

Section 4.15: Greenhouse Gases and Climate Change

An Air Quality Impact Analysis, dated November 2009, has been prepared by Giroux and Associates to characterize air quality in the project area. This analysis included a discussion of greenhouse gases, including estimates of greenhouse gases from future residential development on the site. A summary of the greenhouse gases and climate change issues in the Air Quality Impact Analysis is provided below, with the study provided in Appendix E of this SEIR.

4.15.1 Environmental Setting

Climate Change

The earth's environment is in a state of continuous change. The climate, for example, is highly variable, with conditions changing significantly over the span of seasons, from year to year, and over longer timescales. Fluctuations in the amount of energy emitted by the sun, slight deviations in the earth's orbit, volcanic injections of gases and particles into the atmosphere, and natural variations in ocean temperatures and currents, all cause variability and changes in climate conditions. Many scientific observations indicate that the earth may be undergoing a period of relatively rapid change on timescales of decades to centuries, when compared to historical rates of change on similar timescales. Most of the scientific evidence indicates that these changes are likely the result of a complex interplay of several natural and human-related forces.

In an effort to distill the driving mechanisms behind global climate change, the Intergovernmental Panel on Climate Change (IPCC), and others (i.e., National Research Council – NRC and U.S. Environmental Protection Agency - EPA), have adopted the term “radiative forcing” to describe any externally imposed change in the radiative energy budget of the earth's climate. Such changes can be brought about by variations in the concentrations of radiatively active species (e.g., carbon dioxide [CO₂] and aerosols), changes in the solar irradiance incident upon the planet, or other changes that affect the radiative energy absorbed by the earth's surface (e.g., changes in surface reflection properties). This imbalance in the radiation budget has the potential to lead to changes in climate parameters and, thus, result in a new equilibrium state of the climate system.

The role that human activities play in influencing global climate change is hotly debated. However, the general scientific consensus accepts that human activities, in particular those involving the combustion of fossil fuels for industrial or domestic usage, and biomass burning produce greenhouse gases (GHGs) and aerosols that affect the composition of the atmosphere. The emission of chlorofluorocarbons (CFCs) and other chlorine and bromine compounds has not only an impact on the radiative forcing, but has also led to the depletion of the stratospheric ozone layer. Land use changes, due to urbanization and human forestry and agricultural practices, affect the physical and biological properties of the earth's surface. Such effects change the radiative forcing and have a potential impact on regional and global climate.

Overwhelming scientific evidence suggests that global surface temperatures have increased about 0.6°C (plus or minus 0.2°C) since the late-19th century and about 0.4°F (0.2 to 0.3°C) over the past 25 years. The warming has not been globally uniform. The recent warmth has been greatest over North America and Eurasia between 40 and 70°N. Warming, assisted by the record El Niño of 1997 to 1998, has continued right up to the present, with 2001 being the second warmest year on record after 1998. In California and throughout western North America, signs of a changing climate are evident. During the last 50 years, winter and spring

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temperatures have been warmer; spring snow levels in lower- and mid-elevation mountains have dropped; snow pack has been melting one to four weeks earlier; and flowers are blooming one to two weeks earlier. These regional changes are consistent with global trends.

Greenhouse Gases

Greenhouse gases are gases that trap heat near the surface of the earth and are implicated in global climate change, commonly referred to as “global warming.” These gases contribute to an increase in the temperature of the earth’s atmosphere by transparency to short wavelength visible sunlight, but near opacity to outgoing terrestrial long wavelength heat radiation. The principal greenhouse gases (GHGs) are carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), ozone (O₃), water vapor (H₂O), fluorinated gases, and aerosols.

Carbon Dioxide

Carbon dioxide (CO₂) is an odorless, colorless, natural greenhouse gas. It enters the atmosphere through natural and anthropogenic (human) sources. Natural sources of atmospheric carbon dioxide include volcanic outgassing, the combustion of organic matter, and the respiration processes of living aerobic organisms. Anthropogenic sources of carbon dioxide come mainly from the burning of fossil fuels for heating, power generation and transport.

Methane

At room temperature and standard pressure, methane (CH₄) is an odorless, colorless gas. It is the principal component of natural gas, contributing approximately 97% by volume. Methane is emitted from a variety of both anthropogenic and natural sources, such as fossil fuel production, livestock management, rice cultivation, biomass burning, and waste management. These activities release significant quantities of methane to the atmosphere. It is estimated that 60% of global methane emissions are related to anthropogenic activities. Natural sources of methane include wetlands, gas hydrates, permafrost, termites, oceans, freshwater bodies, non-wetland soils, and other sources such as wildfires.

Nitrous Oxide

Nitrous oxide (N₂O), also known as laughing gas, is used commonly in medical practice. At room temperature, it is a colorless non-flammable gas, with a pleasant, slightly sweet odor and taste. Primary sources of N₂O are agricultural soil management, animal manure management, sewage treatment, mobile and stationary combustion of fossil fuel, and adipic or nitric acid production. Nitrous oxide is also produced naturally from a wide variety of biological sources in soil and water, particularly microbial action in wet tropical forests. Current estimates indicate that agricultural activities produce up to 70% of human-related nitrous oxide, while industrial sources account for only about 20% of all anthropogenic sources, and include the production of nylon and nitric acid, and the burning of fossil fuel in internal combustion engines. Natural emissions of N₂O primarily result from bacterial breakdown of nitrogen in soils and in the earth’s oceans.

Ozone

Ozone (O₃) is a tri-atomic molecule, consisting of three oxygen atoms. Under standard atmospheric conditions it is an odorless, colorless gas. When discussing atmospheric ozone, it is important to make a clear distinction between the functions and implications of the gas from different sources and at differing locations within the earth’s atmosphere. “Natural” ozone, occurring at ground level, is a combination down-mixing from the stratosphere and photochemical reactions of natural precursors from natural sources. At ground level, natural

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ozone formation by sunlight is weak, and most ozone comes from reactions of ultraviolet radiation with “ozone precursors”, volatile organic compounds (VOCs), and nitrogen oxides (NO_x). Because ozone is chemically reactive and is quickly destroyed, naturally derived ozone concentrations typically represent a balance between formation (generators) and loss processes (sinks).

Stratospheric (high-altitude) ozone is formed when oxygen atoms ionized by solar ultraviolet (UV) light combine with other oxygen molecules. About 90 percent of earth's ozone is contained in the stratospheric boundary, commonly referred to as the ‘ozone layer’. Here, ozone absorbs a portion of the radiation from the sun, preventing it from reaching the earth's surface. Most importantly, it absorbs the portion of ultraviolet light called UVB, which has been linked to many harmful effects, including various types of skin cancer, cataracts, and harm to some crops, certain materials, and some forms of marine life. Thus, stratospheric ozone is beneficial for the earth's ecosystem. At any given time, ozone molecules are constantly formed and destroyed in the stratosphere. The total amount, however, remains relatively stable.

Tropospheric (low-altitude) ozone is also created by chemical reactions from automobile, power plant, and other industrial and commercial source emissions in the presence of sunlight. Tropospheric O₃ is a direct greenhouse gas. The past increase in tropospheric O₃ is estimated to provide the third largest increase in direct radiative forcing since the pre-industrial era. In addition, through its chemical impact on hydroxide (OH) molecules, it modifies the lifetimes of other greenhouse gases, such as CH₄. Ozone abundances in the troposphere typically vary from less than 10 ppb over remote tropical oceans up to about 100 ppb in the upper troposphere, and often exceed 100 ppb downwind of polluted metropolitan regions. This variability, reflecting its rapid chemical turnover, makes it impossible to determine the tropospheric burden from the available surface sites

Besides being a greenhouse gas, ozone can also be a harmful air pollutant at ground level, especially for people with respiratory diseases and children and adults who are active outdoors. The health effects of ozone are discussed in Section 4.5, *Air Quality*.

