temperature of the Earth's atmosphere and oceans along with other significant changes in climate (such as precipitation or wind) that last for an extended period of time. The term "global climate change" is often used interchangeably with the term "global warming," but "global climate change" is preferred to "global warming" because it helps convey that there are other changes in addition to rising temperatures.

Climate change may result from natural factors, such as changes in the sun's intensity; natural processes within the climate system, such as changes in ocean circulation; or human activities, such as the burning of fossil fuels, land clearing, or agriculture. The primary observed effect of global climate change has been a rise in the average global tropospheric[3] temperature of 0.36°F per decade, determined from meteorological measurements worldwide between 1990 and 2005. Changes to the global climate system, ecosystems, and the environment of California could include higher sea levels, drier or wetter weather, changes in ocean salinity, changes in wind patterns or more energetic aspects of extreme weather, including droughts, heavy precipitation, heat waves, extreme cold and increased intensity of tropical cyclones. Specific effects in California might include a decline in the Sierra Nevada snowpack, erosion of California's coastline, and seawater intrusion in the Sacramento-San Joaquin River Delta.

Global surface temperatures have risen by 1.33°F ± 0.32°F over the last 100 years (1906 to 2005). The rate of warming over the last 50 years is almost double that over the last 100 years.[4] Climate change modeling shows that further warming could occur, which would induce additional changes in the global climate system during the current century. The latest projections, based on state-of-the art climate models, indicate that temperatures in California are expected to rise 3 to 10.5°F by the end of the century.[5] The prevailing scientific opinion on climate change is that most of the warming observed over the last 50 years is attributable to human activities. Increased amounts of carbon dioxide (CO_2) and other GHGs are the primary causes of the human-induced component of warming. The observed warming effect associated with the presence of GHGs in the atmosphere (from either natural or human sources) is often referred to as the greenhouse effect.[6]

---

[3] The troposphere is the zone of the atmosphere characterized by water vapor, weather, winds, and decreasing temperature with increasing altitude.

[4] Intergovernmental Panel on Climate Change (IPCC), 2007, op. cit.

[5] California Climate Change Center, 2006, op. cit.

[6] The temperature on Earth is regulated by a system commonly known as the "greenhouse effect." Just as the glass in a greenhouse lets heat from sunlight in and reduces the amount of heat that escapes, greenhouse gases like carbon dioxide, methane, and nitrous oxide in the atmosphere keep the Earth at a relatively even temperature. Without the greenhouse effect,

Greenhouse Gases. Greenhouse Gasses (GHGs) are present in the atmosphere naturally, are released by natural sources, or are formed from secondary reactions taking place in the atmosphere. However, over the last 200 years, human activities have caused substantial quantities of GHGs to be released into the atmosphere. These extra emissions are increasing GHG concentrations in the atmosphere, and enhancing the natural greenhouse effect, which is believed to be causing global climate change. The gases that are widely seen as the principal contributors to human-induced global climate change are:[7]

- Carbon dioxide (CO_2)
- Methane (CH_4)
- Nitrous oxide (N_2O)
- Hydrofluorocarbons (HFCs)
- Perfluorocarbons (PFCs)
- Sulfur Hexafluoride (SF_6)

While GHGs produced by human activities include naturally-occurring GHGs such as CO_2, methane, and N_2O, some gases, like HFCs, PFCs, and SF_6 are completely new to the atmosphere. Certain other gases, such as water vapor, are short-lived in the atmosphere as compared to these GHGs that remain in the atmosphere for significant periods of time, contributing to climate change in the long term. Water vapor is generally excluded from the list of GHGs because it is short-lived in the atmosphere and its atmospheric concentrations are largely determined by natural processes, such as oceanic evaporation. For the purposes of this report, the term "GHGs" will refer collectively to the six gases identified in the bulleted list provided above.

These gases vary considerably in terms of Global Warming Potential (GWP), which is a concept developed to compare the ability of each GHG to trap heat in the atmosphere relative to another gas. The global warming potential is based on several factors, including the relative effectiveness of a gas to absorb infrared radiation and length of time that the gas remains in the atmosphere ("atmospheric lifetime"). The GWP of each gas is measured relative to CO_2, the most abundant GHG. The definition of GWP for a particular GHG is the ratio of heat trapped by one unit mass of the GHG to the ratio of heat trapped by one unit mass of CO_2 over a specified time period. GHG emissions are typically measured in terms of pounds or tons of "CO_2 equivalents" (CO_2eq). Table 1 shows the GWPs for each type of GHG. For example, sulfur hexafluoride is 22,800 times more potent at contributing to global warming than carbon dioxide.

the Earth would be a frozen globe; thus, although an excess of greenhouse gas results in global warming, the *naturally occurring* greenhouse effect is necessary to keep our planet at a comfortable temperature.

[7] The greenhouse gases listed are consistent with the definition in Assembly Bill (AB) 32 (Government Code 38505) and the *CEQA Guidelines* section 15364.5, as discussed later in this section.

Table 1: Global Warming Potential of Greenhouse Gases

Gas	Atmospheric Lifetime (Years)	Global Warming Potential (100-year Time Horizon)
Carbon Dioxide	50-200	1
Methane	12	25
Nitrous Oxide	114	298
HFC-23	270	14,800
HFC-134a	14	1,430
HFC-152a	1.4	124
PFC: Tetrafluoromethane (CF_4)	50,000	7,390
PFC: Hexafluoromethane (C_2F_6)	10,000	12,200
Sulfur Hexafluoride (SF_6)	3,200	22,800

Source: IPCC, 2007. Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the IPCC.

The following discussion summarizes the characteristics of the six primary GHGs.

Carbon Dioxide (CO_2). In the atmosphere, carbon generally exists in its oxidized form, as CO_2. Natural sources of CO_2 include the respiration (breathing) of humans, animals and plants, volcanic outgassing, decomposition of organic matter and evaporation from the oceans. Human-caused sources of CO_2 include the combustion of fossil fuels and wood, waste incineration, mineral production, and deforestation. The Earth maintains a natural carbon balance and when concentrations of CO_2 are upset, the system gradually returns to its natural state through natural processes. Natural changes to the carbon cycle work slowly, especially compared to the rapid rate at which humans are adding CO_2 to the atmosphere. Natural removal processes, such as photosynthesis by land- and ocean-dwelling plant species, cannot keep pace with this extra input of man-made CO_2, and consequently, the gas is building up in the atmosphere. The concentration of CO_2 in the atmosphere has risen about 30 percent since the late 1800s.[8]

In 2002, CO_2 emissions from fossil fuel combustion accounted for approximately 98 percent of man-made CO_2 emissions and approximately 84 percent of California's overall GHG emissions (CO_2eq). The transportation sector accounted for California's largest portion of CO_2 emissions, with gasoline consumption making up the greatest portion of these emissions. Electricity generation was California's second largest category of GHG emissions.

Methane (CH_4). Methane is produced when organic matter decomposes in environments lacking sufficient oxygen. Natural sources include wetlands, termites, and oceans. Anthropogenic sources include rice cultivation, livestock, landfills and waste treatment, biomass burning, and fossil fuel combustion (burning of coal, oil, natural gas, etc.). Decomposition occurring in landfills accounts for the majority of human-generated CH_4 emissions in California, followed by enteric fermentation (emissions from the digestive processes of livestock).[9] Agricultural processes such as manure

[8] California Environmental Protection Agency, 2006. *Climate Action Team Report to Governor Schwarzenegger and the Legislature*. March.

[9] California Air Resources Board, Greenhouse Gas Inventory Data - 1990 to 2004. Website: www.arb.ca.gov/cc/inventory/data/data.htm (accessed November 2008).

management and rice cultivation are also significant sources of manmade CH_4 in California. Methane accounted for approximately 6 percent of gross climate change emissions (CO_2eq) in California in 2002.[10] It is estimated that over 60 percent of global methane emissions are related to human-related activities.[11] As with CO_2, the major removal process of atmospheric methane – a chemical breakdown in the atmosphere – cannot keep pace with source emissions, and methane concentrations in the atmosphere are increasing.

Nitrous Oxide (N_2O). Nitrous oxide is produced naturally by a wide variety of biological sources, particularly microbial action in soils and water. Tropical soils and oceans account for the majority of natural source emissions. Nitrous oxide is a product of the reaction that occurs between nitrogen and oxygen during fuel combustion. Both mobile and stationary combustion emit N_2O, and the quantity emitted varies according to the type of fuel, technology, and pollution control device used, as well as maintenance and operating practices. Agricultural soil management and fossil fuel combustion are the primary sources of human-generated N_2O emissions in California. Nitrous oxide emissions accounted for nearly 7 percent of man-made GHG emissions (CO_2eq) in California in 2002.

