

## 4.6 Greenhouse Gases and Climate Change

It is widely recognized that emissions of greenhouse gases (GHGs) associated with human activities are contributing to changes in the global climate, and that such changes are having and will continue to have adverse effects on the environment, the economy, and public health. These are the cumulative effects of past, present, and future actions worldwide. While worldwide contributions of GHGs are expected to have widespread consequences, it is not possible to link particular changes to the environment of California to GHGs emitted from a particular source or location. Thus, when considering a project's contribution to impacts from climate change, it is possible to examine the quantity of GHGs that would be emitted either directly from project sources or indirectly from other sources, such as production of electricity. However, that quantity cannot be tied to a particular adverse effect on the environment of California associated with climate change.

### 4.6.1 Environmental Setting

Gases that trap heat in the atmosphere are called greenhouse gases (GHGs). The major concern with GHGs is that increases in their concentrations are causing global climate change. Global climate change is a change in the average weather on earth that can be measured by wind patterns, storms, precipitation, and temperature. Although there is disagreement as to the speed of global warming and the extent of the impacts attributable to human activities, most agree that there is a direct link between increased emissions of GHGs and long term global temperature increases. What GHGs have in common is that they allow sunlight to enter the atmosphere, but trap a portion of the outward-bound infrared radiation which warms the air. The process is similar to the effect greenhouses have in raising the internal temperature, hence the name GHGs. Both natural processes and human activities emit GHGs. The accumulation of GHGs in the atmosphere regulates the earth's temperature; however, emissions from human activities such as electricity production and the use of motor vehicles have elevated the concentration of GHGs in the atmosphere. This accumulation of GHGs has contributed to an increase in the temperature of the earth's atmosphere and has contributed to global climate change.

The principal GHGs are carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), nitrous oxide (N<sub>2</sub>O), sulfur hexafluoride (SF<sub>6</sub>), perfluorocarbons (PFCs), and hydrofluorocarbons (HFCs). CO<sub>2</sub> is the most common reference gas for climate change. To account for the global warming potential (GWP) of greenhouse gases, GHG emissions are often quantified and reported as CO<sub>2</sub> equivalents (CO<sub>2</sub>e). The global warming potential of a GHG depends largely on the lifetime, or persistence, of the gas molecule in the atmosphere. A summary of global warming potential for the most common GHGs taken from the 4th Assessment Report of the Intergovernmental Panel on Climate Change (IPCC) is provided in **Table 4.6-1**. The Fourth Assessment, similar to the three before it, summarizes the findings of Working Group reports and provides a synthesis that specifically addresses the issues of concern to policymakers in the domain of climate change: it confirms that climate change is occurring now, mostly as a result of human activities; it illustrates the impacts of global warming already under way and to be expected in the future, and describes the potential for adaptation of

**TABLE 4.6-1  
 GLOBAL WARMING POTENTIALS OF REPRESENTATIVE GHGs<sup>a</sup>**

Industrial Designation of GHG	Chemical Formula	Global Warming Potential per IPCC 4th Assessment Report (100 year horizon)	Global Warming Potential per IPCC 2nd Assessment Report (International/CCAR <sup>a</sup> convention)
Carbon Dioxide	CO <sub>2</sub>	1	1
Methane	CH <sub>4</sub>	25	21
Nitrous oxide	N <sub>2</sub> O	298	310
CFC-11 (a representative perfluorocarbon)	CCl <sub>3</sub> F	4,750	3,800
Carbon Tetrachloride	CCl <sub>4</sub>	1,400	1,400
HFC-23 (a representative hydrofluorocarbon)	CHF <sub>3</sub>	14,800	11,700
Sulfur Hexafluoride	SF <sub>6</sub>	22,800	23,900

<sup>a</sup> Values represent multiples of the global warming potential of carbon dioxide (i.e., nitrous oxide has approximately 300 times the global warming potential of carbon dioxide)

<sup>b</sup> CCAR = California Climate Action Registry

SOURCE: IPCC, 2007.

society to reduce its vulnerability; finally it presents an analysis of costs, policies and technologies intended to limit the extent of future changes in the climate system.

For example, one ton of CH<sub>4</sub> contributes the same amount to the greenhouse effect as approximately 25 tons of CO<sub>2</sub>, and one ton of N<sub>2</sub>O contributes the same amount as approximately 298 tons of CO<sub>2</sub>. Therefore, CH<sub>4</sub> and N<sub>2</sub>O are much more potent GHGs than CO<sub>2</sub>. CH<sub>4</sub> results from off-gassing (the release of chemicals from nonmetallic substances under ambient or greater pressure conditions) associated largely with agricultural practices and landfills. Relatively small levels of N<sub>2</sub>O are generated by internal combustion engines. Expressing emissions in CO<sub>2</sub>e takes all GHG emissions that contribute to the greenhouse effect and converts them to a single unit, equivalent to the effect that would occur if only CO<sub>2</sub> were being emitted. Although IPCC has updated the global warming potential for CH<sub>4</sub> and N<sub>2</sub>O in its Fourth Assessment Report, the global warming potential from the Second Assessment Report is still used to maintain international consistency (per page 94 of the 2009 California Climate Action Registry (CCAR) protocol v3.1: “Second Assessment Report (SAR) GWPs are still used by international convention and the U.S. to maintain the value of the CO<sub>2</sub> ‘currency.’”) To maintain consistency with international practice, the CCAR requires participants to use the global warming potentials from the Second Assessment Report for calculating their emissions inventory. Consequently, all calculations of CO<sub>2</sub>e in this section apply the global warming potentials from IPCC’s Second Assessment Report which are also presented in Table 4.6-1.

Some of the potential resulting effects in California of global warming may include loss in snow pack, sea level rise, more extreme heat days per year, more high ozone days, more large forest

fires, and more drought years.<sup>1</sup> Globally, climate change has the potential to impact numerous environmental resources through potential, though uncertain, impacts related to future air temperatures and precipitation patterns. The projected effects of global warming on weather and climate are likely to vary regionally, but are expected to include the following direct effects:<sup>2</sup>

- Higher maximum temperatures and more hot days over nearly all land areas;
- Higher minimum temperatures, fewer cold days almost everywhere;
- Decrease in frost days almost everywhere in the middle and high latitudes with a comparable increase in growing season length;
- Reduced diurnal temperature range over most land areas;
- Increases in regional tropical precipitation and over the tropical Pacific, with general decreases in the subtropics, and increases at high latitudes; and
- Globally averaged mean water vapor, evaporation and precipitation are projected to increase.

Also, there are many secondary effects that are projected to result from global warming, including global rise in sea level, impacts to agriculture, changes in vector-borne diseases and changes in habitat and biodiversity. Vector-borne diseases are those in which a pathogenic microorganism is transmitted from an infected individual to another individual by a ‘vector’, such as a tick or a mosquito. Given that each stage of a pathogen’s life cycle can be linked to an optimum level of temperature and humidity, global climate change may alter the geographic distribution of diseases, with vector-borne diseases being spread pole-ward and spreading beyond areas where they are traditionally endemic. While the possible outcomes and the feedback mechanisms involved are not fully understood, and much research remains to be done, the potential for substantial environmental, social, and economic consequences over the long term may be great.

In 2008, 86 percent of GHG emissions (in CO<sub>2</sub>e) from California were comprised of CO<sub>2</sub> emissions from fossil fuel combustion, with 6 percent comprised of CO<sub>2</sub> from process emissions. High GWP gases accounted for 3.2 percent of the CO<sub>2</sub>e emissions. Transportation is the largest end-use category of GHG emissions, and includes transportation used for industry (i.e., shipping), as well as for residential use.

In 2007, 102.6 million metric MT of CO<sub>2</sub>-equivalent (“MMT CO<sub>2</sub>e”) GHGs were emitted in the San Francisco Bay Area (95.5 MMT CO<sub>2</sub>e were emitted within the Bay Area Air District and 7.1 MMT CO<sub>2</sub>e were indirect emissions from imported electricity).<sup>3</sup> Transportation sources

---

<sup>1</sup> California Air Resources Board (CARB), *Climate Change Scoping Plan: A Framework for Change*, available online: [http://www.arb.ca.gov/cc/scopingplan/document/adopted\\_scoping\\_plan.pdf](http://www.arb.ca.gov/cc/scopingplan/document/adopted_scoping_plan.pdf); published December 2008, amended version included errata and Board requested modifications posted May 11, 2009 (2009a).