Water Vapor

Water vapor (H₂O) is the most abundant greenhouse gas in the atmosphere. The principal source of water vapor in the atmosphere is evaporation of the earth's surface waters (oceans, rivers, lakes, etc.). Secondary sources include evaporation from soils, sublimation (change from solid to gas) from sea ice and snow, transpiration from vegetation, and animal respiration.

Water vapor is distributed unevenly in the atmosphere, not only horizontally but vertically as well. Water vapor decreases rapidly with height as the atmosphere gets colder. Almost half the total water in the air is between sea level and about 1.5 km above sea level. Less than 5 to 6% of the water is above 5 km, and less than 1% is in the stratosphere, nominally above 12 km. Despite the small amount of water vapor in the upper troposphere (above about 5 km) and stratosphere, recent research has shown that upper tropospheric water vapor is very important to the climate.

Fluorinated Gases (High GWP Gases)

Hydro-Chlorofluorocarbon compounds (H-CFCs) are haloalkanes with hydrogen, chlorine, and fluorine. Hydrofluorocarbon compounds (HFCs) consists of carbon, hydrogen, and fluorine, but contain no chlorine. Perfluorocarbon compounds (PFCs) are composed of carbon and fluorine. Sulfur hexafluoride (SF₆) consists of fluorine and sulfur.

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H-CFCs were formerly used widely in industry as refrigerants, propellants, and cleaning solvents. Their use has been regularly prohibited by international protocol in 1989; therefore, they are no longer likely to be encountered. HFCs contain no chlorine and are composed entirely of carbon, hydrogen, and fluorine. PFC emissions are byproducts of aluminum production, arising during discrete periods of process inefficiency. Sulfur hexafluoride has been widely used by the magnesium industry for more than 25 years. Magnesium producers, casters, and recycling companies commonly use a cover gas of dilute SF₆ in dry air and/or CO₂ to protect the molten metal from oxidation and potentially violent burning. Without protection, molten magnesium will oxidize in the presence of air and form magnesium oxide (MgO) deposits that greatly reduce the quality and strength of the final product.

The majority of emissions of fluorinated gases are associated with their use as alternatives to ozone-depleting substances, which are being phased out to prevent the depletion of the stratospheric ozone layer. Other important emission sources include a variety of industrial processes, such as aluminum production, semiconductor manufacturing, electric power transmission, magnesium production and processing, and the production of H-CFC-22. Not all fluorinated gases are considered GHGs, although almost all of the H-CFC's are considered ozone-depleting substances.

Aerosols

Aerosols are liquid or solid particles suspended in the air. Aerosols are emitted to the atmosphere through a range of natural and anthropogenic mechanisms. Soil dust is a major contributor to aerosol loading and optical thickness, especially in sub-tropical and tropical regions. Dust source regions are mainly deserts, dry lake beds, and semi-arid desert fringes, but also areas in drier regions where vegetation has been reduced or soil surfaces have been disturbed by human activities. Sulfate aerosols are emitted when fuel containing sulfur, such as coal and oil, is burned. These aerosols have decreased in concentration in the past two decades resulting from efforts to reduce the coal-fired power plant emissions of sulfur dioxide in the United States and other countries.

Carbonaceous aerosols (organic and black carbon) results from the incomplete combustion of fossil fuels and biomass burning (forest fires and land clearing). Other smaller sources of atmospheric aerosols include biogenic aerosols from plant debris and material, nitrate aerosols, and episodic contributions from volcanic eruptions and outgassing.

The health effects of aerosols are typically associated with the availability and abundance of particulate matter. The potential health effects associated with particulate matter are discussed in greater detail in Section 4.5, *Air Quality*.

Global Warming Potential

Global Warming Potential (GWP) is commonly used as a simplified index to estimate the potential effect of different gases on the climate in a relative sense and to compare the abilities of different greenhouse gases to trap heat in the atmosphere. GWPs are based on the heat-absorbing ability of each gas relative to that of carbon dioxide (CO₂) and the decay rate of the gas over a 100-year time horizon. Another commonly referenced attribute of GHGs is their atmospheric lifetime, which reflects the compound's ability to persist in the atmosphere under prevailing conditions. A summary of atmospheric lifetimes and the GWP of selected

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greenhouse gases are provided in Table 4.15-1, *GHG Global Warming Potential and Atmospheric Lifetimes*.

**TABLE 4.15-1
GHG GLOBAL WARMING POTENTIAL AND ATMOSPHERIC LIFETIMES**

Gas	Atmospheric Lifetime (years)	Global Warming Potential (100-year time horizon)
Carbon Dioxide (CO ₂)	50-200	1
Methane (CH ₄)	12 ± 3	21
Nitrous oxide (N ₂ O)	120	310
Hydrofluorocarbons (HFC)		
HFC-23	264	11,700
HFC-32	5.6	650
HFC-125	32.6	2,800
HFC-134a	14.6	1,300
HFC-143a	48.3	3,800
HFC-152a	1.5	140
HFC-227ea	36.5	2,900
HFC-236fa	209	6,300
HFC-4310mee	17.1	1,300
Perfluoromethane (CF ₄)	50,000	6,500
Perfluoroethane (C ₂ F ₆)	10,000	9,200
Perfluorobutane (C ₄ F ₁₀)	2,600	7,000
Perfluoro-2-methylpentane (C ₆ F ₁₄)	3,200	7,400
Sulfur Hexafluoride (SF ₆)	3,200	23,900
Source: USEPA		

Climate Change Legislation

The Intergovernmental Panel on Climate Change (IPCC) was established in 1988 by two United Nations organizations: the World Meteorological Organization (WMO) and the United Nations Environment Programme (UNEP). The key objectives of the IPCC are to evaluate the risk of anthropogenic climate change, based mainly on peer reviewed and published scientific/technical literature, and assist in the development of strategies to monitor and limit global climate change. The UN Framework Convention on Climate Change (UNFCCC) was adopted in 1992 and entered into force in 1994. The Convention sets an ultimate objective of stabilizing greenhouse gas concentrations "at a level that would prevent dangerous anthropogenic (human induced) interference with the climate system".

In response to growing international concerns over long-standing deterioration of the earth's atmospheric ozone layer, the U.S. became a signatory to the Montreal Protocol in 1987. The protocol, and subsequent amendments, is a binding international treaty agreement designed to halt the production and use of ozone depleting substances and to initiate their accelerated phase out. The treaty is the basis on which Title VI of the Federal Clean Air Act was established. The Montreal Protocol stipulated that the production and consumption of compounds that deplete ozone in the stratosphere - chlorofluorocarbons (CFCs), halons and carbon tetrachloride were to be phased out by 2000 and methyl chloroform – phased out by 2005. Subsequent amendments have adjusted to timeframes for final phase out of certain compounds in both developed and developing countries.

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In April 1993, the U.S. Climate Change Action Plan (CCAP) was enacted to meet the twin challenges of responding to the threat of global warming and strengthening the economy. The CCAP sought to return U.S. greenhouse gas emissions to their 1990 levels by the year 2000 and contained over 50 new and expanded federal and voluntary initiatives.

The U.S. is implementing a comprehensive policy that employs near term domestic measures to address climate change; while also making investments in climate change science and technology in the United States and around the world. The policies promote the development and deployment of clean energy technologies and global collaboration to reduce greenhouse gas emissions; improve energy security; and cut air pollution while ensuring continued economic growth. In 2002, an ambitious goal to reduce the greenhouse gas intensity of the U.S. economy by 18% by 2012 was set in an effort to reduce cumulative emissions of carbon dioxide equivalent by more than 1,833 million metric tons by 2012.

In 2007, the United States Supreme Court ruled that the USEPA has the authority to regulate CO₂ emissions under the federal Clean Air Act if it determines that it poses a threat to human health. To date, the USEPA has not proposed regulations for CO₂ emissions.