Hydrofluorocarbons (HFCs), Perfluorocarbons (PFCs), and Sulfur Hexafluoride (SF_6). HFCs, PFCs, and SF_6 are gases of high global warming potential and are used in a variety of applications, including refrigeration, air conditioning, cleaning solvents, fire extinguishers, and as aerosol propellants. HFCs are primarily used as substitutes for ozone-depleting substances regulated under the Montreal Protocol.[12] PFCs and SF_6 are emitted from various industrial processes, including aluminum smelting, semiconductor manufacturing, electric power transmission and distribution, and magnesium casting. There is no aluminum or magnesium production in California; however, the rapid growth in the semiconductor industry, which is active in California, leads to greater use of PFCs. HFCs, PFCs, and SF_6 accounted for about 3.5 percent of man-made GHG emissions (CO_2eq) in California in 2002.[13]

EMISSIONS INVENTORIES

An emissions inventory that identifies and quantifies the primary human-generated sources and sinks of GHGs is a well-recognized and useful tool for addressing climate change. This section summarizes the latest information on global, United States, California, and local GHG emission inventories. However, because GHGs persist for a long time in the atmosphere (see Table 1), accumulate over time, and are generally well-mixed, their impact on the atmosphere and climate cannot be tied to a specific point of emission.

[10] Ibid.

[11] IPCC, 2007. *Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the IP*CC.

[12] The Montreal Protocol is an international treaty that was approved on January 1, 1989, and was designated to protect the ozone layer by phasing out the production of several groups of halogenated hydrocarbons believed to be responsible for ozone depletion.

[13] California Environmental Protection Agency, 2006. *Climate Action Team Report to Governor Schwarzenegger and the Legislature*. March.

Global Emissions. Worldwide emissions of GHGs in 2004 were 27 billion metric tons of CO_2eq per year.[14] Global estimates are based on country inventories developed as part of programs of the United Nations Framework Convention on Climate Change (UNFCCC).

U.S. Emissions. In 2004, the United States emitted about 7.3 billion metric tons of CO_2eq or about 25 tons per year per person. Of the four major sectors nationwide – residential, commercial, industrial and transportation – transportation accounts for the highest amount of GHG emissions (approximately 35 to 40 percent); these emissions are entirely generated from direct fossil fuel combustion. Between 1990 and 2006, total U.S. GHG emissions rose approximately 14.7 percent.[15]

State of California Emissions. According to California Air Resources Board (ARB) emission inventory estimates, California emitted approximately 480 million metric tons[16] of CO_2eq emissions in 2004.[17] This large number is due primarily to the sheer size of California compared to other States. By contrast, California has the fourth lowest per-capita carbon dioxide emission rate from fossil fuel combustion in the country, due to the success of its energy efficiency and renewable energy programs and commitments that have lowered the State's GHG emissions rate of growth by more than half of what it would have been otherwise.[18]

The ARB estimated that transportation was the source of approximately 38 percent of the State's GHG emissions in 2004, followed by electricity generation (both in-State and out-of-State) at 23 percent, and industrial sources at 20 percent. The remaining sources of GHG emissions were residential and commercial activities at 9 percent, agriculture at 6 percent, high global warming potential gases (HFCs, PFCs, and SF_6 from miscellaneous sources) at 3 percent, and recycling and waste at 1 percent.[19]

ARB staff has projected statewide unregulated GHG emissions for the year 2020, which represent the emissions that would be expected to occur in the absence of any GHG reduction actions, will be 596 million metric tons (MMT) of CO_2eq. GHG emissions from the transportation and electricity sectors as a whole are expected to increase, but remain at approximately 38 percent and 23 percent of total CO_2eq emissions, respectively. The industrial sector consists of large stationary sources of GHG emissions and the percentage of the total 2020 emissions is projected to be 17 percent of total CO_2eq emissions. The remaining sources of GHG emissions in 2020 are high global warming potential gases

[14] Combined total of Annex I and Non-Annex I Country CO_2eq emissions. United Nations Framework Convention on Climate Change (UNFCCC), 2007. *Greenhouse Gas Inventory Data.* Information available at http://unfccc.int/ghg_data/ghg_data_unfccc/time_series_annex_i/items/3814.php and http://maindb.unfccc.int/library/view_pdf.pl?url=http://unfccc.int/resource/docs/2005/sbi/eng/18a02.pdf.

[15] U.S. Environmental Protection Agency (EPA), 2008. The U.S. Greenhouse Gas Emissions and Sinks: Fast Facts. http://www.epa.gov/climatechange/emissions/downloads/2008_GHG_Fast_Facts.pdf.

[16] A metric ton is equivalent to approximately 1.1 tons.

[17] California Air Resources Board, Greenhouse Gas Inventory Data - 1990 to 2004. Website: www.arb.ca.gov/cc/inventory/data/data.htm (accessed November 2008).

[18] California Energy Commission (CEC), 2007. *Inventory of California Greenhouse Gas Emissions and Sinks: 1990 to 2004 - Final Staff Report*, publication # CEC-600-2006-013-SF, Sacramento, CA, December 22, 2006; and January 23, 2007 update to that report.

[19] California Air Resources Board (ARB), 2008. Website: www.climatechange.ca.gov/inventory/index.html (accessed September).

at 8 percent, residential and commercial activities at 8 percent, agriculture at 5 percent, and recycling and waste at 1 percent.[20]

Bay Area Emissions. The Bay Area Air Quality Management District (BAAQMD) established a climate protection program in 2005 to acknowledge the link between climate change and air quality. BAAQMD regularly prepares inventories of criteria and toxic air pollutants to support planning, regulatory and other programs. The most recent emissions inventory estimates greenhouse gas emissions produced by the San Francisco Bay Area in 2007.[21] The inventory updates the BAAQMD's previous GHG emission inventory for base year 2002, which was published November 2006.

In 2007, 102.6 million metric tons of CO_2eq of greenhouse gases were emitted by the San Francisco Bay Area. Fossil fuel consumption in the transportation sector was the single largest source of the San Francisco Bay Area's greenhouse gas emissions in 2007. The transportation sector, including on-road motor vehicles, locomotives, ships and boats, and aircraft, contributed over 40 percent of greenhouse gas emissions in the Bay Area. The industrial and commercial sector (excluding electricity and agriculture) was the second largest contributor with 34 percent of total GHG emissions. Energy production activities such as electricity generation and co-generation were the third largest contributor with approximately 15 percent of the total GHG emissions. Off-road equipment such as construction, industrial, commercial, and lawn and garden equipment contributed 3 percent of GHG emissions.

City of San José Emissions. The GHG emissions inventory shown in Table 2 represents the best available emissions estimates for the City of San José.

Table 2: San José Greenhouse Gas Emissions as Compared to National and State Levels

Location	Greenhouse Gas Emissions (MMT CO2e)	Percent of U.S. Emissions	Percent of California Emissions
United States	7,147.20 [1]	100.00	N/A
California	475.70 [2]	7.80	100.00
San José Citywide	3.83 [3]	0.06	0.80

Sources: [1] U.S. EPA Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2007;
[2] California Greenhouse Gas Inventory by Scoping Plan Categories 2000-2006, California Air Resources Board website: www.arb.ca.gov/cc/inventory/data/tables/ghg_inventory_scopingplan_2009-03-13.pdf; and
[3] Report generated for San José, CA using STAPPA/ALAPCO and ICLEI's Clean Air and Climate Associates Inc.

Note: Values are based on 2005 data.

REGULATORY FRAMEWORK

The regulatory framework for GHG emissions and global climate change is discussed in this section.

Federal Regulations. The United States has historically had a voluntary approach to reducing GHG emissions. However, on April 2, 2007, the United States Supreme Court ruled that the Environmental

[20] California Air Resources Board (ARB), 2008. Website: www.arb.ca.gov/cc/inventory/data/forecast.htm. September.

[21] Bay Area Air Quality Management District, 2008. *Source Inventory of Bay Area Greenhouse Gas Emissions.* December.

Protection Agency (EPA) has the authority to regulate CO_2 emissions under the Federal Clean Air Act (CAA). While there currently are no adopted federal regulations for the control or reduction of GHG emissions, the EPA commenced certain actions in 2009 that are designed to implement a regulatory approach to global climate change.

On December 7, 2009, the EPA Administrator signed a final action under the CAA, finding that six greenhouse gases (CO_2, CH_4, N_2O, HFCs, PFCs, SF_6) constitute a threat to public health and welfare, and that the combined emissions from motor vehicles cause and contribute to global climate change. This EPA action does not impose any requirements on industry or other entities. However, the findings are a prerequisite to finalizing the GHG emission standards for light-duty vehicles mentioned below. EPA received ten petitions challenging this determination. On July 29, 2010, EPA denied these petitions.