<sup>2</sup> Intergovernmental Panel on Climate Change (IPCC), *Climate Change 2007: Working Group I: The Physical Science Basis*, Chapter 10, Global Climate Projections, [http://www.ipcc.ch/publications\\_and\\_data/ar4/wg1/en/ch10.html](http://www.ipcc.ch/publications_and_data/ar4/wg1/en/ch10.html), accessed March 23, 2010, published December 2007.

<sup>3</sup> BAAQMD, *Source Inventory of Bay Area Greenhouse Gas Emissions*, p. 7, December 2008. [http://hank.baaqmd.gov/pln/documents/regionalinventory2007\\_003\\_000\\_000\\_000.pdf](http://hank.baaqmd.gov/pln/documents/regionalinventory2007_003_000_000_000.pdf), accessed May 25, 2010.

(e.g., fossil fuel combustion) were associated with 41 percent of the total emissions, industrial/commercial 34 percent, residential fuel usage 7 percent, electricity and co-generation 15 percent, and off-road equipment 3 percent.

The County of San Mateo is in the process of compiling an inventory of County-wide GHG emissions. The inventory was not completed at the time of this analysis and hence County-wide emissions data are not yet available. However, as a precursor to this effort, the County has prepared a 2012 Energy Strategy which does inventory the GHG emissions from County-wide energy (both electricity and natural gas) use. In 2005 the County-wide GHG emissions from energy use in the built environment was 2,784,795 metric tons per year (San Mateo County, 2006). Other sources not accounted for in this total would include transportation sources (which would include San Francisco and San Carlos airports) and solid waste disposal (which would include Ox Mountain landfill).

## 4.6.2 Regulatory Setting

### Federal

The federal Clean Air Act requires the EPA to define national standards to protect U.S. public health and welfare. The federal Clean Air Act does not specifically regulate GHG emissions; however, on April 2, 2007, in *Massachusetts v. EPA*, 549 U.S. 497, the Supreme Court found that GHGs are air pollutants covered by the Clean Air Act. The Court held that the EPA must determine whether or not emissions of GHG from new motor vehicles cause or contribute to air pollution which may reasonably be anticipated to endanger public health or welfare, or whether the science is too uncertain to make a reasoned decision. In making these decisions, the EPA is required to follow the language of Section 202(a) of the Clean Air Act which dictates the authority of the administrator to prescribe regulation. The Supreme Court decision resulted from a petition for rulemaking under Section 202(a) of the Clean Air Act filed by more than a dozen environmental, renewable energy, and other organizations.

On April 17, 2009, the EPA Administrator signed proposed endangerment and cause or contribute findings for GHGs under Section 202(a) of the Clean Air Act. The EPA held a 60-day public comment period, which ended June 23, 2009, and received over 380,000 public comments. These included both written comments as well as testimony at two public hearings in Arlington, Virginia and Seattle, Washington. The EPA carefully reviewed, considered, and incorporated public comments and has now issued these final Findings discussed below.

The EPA found that six GHGs taken in combination endanger both the public health and the public welfare of current and future generations. The EPA also found that the combined emissions of these GHGs from new motor vehicles and new motor vehicle engines contribute to the greenhouse gas pollution which endangers public health and welfare under the Clean Air Act Section 202(a). These Findings were based on careful consideration of the full weight of scientific evidence and a thorough review of numerous public comments received on the Proposed Findings published April 24, 2009. These Findings were published in the Federal Register on December 15, 2009 and

became effective on January 14, 2010.<sup>4</sup> Subsequent to adoption of these findings, there have been two federal ruling actions with regard to GHGs.

On April 1, 2010, EPA and the National Highway Traffic Safety Administration (NHTSA) announced a joint final rule establishing a historic national program to reduce greenhouse gas emissions and improve fuel economy for new cars and light trucks sold in the United States. EPA and NHTSA will now begin work on two new joint rulemakings, one to develop the first-ever fuel efficiency and GHG emissions standards for commercial trucks, and another to adopt the second-phase of GHG and fuel economy standards for light-duty vehicles. These actions, as announced by President Obama on May 21, 2010, will reduce GHG emissions and fuel use from both light-duty and heavy-duty vehicles for model years 2012 through 2016.

On May 13, 2010, EPA issued a final rule that establishes thresholds for GHG emissions that define when permits are required for new and existing industrial facilities. Facilities responsible for nearly 70 percent of the national GHG emissions from stationary sources will be subject to permitting requirements under this rule. This includes the nation's largest GHG emitters—power plants, refineries, and cement production facilities. This rule took effect in January 2011.

## State

### ***Executive Order S-3-05***

In 2005, in recognition of California's vulnerability to the effects of climate change, Governor Schwarzenegger established Executive Order S-3-05, which set forth a series of target dates by which statewide emissions of GHGs would be progressively reduced, as follows:

- By 2010, reduce GHG emissions to 2000 levels;
- By 2020, reduce GHG emissions to 1990 levels; and
- By 2050, reduce GHG emissions to 80 percent below 1990 levels.

### ***Assembly Bill 32 – California Global Warming Solutions Act***

California Assembly Bill 32 (AB 32), the Global Warming Solutions Act of 2006, was enacted as legislation in 2006 and requires the California Air Resources Board to establish a statewide GHG emission cap for 2020 based on 1990 emission levels. AB 32 required the California Air Resources Board to adopt regulations by January 1, 2008, that identify and require selected sectors or categories of emitters of GHGs to report and verify their statewide GHG emissions, and the California Air Resources Board is authorized to enforce compliance with the program. The California Air Resources Board established the statewide emissions cap, in December 2007, at 427 MMTCO<sub>2</sub>e<sup>5</sup>. This is approximately 30 percent below forecast "business-as-usual" emissions

<sup>4</sup> U.S. Environmental Protection Agency (EPA), *Endangerment and Cause or Contribute Findings for Greenhouse Gases Under Section 202(a) of the Clean Air Act; Final Rule*, Federal Register Volume 74 No. 239, pp. 66496-66546, December 15, 2009.

<sup>5</sup> MMT = million metric tons; CO<sub>2</sub>e = CO<sub>2</sub> equivalents

of 596 MMTCO<sub>2</sub>e, and about 10 percent below average annual GHG emissions during the period 2002 – 2004.<sup>6</sup>

By January 1, 2011, the California Air Resources Board was required to adopt rules and regulations (which shall become operative January 1, 2012), to achieve the maximum technologically feasible and cost-effective GHG emission reductions. In December 2010, ARB adopted regulations establishing such a market-based system—a GHG cap-and-trade system—as permitted in AB 32. This followed earlier adoption of GHG emission limits on automobiles, a low-carbon fuel standard, and regulations requiring utilities to obtain one-third of their power from renewable sources. Similar to federal regulations governing certain other pollutants, the cap-and-trade system would permit emitters to buy and sell rights to emit GHGs.<sup>7</sup> AB 32 also requires the California Air Resources Board to monitor compliance with and enforce any rule, regulation, order, emission limitation, emissions reduction measure, or market-based compliance mechanism that it adopts.

In June 2007, the California Air Resources Board directed staff to pursue 37 early actions for reducing GHG emissions under AB 32. The broad spectrum of strategies to be developed – including a Low Carbon Fuel Standard, regulations for refrigerants with high global warming potentials, guidance and protocols for local governments to facilitate GHG reductions, and green ports – reflects that the serious threat of climate change requires action as soon as possible.<sup>8</sup>

In addition to approving the 37 GHG reduction strategies, the California Air Resources Board directed staff to further evaluate early action recommendations made at the June 2007 meeting, and to report back to the California Resources Board within six months. The general sentiment of the California Air Resources Board suggested a desire to try to pursue greater GHG emissions reductions in California in the near-term. Since the June 2007 California Air Resources Board hearing, the California Air Resources Board staff has evaluated all 48 recommendations submitted by stakeholders and several internally-generated staff ideas and published the *Expanded List of Early Action Measures To Reduce Greenhouse Gas Emissions In California Recommended For Board Consideration* in October 2007.<sup>9</sup> The California Air Resources Board adopted nine Early Action measures for implementation: (1) Ship Electrification at Ports; (2) Reduction of High Global-Warming-Potential Gases in Consumer Products; (3) Heavy-Duty Vehicle Greenhouse Gas Emission Reduction (Aerodynamic Efficiency); (4) Reduction of Perfluorocarbons from Semiconductor Manufacturing; (5) Improved Landfill Gas Capture; (6) Reduction of Hydrofluorocarbon-134a from Do-It-Yourself Motor Vehicle Servicing; (7) Sulfur Hexafluoride Reductions from the Non-Electric Sector; (8) a Tire Inflation Program;

---

<sup>6</sup> California Air Resources Board (CARB), *Climate Change Scoping Plan: A Framework for Change*, available online: [http://www.arb.ca.gov/cc/scopingplan/document/adopted\\_scoping\\_plan.pdf](http://www.arb.ca.gov/cc/scopingplan/document/adopted_scoping_plan.pdf); published December 2008, amended version included errata and Board requested modifications posted May 11, 2009 (2009a).