The State of California has had legislation addressing global climate change as early as the late 1970's. Starting with the establishment of the State's appliance (Title 20) and new building (Title 24) standards in 1976 and 1978, respectively, and concurrent investments in energy efficiency programs across the State, California has pursued strong energy efficiency programs and policies that have set it apart from the rest of the U.S.

California's historical energy efficiency policies have enabled the state to hold per capita electricity use essentially constant, while in the United States as a whole, per capita electricity use increased by nearly 50 percent since the mid-1970s. California's most recently adopted statewide energy efficiency standards for buildings and appliances are also expected to save 2,800 megawatts (MW) over the next ten years (about five percent of the 60 gigawatts of in-State capacity), effectively avoiding the need to build five 500-MW power plants in the next ten years.

California Assembly Bill 1493, enacted in 2002, required that the State Air Resources Board "develop and adopt regulations that achieve the maximum feasible and cost-effective reduction of greenhouse gases from motor vehicles". In the bill, the Legislature declared that "global warming is a matter of increasing concern for public health and the environment in the state" and that "the control and reduction of emissions of greenhouse gases are critical to slow the effects of global warming". The bill also directed the California Climate Action Registry to adopt protocols for reporting "reductions in greenhouse gas emissions from mobile sources."

In 2005, the Governor issued Executive Order S-3-05 recognizing the importance of the natural resources of the State of California and the risks posed to them by potential changes in global climate. The Executive Order requires that the California Environmental Protection Agency coordinate with State agencies to adopt limits and requirements to reduce greenhouse gas emissions to 1990 and pre-1990 levels by set target dates. The targets set forth in Executive Order S-3-05 are:

- ❖ 2010 - Reduce greenhouse gas emissions to Year 2000 levels
- ❖ 2020 - Reduce greenhouse gas emissions to Year 1990 levels
- ❖ 2050 - Reduce greenhouse gas emissions to 80 percent below Year 1990 levels

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Subsequently, the California State Legislature followed with the adoption of the California Global Warming Solutions Act of 2006 (California Assembly Bill No. 32). AB 32 is one of the most significant pieces of environmental legislation that California has adopted. Among other things, it is designed to maintain California's reputation as a "national and international leader on energy conservation and environmental stewardship." It will have wide-ranging effects on California businesses and lifestyles as well as far reaching effects on other states and countries. A unique aspect of AB 32, beyond its broad and wide-ranging mandatory provisions and dramatic GHG reductions are the short time frames within which it must be implemented. Major components of the AB 32 include:

- ❖ Require the monitoring and reporting of GHG emissions beginning with sources or categories of sources that contribute the most to statewide emissions.
- ❖ Requires immediate "early action" control programs on the most readily controlled GHG sources.
- ❖ Mandates that by 2020, California's GHG emissions be reduced to 1990 levels.
- ❖ Forces an overall reduction of GHG gases in California by 25-40%, from business as usual, over the next 13 years (by 2020).
- ❖ Must complement efforts to achieve and maintain federal and state ambient air quality standards and to reduce toxic air contaminants.

To implement AB 32, the Climate Action Registry created a Reporting Online Tool to track GHG emissions. It also adopted the Climate Change Scoping Plan that identifies GHG reduction programs that would expand existing energy efficiency programs, improve building and appliance standards; increase renewable energy sources; develop a California cap-and-trade program; establish targets for transportation-related GHG emissions; implement clean car standards, goods movement measures, and the Low Carbon Fuel Standard and creating target fees to fund the administrative costs of AB 32 implementation.

In December 2007, CARB established the 1990 statewide GHG emissions level at 427 teragrams (Tg) CO₂ equivalent GHG, which, as required under AB 32, is the GHG emissions level to be achieved by 2020.

Senate Bill 375 was adopted in 2008 so that GHG emissions reductions targets established in the Scoping Plan for the transportation sector can be correlated to local land use decisions. Recognizing that GHG emissions from light-duty trucks and automobiles could be reduced by land use decisions that reduce vehicle miles traveled and vehicle trips, SB 375 requires CARB to establish GHG emissions reduction targets for each of the 17 regions in California by September 30, 2010. Once the GHG emissions reduction targets are established, SCAG will be required to prepare a Sustainable Communities Strategy (SCS) in their Regional Transportation Plan. The SCS are expected to establish a development pattern for the region that would reduce GHG emissions from transportation sources (except goods movement). The SCS is expected to provide individual jurisdictions with growth strategies that would help achieve the regional GHG emissions reduction targets.

Existing Greenhouse Gas Emissions Inventory

Data compiled by the United Nations Framework Convention on Climate Change (UNFCCC) from annual inventories submitted by developed (Annex I) countries estimate that global GHG emissions in the most recent data year (2005) were approximately 22,375 Tg CO₂ Eq. (Teragrams of CO₂ equivalent or million gross metric tons of CO₂ equivalent) from all sources, not including emissions related to land use, land use change, or forestry. This figure represents an

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approximate decrease of 1.85% below base year (1990) GHG emission levels for those countries. Data for developing (Annex II) countries is not included because of incomplete data availability and the proportionately minor size of their global contributions. Under the convention, precise and regularly updated inventories of greenhouse gas emissions from industrialized countries are required to be submitted on an annual basis. Developing countries also are encouraged to carry out similar inventories.

Data submitted to the UNFCCC by the U.S. in 2005 indicated total GHG emissions of 7,241 Tg CO₂ Eq., an increase of approximately 16.3% from 1990 levels. This figure represents over 32% of global emissions from developed countries for 2005. Analysis of historical data shows that U.S. annual emissions steadily increased over the recording period 1991-2005. In 2006, total U.S. greenhouse gas emissions were 7,054 Tg CO₂ Eq. Overall, total U.S. emissions have risen by 14.7 percent from 1990 to 2006, while the U.S. gross domestic product has increased by 59 percent over the same period. Emissions fell from 2005 to 2006, decreasing by 1.1 percent (75.7 Tg CO₂ Eq.). The following factors were primary contributors to this decrease: (1) compared to 2005, 2006 had warmer winter conditions, which decreased consumption of heating fuels, as well as cooler summer conditions, which reduced demand for electricity, (2) restraint on fuel consumption caused by rising fuel prices, primarily in the transportation sector and (3) increased use of natural gas and renewables in the electric power sector.

The State of California is a substantial GHG generator and is ranked second in the United States, only behind Texas. In 2004, the State produced an estimated 492 Tg CO₂ Eq. GHG emissions, with transportation and electricity generation being by far the largest end-user contributors. California's greenhouse gas emissions are also large in a world scale context and continue to grow. The proportional contributions from all sources of GHG in the State were 81% from fossil fuel combustion, 2.8% from other sources of CO₂, 5.7% from methane, 6.8% from nitrous oxide, and the remainder from high GWP gases (2.9%).

The EIR for TOP estimated GHG emissions from existing land uses in the City of Ontario, as provided in Table 4.15-2, *Citywide GHG Emissions Inventory*.

**TABLE 4.15-2
CITYWIDE GHG EMISSIONS INVENTORY (2008)**

Source	CO ₂ Emissions MT/Year
Transportation Sector	3,603,215
Electricity Sector	
Purchased Energy	855,221
Water Demand and Treatment	50,394
Total Energy Emissions	905,615
Recycling and Waste	56,298
Agricultural	356,306
Area Sources	207,533
Total	5,128,968
MT – metric tons	
Source: TOP EIR	

A minor portion of these are GHG generated by the US Post Office operations at the project site.

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4.15.2 Threshold of Significance

According to Appendix G of the CEQA Guidelines, a project could have a significant adverse impact on greenhouse gases and climate change, if its implementation results in any of the following:

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

The California Air Resources Board (CARB) and SCAQMD tried to establish GHG emission thresholds for industrial, residential, and commercial projects. CARB's preliminary draft proposal was released for public review on October 24, 2008. CARB also held a public workshop to discuss the draft proposal on October 27, 2008 and December 9, 2008. CARB's interim thresholds establish a numeric threshold of 7,000 metric tons of CO₂ Equivalent/year for industrial projects and a mandatory reporting requirement of 25,000 metric tons of CO₂ Equivalent/year. No threshold for residential and commercial projects was recommended, aside from a programmatic approach for consistency with performance standards that reduce GHG.