In February 2010, the White House Council of Environmental Quality released a document titled "Draft NEPA Guidance on Consideration of the Effects of Climate Change and Greenhouse Gas Emissions." The draft guidance recognizes that many federal actions will result, directly or indirectly, in GHG emissions. The draft guidance encourages agencies to quantify cumulative emissions over the life of the project in project analysis; to discuss measures to reduce emissions, including the consideration of reasonable alternatives; and to discuss from a qualitative perspective the link between the project's emissions and climate change. The guidance recognizes scientific limits on the ability to predict climate change effects, and therefore cautions against the use of speculative analyses or attempting to link a particular project to specific climatological changes.

On April 1, 2010, the EPA and the Department of Transportation's National Highway Traffic Safety Administration (NHTSA) announced a final joint rule to establish a national program consisting of new standards for model year 2012 through 2016 light-duty vehicles that will reduce greenhouse gas emissions and improve fuel economy. EPA is finalizing the first-ever national greenhouse gas emissions standards under the CAA, and NHTSA is finalizing Corporate Average Fuel Economy (CAFE) standards under the Energy Policy and Conservation Act. The EPA GHG standards require these vehicles to meet an estimated combined average emissions level of 250 grams of carbon dioxide (CO_2) per mile in model year 2016, equivalent to 35.5 miles per gallon (mpg).

On May 13, 2010, the EPA issued a final rule to address greenhouse gas emissions from stationary sources under the CAA permitting programs. This final rule sets thresholds for GHG emissions that define when permits under the New Source Review Prevention of Significant Deterioration (PSD) and title V Operating Permit programs are required for new and existing industrial facilities.

State Regulations. The ARB is the lead agency for implementing climate change regulations in the State. Since its formation, the ARB has worked with the public, the business sector, and local governments to find solutions to California's air pollution problems.

Assembly Bill 1493 (2002). In a response to the transportation sector's significant contribution to California's CO_2 emissions, Assembly Bill 1493 (AB 1493, Pavley) was enacted on July 22, 2002. AB 1493 requires the ARB to set GHG emission standards for passenger vehicles and light duty trucks (and other vehicles whose primary use is noncommercial personal transportation in the State) manufactured in 2009 and all subsequent model years. To set its own GHG emissions limits on motor vehicles, California must receive a waiver from the EPA. On June 30, 2009, the EPA granted the

waiver of Clean Air Act preemption to California for its greenhouse gas emission standards for motor vehicles beginning with the 2009 model year. Notice of the decision was published in the Federal Register on July 8, 2009.

Executive Order S-3-05 (2005). In June 2005, Governor Schwarzenegger established California's GHG emissions reduction targets in Executive Order S-3-05. The Executive Order established the following goals for the State of California: GHG emissions should be reduced to 2000 levels by 2010; GHG emissions should be reduced to 1990 levels by 2020; and GHG emissions should be reduced to 80 percent below 1990 levels by 2050.

The executive order also directed the secretary of the California EPA to coordinate a multiagency effort to reduce GHG emissions to the target levels. The secretary will submit biannual reports to the governor and legislature describing progress made toward reaching the emission targets, impacts of climate change on California's resources, and mitigation and adaptation plans to combat impacts of climate change.

Assembly Bill 32 (2006), California Global Warming Solutions Act. California's major initiative for reducing GHG emissions is outlined in Assembly Bill 32 (AB 32), the "Global Warming Solutions Act," passed by the California State legislature on August 31, 2006. This effort aims at reducing GHG emissions to 1990 levels by 2020. The ARB has established the level of GHG emissions in 1990 at 427 million metric tons (MMT) of CO_2eq. The emissions target of 427 MMT requires the reduction of 169 MMT from the State's projected business-as-usual 2020 emissions of 596 MMT. AB 32 requires the ARB to prepare a Scoping Plan that outlines the main State strategies for meeting the 2020 deadline and to reduce GHGs that contribute to global climate change. The Scoping Plan was approved by the ARB on December 11, 2008, and includes measures to address GHG emission reduction strategies related to energy efficiency, water use, and recycling and solid waste, among other measures.[22] The Scoping Plan includes a range of GHG reduction actions that may include direct regulations, alternative compliance mechanisms, monetary and non-monetary incentives, voluntary actions, and market-based mechanisms such as a cap-and-trade system. The Scoping Plan, even after Board approval, remains a recommendation. The measures in the Scoping Plan will not be binding until after they are adopted through the normal rulemaking process. The ARB rulemaking process includes preparation and release of each of the draft measures, public input through work-shops and a public comment period, followed by an ARB Board hearing and rule adoption.

In addition to reducing GHG emissions to 1990 levels by 2020, AB 32 directed the ARB and the newly created Climate Action Team (CAT)[23] to identify a list of "discrete early action GHG reduction measures" that can be adopted and made enforceable by January 1, 2010. On January 18, 2007, Governor Schwarzenegger signed Executive Order S-1-07, further solidifying California's dedication to reducing GHGs by setting a new Low Carbon Fuel Standard. The Executive Order sets a target to reduce the carbon intensity of California transportation fuels by at least 10 percent by 2020 and directs the ARB to consider the Low Carbon Fuel Standard as a discrete early action measure.

[22] California Air Resources Board, 2008. *Climate Change Scoping Plan: a framework for change*. December.

[23] CAT is a consortium of representatives from State agencies who have been charged with coordinating and implementing GHG emission reduction programs that fall outside of ARB's jurisdiction.

In June 2007, the ARB approved a list of 37 early action measures, including three discrete early action measures (Low Carbon Fuel Standard, Restrictions on High Global Warming Potential Refrigerants, and Landfill Methane Capture).[24] Discrete early action measures are measures that are required to be adopted as regulations and made effective no later than January 1, 2010, the date established by Health and Safety Code (HSC) Section 38560.5. The ARB adopted additional early action measures in October 2007 that tripled the number of discrete early action measures. These measures relate to truck efficiency, port electrification, reduction of perfluorocarbons from the semiconductor industry, reduction of propellants in consumer products, proper tire inflation, and sulfur hexafluoride (SF_6) reductions from the non-electricity sector. The combination of early action measures is estimated to reduce State-wide GHG emissions by nearly 16 MMT.[25]

To assist public agencies in analyzing the effects of GHGs under CEQA, Senate Bill 97 (Chapter 185, 2007) requires the Governor's Office of Planning and Research (OPR) to develop CEQA guidelines on how to minimize and mitigate a project's GHG emissions. On December 30, 2009, the Natural Resources Agency adopted CEQA Guidelines Amendments related to climate change. These amendments became effective on March 18, 2010.

Senate Bill 375 (2008). SB 375, signed into law on October 1, 2008, is intended to enhance the ARB's ability to reach AB 32 goals by directing the ARB to develop regional GHG emissions reduction targets to be achieved within the automobile and light truck sectors for 2020 and 2035. The ARB will work with California's 18 metropolitan planning organizations to align their regional transportation, housing, and land use plans and prepare a "Sustainable Communities Strategy" to reduce the number of vehicle miles traveled in their respective regions and demonstrate the region's ability to attain its GHG reduction targets.

California Natural Resources Agency. On December 30, 2009, the California Natural Resources Agency adopted CEQA Guidelines Amendments related to Climate Change. These amendments became effective on March 18, 2010, and state:

(a) The determination of the significance of greenhouse gas emissions calls for a careful judgment by the lead agency consistent with the provisions in section 15064. A lead agency should make a good-faith effort, based to the extent possible on scientific and factual data, to describe, calculate or estimate the amount of greenhouse gas emissions resulting from a project. A lead agency shall have discretion to determine, in the context of a particular project, whether to:

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

(2) Rely on a qualitative analysis or performance based standards.

[24] California Air Resources Board, 2007. *Expanded List of Early Action Measures to Reduce Greenhouse Gas Emissions in California Recommended for Board Consideration*. October.

[25] California Air Resources Board, 2007. "ARB approves tripling of early action measures required under AB 32". News Release 07-46. Website: www.arb.ca.gov/newsrel/nr102507.htm (accessed October 25).

(b) A lead agency should consider the following factors, among others, when assessing the significance of impacts from greenhouse gas emissions on the environment:

(1) The extent to which the project may increase or reduce greenhouse gas emissions as compared to the existing environmental setting;

(2) Whether the project emissions exceed a threshold of significance that the lead agency determines applies to the project; and

(3) The extent to which the project complies with regulations or requirements adopted to implement a statewide, regional, or local plan for the reduction or mitigation of greenhouse gas emissions. Such requirements must be adopted by the relevant public agency through a public review process and must reduce or mitigate the project's incremental contribution of greenhouse gas emissions. If there is substantial evidence that the possible effects of a particular project are still cumulatively considerable notwithstanding compliance with the adopted regulations or requirements, an EIR must be prepared for the project.