<sup>7</sup> In January 2011, a San Francisco Superior Court judge issued an injunction barring the Air Resources Board from further implementing the AB 32 Scoping Plan. In the decision, the court found that ARB had not properly considered alternatives to the cap-and-trade system in the CEQA-equivalent document that the Board had prepared. This decision could delay implementation of the cap-and-trade system beyond its intended January 2012 start date.

<sup>8</sup> California Air Resources Board (CARB), *Draft List of Early Action Measures To Reduce Greenhouse Gas Emissions In California Recommended For Board Consideration*. September 2007 (2007a).

<sup>9</sup> California Air Resources Board (CARB), *Expanded List of Early Action Measures To Reduce Greenhouse Gas Emissions In California Recommended For Board Consideration*, October 2007 (2007b).

and (9) a Low Carbon Fuel Standard. Implementation of these Early Action Measures is discussed later in this chronological discussion of state GHG regulation efforts by either by specific legislative bill number or as part of the Climate Change Scoping Plan.

### **SB 375**

SB 375, signed in September 2008 by Governor Schwarzenegger (Chapter 728, Statutes of 2008), aligns regional transportation planning efforts, regional GHG reduction targets, and land use and housing allocation in order to reach California's GHG reduction goals set by AB 32. SB 375 requires Metropolitan Planning Organizations to adopt a Sustainable Communities Strategy (SCS), and, if needed, an Alternative Planning Strategy (APS) that will include land use designations into that Metropolitan Planning Organization's regional transportation plan. The California Air Resources Board, in consultation with Metropolitan Planning Organizations, on September 23, 2010, adopted reduction targets by region for GHGs emitted by passenger cars and light trucks in the region for the years 2020 and 2035. The Bay Area is required to reduce per capita emissions 7 percent by 2020 and 15 percent by 2035. These reduction targets will be updated every eight years but can be updated every four years if advancements in emissions technologies affect the reduction strategies to achieve the targets.

The purpose of the SCS is to propose feasible measures, including patterns of land use that will reduce vehicle miles traveled and otherwise reduce transportation-related GHG emissions. A Draft Bay Area SCS is expected to be released in November 2012 and to be adopted by April 2013. The California Air Resources Board is charged with reviewing each Metropolitan Planning Organization's SCS for consistency with its assigned targets. If CARB concludes that the SCS does not meet the defined targets, then an Alternative Planning Strategy must be prepared showing how the targets may be met. Metropolitan Planning Organizations that do not prepare plans meeting the GHG reduction targets, transportation projects may not be eligible for State funding programmed after January 1, 2012.

This law also extends the minimum time period for the regional housing needs allocation cycle from five years to eight years for local governments, such as Menlo Park, located within a Metropolitan Planning Organization that meets certain requirements. City or county land use policies (including general plans) are not required to be consistent with the regional transportation plan (and associated SCS), but transportation projects inconsistent with the SCS will not be funded. However, new provisions of CEQA would incentivize (through streamlining and other provisions) qualified projects that are consistent with an approved SCS or alternative Planning strategy, categorized as "transit priority projects." A transit priority project would have at least 50 percent residential use, have a minimum net density of 20 units per acre and be located within one half mile of a major transit stop or transit corridor included in a regional transportation plan. Some projects located within the Specific Plan area are likely to qualify as transit priority projects.

### **California Air Pollution Control Officers Association (CAPCOA) January 2008 CEQA and Climate Change White Paper**

In January 2008, CAPCOA issued a “white paper” on evaluating GHG emissions under CEQA. The CAPCOA white paper strategies are not guidelines and have not been adopted by any regulatory agency; rather, the paper is offered as a resource to assist lead agencies in considering climate change in environmental documents.

The CAPCOA white paper addresses what constitutes new emissions, how baseline emissions should be established, what should be considered cumulatively considerable under CEQA, what a business as usual scenario means, and whether an analysis should include life-cycle emissions.

The CAPCOA white paper is used as a guidance tool for project and plan-level GHG analysis in jurisdictions where the local air quality district has not adopted substantive guidance, thresholds or methodologies for performing GHG impact assessment relative to CEQA. Because the Bay Area Air Quality Management District (BAAQMD) has adopted GHG impact thresholds and methodology subsequent to the white paper, its use for analysis of plans and projects in the Bay Area is primarily as a background reference source.

The CAPCOA white paper considers GHG impacts to be exclusively cumulative impacts.<sup>10</sup>

### **Climate Change Scoping Plan**

In December 2008, the California Air Resources Board approved the AB 32 Scoping Plan outlining the State’s strategy to achieve the 2020 GHG emissions limit.<sup>11</sup> This Scoping Plan, developed by the California Air Resources Board in coordination with the state-appointed Climate Action Team of regulatory chairpersons and other stakeholders, proposes a comprehensive set of actions designed to reduce overall GHG emissions in California, improve the environment, reduce dependence on oil, diversify our energy sources, save energy, create new jobs, and enhance public health. The measures in the Scoping Plan approved by the California Air Resources Board will be developed over the next two years and be in place by 2012.

The Scoping Plan expands the list of nine Early Action Measures into a list of 39 Recommended Actions contained in Appendices C and E of the Scoping Plan. These measures are presented in **Table 4.6-2**.

### **CEQA Guidelines Revisions**

In 2007, the legislature passed SB97, which required amendment of the state CEQA Guidelines to incorporate analysis of, and mitigation for, greenhouse gas emissions from projects subject to CEQA. The California Natural Resources Agency adopted these amendments on December 30,

---

<sup>10</sup> California Air Pollution Control Officers Association (CAPCOA), *CEQA and Climate Change: Evaluating and Addressing Greenhouse Gas Emissions from Projects Subject to the California Environmental Quality Act*, 2008

<sup>11</sup> California Air Resources Board (CARB), *Climate Change Scoping Plan: A Framework for Change*, available online: [http://www.arb.ca.gov/cc/scopingplan/document/adopted\\_scoping\\_plan.pdf](http://www.arb.ca.gov/cc/scopingplan/document/adopted_scoping_plan.pdf); published December 2008, amended version included errata and Board requested modifications posted May 11, 2009 (2009a).