On December 5, 2008, the SCAQMD Governing Board adopted an Interim GHG Significance Threshold for industrial projects where the SCAQMD is the lead agency (e.g., stationary source permit projects, rules, plans, etc.) of 10,000 metric tons CO₂ Equivalent/year. As part of the Interim GHG Significance Threshold development process for industrial projects, the SCAQMD established a working group of stakeholders that also considered thresholds for residential/commercial projects. The SCAQMD's working group considered performance standards primarily focused on energy efficiency measures beyond Title 24 and a screening level of 3,000 metric tons CO₂ Equivalent/year based on the relative GHG emissions contribution between residential/commercial sectors and stationary source (industrial) sectors. The working group and staff ultimately decided that additional analysis was needed to further define the performance standards and to coordinate with CARB staff's interim GHG proposal. Staff, therefore, did not recommend action for adopting an interim threshold for residential/commercial projects.

Senate Bill 97 (Chapter 185, 2007) required the Governor's Office of Planning and Research (OPR) to develop CEQA guidelines on how to address global warming emissions and mitigate project-generated GHG. OPR was required to prepare, develop, and transmit these guidelines on or before July 1, 2009, and directed the California Natural Resources Agency to adopt the CEQA guidelines by January 1, 2010.

In April 2009, the Governor's Office of Planning and Research proposed amendments to the CEQA Guidelines to address greenhouse gas emissions but has left the establishment of thresholds of significance to the Lead Agency. These amendments were adopted in January 2010.

CARB has suspended their efforts in developing thresholds. However, SCAQMD is still working on developing GHG significance thresholds, although no formal quantitative guidance that would be applicable to the proposed Amendment or to residential uses has been adopted at this time.

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4.15.3 Environmental Impacts

Future residential development under the proposed *Guasti Plaza Specific Plan Amendment* would lead to the development of 500 new housing units on the site, which would generate GHG emissions.

GHG Emissions (*Would the project generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?*)

The General Reporting Protocol (GRP) in the California Climate Action Registry (CCAR) divides project-related operational GHG emissions into three categories. These three sources include the following:

- ❖ *Source 1* - On-site combustion of fossil fuels (space and water heating, fireplaces, landscape utility equipment, etc.)
- ❖ *Source 2* - Consumption of purchased energy (electricity)
- ❖ *Source 3* - Indirect emissions (transportation, solid waste disposal, fresh-and wastewater conveyance and treatment)

For general development projects such as the Guasti Project, Source 3 is typically a much larger contributor to the GHG burden than Sources 1 and 2. For convenience, project related GHG emissions were aggregated into transportation and non-transportation sources. The transportation component is calculated and reported in the URBEMIS2007 computer model. The non-transportation sources require additional analysis, as shown below.

Construction Emissions

Short-term GHG emissions will be generated by construction activities on the site. The URBEMIS2007 computer model was used to calculate GHG emissions from the following prototype construction equipment fleet for residential construction:

- | | |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><u>Grading</u></p> <ul style="list-style-type: none"> ❖ 1 Grader ❖ 1 Rubber Tired Dozer ❖ 1 Tractor/Loader/Backhoe ❖ 1 Water Truck | <p><u>Paving</u></p> <ul style="list-style-type: none"> ❖ 4 Cement Mixers ❖ 1 Paver ❖ 2 Paving Equipment ❖ 1 Roller ❖ 1 Tractor/Loader/Backhoe |
| <p><u>Construction</u></p> <ul style="list-style-type: none"> ❖ 3 Welders ❖ 1 Tractor/Loader/Backhoe ❖ 1 Generator Set ❖ 1 Crane ❖ 2 Forklifts | |

Calculated construction activity emissions are summarized in Table 4.15-3, *Daily Construction Activity GHG Emissions*.

**TABLE 4.15-3
DAILY CONSTRUCTION ACTIVITY GHG EMISSIONS (POUNDS/DAY)**

Activity	CO ₂
Grading	2,371.7
Construction	8,450.2

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**TABLE 4.15-3
DAILY CONSTRUCTION ACTIVITY GHG EMISSIONS (POUNDS/DAY)**

Activity	CO ₂
Coating and Paving	1,872.7
	-

Source: Giroux and Associates, 2009.

Equipment exhaust also contains small amounts of methane and nitric oxides, which are GHGs. Non-CO₂ GHG emissions represent approximately a three percent increase in CO₂-equivalent emissions from diesel equipment exhaust. For purposes of analysis, it was assumed that the non-CO₂ GHG emissions from construction equipment during short-term construction activities at the site are negligible, and that the total project construction GHG burden can be characterized by 40 peak grading, 100 peak construction activity days and 100 peak coating and paving days. The estimated annual GHG impact is estimated in Table 4.15-4, *Total Construction Activity GHG Emissions*, if all the above activities were to occur in a single year.

**TABLE 4.15-4
TOTAL CONSTRUCTION ACTIVITY GHG EMISSIONS (POUNDS/DAY)**

Activity/Use	Residential
Grading	2,372 lbs/day x 40 days
Construction	8,450 lbs/day x 100 days
Coating and Paving	1,873 lbs/day x 100 days
Yearly Total	1,127,180 lbs/2000 lbs/ton = 564 "short" tons = 513 Metric Tons

For screening purposes, the temporary construction activity GHG emissions were compared to the chronic operational emissions in the SCAQMD's interim thresholds. The recommended screening level for commercial uses is 3,000 metric tons (MT) of CO₂-equivalent (CO₂(e)) per year. Construction activities generating 513 MT are well below this threshold. Impacts would be less than significant.

Operational GHG

Implementation of the proposed project would contribute to long-term increases in greenhouse gases (GHGs) as a result of traffic increases (mobile sources) and minor secondary fuel combustion emissions from space heating. Development occurring as a result of the proposed project would also result in secondary operational increases in GHG emissions as a result of electricity generation to meet project-related increases in energy demand. Electricity generation in California is mainly from natural gas-fired power plants. However, since California imports about 20 to 25 percent of its total electricity (mainly from the northwestern and southwestern states), GHG emissions associated with electricity generation could also occur outside of California. Space or water heating, water delivery, wastewater processing and solid waste disposal also generate GHG emissions.

Annual GHG emissions, from non-transportation sources are shown in Table 4.15-5, *Non-Transportation GHG Emissions*.

**TABLE 4.15-5
NON-TRANSPORTATION GHG EMISSIONS (POUNDS/DAY)**

Annual Non-Transportation Consumption/Generation Factors					
Land Use	Unit	Electricity (MWHR)	Nat. Gas (10 ⁶ cu ft)	Solid Waste (tons)	Water (10 ⁶ gal)
Residential	DU	5.6	0.0481	0.73	0.073

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GHG Emissions					
	Unit	Electricity (MWHR)	Nat. Gas (10 ⁶ cu ft)	Solid Waste (tons)	Water (MG)
Residential	500 DU	2,800	24	365	36
Conversion Factor		0.364	54.6	0.46	4.62
CO ₂ (e) tons/yr		1,019	1,310	168	166
Conversion to CO ₂ (e) [tons/year] -					
Electricity		MWHR x 0.364 tons/MWHR (1)			
Nat. Gas		10 ⁶ cubic feet x 54.6 tons/10 ⁶ cubic feet (2)			
Solid Waste		tons x 0.46 tons/ton (3)			
Water and Wastewater		10 ⁶ gal(MG) x 4.62 tons/MG (4)			
(1) California Climate Action Registry					
(2) California Climate Action Registry					
(3) Energy Information Admin., Voluntary Reporting of GHG					
(4) California Energy Commission, Integrated Energy Policy Report (12.7 MWHR per MG conveyed, treated and disposed in Southern California)					
Source: Air Quality Impact Analysis, 2009					

The URBEMIS2007 computer model predicts daily operational CO₂ emissions from residential traffic and area source emissions, estimated at 5,731.1 tons/year. Added with a calculation of indirect GHG emissions in the table above at 2,663 tons/year, a total of approximately to be 8,394 tons of CO₂ per year would be generated by future residential uses on the site.