CEQA Guidelines Section 15064(b) provides that the "determination of whether a project may have a significant effect on the environment calls for careful judgment on the part of the public agency involved, based to the extent possible on scientific and factual data," and further, states that an "ironclad definition of significant effect is not always possible because the significance of an activity may vary with the setting."

Individual projects incrementally contribute toward the potential for global climate change on a cumulative basis in concert with all other past, present, and probable future projects. While individual projects are unlikely to measurably affect global climate change, each of these projects incrementally contribute toward the potential for global climate change on a cumulative basis, in concert with all other past, present, and probable future projects.

Revisions to Appendix G of the *CEQA Guidelines* suggest that the project be evaluated for the following impacts:

- Would the project generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?
- Would the project conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?

Bay Area Air Quality Management District. As the regional air quality management district, the BAAQMD has taken a lead role in adopting a Climate Protection Program and by adopting CEQA Guidelines related to GHG emissions.

Bay Area Air Quality Management District Climate Protection Program. The BAAQMD established a climate protection program to reduce pollutants that contribute to global climate change and affect air quality in the San Francisco Bay Area Air Basin. The climate protection program includes measures that promote energy efficiency, reduce vehicle miles traveled, and develop alternative sources of energy, all of which assist in reducing emissions of GHG and in reducing air pollutants that affect the health of residents. The BAAQMD also seeks to support current climate protection programs in the region and to stimulate additional efforts through public education and outreach, technical assistance to local governments and other interested parties, and promotion of collaborative efforts among stakeholders.

BAAQMD CEQA Guidelines. The BAAQMD adopted revised CEQA Guidelines in May, 2011. The BAAQMD CEQA Guidelines include thresholds of significance for GHG emissions. The BAAQMD does not have a quantitative threshold of significance for construction-related GHG emissions. However, BAAQMD recommends that the Lead Agency quantify and disclose GHG emissions that would occur during construction, and make a determination on the significance of these construction generated GHG emission impacts in relation to meeting AB 32 GHG reduction goals. Lead Agencies are encouraged to incorporate best management practices, such as recycling of at least 50 percent of construction waste or demolition materials, to reduce GHG emissions during construction.

For land use development projects (i.e., residential, commercial, industrial, and public land uses and facilities), the BAAQMD thresholds of significance for operational GHG emissions are: (1) compliance with a qualified climate action plan or qualified general plan; (2) annual GHG emissions of less than 1,100 metric tons of CO_2eq per year; or (3) annual GHG emissions of less than 4.6 metric tons per service population (residents plus employees). Achievement of any one of these standards defines a less-than-significant project impact.

City of San José. Various policies in the City's General Plan have been adopted that avoid or mitigate climate change impacts resulting from planned development within the City. The City of San José has the following goals and policies related to the proposed project that would reduce GHG emissions and address global climate change:

- *Air Quality Goal*. Maintain acceptable levels of air quality for the residents of San José and minimize the air pollution produced by new development.
- *Air Quality Policy 1*. The City should take into consideration the cumulative air quality impacts from proposed developments and should establish and enforce appropriate land uses and regulations to reduce air pollution consistent with the region's Clean Air Plan and State law.
- *Air Quality Policy 2*. Expansion and improvement of public transportation services and facilities should be promoted, where appropriate, to both encourage energy conservation and reduce air pollution.
- *Air Quality Policy 3*. The City should urge effective regulation of those sources of air pollution, both inside and outside of San José, which affect air quality. In particular, the City should support federal and State regulations to improve automobile emission controls.
- *Air Quality Policy 4*. The City should foster educational programs about air pollution problems and their solutions.
- *Air Quality Policy 5*. In order to reduce vehicle miles traveled and traffic congestion, new development within 1,000 feet of an existing or planned transit station should be designed to encourage the usage of public transit and minimize the dependence on the automobile through the application of site design guidelines.
- *Energy Goal*. Consistent with Sustainable City Strategy Goals, the City should foster development which, by its location and design, reduces the use of non-renewable energy resources in transportation, buildings and urban services (utilities) and expands the use of renewable energy resources.
- *Energy Policy 1*. The City should promote development in areas served by public transit and other existing services. Higher residential densities should be encouraged to locate in areas served by primary public transit routes and close to major employment centers.
- *Energy Policy 2*. Decisions on land use should consider the proximity of industrial and commercial uses to major residential areas in order to reduce the energy used for commuting.

- *Energy Policy 3*. Public facilities should be encouraged to locate in areas easily served by public transportation.
- *Energy Policy 4*. The energy-efficiency of proposed new development should be considered when land use and development review decisions are made. The City's design techniques include provisions for solar access, for siting structures to maximize natural heating and cooling, and for landscaping to aid passive cooling protection from prevailing winds and maximum year-round solar access.
- *Energy Policy 5*. The City should encourage owners and residents of existing developments to implement programs to use energy more efficiently in buildings and in their transportation choices, to reduce dependency on automobiles, and to explore alternative energy sources.
- *Energy Policy 9*. The City should encourage the development of renewable energy sources and alternative fuels and cooperate with other public and quasi-public agencies in furthering this policy.

In addition, the *San José Green Vision* adopted in October 2007, is a 15-year plan to transform the City into a world center of Clean Technology, promote cutting-edge sustainable practices, and demonstrate that the goals of economic growth, environmental stewardship and fiscal responsibility are inextricably linked. The 10 goals of the *Green Vision* are as follows:

1. Create 25,000 Clean Tech jobs as the World Center of Clean Tech Innovation;
2. Reduce per capita energy use by 50 percent;
3. Receive 100 percent of our electrical power from clean renewable sources;
4. Build or retrofit 50 million square feet of green buildings;
5. Divert 100 percent of the waste from our landfill and convert waste to energy;
6. Recycle or beneficially reuse 100 percent of our wastewater (100 million gallons per day);
7. Adopt a General Plan with measurable standards for sustainable development;
8. Ensure that 100 percent of public fleet vehicles run on alternative fuels;
9. Plant 100,000 new trees and replace 100 percent of our streetlights with smart, zero-emission lighting; and
10. Create 100 miles of interconnected trails.

The City of San José has also adopted a Green Building Policy, which fosters long-term social, economic, and environmental sustainability in public building and development. The Green Building Policy goals center on five main categories: sustainable sites, energy and atmosphere, water efficiency, materials and resources, and indoor environmental quality.

In October 2008, the City Council adopted the Private Sector Green Building Policy (6-32) that establishes baseline green building standards for private sector new construction and provides a framework for the implementation of these standards. This policy requires that applicable projects achieve minimum green building performance levels using the Council adopted standards. The proposed project would be subject to this policy. A residential project of greater than 10 units, such as the proposed project, would be required to achieve a minimum of a LEED Certified rating or a Build it Green (BIG) rating of 50 points.

In addition, the City of San José is currently developing a Greenhouse Gas Reduction Strategy in tandem with the General Plan Update process that will identify current and projected greenhouse gas emissions and measures for local government and the community to implement to reduce and avoid

greenhouse gas emissions. The Greenhouse Gas Reduction Strategy will put forth a road map to reduce greenhouse gas emissions, including those related to transportation, through policies and a land use plan that support a more compact urban form and greater use of walking, mass transit or bicycling as a means of travel between home, work, school, shopping and other services.

3.0 CRITERIA AND METHODOLOGY

This section identifies the criteria of significance, establishing the thresholds to determine whether an impact is significant. The latter part of this section outlines the methodology followed in analyzing global climate change impacts that could result from the proposed project.

CRITERIA OF SIGNIFICANCE

This report analyzes whether the project's GHG emissions would be cumulatively significant. Accordingly, the project would result in significant adverse impacts on global climate change if it would:

- Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment. According to the BAAQMD a project would have a less-than-significant impact on greenhouse gas emissions if it would:
  - Comply with a Qualified Greenhouse Gas Reduction Strategy; or
  - Result in operational-related greenhouse gas emissions of less than 1,100 metric tons of CO_2eq a year; or
  - Result in operational-related greenhouse gas emissions of less than 4.6 metric tons of CO_2eq per service population (residents + employees).
- Conflict with a an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases,

PROJECT-RELATED EMISSIONS METHODOLOGY

Emissions estimates for the proposed project are discussed below. GHG emissions associated with the project would occur over the short term from construction activities, consisting primarily of emissions from equipment exhaust. There would also be long-term regional emissions associated with project through vehicle trips, energy consumption, and water consumption. Recognizing that the field of global climate change analysis is rapidly evolving, the approaches advocated most recently indicate that lead agencies should calculate, or estimate, emissions from vehicular traffic, energy consumption, water conveyance and treatment, waste generation, construction activities, and any other significant source of emissions within the project area.