**TABLE 4.6-2  
 RECOMMENDED ACTIONS OF CLIMATE CHANGE PROPOSED SCOPING PLAN**

<b>ID #</b>	<b>Sector</b>	<b>Strategy Name</b>
T-1	Transportation	Pavley I and II – Light-Duty Vehicle GHG Standards
T-2	Transportation	Low Carbon Fuel Standard (Discrete Early Action)
T-3	Transportation	Regional Transportation-Related GHG Targets
T-4	Transportation	Vehicle Efficiency Measures
T-5	Transportation	Ship Electrification at Ports (Discrete Early Action)
T-6	Transportation	Goods-movement Efficiency Measures
T-7	Transportation	Heavy Duty Vehicle Greenhouse Gas Emission Reduction Measure – Aerodynamic Efficiency (Discrete Early Action)
T-8	Transportation	Medium and Heavy-Duty Vehicle Hybridization
T-9	Transportation	High Speed Rail
E-1	Electricity and Natural Gas	Increased Utility Energy efficiency programs ; More stringent Building and Appliance Standards
E-2	Electricity and Natural Gas	Increase Combined Heat and Power Use by 30,000 GWh
E-3	Electricity and Natural Gas	Renewables Portfolio Standard
E-4	Electricity and Natural Gas	Million Solar Roofs
CR-1	Electricity and Natural Gas	Energy Efficiency
CR-2	Electricity and Natural Gas	Solar Water Heating
GB-1	Green Buildings	Green Buildings
W-1	Water	Water Use Efficiency
W-2	Water	Water Recycling
W-3	Water	Water System Energy Efficiency
W-4	Water	Reuse Urban Runoff
W-5	Water	Increase Renewable Energy Production
W-6	Water	Public Goods Charge (Water)
I-1	Industry	Energy Efficiency and Co-benefits Audits for Large Industrial Sources
I-2	Industry	Oil and Gas Extraction GHG Emission Reduction
I-3	Industry	GHG Leak Reduction from Oil and Gas Transmission
I-4	Industry	Refinery Flare Recovery Process Improvements
I-5	Industry	Removal of Methane Exemption from Existing Refinery Regulations
RW-1	Recycling and Waste Management	Landfill Methane Control (Discrete Early Action)
RW-2	Recycling and Waste Management	Additional Reductions in Landfill Methane – Capture Improvements
RW-3	Recycling and Waste Management	High Recycling/Zero Waste
F-1	Forestry	Sustainable Forest Target
H-1	High Global Warming Potential Gases	Motor Vehicle Air Conditioning Systems (Discrete Early Action)
H-2	High Global Warming Potential Gases	SF <sub>6</sub> Limits in Non-Utility and Non-Semiconductor Applications (Discrete Early Action)
H-3	High Global Warming Potential Gases	Reduction in Perfluorocarbons in Semiconductor Manufacturing (Discrete Early Action)
H-4	High Global Warming Potential Gases	Limit High GWP Use in Consumer Products (Discrete Early Action, Adopted June 2008)
H-5	High Global Warming Potential Gases	High GWP Reductions from Mobile Sources
H-6	High Global Warming Potential Gases	High GWP Reductions from Stationary Sources
H-7	High Global Warming Potential Gases	Mitigation Fee on High GWP Gases
A-1	Agriculture	Methane Capture at Large Dairies

SOURCE: CARB, 2009a.

2009, and they took effect March 18, 2010, after review by the Office of Administrative Law and filing with the Secretary of State for inclusion in the California Code of Regulations.

The Guidelines revisions include a new section (Sec. 15064.4) specifically addressing the significance of GHG emissions. Section 15064.4 calls for a “good-faith effort” to “describe, calculate or estimate” GHG emissions; Section 15064.4 further states that the significance of GHG impacts should include consideration of the extent to which the project would increase or reduce greenhouse gas emissions; exceed a locally applicable threshold of significance; and comply with “regulations or requirements adopted to implement a statewide, regional, or local plan for the reduction or mitigation of greenhouse gas emissions.” The revisions also state that a project may be found to have a less-than-significant impact if it complies with an adopted plan that includes specific measures to sufficiently reduce GHG emissions (Sec. 15064(h)(3)).

Importantly, however, the revised guidelines do not require or recommend a specific analysis methodology or provide criteria for determining significance of GHG emissions.

## **Local**

### ***Bay Area Air Quality Management District***

The Bay Area Air Quality Management District (BAAQMD) is the primary agency responsible for comprehensive air pollution control in the entire San Francisco Bay Area Air Basin. BAAQMD in June 2010 adopted updated CEQA Guidelines, which include the adoption of recommended significance thresholds,<sup>12</sup> assessment methodologies, and mitigation strategies for GHG emissions. The approach that BAAQMD adopted on June 2, 2010, is set forth in its June 2010 document entitled *California Environmental Quality Act Air Quality Guidelines*.<sup>13</sup> This approach includes GHG thresholds for local plans and projects. With regard to construction emissions, the Guidelines do not include a quantitative threshold of significance for construction-related GHG emissions. However, the BAAQMD is encouraging lead agencies to incorporate best management practices to reduce GHG emissions during construction, as applicable. For operations, the proposed guidelines state that a project or any plan that is not a General Plan, such as the Specific Plan, must either be compliant with a qualified GHG Reduction Strategy or have a per capita emission rate of less than 4.6 metric tons of CO<sub>2</sub>e per service population (residents + employees) per year for impacts to be less than significant.

In the context of the BAAQMD 2010 CEQA Guidelines, a “qualified GHG Reduction Strategy” is one that includes a GHG inventory for existing (baseline) and future years (2020 or other forecast year) that includes future emissions under a “business-as-usual” scenario; an adopted GHG reduction goal for 2020 of (a) 1990 GHG emission levels, (b) 15 percent below baseline (2008 or earlier) emission levels, or (c) a specified efficiency-based service population emissions rate; analysis of anticipated GHG emissions resulting from local and state policies and regulations

---

<sup>12</sup> BAAQMD, CEQA Guidelines Update Proposed Thresholds of Significance, May 3, 2010, approved June 2, 2010.

<sup>13</sup> BAAQMD, California Environmental Quality Act Air Quality Guidelines, June 2010. Available at: <http://www.baaqmd.gov/Divisions/Planning-and-Research/CEQA-GUIDELINES.aspx>.

that may be planned or adopted but not implemented; identification of specific feasible reduction measures to meet the identified target on a project-by-project basis, including quantification of each measure's effectiveness in GHG reduction; and establishment of a monitoring program, including identification of which measures apply to different types of new development projects, a mechanism for reviewing and determining if all applicable mandatory measures are being applied, implementation steps and parties responsible for ensuring implementation of each action and a schedule for implementation, procedures for monitoring and updating the GHG inventory and reduction measures at three- to five-year intervals, and annual review and reporting on the progress of implementation. In addition, a qualified GHG Reduction Strategy must have undergone CEQA review and been approved through a public process.

The updated BAAQMD CEQA Guidelines contain guidance for assessing impacts relative to emissions of GHGs. Additionally, BAAQMD has introduced the Beta version of its GHG emissions model: BAAQMD GHG Model which works in conjunction with the URBEMIS2007 model of the California Air Resources Board (CARB).

All of the 2010 revisions to the CEQA thresholds of significance adopted by BAAQMD with the exception of risk and hazard thresholds for new receptors became effective June 2, 2010. These recently adopted thresholds of significance for GHGs from new sources are intended to apply to projects for which a Notice of Preparation was published or environmental analysis begun on or after the applicable effective date. Therefore, the Specific Plan would be subject to the thresholds identified in BAAQMD's 1999 CEQA Guidelines, as opposed to the recently adopted thresholds. However, because BAAQMD's 1999 CEQA Guidelines do not address or otherwise identify significance thresholds with respect to GHG emissions, this analysis applies BAAQMD's recently adopted revised thresholds of significance to the proposed Specific Plan.

### **City of Menlo Park**

In January 2007, the Menlo Park City Council established a goal to promote and follow sustainable environmental practices aimed at reducing GHG emissions, protecting the environment, and conserving natural resources. In 2008 the City Council resolved to develop a Climate Action Plan for Menlo Park as a starting point for the City to achieve significant GHG emission reductions.<sup>14</sup>

In 2009 the City published its Climate Action Plan, a document that is intended to be updated yearly as new technologies arise and economic conditions change. The Plan includes an inventory of GHG emissions in 2005 for the community as a whole as well as emissions generated specifically from municipal operations. According to this inventory, community wide GHG emissions were approximately 491,000 metric tons of CO<sub>2</sub>e or approximately 16.37 metric tons per capita in 2005. Of these emissions, approximately 0.4 percent or 2,200 metric tons were from municipal operations (excluding emission from the Marsh Landfill, which contributes 8.5 percent or 41,735 metric tons).

---

<sup>14</sup> City of Menlo Park, *Climate Change Action Plan*, 2009.