Thus, future residential development would generate 8,394 MT of GHG emissions per year from combined stationary and mobile sources.

There are no quantified thresholds of significance for GHG emissions. Thus, the impact significance of the Amendment's GHG emissions cannot be determined readily. Although the SCAQMD has not adopted the proposed threshold of 3,000 metric tons of CO₂ Equivalent/year, future residential development under the proposed Amendment will exceed 3,000 metric tons.

Comparison with the estimated GHG emissions from existing land uses and at buildout of the City of Ontario, as provided in Table 4.15-6, *City-wide and Project-Related GHG Emissions*, shows that GHG emissions from future residential development at the site would represent less than 0.2 percent of existing and projected City-wide GHG emissions.

**TABLE 4.15-6
CITY-WIDE AND PROJECT-RELATED GHG EMISSIONS**

Source	Existing Land Uses (MMTons)	Buildout (MMTons)	Proposed Project (Tons)
Transportation Sector	3.6	10.6	5,731.1
Electricity Sector			
Purchased Energy	0.9	2.2	1,019
Water Demand and Treatment	0.1	0.1	166
Total Energy Emissions	0.9	2.3	1,185
Recycling and Waste	0.1	0.1	168
Agricultural	0.4	0	0
Area Sources	0.2	0.5	1,310
Total	5.1	13.6	8,394.1
MT – metric tons MMTons – million metric tons Source: TOP Recirculated DEIR			

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Since GHG emissions are implicated in the acceleration of global warming experienced in the last several decades, project impacts would be global, even if miniscule. This is considered a significant adverse impact. The cumulative impacts of the Amendment on GHG and Global Climate Change are discussed further in Section 6.0, *Cumulative Impacts*. Operational GHG emissions from future residential development would be significant and adverse.

Impact 4.15.1: Greenhouse gas emissions from future residential development would contribute to climate change.

Unless there is a greater shift to clean energy such as solar, hydroelectric, wind, nuclear, etc., no substantial reduction in GHG is likely attainable by individual developments, except through energy conservation. Thus, in the absence of definitive thresholds of significance, the GHG reduction measures are geared towards the incorporation of project design features that reduce energy consumption and vehicular travel, as much as is reasonably feasible. A reduction in potential GHG emissions would occur under the Amendment (by locating residential uses near commercial areas) over the uses approved in the Guasti Plaza Specific Plan. Existing regulations also call for trip reduction and energy conservation measures to be incorporated into future residential development. In addition, mitigation is recommended to further reduce GHG emissions associated with future development under the proposed Amendment.

GHG Policy Consistency (*Would the project conflict with any applicable plan, policy or regulation of an agency adopted for the purpose of reducing the emissions of greenhouse gases?)*

The proposed Amendment and future residential development under the Amendment will implement measures as part of the Specific Plan development, as standard conditions, or as mitigation measures, which would also serve to reduce GHG emissions. These include:

Trip Reduction

- ❖ *Specific Plan Amendment – Residential and commercial uses could be located in mixed use developments or within walking distance of each other at Guasti Plaza.*
- ❖ *Specific Plan – Implementation of Transportation Demand Management (TDM) measures is called for in the Specific Plan, along with the formation of transportation management associations.*
- ❖ *Specific Plan – The Specific Plan acknowledges bus transit routes that may serve future development.*
- ❖ *Specific Plan – The development of sustainable landscapes is called out in the Specific Plan, to include efficient irrigation, pervious surfaces, recyclable materials, infiltration planter boxes, etc. Specific Plan - Pedestrian and bicycle circulation is promoted by the Specific Plan through Site Guidelines that encourage pedestrian activity.*

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- ❖ *Specific Plan Amendment – Design guidelines call for an urban, pedestrian friendly environment, with strong pedestrian linkages between residential and commercial uses.*
- ❖ *Specific Plan Amendment – Design guidelines promote innovative housing types like mixed use or live-work units.*
- ❖ *Standard Condition 4.4.6: Future residential or commercial development shall comply with City’s Trip Reduction Ordinance requirements, through the provision of bike racks, sidewalks from public streets to each building; a passenger loading area; and transit facilities, such as bus shelters, bus pullouts, and bus pads.*
- ❖ *Mitigation Measure 4.4.2: Bus turnouts and bus shelters shall be provided along Archibald Avenue, as part of future development within the Specific Plan area and in coordination with Omnitrans.*
- ❖ *Mitigation Measure 4.5.2: Measures that reduce trip generation or trip lengths and that promote energy conservation would reduce long-term emissions and shall be implemented by future development. These include:*
 - *Bus turnouts and bus shelters on Archibald Avenue (as discussed in Section 4.4)*
 - *Provision of complete pedestrian pathways between the site and adjacent commercial uses*
 - *Promote the use of bus transit through the provision of bus route schedules at lobbies*
 - *Provision of bike racks (as required by the City’s Trip Reduction Ordinance)*
 - *Construction methods and use of energy efficient appliances that exceed Title 24 requirements (as discussed in Section 4.15)*

Water Conservation

- ❖ *Specific Plan – Design guidelines call for the preservation or relocation of existing mature trees and the use of plants that can withstand Southern California drought.*
- ❖ *Specific Plan – The Landscape Plan requires water-efficient irrigation systems that are specific to the plant species; reduce runoff; and with automatic controllers.*
- ❖ *Standard Condition 4.12.2: Future residential or commercial development shall implement water conservation measures in accordance with the California Plumbing Code, Title 6, Chapter 8a of the Ontario Municipal Code, and as recommended by the California Department of Water Resources in all new or substantially rehabilitated structures, including the following:*
 - *Low flush toilets of no greater than 1.6 gallons per flush;*
 - *Low flow shower heads;*
 - *Insulation of hot water lines to provide hot water faster with less water waste and to keep hot pipes from heating cold water pipes;*

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- *Water pressure greater than 50 pounds per square inch be reduced to less than 50 pounds per square inch by means of a pressure reducing valve;*
 - *Landscape with low water consuming or drought tolerant plants in all commercial and industrial projects, and in public areas in residential projects. Landscaped areas should also be mulched to the maximum extent to reduce evaporation and maintain soil moisture;*
 - *Install efficient irrigation systems that minimize runoff and evaporation, and maximize the water that will reach the plant roots. Drip irrigation, soil moisture sensors and automatic irrigation systems are a few methods to consider in increasing irrigation efficiency;*
 - *Require projects of appropriate size to connect to the reclaimed water system for irrigation purposes.*
-
- ❖ *Standard Condition 4.12.4: The landscape irrigation system installed on the site shall have the capability of being retrofitted to utilize reclaimed water supplies when they become available, in accordance with Title 6, Chapter 8C, Recycled Water Use, of the Ontario Municipal Code.*
 - ❖ *Standard Condition 4.12.5: The City Engineering Department shall consult with project proponents within the Redevelopment Area as to the most effective methods of reusing wastewater generated by proposed projects.*

Waste Reduction

- ❖ *Standard Condition 4.12.8: Future residential or commercial development shall implement waste reduction, disposal, and recycling measures during construction and operations in accordance with Title 6, Chapter 3 (Integrated Solid Waste Management) of the City's Municipal Code. This includes the development and implementation of a Construction and Demolition Recycling Plan, during the construction phase of the project.*

Energy Conservation

- ❖ *Standard Condition 4.12.11: Future residential or commercial development shall implement energy conservation measures, as required under Title 24, Part 6, of the California Code of Regulations (California's Energy Efficiency Standards for Residential and Nonresidential Buildings).*

Consistency of the proposed Amendment and future residential development on the site with existing GHG reduction plans, policies and regulations is addressed below.