Construction Emissions. The combustion of fossil-based fuels creates GHGs such as CO_2, CH_4, and N_2O. Furthermore, CH_4 is emitted during the fueling of heavy equipment. Exhaust emissions from on-site construction activities would vary daily as construction activity levels change. BAAQMD does

not have an adopted Threshold of Significance for construction-related GHG emissions. However, the District encourages Lead Agencies to quantify and disclose GHG emissions that would occur during construction. Construction of the proposed project is anticipated to start in May of 2013 for a duration of 21 months.

Operation-Related Emissions. Long-term operation of the proposed project would generate GHG emissions from area and mobile sources, and indirect emissions from sources associated with energy consumption, and water use. The methodology and/or qualitative description of the sources of GHG emissions related to transportation, electricity, water use, and solid waste disposal are described below. GHG emissions were estimated using the BAAQMD GHG Model (BGM) which incorporates the model inputs used in the air quality analysis from URBEMIS 2007.

Transportation. Transportation associated with the project would result in GHG emissions from the combustion of fossil fuels in daily automobile and truck trips. Transportation is the largest source of GHG emissions in California and represents approximately 38 percent of annual CO_2 emissions generated in the State. For land use development projects, vehicle miles traveled (VMT) and vehicle trips are the most direct indicators of GHG emissions associated with the project. The analysis accounts for a 15 percent reduction in trip generation to account for the project's transit oriented development (TOD) status. It also takes into applies a 4 percent reduction in standard trips which is typical of affordable housing projects.

Electricity and Natural Gas. Buildings represent 39 percent of United States primary energy use and 70 percent of electricity consumption.[26] Electricity use can result in GHG production if the electricity is generated by combusting fossil fuel. The project is anticipated to increase the use of electricity and natural gas.

Water and Wastewater. Energy use and related GHG emissions are based on water supply and conveyance, water treatment, water distribution, and wastewater treatment. Each element of the water use cycle has unique energy intensities (kilowatt hours [kWh]/million gallons). Recognizing that the actual energy intensity in each component of the water use cycle will vary by utility, the California Energy Commission (CEC) assumes that approximately 5,411 kWh per million gallons are consumed for water that is supplied, treated, consumed, treated again, and disposed of in Northern California. Water usage and wastewater generation were estimated using the BGM.

Solid Waste Disposal. Solid waste generated by the project could contribute to GHG emissions in a variety of ways. Landfilling and other methods of disposal use energy for transporting and managing the waste and they produce additional GHGs to varying degrees. Landfilling, the most common waste management practice, results in the release of CH_4 from the anaerobic decomposition of organic materials. CH_4 is 25 times more potent a GHG than CO_2. However, landfill CH_4 can also be a source of energy. In addition, many materials in landfills do not decompose fully, and the carbon that remains is sequestered in the landfill and not released into the atmosphere. Solid waste disposal was estimated using the BGM.

[26] United States Department of Energy, 2003. *Buildings Energy Data Book.*

4.0 IMPACTS AND MITIGATION MEASURES

PROJECT GREENHOUSE GAS EMISSIONS

This section evaluates the emissions of greenhouse gases that would result from implementation of the proposed project. The evaluation of environmental effects presented in this section focuses on potential climate change impacts associated with the project's increase in GHG emissions. Mitigation measures are proposed as appropriate.

Construction Emissions. Construction would produce combustion emissions from various sources. During site preparation and construction of the project, GHGs would be emitted through the operation of construction equipment and from worker and builder supply vendor vehicles, each of which typically uses fossil-based fuels to operate. Using the URBEMIS 2007 model, it is estimated that the total project construction emissions would be approximately 219 metric tons of CO_2. Model output sheets are included in Appendix A.

Architectural coatings used in construction of the proposed project may contain volatile organic compounds (VOCs) that are similar to reactive organic gases (ROG) and are part of ozone precursors. However, there are no significant emissions of GHGs from architectural coatings.

Operation-Related Emissions. Long-term operation of the proposed project would generate GHG emissions from area and mobile sources, and indirect emissions from sources associated with energy consumption, water use, and solid waste disposal. Mobile-source emissions of GHGs would include project-generated vehicle trips associated with residential commutes, and visitor trips to the project site. Area-source emissions would be associated with activities such as landscaping and maintenance of proposed land uses, natural gas for heating, and other sources. Increases in emissions would also occur at off-site utility providers as a result of demand for electricity, natural gas, and water by the proposed land use.

When calculating project GHG emissions to compare to the thresholds of significance, the BAAQMD recommends that the lead agency consider project design features, attributes, and local development requirements as part of the project as proposed and not as mitigation measures. Estimates of future GHG emissions do not account for all changes in technology that may reduce such emissions; therefore, the estimates are based on past performance and represent a scenario that is believed to be worse than that which is likely to be encountered (i.e., after energy-efficient technologies have been implemented).

Summary of Project Emissions. Table 3 shows the calculated GHG emissions for the existing uses and the proposed project. Motor vehicle emissions are the largest source of project-related GHG emissions at 664 metric tons per year representing approximately 62 percent of the total. Energy use of electricity and natural gas is the next largest category at a combined 27.1 percent of project CO_2eq annual emissions with approximately 153 and 137 metric tons of CO_2eq emissions, respectively. Project-related water and wastewater transmission would result in approximately 16 metric tons of CO_2eq GHG emissions, representing 1.5 percent of the project total. Solid waste accounts for 9.5

percent of the project's GHG emissions with 102 metric tons of CO_2eq emissions per year. Other area sources, including landscape equipment, are the remaining source of GHG emissions and comprise less than 1 percent of the total emissions for the proposed project. Additional calculation details are provided in Appendix B.

Table 3: Greenhouse Gas Emissions

	Emissions (Metric Tons Per Year)				
Emission Source	**CO_2**	**CH_4**	**N_2O**	**CO_2eq**	**Percent of Total**
Vehicles	--	--	--	663.94	61.95
Electricity	152.81	0.00	0.00	153.05	14.28
Natural Gas Combustion	136.84	0.01	0.00	137.19	12.80
Water & Wastewater	15.58	0.00	0.00	15.60	1.46
Solid Waste	0.70	4.81	--	101.79	9.50
Total Annual Emissions	306.16	4.82	0.00	1,071.80	**100.00**

Note: Column totals may vary slightly due to independent rounding of input data.
-- Estimates not available for this pollutant and/or category.
Source: LSA Associates, Inc., June 2011.

The proposed project would generate up to 1,072 tons of CO_2eq per year of emissions, as shown in Table 3. Annual emissions of operational-related GHGs for the proposed project do not exceed the significance threshold of 1,100 metric tons of CO_2eq per year; therefore, the project would not generate significant greenhouse gas emissions. As a result, the impact of the proposed project would be less than significant.

PROJECT CONSISTENCY WITH PLANS

The California Environmental Protection Agency Climate Action Team (CAT) and the ARB have developed several reports to achieve the Governor's GHG targets that rely on voluntary actions of California businesses, local government and community groups, and State incentive and regulatory programs. These include the CAT's 2006 "*Report to Governor Schwarzenegger and the Legislature*," the ARB's 2007 "*Expanded List of Early Action Measures to Reduce Greenhouse Gas Emissions in California*," and the ARB's "*Climate Change Scoping Plan: a Framework for Change.*" The reports identify strategies to reduce California's emissions to the levels proposed in Executive Order S-3-05 and AB 32.

The adopted Scoping Plan includes proposed GHG reductions from direct regulations, alternative compliance mechanisms, monetary and non-monetary incentives, voluntary actions, and market-based mechanisms such as cap-and-trade systems.

In addition to reducing GHG emissions to 1990 levels by 2020, AB 32 directed the ARB to identify a list of "discrete early action GHG reduction measures" that can be adopted and made enforceable by January 1, 2010. In June 2007, the ARB approved a list of 37 early action measures, including three discrete early action measures (Low Carbon Fuel Standard, Restrictions on High Global Warming Potential Refrigerants, and Landfill Methane Capture). Discrete early action measures are measures that are required to be adopted as regulations and made effective no later than January 1, 2010, the date established by Health and Safety Code (HSC) Section 38560.5. The ARB adopted additional early action measures in October 2007 that tripled the number of discrete early action measures.

The ARB's focus in identifying the 44 early action items was to recommend measures that the ARB staff concluded were "expected to yield significant GHG emission reductions, are likely to be cost-effective and technologically feasible." The combination of early action measures is estimated to reduce State-wide GHG emissions by nearly 16 MMT. Accordingly, the 44 early action items focus on industrial production processes, agriculture, and transportation sectors. Early action items associated with industrial production and agriculture do not apply to the proposed project. The transportation sector early action items such as truck efficiency, low carbon fuel standard, proper tire inflation, truck stop electrification and strengthening light duty vehicle standards are not specifically applicable to the proposed project. State measures include emission reductions assumed as part of the Scoping Plan, including light-duty vehicle GHG standards ("Pavley standards"), low carbon fuel standard, and energy efficiency measures.