The Climate Action Plan puts forth two options for both the community target and municipal target for the City Council to consider for adoption. The options are as follows:

- *Municipal Operations Targets:*
  - *Option 1* – Adopt a target that is equal to the sum of the emissions reductions of all of the strategies outlined in the Climate Action Plan. This would translate to a 210 metric ton reduction in GHG emissions from municipal sources between 2009 and 2012, resulting in 2012 emission levels that would be 10 percent below 2005 emissions. Within 10 years (by 2020), the City would reduce annual emission by 560 metric tons or 26 percent below 2005 levels.
  - *Option 2* – Adopt the State’s goal to reduce emissions to 1990 levels by 2020. This would translate roughly to reducing emission to 15 percent below 2005 levels by 2020.
- *Community Targets:*
  - *Option 1* – Adopt a target that is equal to the sum of the emissions reductions of all the strategies described in the Climate Action Plan. This would translate to a 4 percent increase from 2005 levels in 2012 which is less than the 8 percent increase that is anticipated to occur under the ‘business as usual scenario’. Within 10 years (by 2020), community emissions would be 3 percent below the anticipated 2020 levels if the strategies were not implemented.
  - *Option 2* – Adopt the State’s goal to reduce 1990 levels by 2020. This is roughly equivalent to reducing emissions 15 percent below 2005 levels by 2020.

**Table 4.6-3** lists proposed, planned and existing strategies for reducing emissions from municipal operations and community activities. Strategies listed as ‘existing’ have been implemented by the City. Without implementation of the City’s Climate Action Plan and other measures of the State, GHG emissions in 2020 are expected to increase by 107,227 metric tons per year in Menlo Park for a total of 598,281 metric tons per year. These emissions would be reduced depending on the combination of options adopted by the City. The Climate Action Plan itself has not been formally adopted or otherwise acted upon by the City Council. However, individual projects from the Climate Action Plan will be considered on an ongoing basis as part of the City’s Five-year Capital Improvement Program.

Because the City’s Climate Action Plan has not been adopted by the City or determined to be a “qualified GHG Reduction Strategy” as defined in the BAAQMD Guidelines, this analysis relies on the Guidelines’ service population threshold of significance in its analysis of GHG impacts. It is noted that the City/County Association of Governments of San Mateo County is currently drafting a countywide climate action plan template for use by member jurisdictions in developing a Qualified GHG Reduction Strategy, coordinating regional climate reduction efforts, and demonstrating leadership in addressing climate change.

### **Menlo Park General Plan**

Although the General Plan does not include policies explicitly designed to address greenhouse gas emissions and climate change, a number of goals and policies in the General Plan would be expected to contribute to this end.

**TABLE 4.6-3  
 RECOMMENDED STRATEGIES OF MENLO PARK CLIMATE ACTION PLAN**

<b>Strategy Name</b>	<b>Status</b>
<b>Municipal Operations</b>	
Roofing for City Buildings – Reflective and Energy Star	Proposed
Solar PV Panels for Corporate Yard	Planned
Replace Existing Streetlights with LED Models	Proposed
Sharon Heights Water Supply Pump Station Upgrades	Planned
Solar Heating for Belle Haven Pool	Proposed
Enhance Transit Pass/Carpooling Programs	Proposed
Marsh Road Landfill Methane Emissions Mitigation	Existing
Enhance Recycling Collection Services	Planned
Install Water Efficient Fixtures in Municipal Facilities	Planned
PG&E ClimateSmart	Existing
Climate and Energy Coordinator	Proposed
Plant Trees	Existing and Planned
Environmentally Preferable Purchasing Program	Proposed
Green Fleet Policy	Proposed
Idling Policy	Proposed
<b>Community Strategies</b>	
Residential Energy Audit Program (Green@Home)	Existing
Energy Efficiency and Renewable Energy Financing Program	Proposed
Electric and Plug-in Hybrid Vehicle Charging Stations	Proposed
Expand Community Shuttle Service	Planned
Implement Bike Improvements	Planned
Enhance Recycling Collection Services	Planned
Incentives for Building Practices that Reduce Energy Consumption Beyond Current Codes	Proposed
Early Implementation of California Green Building Code Standards	Proposed
City Car Sharing Program	Proposed
Limit Commercial Vehicle Idling	Proposed
Transportation Demand Management Strategies	Existing and Proposed
Resident Education on Trip Reduction	Existing and Proposed
Transportation Management Associations	Proposed
Zero Waste Plan and Target	Proposed
Requiring Recycling Service for Commercial Facilities	Proposed
Construction & Demolition Debris Ordinance Update	Proposed
Menlo Park Municipal Water District Conservation Programs	Existing
Landscape Ordinance Update	Existing

SOURCE: City of Menlo Park, 2009.

**Land Use Element**

- *Policy I-B-4:* Uses and activities shall be encouraged which will strengthen and complement the relationship between the Transportation Center and the Downtown area and the nearby El Camino Real corridor.

**Goal I-G:** To promote the preservation of open space lands for recreation, protection of natural resources, the production of managed resources, protection of health and safety, and/or enhancement of scenic qualities.

- *Policy I-G-11:* Well-designed pedestrian facilities should be included in areas of intensive pedestrian activity.
- *Policy I-H-1:* The community design should help conserve resources and minimize waste.
- *Policy I-H-2:* The use of water-conserving plumbing fixtures in all new public and private development shall be required.
- *Policy I-H-3:* Plant material selection and landscape and irrigation design for City parks and other public facilities and in private developments shall adhere to the City's Water Efficient Landscape Ordinance.
- *Policy I-H-12:* Street orientation, placement of buildings, and use of shading should contribute to the energy efficiency of the community.
- *Policy I-I-2:* The regional land use planning structure should be integrated within a larger transportation network built around transit rather than freeways and the City shall influence transit development so that it coordinates with Menlo Park's land use planning structure.

#### **Circulation Element**

- *Policy II-A-12:* The City shall endeavor to provide for the safe, efficient, and equitable use of streets by pedestrians and bicyclists through good roadway design, maintenance, and effective traffic law enforcement.

**Goal II-B:** To promote the use of public transportation.

- *Policy II-B-1:* The City shall consider transit modes in the design of transportation improvements and the review and approval of development projects.
- *Policy II-B-2:* As many activities as possible should be located within easy walking distance of transit stops, and transit stops should be convenient and close to as many activities as possible.
- *Policy II-B-3:* The City shall promote improved public transit service and increased transit ridership, especially to office and industrial areas and schools.

**Goal II-C:** To promote the use of alternatives to the single occupant automobile.

- *Policy II-C-1:* The City shall work with all Menlo Park employers to encourage employees to use alternatives to the single occupancy automobile in their commute to work.

**Goal II-D:** To promote the safe use of bicycles as a commute alternative and for recreation.

- *Policy II-D-3:* The design of streets within Menlo Park shall consider the impact of street cross section, intersection geometrics and traffic control devices on bicyclists.

- *Policy II-D-4:* The City shall require new commercial and industrial development to provide secure bicycle storage facilities on-site.

**Goal II-E:** To promote walking as a commute alternative and for short trips.

- *Policy II-E-1:* The City shall endeavor to maintain safe sidewalks and walkways where existing within the public right-of-way.

### 4.6.3 Impacts and Mitigation Measures

#### Significance Criteria

Implementation of the Specific Plan would be considered to have significant impacts with regard to GHGs and climate change based on the 2010 amendments to the CEQA Guidelines if it would:

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

BAAQMD considers GHG impacts to be exclusively cumulative impacts (as does CAPCOA) and, as such, assessment of significance is based on a determination of whether the GHG emissions from a project represent a cumulatively considerable contribution to the global atmosphere.

With regard to the effects of global warming on the project, the Plan area is relatively flat and located at a remove from the San Francisco Bay, with elevations of between approximately 60 and 80 feet above sea level. As such, the Plan area is not located in an area that is likely subject to inundation by sea level rise. Nor is the Plan area in a high fire hazard area that could be affected by climate-change-related drought. A broader discussion of the potential for drought and its impacts on water supply are discussed in more detail in Section 4.12, *Public Services and Utilities*.

#### Specific Plan Initiated GHG Reduction Measures

The Specific Plan identifies a number of Guidelines that address sustainability measures and other techniques to reducing GHG emissions generated in the Specific Plan Area. Specifically, Section C.5 of the Plan is a section devoted entirely to addressing sustainability. The Specific Plan incorporates into its concepts and guidelines sustainability strategies reflected in the Leadership in Energy and Environmental Design (LEED) for Neighborhood Development 2009 rating system credits, developed by the U.S. Green Building Council. Guidelines implementing these strategies are located in Section D.6 of the Specific Plan as well as a number of other areas including: Specific Plan Guidelines D.2.18, D.2.46, D.4.16, D.5.01, D.6.05, E.3.6.13, E.3.8.3.01 – E.3.8.3.04, E.3.8.4.01 – E.3.8.4.06, E.3.8.4.09, E.3.8.4.12 – E.3.8.4.15, and E.3.8.4.18. These measures would contribute to lessening GHG impacts in the Plan Area.