Climate Change Scoping Plan

The California Air Resources Board (CARB) adopted the Climate Change Scoping Plan in 2008, which calls for a 30-percent reduction in GHG emissions to meet the 1990 GHG emissions goal by 2020. Early action measures in the Scoping Plan include:

- ❖ *Green Building through implementation of more energy-efficient building standards in Title 24. (The 2008 Building and Energy Efficiency Standards are 15 percent more energy-efficient than the 2005 standards.)*

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Future residential development will need to implement measures to exceed the energy-efficient standards in Title 24.

- ❖ Renewable Energy Portfolio (33 percent) for energy producers in California. (Renewable energy currently comprises 12 percent of the state's energy portfolio.)

Future residential development or the Specific Plan would not produce energy on-site.

- ❖ Per-Capita Water Reduction by approximately 20 percent. (The draft 20X2020 water conservation plan identifies strategies to reduce water use in the state. In addition, plumbing and landscaping codes amended with the new Title 24 result in a 50 percent reduction of water use for new commercial and residential plumbing fixtures.)

Future residential development would implement water conservation measures, as discussed in Section 4.12.1, Water Services.

- ❖ Low Carbon Fuel Standard (10-percent reduction in carbon content) for fuels sold in California by year 2020.

Future residential development will utilize fuels meeting the Low Carbon Fuel Standard, when they become available.

- ❖ Pavley Fuel Efficiency Standards (higher fuel efficiency standards of 43 miles per gallon - mpg) for the average fleet fuel economy of cars by year 2020. (This will increase in fuel efficiency by 20 mpg from the current 23 mpg average fleet economy in California.)

Future residential development will utilize cars with higher fuel efficiency, when they become available.

CAPCOA and Attorney General Policies

In January 2008, the California Air Pollution Control Officers Association (CAPCOA) published "CEQA and Climate Change," which considers and evaluates numerous approaches to addressing greenhouse gas emissions under CEQA. The EIR for TOP analyzed the GHG and climate change impacts of the buildout of the City of Ontario. The analysis included review of CAPCOA's model policies for GHG emissions in General Plans, which indicated that TOP is consistent with CAPCOA policies because a number of TOP policies reflect the CAPCOA policies and mitigation measures have been added to make the TOP consistent with the rest of the CAPCOA policies. Similarly, consistency with the Attorney General's GHG policies was evaluated in TOP EIR and mitigation measures were provided for policies that were not reflected in TOP. Since the proposed Amendment is consistent with TOP, as discussed in Section 4.2, *Land Use and Planning*, it is considered consistent with CAPCOA and Attorney General policies.

Regional Plans

As discussed in Section 4.2, *Land Use and Planning*, the proposed Amendment and future residential development on the site is also consistent with the Compass Blueprint, Regional Comprehensive Plan, Regional Housing Needs Assessment, and Regional Transportation Plan,

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which all address growth and development in the Southern California region. These plans call for focused growth in existing and emerging centers and along major transportation corridors; provision of adequate housing; mixed-use development and walkable communities; and reductions in vehicle trips and vehicle miles traveled, which would reduce GHG emissions in the and region. The proposed Specific Plan Amendment embodies these same goals and thus, would reduce GHG emissions through the development of residential uses within Guasti Plaza.

TOP Mitigation

A number of mitigation measures have been included in the EIR for TOP, to reduce Citywide GHG emissions. A number of these mitigation measures are City-sponsored policies, which would not be applicable to the proposed Amendment and future residential development on the site. Consistency of the proposed Amendment with TOP would in turn, mean consistency with these mitigation measures. Other mitigation measures are project-specific and would apply to future residential development. However, with no development application accompanying the proposed Amendment, these measures would have to be implemented at the time when residential development and construction is proposed on-site.

Consistency of the proposed Amendment and future residential development with GHG mitigation measures is analyzed in Table 4.15-7, *Consistency with TOP Mitigation*.

**TABLE 4.15-7
CONSISTENCY WITH TOP MITIGATION**

TOP Mitigation	Consistency of SPA and Future Residential Development
<i>MM 6-1 Climate Action Plan (CAP)</i>	This is a City endeavor that is not applicable to the SPA or the site. Future residential development will comply with the CAP when it is adopted at the time of site development.
<i>MM 6-2 Measures to consider in CAP</i>	This is a City endeavor that is not applicable to the SPA or the site. Future residential development will comply with applicable measures in the CAP when it is adopted at the time of site development.
<i>MM 6-3 Municipal Code Amendment</i>	This is a City endeavor that is not applicable to the SPA or the site. Future residential development will comply with applicable regulations in the City's Municipal Code.
<i>MM 6-4 Review development per MMs 6-2 and 6-3 prior to CAP adoption</i>	Future residential development will comply with applicable mitigations at the time of site development, if the CAP has not been adopted.
<i>Applicable measures under MM 6-2</i>	
Require that new development projects in Ontario that require demolition prepare a demolition plan to reduce waste by recycling and/or salvaging a non-hazardous construction and demolition debris.	Future residential development will prepare a Construction and Demolition Recycling Plan per City requirements, as discussed in Section 4.12.4.
Require that new developments design buildings to be energy efficient by siting buildings to take advantage of shade, prevailing winds, landscaping, and sun screening to reduce energy required for cooling.	This measure will be added as mitigation for future residential development, to be implemented if the CAP has not been adopted.

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**TABLE 4.15-7
CONSISTENCY WITH TOP MITIGATION**

TOP Mitigation	Consistency of SPA and Future Residential Development
Require all new traffic lights installed be energy efficient traffic signals.	This measure will be added as mitigation for future residential development, to be implemented if the CAP has not been adopted.
Require the use of reclaimed water for landscape irrigation in all new development and on public property where such connections are within the service boundaries of the City's reclaimed water system.	There is no reclaimed water connection to the site but future residential development would be plumbed for connection to the reclaimed water system, when connection is made available to the Specific Plan area.
Require all new landscaping irrigation systems installed within the City to be automated, high-efficient irrigation systems to reduce water use and require use of bubbler irrigation; low-angle, low-flow spray heads; or moisture sensors.	This measure will be added as mitigation for future residential development, to be implemented if the CAP has not been adopted.
Mitigate climate change by decreasing heat gain from pavement and other hard surfaces associated with infrastructure.	This measure will be added as mitigation for future residential development, to be implemented if the CAP has not been adopted.
Reduce heat gain from pavement and other similar hardscaping.	This measure will be added as mitigation for future residential development, to be implemented if the CAP has not been adopted.
Provide safe and convenient access for pedestrians and bicyclists to, across, and along major transit priority streets.	This measure will be added as mitigation for future residential development, to be implemented if the CAP has not been adopted.
Encouraging new construction to include vehicle access to properly wired outdoor receptacles to accommodate ZEV and/or plug in electric hybrids (PHEV).	This measure will be added as mitigation for future residential development, to be implemented if the CAP has not been adopted.
Requirements for the use of Energy Star appliances and fixtures in discretionary new development.	This measure will be added as mitigation for future residential development, to be implemented if the CAP has not been adopted.
Encourage the performance of energy audits for residential and commercial buildings prior to completion of sale, and that audit results and information about opportunities for energy efficiency improvements be presented to the buyer.	This measure will be added as mitigation for future residential development, to be implemented if the CAP has not been adopted.
Require the installation of outdoor electrical outlets on buildings to support the use, where practical, of electric lawn and garden equipment, and other tools that would otherwise be run with small gas engines or portable generators.	This measure will be added as mitigation for future residential development, to be implemented if the CAP has not been adopted.
Conduct a comprehensive inventory and analysis of the urban forest, and coordinate tree maintenance responsibilities with all responsible departments, consistent with best management practices.	Existing trees at the site would be preserved, per the tree preservation program of the Specific Plan, and new trees would be planted to complement the historic landscape.
Implement enhanced programs to divert solid waste from landfill operations	Recycling will be added as mitigation for future residential development, to be implemented if the