The proposed project would incorporate green building design features such as a vegetated rooftop "living" area, a rain garden, photovoltaics, passive solar lighting, recycled building materials, and energy efficient windows. The project is a LEED for Homes Mid-Rise Pilot registered development and the project applicant is pursuing LEED Platinum certification from the United States Green Building Council, and therefore would be consistent with the San José Green Vision plan.

The proposed project is designed as a transit-oriented development (TOD) and is located within a quarter-mile of bus and light rail services, a half a mile of a commuter rail line and a quarter-mile of an employment center in a central business district. All residents would also receive a free, annual Santa Clara Valley Transportation Authority (VTA) Eco Pass for use on all bus and light rail services throughout Santa Clara County. The proposed project would also include 34 secure bicycle parking spaces, 16 of which would be located in the parking garage and 18 of which would be on the second floor.

The proposed project would not conflict with the State goal of reducing GHG emissions and would not conflict with the AB 32 Scoping Plan or the early action measures. The project would be subject to all applicable permit and planning requirements in place or adopted by the City of San José. Therefore, the proposed project would have a less than significant impact with regard to global climate change.

MITIGATION MEASURES

As discussed above, the proposed project would generate emissions below the significance criteria established by the BAAQMD for greenhouse gas emissions. The project would also be consistent with plans adopted for the purpose of reducing GHG emissions. Therefore, mitigations to reduce GHG emissions are not required.

5.0 GLOBAL CLIMATE CHANGE IMPACTS ON PROJECT

Local temperatures could increase in time as a result of global climate change, with or without development as envisioned by the project. This increase in temperature could lead to other climate effects including, but not limited to, increased flooding due to increased precipitation and runoff, and a reduction in the Sierra snowpack. At present, the extent of climate change impacts is uncertain, and more extensive monitoring of runoff and snowpack is necessary for greater understanding of changes in hydrologic patterns. Studies indicate that increased temperatures could result in a greater portion of peak streamflows occurring earlier in the spring with decreases in late spring and early summer.[27] These changes could have implications for water supply, flood management, and ecosystem health.

Temperature Increase. The latest projections, based on state-of-the art climate models, indicate that temperatures in California are expected to rise 3 to 10.5°F by the end of the century.[28] Because GHGs persist for a long time in the atmosphere, accumulate over time, and are generally well-mixed, their impact on the atmosphere cannot be tied to a specific point of emission.

The primary effect of global climate change has been a rise in the average global temperature. The impact of human activities on global climate change is readily apparent in the observational record. For example, surface temperature data show that 11 of the 12 years from 1995 to 2006 rank among the 12 warmest since 1850, the beginning of the instrumental record for global surface temperature[29]. Climate change modeling shows that further warming could occur, which would induce additional changes in the global climate system during the current century. Changes to the global climate system, ecosystems, and the environment of California could include, but are not limited to:

- The loss of sea ice and mountain snow pack, resulting in higher sea levels and higher sea surface evaporation rates with a corresponding increase in tropospheric water vapor due to the atmosphere's ability to hold more water vapor at higher temperatures;
- Rise in global average sea level primarily due to thermal expansion and melting of glaciers and ice caps in the Greenland and Antarctic ice sheets;
- Changes in weather that include widespread changes in precipitation, ocean salinity, and wind patterns, and more energetic aspects of extreme weather, including droughts, heavy precipitation, heat waves, extreme cold, and the intensity of tropical cyclones;
- Decline of the Sierra Nevada snowpack, which accounts for a significant amount of the surface water storage in California, by 70 percent to as much as 90 percent over the next 100 years;

[27] U.S. Global Change Research Program, 2001. *Climate Change Impacts on the United States: The Potential Consequences of Climate Variability and Change.*

[28] California Climate Change Center, 2006. *Our Changing Climate. Assessing the Risks to California.* July.

[29] California, State of, 2008. California Energy Commission's Public Interest Energy Research Program. *The Future is Now: An Update on Climate Change Science, Impacts, and Response Options for California.* September.

- Increase in the number of days conducive to ozone formation by 25 to 85 percent (depending on the future temperature scenario) in high ozone areas of Los Angeles and the San Joaquin Valley by the end of the 21st century; and
- High potential for erosion of California's coastlines and seawater intrusion into the Delta and levee systems due to the rise in sea level.

Temperate increases in the project area are expected to be consistent with the latest projections for California.

Precipitation and Water Supply. Global average precipitation is expected to increase overall during the 21st century as the result of climate change, but will vary in different parts of the world. However, global climate models are generally not well suited for predicting regional changes in precipitation because of the scale of regionally important factors, such as the proximity of mountain ranges that affect precipitation.[30]

Most of California's precipitation falls in the northern part of the State during the winter. A vast network of man-made reservoirs and aqueducts capture and transport water throughout the State from northern California rivers, as the greatest demand for water comes from users in the southern part of the State during the spring and summer.[31] The current distribution system relies on Sierra Nevada mountain snowpack to supply water during the dry spring and summer months. Rising temperatures, potentially compounded by decreases in precipitation, could severely reduce spring snowpack, increasing the risk of summer water shortages.

Some models predict drier conditions and decreased water flows, while others predict wetter conditions in various parts of the world. If heat-trapping emissions continue unabated, more precipitation will fall as rain instead of snow, and the snow that does fall will melt earlier, reducing the Sierra Nevada spring snowpack by as much as 70 to 90 percent over the next 100 years.

The extent to which various meteorological conditions will impact groundwater supply is unknown. Warmer temperatures could increase the period when water is on the ground by reducing soil freeze. However, warmer temperatures could also lead to higher evaporation or shorter rainfall seasons, shortening the recharge season. Warmer winters could increase the amount of runoff available for groundwater recharge. However, the additional runoff would occur at a time when some basins, particularly in Northern California, are being recharged at their maximum capacity.

Where precipitation is projected to increase in California, the increases are focused in Northern California. However, various California climate models provide mixed results regarding changes in total annual precipitation in the State through the end of this century; therefore, no conclusion on an increase or decrease can be made. Considerable uncertainties about the precise effects of climate change on California hydrology and water resources will remain until there is more precise and consistent information about how precipitation patterns, timing, and intensity will change.[32]

---

[30] IPCC, 2007. *Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the IPCC*.

[31] California Climate Change Center, 2006. *Our Changing Climate. Assessing the Risks to California.* July.

[32] California, State of, 2006. Department of Water Resources. *Progress on Incorporating Climate Change into Management of California's Water Resources*. July.

The San José Water Company supplies water to the project area, and is an investor owned public utility that serves over 1 million people in the greater San José metropolitan area. The San José Water Company provides water from three major sources: (1) Groundwater pumped from the Santa Clara Groundwater Basin; (2) Surface water imported from the Sacramento-San Joaquin Delta and purchased from the Santa Clara Valley Water district; and (3) Local mountain surface water collected on our watershed in the Santa Cruz Mountains. The San José Water Company is a signatory to the Memorandum of Understanding (MOU) with the California Urban Water Conservation Council (CUWCC), which was created to increase efficient water use statewide through partnerships among urban water agencies, public interest organizations, and private entities. The MOU pledges support to develop and implement 14 comprehensive Best Management Practices in conservation. Continued conservation efforts are necessary to ensure that water supply will be available in future years.

Sea Level Rise. Rising sea level is one of the major areas of concern related to global climate change. Two of the primary causes for a sea level rise are the thermal expansion of ocean waters (water expanding as it heats up) and the addition of water to ocean basins by the melting of land-based ice. From 1961 to 2003, global average sea level rose at an average rate of 0.07 inches per year, and at an accelerated average rate of about 0.12 inches per year during the last decade of this period (1993 to 2003).[33] Over the past 100 years, sea levels along California's coasts and estuaries have risen about seven inches.[34]

Sea levels could rise an additional 22 to 35 inches by the end of the century as global climate change continues.[35] Although these projections are on a global scale, the rate of sea level rise along California's coast is relatively consistent with the worldwide average rate observed over the past century. Therefore, it is reasonable to assume that changes in worldwide sea level rise will also be experienced along California's coast.[36]

Sea level rise of this magnitude would increasingly threaten California's coastal regions with more intense coastal storms, accelerated coastal erosion, threats to vital levees, and disruption of inland water systems, wetlands and natural habitats. Rising sea levels and more intense storm surges could increase the risk for coastal flooding. The San Francisco Bay Conservation and Development Commission (BCDC) employed geographic information system software to identify the shoreline areas likely to be most impacted by a one meter rise in sea level.[37] The map of the South Bay shows that the proposed project would not be in a location that would be affected by a one meter rise in sea level.[38]

Water Quality. Water quality depends on a wide range of variables such as water temperature, flow, runoff rates and timing, waste discharge loads, and the ability of watersheds to assimilate wastes and

[33] California, State of, 2008. California Energy Commission's Public Interest Energy Research Program. *The Future is Now: An Update on Climate Change Science, Impacts, and Response Options for California*. September.