## Impacts

### **Impact GHG-1: The Specific Plan would generate GHG emissions, both directly and indirectly, that would have a significant impact on the environment. (Significant)**

#### ***Construction***

As discussed previously, the BAAQMD has not adopted a threshold of significance for construction related GHG emissions for either projects or plans. For projects, the BAAQMD encourages lead agencies to quantify GHG emissions that would occur during construction and to make a determination regarding their significance. The BAAQMD Guidelines do not identify a methodology for evaluating construction-related GHG emissions from plans. Agencies are encouraged to incorporate best management practices to reduce GHG emissions associated with construction.

Given that detailed construction information such as construction techniques and scheduling that would be utilized for each individual development project is not currently known, estimation of emissions from individual development projects would be too speculative to warrant quantification at this time. Projects constructed within the Plan area would be required to implement Mitigation Measure AIR-1b (see Section 4.2, *Air Quality*) which includes a number of best management practices to reduce construction related exhaust emissions. Construction would further be dispersed over several phases of redevelopment thus reducing annual GHG emissions per capita. Redevelopment under the Specific Plan would likely not involve grubbing of land or large scale rough grading phases which generate large quantities of diesel equipment emissions, because the Plan area does not include undeveloped sites or sites where such large-scale topographic alterations would be necessary prior to development. Given that detailed construction information such as construction techniques and scheduling that would be utilized for each individual development project is not currently known, estimation of annualized emissions from individual development projects would be too speculative to warrant evaluation. Individual projects in the Specific Plan area undergoing CEQA review would have the ability to estimate construction-related GHG emissions and these emissions may be amortized over the lifetime of the project and included in the individual project inventory for comparison to project-level GHG thresholds.

GHG emissions created by construction would add to the operational emissions described in the next section. However, such emissions would not be expected to exceed any adopted threshold of significance, nor conflict with any adopted plan or policy, nor would they be expected to interfere with the ability of the state to meet the AB 32 GHG reduction goals. This is because any given project's *total* GHG emissions from construction are likely to be less (perhaps substantially less) than half of the same project's *annual* GHG emissions from operations; when annualized over an anticipated project's typical 40-year lifespan, construction GHG emissions thus would be typically less than one percent of a project's total annual GHG emissions. Moreover, construction-related GHG impacts may be further reduced through implementation "best management practices" during construction, as recommended by the BAAQMD. Such practices might include the use of alternative fueled (e.g., biodiesel, electric) construction vehicles and



equipment and locally sourced building materials that require less transportation, and recycling or reusing construction waste and demolition materials.

### Operations

Operational project-related greenhouse gas emissions would be approximately 16,646 metric tons/year of CO<sub>2</sub>e (including emissions from vehicle trips, space heating, and indirect emissions from the use of electricity, solid waste generation, and water and wastewater treatment and conveyance). These emissions are presented in **Table 4.6-4** and were calculated using the GHG Model of the BAAQMD. Default assumptions of the BAAQMD GHG Model (BGM) were used based on increased square footage of commercial and retail space and units of residential space, and an increase in vehicle miles travelled of 90,000 trips per day. Electrical emissions of BGM were adjusted to account for a PG&E specific emission factor instead of the statewide default factor. Electrical and natural gas emissions were also adjusted to reflect BAAQMD-identified sector adjustments for meeting green building standards. These calculations do not reflect other sustainable building guidelines of the Specific Plan such as non-Green Building Council (GBC) related elements that might be identified within the LEED certification for building elements.

**TABLE 4.6-4  
 EMISSIONS OF GHG FROM THE SPECIFIC PLAN**

Emission Source/Sink	Emissions (metric tons CO <sub>2</sub> e per year)
	Total CO <sub>2</sub> e
Motor Vehicle Trips	10,459
Natural Gas	1,466
Grid Electricity	1,959
Solid Waste Generation	2,612
Water and Wastewater Conveyance and Treatment	150
Area Source (landscape maintenance)	6
<b>Total Proposed Project Operational Greenhouse Gas Emissions</b>	<b>16,646</b>
<b>Tons per Year per Service Population (residents + employees)</b>	<b>5.8</b>
<b>BAAQMD Threshold (Service Population)</b>	<b>4.6</b>

SOURCE: Environmental Science Associates, 2011.

Motor vehicle emissions are estimated using vehicle miles traveled calculated by the URBEMIS model that was used in the air quality analysis. The BGM model uses this data to estimate GHG emissions that account for state adopted GHG reduction strategies such as phase-in of Pavley efficiency standards in the vehicle fleet and the low carbon fuel standards. Natural gas emissions are estimated by BGM using land use type and size and climate-specific natural gas demand rates and natural gas emissions factors of the California Climate Action Registry. Electrical GHG emissions are also estimated by BGM using land use type and size. Solid waste emissions are calculated by BGM using land use specific waste generation rates of CalRecycle.

Water and wastewater treatment and conveyance require electricity for the pumping and treatment processes and these are calculated by BGM based on land use water demand estimates of the San Francisco Public Utilities Commission. These emissions were adjusted to reflect implementation of the City's 2010 Water Efficient Landscaping Ordinance using the mitigation tab for drought tolerant landscaping in BGM.

Assuming that the proposed Specific Plan would have a service population of 2,894 (1,357 new jobs and 1,537 residents), the per capita emission rate would be 5.8 metric tons per service population per year. This would exceed the BAAQMD adopted threshold of 4.6 metric tons per service population per year. Therefore, GHG emissions under implementation of the Specific Plan would have a significant impact using the methodology and significance criteria of the BAAQMD, the air quality regulatory agency with jurisdiction over the Specific Plan area.

**Mitigation Measure GHG-1: Implement feasible BAAQMD-identified GHG Mitigation Measures and Proposed City CALGreen Amendments.** BAAQMD has identified a menu of over 100 available mitigation measures for the purposes of addressing significant air quality impacts, including GHG impacts that arise from implementation of plans including Specific Plans. Many of the GHG reduction measures are already part of the proposed Specific Plan and discussed in the Project Description. Several BAAQMD identified mitigation measures are not applicable to a Specific Plan as they are correlated to specific elements of a general plan. As an example, **Table 4.6-5** presents the mitigation measures contained in the BAAQMD CEQA Guidelines related to Land Use elements and either correlates each to a specific element of the project, explains why it is inapplicable to the proposed project or identifies it as a mitigation measure to be implemented by the proposed project. This method was used in consideration of all BAAQMD identified GHG mitigation measures for plans to develop the following list of available mitigation measures (with BAAQMD-identified category) for the proposed Specific Plan:

- Facilitate lot consolidation that promotes integrated development with improved pedestrian and vehicular access (Land Use Element: Compact Development);
- Ensure that new development finances the full cost of expanding public infrastructure and services to provide an economic incentive for incremental expansion (Land Use Element: Compact Development);
- Ensure new construction complies with California green Building Code Standards and local green building ordinances (Land Use Element: Sustainable Development);
- Provide permitting incentives for energy efficient and solar building projects (Land Use Element: Sustainable Development);
- Support the use of electric vehicles; where appropriate. Provide electric recharging facilities (Circulation Element: Local Circulation; see also Mitigation Measure GHG-2 below).
- Allow developers to reach agreements with auto-oriented shopping center owners to use commercial parking lots as park-and-ride lots and multi-modal transfer sites (Circulation Element: Regional Circulation);
- Eliminate [or reduce] parking requirements for new development in the Specific Plan area (Circulation Element: Parking);