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**TABLE 4.15-7
CONSISTENCY WITH TOP MITIGATION**

TOP Mitigation	Consistency of SPA and Future Residential Development
	CAP has not been adopted.
Reduce per capita water consumption consistent with state law by 2020.	Water conservation measures would be implemented by future residential development, as discussed in Section 4.12.1.
Promoting the use of recycled water for agricultural, industrial, and irrigation purposes, including grey water systems for residential irrigation.	There is no reclaimed water system near the site but future residential development would be plumbed to connect to the reclaimed water system, when it is extended into the Specific Plan area.
Establishing building design guidelines and criteria to promote water efficient building design, including minimizing the amount of non-roof impervious surfaces around the building(s).	This measure will be added as mitigation for future residential development, to be implemented if the CAP has not been adopted.
Establishing menus and check-lists for developers and contractors to ensure water-efficient infrastructure and technology are used in new construction, including low-flow toilets and shower heads, moisture-sensing irrigation, and other such advances.	Water conservation measures would be implemented by future residential development, as discussed in Section 4.12.1.
<i>Applicable measures under MM 6-3</i>	
Increase densities in urban core areas to support public transit	The proposed SPA increases density within the Airport Metro Center Area.
Reduce required road width standards wherever feasible to calm traffic and encourage alternative modes of transportation.	This measure will be added as mitigation for future residential development, to be implemented if the CAP has not been adopted.
Add bicycle facilities to city streets and public spaces, where feasible.	This measure will be added as mitigation for future residential development, to be implemented if the CAP has not been adopted.
Promote infill, mixed-use, and higher density development, and provide incentives to support the creation of affordable housing in mixed use zones.	The proposed SPA would create a mixed use, high density development within Guasti Plaza.
Plan for and create incentives for mixed-use development	The proposed SPA would allow mixed use development, as allowed under TOP.
Identify sites suitable for mixed-use development and establish appropriate site specific standards to accommodate mixed uses	TOP has identified Guasti as a mixed use area and the proposed SPA would allow mixed use development, as allowed under TOP.
Enable prototype mixed-use structures for use in neighborhood center zones that can be adapted to new uses over time with minimal internal remodeling.	This measure will be added as mitigation for future residential development, to be implemented if the CAP has not been adopted.
Identify and facilitate the inclusion of complementary land uses not already present in local zoning districts, such as supermarkets, parks and recreational fields, schools in neighborhoods, and residential uses in business districts, to reduce the vehicle miles traveled and	The proposed SPA would allow residential development, where commercial uses are planned under the Guasti Plaza Specific Plan.

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**TABLE 4.15-7
CONSISTENCY WITH TOP MITIGATION**

TOP Mitigation	Consistency of SPA and Future Residential Development
promote bicycling and walking to these uses.	
Develop form-based community design standards to be applied to development projects and land use plans, for areas designated mixed-use.	The proposed SPA would include form-based community design standards for residential uses.
Identify transit centers appropriate for mixed-use development, and promote transit oriented, mixed-use development within these targeted areas	TOP has identified Guasti as a mixed use area and the proposed SPA would allow mixed use development, as allowed under TOP.
Ensure new development is designed to make public transit a viable choice for residents	Bus stop improvements would be provided by future development, as discussed in Section 4.4, Transportation.
Create and preserve distinct, identifiable neighborhoods whose characteristics support pedestrian travel, especially within, but not limited to, mixed-use and transit oriented development areas	The proposed SPA would develop a mixed use neighborhood that will support pedestrian travel between residential and commercial uses within Guasti Plaza.
Designing or maintaining neighborhoods where the neighborhood amenities can be reached in approximately five minutes of walking	The proposed SPA would allow residential development near planned commercial uses.
Encouraging pedestrian-only streets and/or plazas within developments, and destinations that may be reached conveniently by public transportation, walking, or bicycling.	Pedestrian walkways and plazas would be provided within Guasti Plaza.
Allowing flexible parking strategies in neighborhood activity centers to foster a pedestrian-oriented streetscape.	This measure will be added as mitigation for future residential development, to be implemented if the CAP has not been adopted.
Providing continuous sidewalks with shade trees and landscape strips to separate pedestrians from traffic.	This measure will be added as mitigation for future residential development, to be implemented if the CAP has not been adopted.
Ensure pedestrian access to activities and services, especially within, but not limited to, mixed-use and transit-oriented development areas	The proposed SPA would locate residential and commercial uses within Guasti Plaza, with established pedestrian connections.
Ensuring new development that provides pedestrian connections in as many locations as possible to adjacent development, arterial streets, thoroughfares.	This measure will be added as mitigation for future residential development, to be implemented if the CAP has not been adopted.
Ensuring a balanced mix of housing, workplaces, shopping, recreational opportunities, and institutional uses, including mixed-use structures.	The proposed SPA would locate residential and commercial uses within Guasti Plaza.
Encouraging new development in which primary entrances are pedestrian entrances, with automobile entrances and parking located to the rear.	This measure will be added as mitigation for future residential development, to be implemented if the CAP has not been adopted.
Supporting development where automobile	This measure will be added as mitigation for future

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**TABLE 4.15-7
CONSISTENCY WITH TOP MITIGATION**

TOP Mitigation	Consistency of SPA and Future Residential Development
access to buildings does not impede pedestrian access, by consolidating driveways between buildings or developing alley access.	residential development, to be implemented if the CAP has not been adopted.
Utilizing street parking as a buffer between sidewalk pedestrian traffic and the automobile portion of the roadway.	This measure will be added as mitigation for future residential development, to be implemented if the CAP has not been adopted.
Including low-water landscaping in place of hardscaping around transportation infrastructure and in parking areas.	This measure will be added as mitigation for future residential development, to be implemented if the CAP has not been adopted.
Establishing standards that provide for pervious pavement options.	This measure will be added as mitigation for future residential development, to be implemented if the CAP has not been adopted.
Removing obstacles to natural, drought tolerant landscaping and low-water landscaping.	This measure will be added as mitigation for future residential development, to be implemented if the CAP has not been adopted.
Ensuring transit stops and bus lanes are safe, convenient, clean and efficient.	Bus stop improvements would be provided by future development, as discussed in Section 4.4, Transportation.
Ensuring transit stops have clearly marked street-level designation, and are accessible.	Bus stop improvements would be provided by future development, as discussed in Section 4.4, Transportation.
Ensuring transit stops are safe, sheltered, benches are clean, and lighting is adequate.	Bus stop improvements would be provided by future development, as discussed in Section 4.4, Transportation.
Facilitate employment opportunities that minimize the need for private vehicle trips	The proposed SPA would provide nearby employment opportunities for future residents.
Providing access for pedestrians and bicyclist to public transportation through construction of dedicated paths, where feasible.	The proposed SPA would locate residential and commercial uses within Guasti Plaza, with established pedestrian connections.
Where feasible, promote the construction of weatherproof bicycle facilities and at a minimum, provide bicycle racks or covered, secure parking near the building entrances.	This measure will be added as mitigation for future residential development, to be implemented if the CAP has not been adopted.
Require that, where feasible, all new buildings be constructed to allow for easy, cost effective installation of solar energy systems in the future	This measure will be added as mitigation for future residential development, to be implemented if the CAP has not been adopted.
Install water-efficient landscapes and irrigation	This will be implemented on-site, as discussed in Section 4.12.1.
Requiring planting drought-tolerant and native species, and covering exposed dirt with moisture-retaining mulch or other materials such as decomposed granite.	This measure will be added as mitigation for future residential development, to be implemented if the CAP has not been adopted.
Requiring the installation of water-efficient irrigation systems and devices, including advanced technology such as moisture-sensing irrigation controls.	This measure will be added as mitigation for future residential development, to be implemented if the CAP has not been adopted.
Promote the planting of shade trees and	Existing trees at the site would be preserved, per

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**TABLE 4.15-7
CONSISTENCY WITH TOP MITIGATION**

TOP Mitigation	Consistency of SPA and Future Residential Development
establish shade tree guidelines and specifications	the tree preservation program of the Specific Plan, and new trees would be planted to complement the historic landscape.
Establishing guidelines for tree planting, including criteria for selecting deciduous or evergreen trees low-VOC-producing trees, and emphasizing the use of drought-tolerant native trees and vegetation	Existing trees at the site would be preserved, per the tree preservation programs of the Specific Plan, and new trees would be planted to complement the historic landscape.
<i>MM 6-5 Consistency with SCS</i>	Future residential development will comply with applicable measures in the SCS, when it is adopted by the time of site development.
<i>MM 6-6 Green Valley Initiative</i>	This is a City endeavor that is not applicable to the SPA or the site.