[34] Ibid.

[35] California Climate Change Center, 2006. *Our Changing Climate. Assessing the Risks to California.* July.

[36] California, State of. Department of Water Resources, 2006. *Progress on Incorporating Climate Change into Management of California's Water Resources*. July.

[37] California, State of, 2009. San Francisco Bay Conservation and Development Commission. Climate Change website. www.bcdc.ca.gov/planning/climate_change/climate_change.shtml.

[38] Ibid.

pollutants. Climate change could alter water quality in a variety of ways, including higher winter flows that reduce pollutant concentrations (through dilution) or increase erosion of land surfaces and stream channels, leading to higher sediment, chemical, and nutrient loads in rivers. Water temperature increases and decreased water flows can result in increasing concentrations of pollutants and salinity. Increases in water temperature alone can likely to lead to adverse changes in water quality, even in the absence of changes in precipitation.

Land and resource use changes can have impacts on water quality comparable to or even greater than those from global climate change. The net effect on water quality for rivers, lakes, and groundwater in the future is dependent not just on climate conditions, but also on a wide range of other human actions and management decisions. Therefore, the specific impact to the proposed project is unknown at this time.

Public Health. Global climate change is anticipated to result in not only changes to average temperature, but also to more extreme heat events.[39] These extreme heat events increase the risk of death from dehydration, heart attack, stroke, and respiratory distress, especially with people who are ill, children, the elderly, and the poor, who may lack access to air conditioning and medical assistance. According to the California Climate Change Center, more research is needed to understand the effects of higher temperatures and how adapting to these temperatures can minimize health effects.[40]

[39] California Climate Change Center, 2006, op. cit.

[40] Ibid.

APPENDIX A

CONSTRUCTION-RELATED GHG EMISSIONS ESTIMATES

6/17/2011 11:18:20 AM

Urbemis 2007 Version 9.2.4

Summary Report for Annual Emissions (Tons/Year)

File Name: C:\Documents and Settings\AFischer\Desktop\FCY1101 N San Pedro Avenue Housing\Background\BGM San Pedro Apartments.urb924

Project Name: North San Pedro Apartments

Project Location: Bay Area Air District

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

CONSTRUCTION EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2
2013 TOTALS (tons/year unmitigated)	0.15	1.10	1.37	0.00	0.20	0.06	0.26	0.04	0.06	0.10	226.47
2014 TOTALS (tons/year unmitigated)	1.67	0.05	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	15.10

AREA SOURCE EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (tons/year, unmitigated)	1.40	0.19	0.22	0.00	0.00	0.00	237.45

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (tons/year, unmitigated)	0.52	0.52	5.24	0.01	1.63	0.31	877.36

6/17/2011 11:18:20 AM

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (tons/year, unmitigated)	1.92	0.71	5.46	0.01	1.63	0.31	1,114.81

APPENDIX B

OPERATION-RELATED GHG EMISSIONS ESTIMATES

Mitigated	CO2 (metric tpy)	CH4 (metric tpy)	N2O (metric tpy)	CO2e (metric tpy)	% of Total
Transportation*:				663.94	61.95%
Area Source:	0.23	0.00	0.00	0.23	0.02%
Electricity:	152.81	0.00	0.00	153.05	14.28%
Natural Gas:	136.84	0.01	0.00	137.19	12.80%
Water & Wastewater:	15.58	0.00	0.00	15.60	1.46%
Solid Waste:	0.70	4.81	N/A	101.79	9.50%
Agriculture:	0.00	0.00	0.00	0.00	0.00%
Off-Road Equipment:	0.00	0.00	0.00	0.00	0.00%
Refrigerants:	N/A	N/A	N/A	0.00	0.00%
Sequestration:	N/A	N/A	N/A	0.00	0.00%
Purchase of Offsets:	N/A	N/A	N/A	0.00	0.00%
Total:				1,071.80	100.00%

Mitigation Measures Selected:

Transportation

Baseline is Currently: OFF

Unmitigated Transportation	Target Year: 2020	2011	
	Project	Baseline	Project-Baseline
Operational Emissions from URBEMIS (CO2 tons/year)	877.36	0.00	
Metric Ton Adjustment (CO2 metric tons/year)	796.15	0.00	
Pavley Regulation Adjustment (CO2 metric tons/year):	679.68	0.00	
US EPA Adjustment (CO2e metric tons/year):	715.46	0.00	
Low Carbon Fuels Rule Adjustment (CO2e metric tons/year	663.94	0.00	
Total (CO2e metric tons/year):			**663.94**

Mitigated Transportation	Target Year: 2020	2011	
	Project	Baseline	Project-Baseline
Operational Vehicles from URBEMIS (CO2 tons/year):	877.36	0.00	
Metric Ton Adjustment (CO2 metric tons/year):	796.15	0.00	
Pavley Regulation Adjustment (CO2 metric tons/year):	679.68	0.00	
US EPA Adjustment (CO2e metric tons/year):	715.46	0.00	
Low Carbon Fuels Adjustment (CO2e metric tons/year)	663.94	0.00	
Total (CO2e metric tons/year):			**663.94**

The BGM User's Manual describes in detail each step used to convert URBEMIS's transportation CO2 emissions to total CO2e.
These steps include converting from English to Metric units, adjusting for the Pavley Rule, converting CO2 to CO2e, and adjusting for the Low Carbon Fuels Rule.

Reference

U.S. EPA assumption that GHG emissions from other pollutants - CH4, N20, and hydrofluorcarbons (HFCs) from leaking air conditioners account for 5 percent of emissions from vehicles, after accounting for global warming potentail of each GHG.

Jump to the Following Transportation Related Tabs:
Transportation Detail for Operational Mitigation
Land Use Detail

	Don't Need to Adjust this amt	Unadjusted Amount Affected by Pavley	Adjusted	Adusted	Adusted	Adusted	Adjusted
	Not Affected by Pavley	LDA/ LDT1/ LDT2/ MDV	LDA	LDT1	LDT2	MDV	4 totaled
Pavley Calculations - Project Unmitigated	130.66	665.49	265.78	83.45	135.62	64.17	549.02
Pavley Calculations - Baseline Unmitigated	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pavley Calculations - Project Mitigated	130.66	665.49	265.78	83.45	135.62	64.17	549.02
Pavley Calculations - Baseline Mitigated	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Pavley Adjustment

Year	% LDA CO2 Emissions	% LDT1 CO2 Emissions	% LDT2 CO2 Emissions	% MDV CO2 Emissions	% LDA/LDT1/LDT2/MDV	% everything else	% CO2 Reduction - LDA	% CO2 Reduction - LDT1	% CO2 Reduction - LDT2	% CO2 Reduction MDV	12.00 LDA	13.00	14.00	15.00	16.00	
2009	41.59%	12.33%	19.61%	9.71%	83.26%	16.74%	0.00%	0.00%	0.07%	0.08%	0.0000	0.0000	0.0006	0.0007	0.0013	Step 1 - Figure out year
2010	41.72%	12.39%	19.54%	9.61%	83.26%	16.74%	0.35%	0.25%	0.45%	0.48%	0.0020	0.0022	0.0036	0.0044	0.0122	Step 2- Emissions from HDVs, etc. do not change
2011	41.83%	12.45%	19.50%	9.50%	83.27%	16.73%	1.75%	1.34%	1.31%	1.29%	0.0102	0.0117	0.0106	0.0117	0.0442	Step 3 - Adjust emissions from LDA's, etc. individually
2012	41.89%	12.50%	19.47%	9.40%	83.27%	16.73%	4.07%	3.27%	2.60%	2.44%	0.0237	0.0286	0.0209	0.0221	0.0953	Step 4 - Add Step 2 and Step 3 emissions
2013	41.94%	12.56%	19.46%	9.32%	83.28%	16.72%	6.31%	5.26%	3.88%	3.61%	0.0366	0.0460	0.0313	0.0328	0.1466	
2014	41.98%	12.62%	19.46%	9.27%	83.33%	16.67%	8.48%	7.26%	5.17%	4.83%	0.0492	0.0634	0.0416	0.0438	0.1980	
2015	42.00%	12.67%	19.47%	9.24%	83.38%	16.62%	10.74%	9.38%	6.54%	6.17%	0.0623	0.0819	0.0527	0.0560	0.2529	
2016	42.05%	12.76%	19.50%	9.23%	83.54%	16.46%	12.96%	11.56%	7.94%	7.54%	0.0751	0.1008	0.0639	0.0684	0.3082	
2017	42.02%	12.81%	19.51%	9.21%	83.55%	16.45%	15.03%	13.58%	9.27%	8.88%	0.0871	0.1184	0.0746	0.0806	0.3608	
2018	41.98%	12.84%	19.52%	9.21%	83.55%	16.45%	16.94%	15.43%	10.54%	10.16%	0.0983	0.1345	0.0848	0.0923	0.4099	
2019	41.95%	12.87%	19.53%	9.21%	83.57%	16.43%	18.72%	17.13%	11.74%	11.40%	0.1087	0.1492	0.0945	0.1035	0.4559	
2020	41.92%	12.89%	19.55%	9.22%	83.59%	16.41%	20.37%	18.69%	12.89%	12.59%	0.1183	0.1628	0.1037	0.1143	0.4990	
2025	41.92%	12.96%	19.67%	9.28%	83.82%	16.18%	26.87%	24.86%	17.60%	17.42%	0.1560	0.2164	0.1414	0.1581	0.6719	
2030	42.15%	13.03%	19.76%	9.32%	84.26%	15.74%	30.60%	28.71%	20.63%	20.47%	0.1770	0.2497	0.1655	0.1856	0.7779	
2035	42.21%	13.11%	19.80%	9.35%	84.47%	15.53%	32.38%	31.17%	22.43%	22.29%	0.1871	0.2708	0.1799	0.2021	0.8400	
2040	42.24%	13.14%	19.90%	9.44%	84.72%	15.28%	33.27%	32.61%	23.60%	23.53%	0.1922	0.2832	0.1890	0.2131	0.8775	