**TABLE 4.6-5  
 BAAQMD-IDENTIFIED GHG MITIGATION MEASURES FOR PLAN LAND USE ELEMENTS**

<b>BAAQMD Mitigation Measure</b>	<b>Elements of the Proposed Project Consistent with the Mitigation Measure, Justification for Non-applicability, or Available Mitigation Measure</b>
<b>Urban Form</b>	
Create and enhance landscaped greenway, trail, and sidewalk connections between neighborhoods, commercial areas, activity centers, and parks.	Addressed in Specific Plan – Improved interconnectivity of neighborhoods is a guiding principle (Section C.2) of the Specific Plan
Adopt policies supporting infill development	Addressed in Specific Plan – As discussed in the Project Description, the Specific Plan uses a combination of both standards and guidelines to manage the design and construction of new buildings. The standards and guidelines are intended to encourage infill development on underutilized parcels of land.
Ensure that proposed land uses are supported by a multi-modal transportation system and that the land uses themselves support the development of the transportation system.	Addressed in Specific Plan – The Specific Plan is located within a multi-modal transit corridor that has regional rail service and regional and local bus service. Guideline D.4.01 directs the city to take into consideration recommended criteria of the Grand Boulevard Initiative’s <i>Multi-Modal Access Strategy &amp; Context-Sensitive Design Guidelines</i> .
Designate a central city core for high-density and mixed-use development.	Addressed in Specific Plan – Figure B.3 of the Specific Plan identifies a focus area for higher density development in proximity to the train station area.
Discourage high intensity office and commercial uses from locating outside of designated centers or downtowns, or far from residential areas and transit stations.	Addressed in Specific Plan (indirectly) – While this measure is not directly applicable to the proposed Specific Plan, the proposed Plan does call for increased density in an area in close proximity to downtown and transit stations, and therefore is implicitly consistent with this measure.
Provide financial incentives and density bonuses to entice development within the designated central city.	Addressed in Specific Plan – Tables E.3 through E.12 of the Specific Plan provide density bonuses for areas within the Plan area.
Provide public education about benefits of well-designed, higher-density housing and relationships between land use and transportation.	Addressed in Specific Plan (indirectly) – This measure is not directly applicable to a Specific Plan, except insofar as development consistent with the proposed Plan would demonstrate the benefits of the higher-density housing in proximity to transportation.
<b>Compact Development</b>	
Achieve a jobs/housing balance or improve the jobs/housing ratio within the plan area.	Addressed in Specific Plan – As discussed in EIR Section 4.11, if full buildout occurs, the Specific Plan’s ratio of new population to job growth ratio of 1.25 is only slightly greater than the current ratio of 1.23 indicating that the Specific Plan would result in a very slight net increase of housing capacity for Menlo Park. This would contribute towards reducing the projected comparative undersupply of housing relative to the job growth expected to occur over the next twenty years within Menlo Park.
Create incentives to attract mixed-use projects to older commercial and industrial areas.	Addressed in Specific Plan – As presented in Figure C-2 and C-3 of the Specific Plan, residential mixed use development is proposed within the Plan area.
Adopt incentives for the concurrent development of retail, office, and residential land uses within mixed-use projects or areas. Require mixed-use development to include ground-floor retail.	Addressed in Specific Plan – The Specific Plan provides the guiding principles for the concurrent development of mixed uses and identifies ground floor retail within the downtown area.
Provide adaptive re-use alternatives to demolition of historic buildings. Provide incentives to prevent demolition of historic buildings.	Addressed in EIR – Mitigation Measure CUL-1 of this EIR would require project sponsors to complete site-specific evaluations at the time that individual projects are proposed at or near buildings that are at least 50 years old to determine if the project is subject to completion of a site-specific historic resources study.

**TABLE 4.6-5 (Continued)**  
**BAAQMD-IDENTIFIED GHG MITIGATION MEASURES FOR PLAN LAND USE ELEMENTS**

<b>BAAQMD Mitigation Measure</b>	<b>Elements of the Proposed Project Consistent with the Mitigation Measure, Justification for Non-applicability, or Available Mitigation Measure</b>
<b>Compact Development (cont.)</b>	
Facilitate lot consolidation that promotes integrated development with improved pedestrian and vehicular access.	Not addressed in Specific Plan – Identified above as mitigation
Reinvest in existing neighborhoods and promote infill development as a preference over new, Greenfield development.	Addressed in Specific Plan – The proposed Specific Plan addresses development within an existing developed area and promotes infill development.
Ensure that new development finances the full cost of expanding public infrastructure and services to provide an economic incentive for incremental expansion.	Not addressed in Specific Plan – Identified above as mitigation
Require new developments to extend sewer and water lines from existing systems or to be in conformance with a master sewer and water plan.	Not Applicable – Proposed development within the Specific Plan area would use existing water and sewer infrastructure.
<b>Green Economy and Business</b>	
Work with businesses to encourage employee transit subsidies and shuttles from transit stations.	Addressed in Specific Plan – Plan would facilitate transit use by increasing density in proximity to transit and to shuttles, including City-operated shuttles, that currently serve the Menlo Park Caltrain Station. Proposed Plan supports additional shuttle service and other transit improvements (Section F.6).
Encourage businesses to participate in local green business programs.	Not Applicable – Refers to local government economic development policy and not to Specific Plan land use policies.
Offer incentives to attract businesses to city core and infill areas.	Addressed in Specific Plan – Proposed Plan calls for increased commercial density and increased height limits that would encourage higher-density commercial development in and near Downtown.
Work to attract green businesses and promote local green job training programs.	Not Applicable – Refers to local government economic development policy and not to Specific Plan land use policies.
Support regional collaboration to strengthen the green economy.	Not Applicable – Refers to local government economic development policy and not to Specific Plan land use policies.
Provide outreach and education to local businesses on energy, waste, and water conservation benefits and cost savings.	Addressed in Specific Plan – Section C.5 of proposed plan calls for green buildings that reduce energy and water consumption and for stormwater management best practices.
Support innovative energy technology companies.	Not Applicable – Refers to local government economic development policy and not to Specific Plan land use policies.

- Encourage developers to agree to parking sharing between different land uses (Circulation Element: Parking);
- Require developers to provide preferential parking for low emissions and carpool vehicles (Circulation Element: Parking);
- Minimize impervious surfaces in new development and reuse project in the Specific Plan area (Conservation Element: Water Conservation);

- Require fireplaces installed in residential development to be energy efficient in lieu of open hearth. Prohibit the installation of wood burning devices (Conservation Element: Energy Conservation); and
- Sealing of HVAC ducts. This is a project level BAAQMD measure that requires the developer to obtain third party HVAC commissioning to ensure proper sealing of ducts and optimal heating and cooling efficiencies. BAAQMD estimated that this measure reduces air conditioning electrical demand by 30 percent. The California Energy commission estimates that air conditioning electrical demand represents approximately 20 percent of total demand for a single family residence and this measure would reduce electrical-related GHG emissions by approximately 100 metric tons/year of CO<sub>2</sub>e.

Additionally, the City of Menlo Park is planning its own amendments to the CALGreen building code (California Green Building Standards Code, Title 24, Part 11). These amendments will be designed to require a further 15 percent reduction over baseline Title 24 green building standards requirements for all new development in the City, as well as mandatory duct testing (discussed above) and cool roof materials. As these amendments are only in the planning stages, they are identified here as further mitigation. Reductions in GHG emissions from these amendments were calculated using the mitigations tab in the BGM model.

While BAAQMD also identifies use of cool roof materials as a potential GHG mitigation measure, per CAPCOA<sup>15</sup>, reflective roofs are covered under Title 24 Part 6 and the electricity savings is therefore incorporated in savings due to Title 24 (CALGreen) and no further reduction was taken for this measure as reductions up to 15 percent beyond Title 24 have already been included.

**Significance after Mitigation:** The above mitigation measures (in particular the CALGreen 15 percent improvement) would reduce GHG emissions to 16,038 metric tons/year of CO<sub>2</sub>e within the Specific Plan Area as shown in **Table 4.6-6**. With a service population of 2,894, the per capita emission rate would be 5.5 metric tons per service population per year. This would exceed the BAAQMD adopted threshold of 4.6 metric tons per service population per year. The non-quantifiable mitigation measures would likely reduce this emission rate further, but this effect cannot be calculated, and would likely still be above the threshold. Therefore, GHG emissions under implementation of the Specific Plan with all feasible mitigation would have a significant impact using the methodology and significance criteria of the BAAQMD, the air quality regulatory agency with jurisdiction over the Specific Plan area. Therefore the project would have a significant and unavoidable impact resulting from GHG emissions.