As shown, a number of TOP GHG mitigations have not been incorporated into the SPA and will have to be implemented by future residential development on the site.

Impact 4.15.2: Future residential development would not be consistent with all of the TOP GHG mitigation.

When adopted, compliance with the CAP by future developments in the City would make the development consistent with the TOP mitigation. In the interim, TOP mitigation that are applicable to future residential development but have not been included into the proposed Specific Plan Amendment or the standard conditions and mitigation measures in other sections of this EIR will be added as mitigation, to be implemented by future residential development on the site even if the CAP is not adopted. This will align the proposed Amendment and future residential development with the GHG emissions reduction strategies of the State and City.

4.3.4 Previous Analysis

To the extent applicable, this Supplemental EIR tiers off previous environmental documents relating to the development of the project site, which include the EIR for the Guasti Plaza Specific Plan and the EIR for the Guasti Redevelopment Plan. The following discussion summarizes the similarities/differences in potential impacts between the previous documents and this Supplemental EIR and, where similar impacts are present, applicable policies, standard conditions or mitigation measures in the previous documents are identified for incorporation or implementation by the current project, where appropriate.

Guasti Plaza Specific Plan EIR

The Initial Study for the Guasti Plaza Specific Plan EIR indicated that future development under the Specific Plan would have moderate or potential effects on climate and no further analysis is provided in the EIR.

Future residential development under the proposed Amendment would generate greenhouse gases, as would planned office uses.

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Guasti Redevelopment Plan EIR

The Guasti Redevelopment Plan EIR did not analyze impacts related to Greenhouse Gases and Climate Change.

4.15.5 Standard Conditions and Mitigation Measures

Standard Conditions

A number of programs have been adopted by the State that would reduce greenhouse gas emissions from various sources but not are specifically applicable to future residential development. The Ontario Plan also contains policies that would reduce vehicle trips and vehicle miles traveled, promote transit use, call for water conservation, energy conservation, waste reduction, sustainable practices and other ways to reduce GHG emissions.

Standard Condition 4.15.1: Future residential development will need to comply with applicable General Plan goals and policies, as they relate to GHG emissions reductions.

Mitigation Measures

The following mitigation measure shall be implemented as part of future residential development under the proposed Amendment:

Mitigation Measure 4.15.1: Measures that reduce trip generation or trip lengths; that optimize the transportation efficiency of a region; that promote energy conservation and carbon sequestering shall be incorporated into future residential development to reduce GHG emissions. These include the following:

Site and Building Design

- *Mitigate climate change by decreasing heat gain from pavement and other hard surfaces associated with infrastructure.*
- *Reduce heat gain from pavement and other similar hardscaping.*
- *Include vehicle access to properly wired outdoor receptacles to accommodate ZEV and/or plug in electric hybrids (PHEV).*
- *Require the installation of outdoor electrical outlets on buildings to support the use, where practical, of electric lawn and garden equipment, and other tools that would otherwise be run with small gas engines or portable generators.*
- *Utilize building design guidelines and criteria that promote water efficient building design, including minimizing the amount of non-roof impervious surfaces around the building(s).*
- *Enable prototype mixed-use structures for use in neighborhood center zones that can be adapted to new uses over time with minimal internal remodeling.*
- *Establish standards that provide for pervious pavement options.*

Transportation

- *Promote increased utilization of public transit*
- *Provide continued support for rideshare programs to encourage the use of alternatives to the single occupant vehicle (SOV) for site access and trips originating at the site*

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- *Provide safe and convenient access for pedestrians and bicyclists to, across, and along major transit priority streets.*
- *Reduce required road width standards wherever feasible to calm traffic and encourage alternative modes of transportation.*
- *Add bicycle facilities to city streets and public spaces, where feasible.*
- *Allow flexible parking strategies in neighborhood activity centers to foster a pedestrian-oriented streetscape.*
- *Provide continuous sidewalks with shade trees and landscape strips to separate pedestrians from traffic.*
- *Provide pedestrian connections in as many locations as possible to adjacent development, arterial streets, thoroughfares.*
- *Encourage primary entrances to be pedestrian entrances, with automobile entrances and parking located to the rear.*
- *Support development where automobile access to buildings does not impede pedestrian access, by consolidating driveways between buildings or developing alley access.*
- *Utilize street parking as a buffer between sidewalk pedestrian traffic and the automobile portion of the roadway.*
- *Where feasible, promote the construction of weatherproof bicycle facilities and at a minimum, provide bicycle racks or covered, secure parking near the building entrances.*

Energy Conservation

- *Construct new buildings to exceed current California Title 24 energy efficiency requirements by twenty (20) percent.*
- *Maximize use of low pressure sodium and/or fluorescent lighting*
- *Require acquisition of new appliances and equipment to meet Energy Star certification*
- *Design buildings to be energy efficient by siting buildings to take advantage of shade, prevailing winds, landscaping, and sun screening to reduce energy required for cooling.*
- *All new traffic lights installed shall be energy efficient traffic signals.*
- *Perform energy audits for residential and commercial buildings prior to completion of sale, and that audit results and information about opportunities for energy efficiency improvements be presented to the buyer.*
- *Require that, where feasible, all new buildings be constructed to allow for easy, cost effective installation of solar energy systems in the future*

Urban Forestry

- *Participate in green waste collection and recycling programs for landscape maintenance*
- *Encourage use of landscaping with low water requirements and fast growth.*

Water Conservation

- *Landscaping irrigation systems shall be automated, high-efficient irrigation systems to reduce water use and require use of bubbler irrigation; low-angle, low-flow spray heads; moisture-sensing irrigation controls.*
- *Include low-water landscaping in place of hardscaping around transportation infrastructure and in parking areas.*

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- *Remove obstacles to natural, drought tolerant landscaping and low-water landscaping.*
- *Require planting drought-tolerant and native species, and cover exposed dirt with moisture-retaining mulch or other materials such as decomposed granite.*

Mitigation Measure 4.15.2: The TOP GHG mitigations cited in Table 4.15-7 and that are targeted for implementation by future developments in the City will be implemented by future residential development on the site, even if the CAP is not adopted.

4.15.6 Unavoidable Significant Adverse Impacts

Future residential development would generate greenhouse gases that would contribute to global warming. However, the proposed Amendment would allow for the siting of residential uses near commercial/retail uses, which would reduce vehicle miles traveled and promote alternatives to the automobile. Since a large proportion of greenhouse gases are generated through vehicle emissions, a reduction in vehicle miles traveled will result in a reduction in GHG emissions. Mitigation measures are also provided to further reduce greenhouse gas emissions associated with the proposed Amendment and to make future residential development consistent with the TOP GHG mitigation. These mitigation measures may be modified to be consistent with the City's CAP and SCS, once these regulations are adopted.

With implementation of the mitigation measures above, the proposed Amendment and future residential development would be consistent with plans, policies and regulations that reduce the emissions of greenhouse gases. However, GHG emissions from future residential development would still have the potential to contribute to global warming and climate change impacts. Impacts will remain significant and unavoidable.