Low Carbon Fuels Standards

Year	% Reduction Gasoline and Diesel Fuel	% Reduction Tank to Wheels
2010	0.00	0.00
2011	0.25	0.18
2012	0.50	0.36
2013	1.00	0.72
2014	1.50	1.08
2015	2.50	1.80
2016	3.50	2.52
2017	5.00	3.60
2018	6.50	4.68
2019	8.00	5.76
2020	10.00	7.20
2021	10.00	7.20
2022	10.00	7.20
2023	10.00	7.20
2024	10.00	7.20
2025	10.00	7.20
2026	10.00	7.20
2027	10.00	7.20
2028	10.00	7.20
2029	10.00	7.20
2030	10.00	7.20
2031	10.00	7.20
2032	10.00	7.20
2033	10.00	7.20
2034	10.00	7.20
2035	10.00	7.20
2036	10.00	7.20
2037	10.00	7.20
2038	10.00	7.20
2039	10.00	7.20
2040	10.00	7.20

Source:
Final Regulation Order
Subchapter 10. Climate Change
Article 4. Regulations to Achieve Greenhouse Gas Reductions
Subarticle 7. Low Carbon Fuel Standard
Section 95482. Average Carbon Intensity Requirements for Gasoline and Diesel

Area Source

Baseline is currently: OFF

Unmitigated Area Source	Project	Baseline	Project-Baseline
Landscaping Emissions from URBEMIS (CO2 metric tons/year):	0.227	0.000	
Hearth Emissions from URBEMIS (CO2 metric tons/year):	0.000	0.000	
Wood Burning Fireplaces (N2O metric tons/year):	0.000	0.000	
Natural Gas Fireplaces (N2O metric tons/year):	0.000	0.000	
Wood Burning Stoves (CH4 metric tons/year):	0.000	0.000	
Natural Gas Fireplaces (CH4 metric tons/year):	0.000	0.000	
Total (CO2e metric tons/year):	0.227	0.000	
Total (CO2e metric tons/year):			**0.227**

Mitigated Area Source	Project	Baseline	Project-Baseline
Landscaping Emissions from URBEMIS (CO2 metric tons/year):	0.227	0.000	
Hearth Emissions from URBEMIS (CO2 metric tons/year):	0.000	0.000	
Wood Burning Fireplaces (N2O metric tons/year):	0.000	0.000	
Natural Gas Fireplaces (N2O metric tons/year):	0.000	0.000	
Wood Burning Stoves (CH4 metric tons/year):	0.000	0.000	
Natural Gas Fireplaces (CH4 metric tons/year):	0.000	0.000	
Total (CO2e metric tons/year):	0.227	0.000	
Total (CO2e metric tons/year):			**0.227**

The URBEMIS area source calculations include five separate categories: 1) natural gas fuel combustion, 2) hearth fuel combustion, 3) landscape maintenance equipment, 4) consumer products, and 5) architectural coatings. This Area Source tab imports CO2 emissions calculated by URBEMIS for hearths and landscape maintenance equipment only. BGM then calculates N2O and CH4 emissions for woodstoves and fireplaces and uses the resulting emissions to calculate CO2e. The consumer products and architectural coatings categories within URBEMIS do not generate GHG emissions and, consequently, are not used by BGM. Also, URBEMIS' estimate of CO2 from natural gas fuel combustion is not used by BGM. Instead, BGM calculates natural gas use and the resulting CO2 emissions in the Electricity and Natural Gas tab.

Electricity and Natural Gas

Baseline is currently: OFF

Unmitigated Electricity	Project	Baseline	Project-Baseline
CO2 metric tons/year CO2:	181.596	0.000	
CH4 metric tons/year CH4:	0.002	0.000	
N2O metric tons/year:	0.001	0.000	
CO2e metric tons/year:	181.887	0.000	
CO2e metric tons/year:			**181.89**

Mitigated Electricity	Project	Baseline	Project-Baseline
CO2 metric tons/year CO2:	152.806	0.000	
CH4 metric tons/year CH4:	0.001	0.000	
N2O metric tons/year:	0.001	0.000	
CO2e metric tons/year:	153.050	0.000	
CO2e metric tons/year:			**153.05**

Unmitigated Natural Gas	Project	Baseline	Project-Baseline
CO2 metric tons/year:	160.88	0.000	
CH4 metric tons/year:	0.02	0.000	
N2O metric tons/year:	0.00	0.000	
CO2e metric tons/year:	161.29	0.000	
CO2e metric tons/year:			**161.29**

Mitigated Natural Gas	Project	Baseline	Project-Baseline
CO2 metric tons/year:	136.836	0.000	
CH4 metric tons/year:	0.013	0.000	
N2O metric tons/year:	0.000	0.000	
CO2e metric tons/year:	137.186	0.000	
CO2e metric tons/year:			**137.19**

Water and Wastewater

Baseline is currently: OFF

Unmitigated Water and Wastewater	Project	Baseline	Project-Baseline
CO2 metric tons/year:	15.5797	0.0000	
CH4 metric tons/year:	0.0001	0.0000	
N20 metric tons/year:	0.0001	0.0000	
CO2e metric tons/year:	15.6047	0.0000	
CO2e metric tons/year:			**15.60**

Mitigated Water and Wastewater	Project	Baseline	Project-Baseline
CO2 metric tons/year:	15.5797	0.0000	
CH4 metric tons/year:	0.0001	0.0000	
N20 metric tons/year:	0.0001	0.0000	
CO2e metric tons/year:	15.6047	0.0000	
CO2e metric tons/year:			**15.60**

Clear All User Overrides

***** Select Mitigation Measures on the Mitigation Tab ===>** Mitigation

	User Override of Model Estimates (af/yr)	Model Estimate (af/yr)	Total Gallons/year	Indoor Gallons/Year	Outdoor Gallons/year	Mitigated Indoor Gallons/Year	Mitigated Outdoor Gallons/year	Total Mitigated kwh/year
Baseline Water Demand		0.00	0	0.00	0.00	0.00	0.00	
Project Water Demand		27.95	9,108,993	5,650,717.00	3,458,276.49	5,650,717.00	3,458,276.49	
Net Increase in Water Demand		27.95	9,108,993	5,650,717.00	3,458,276.49	5,650,717.00	3,458,276.49	
						30576.03	12103.97	42,680.00

Mitigation

Mitigation Category

	Check=On	Mitigation Options	MMBtu/year Reduced	
Electricity & Natural Gas	☐	Solar Water Heater	5000	
	☐	Tankless Water Heater	5000	
			kwh/year reduced	MMBtu/year Increased
	☑	Cool Roofs/Green Roofs	5000	2
			% Increase In Energy Efficiency	
	☑	Increase Energy Efficiency Beyond Title 24	15	
			kwh/year generated	
	☐	Onsite Renewable Energy Systems - Solar	250000	
	☐	Onsite Renewable Energy Systems - Wind	5000	
	☐	Onsite Renewable Energy Systems - Other	5000	
Water and Wastewater			% Reduction Outdoor Use	
	☐	Drought Tolerant Landscaping	10	
			% Reduction Indoor Use	
	☐	Low Flush Toilets	2	
Solid Waste			Solid Waste Reduction %	
	☐	Reduce Solid Waste by the Following Percentage	10	
Refrigerants			% Reduction	
	☐	Use Ammonia of CFCs or HCFCs	50	
Offsets / Credits			Metric Tons CO2e/Year	
	☐	Purchase Emission Offsets / Credits	5000	