---

<sup>15</sup> CAPCOA, Quantifying Greenhouse Gas Mitigation Measures, August 2010, p. 456.

**TABLE 4.6-6  
 MITIGATED EMISSIONS OF GHG FROM THE SPECIFIC PLAN**

Emission Source/Sink	Emissions (metric tons CO <sub>2</sub> e per year)
	Total CO <sub>2</sub> e
Motor vehicle trips	10,459
Natural gas	1,246
Grid Electricity	1,565
Solid Waste generation	2,612
Water and Wastewater Conveyance and treatment	150
Area Source (landscape maintenance)	6
<b>Total Proposed Project Operational Greenhouse Gas Emissions with Mitigation</b>	<b>16,038</b>
<b>Tons per Year per Service Population (residents + employees)</b>	<b>5.5</b>
<b>BAAQMD Threshold (Service Population)</b>	<b>4.6</b>

SOURCE: Environmental Science Associates, 2011.

**Impact GHG-2: The Specific Plan could conflict with applicable plans, policies or regulations of an agency with jurisdiction over the Specific Plan adopted for the purpose of reducing the emissions of GHGs. (Significant)**

The Specific Plan does not pose any explicit conflict with the applicable list of California Air Resources Board GHG reduction strategies (see Table 4.6-2). As can be seen in the table, many of the measures—such as implementation of increased fuel efficiency for vehicles (the “Pavley” standards), increased efficiency in utility operations, and development of more renewable energy sources—require statewide action by government, industry, or both. Some of the measures are at least partially applicable to development projects, such as increasing energy efficiency in new construction, installation of solar panels on individual building roofs, and a “green building” strategy—although, arguably, some of these measures could require government action, such as strengthening of building codes, to realize meaningful reductions in GHG emissions. The Specific Plan includes sustainability strategies that promote reduced automobile dependence and certified green buildings (LEED Silver certification required for most building projects).

With respect to consistency with AB 32 and its Climate Change Scoping Plan, this analysis acknowledges that BAAQMD derived the per-capita efficiency threshold that was applied in Impact GHG-1 from emission levels required to be met in order to achieve AB 32 goals.<sup>16</sup> Therefore, these quantitative thresholds also may be used to assess whether or not the proposed Specific Plan would conflict with AB 32. Because the proposed Specific Plan would emit GHGs

<sup>16</sup> BAAQMD, *CEQA Guidelines Update Proposed Thresholds of Significance*, May 3, 2010, page 11

greater than the service population-based efficiency thresholds of the BAAQMD which were derived based on AB 32 attainment goals, implementation of the Specific Plan would therefore conflict with AB 32 and its associated planning efforts.

The City of Menlo Park General Plan does not include policies explicitly designed to address greenhouse gas emissions and climate change. However, a number of goals and policies in the General Plan would play a role in planning efforts to reduce GHG emissions. The Specific Plan would implement development guidelines that are consistent and would not conflict with a variety of General Plan policies, such as:

- *Policy I-B-4:* Uses and activities shall be encouraged which will strengthen and complement the relationship between the Transportation Center and the Downtown area and the nearby El Camino Real corridor.
- *Policy II-A-12:* The City shall endeavor to provide for the safe, efficient, and equitable use of streets by pedestrians and bicyclists through good roadway design, maintenance, and effective traffic law enforcement.
- *Policy II-B-1:* The City shall consider transit modes in the design of transportation improvements and the review and approval of development projects.
- *Policy II-B-3:* The City shall promote improved public transit service and increased transit ridership, especially to office and industrial areas and schools.
- *Policy II-D-3:* The design of streets within Menlo Park shall consider the impact of street cross section, intersection geometrics and traffic control devices on bicyclists.
- *Policy II-E-1:* The City shall endeavor to maintain safe sidewalks and walkways where existing within the public right-of-way.

In 2009, Menlo Park published a Climate Action Plan that outlines a number of municipal and community emissions reduction strategies. The Specific Plan would not conflict with implementation of the Climate Action Plan; in fact, many sustainability strategies set forth in the Specific Plan would be consistent with the Climate Action Plan. **Table 4.6-7** below presents the community strategies contained in the Climate Action Plan and correlates each to a specific element or mitigation measure of the project that address the strategy. A review of the table indicates that the proposed Specific Plan is consistent with all but one of the strategies that would reasonably be applicable to a land use development project.

For example, the Specific Plan would aim to reduce automobile dependence by improving pedestrian and bicycle infrastructure. This goal would help reinforce the Climate Action Plan's strategies to implement bike improvements and to implement transportation demand management strategies. Furthermore, the Specific Plan aims to encourage infill development and locate residents near transit facilities, which would also be generally consistent with the Climate Action Plan's strategy to implement transportation demand management strategies. The one outstanding strategy not included in the Specific Plan guidelines relates to the Climate Action Plan's goal to encouraging larger local businesses to install recharging stations for electric vehicles and plug-in

**TABLE 4.6-7  
 CLIMATE ACTION PLAN STRATEGIES TO BE IMPLEMENTED AT THE COMMUNITY LEVEL**

CAP Community Strategy	Elements of the Proposed Project Consistent with the Strategy
1. Residential Energy Audit Program. This program uses community volunteers to conduct energy audits in their neighborhood to determine improvements to be made in infrastructure to realize energy savings and associated GHG reductions	The Specific Plan incorporates into its concepts and guidelines sustainability strategies reflected in the Leadership in Energy and Environmental Design (LEED) for Neighborhood Development (ND) rating system developed by the U.S. Green Building Council. These programs include the types of improvements that would be targeted by the Residential Energy Audit Program.
2. Energy Efficiency and Renewable Energy Financing Program. Under this program, the City provides low-interest loan funding for solar and energy efficiency installations	The proposed Specific Plan would include certified green buildings by encouraging a high level of certification for new buildings as well as retrofit of existing structures. Any additional owner-occupant efforts to add solar installations would be able to use this funding mechanism, as regulatory lending allows.
3. Electric and Plug-in Hybrid Vehicle Charging Stations. Under this strategy the City would provide infrastructure to recharge electric vehicles or encourage contractors and developers to incorporate recharging facilities into multi-unit housing projects.	This strategy is not addressed as a part of the Specific Plan.
5. Expand Community Shuttle Service	Section F.10 of the Specific Plan proposed requiring all new developments to establish a Transportation Demand Management (TDM) program or pay an in-lieu impact fee. Mitigation Measure TR-2 of this DEIR identifies transportation demand management strategies to be implemented by individual project applicant. These strategies include operation of a dedicated shuttle service or buy-in to a shuttle consortium.
6. Implement Bike Improvements	Alternative transportation modes are addressed in Sections F.3 and F.4 of the Specific Plan. The Specific Plan establishes a comprehensive bicycle network for the area. Additionally, Mitigation Measure TR-2 of this DEIR identifies transportation demand management strategies to be implemented by individual project applicants. These strategies include bicycle storage facilities and showers and changing rooms. Additionally, parking spaces would be removed on Oak Grove Avenue to accommodate bike lanes and reduce vehicle conflicts.
7. Enhance Recycling Collection Services.	This strategy is not applicable to local development as it is a City sponsored infrastructure program to implement single stream recycling.
8. Incentives for Building Practices that Reduce Energy Consumption Beyond Current Codes	The Specific Plan incorporates into its concepts and guidelines sustainability strategies reflected in the Leadership in Energy and Environmental Design (LEED) for Neighborhood Development (ND) rating system developed by the U.S. Green Building Council. These programs would reduce energy consumption beyond current code requirements.
9. Early Implementation of California Green Building Code Standards	This strategy is not applicable to local development as it is a City sponsored regulatory process.
10. City Car Sharing Program	Mitigation Measure TR-2 of this DEIR identifies transportation demand management strategies to be implemented by individual project applicants. These strategies include implementation of car share programs.
11. Limit Commercial Vehicle Idling	This strategy is designated for further study and would not be enforceable by the Specific Plan. Additionally, the California Air Resources Board has already implemented a heavy-duty truck idling emission reduction program that restricts truck idling to 5 minutes.
12. Transportation Demand Management Strategies.	Section F.10 of the Specific Plan proposes that new developments establish a Transportation Demand Management (TDM) program or pay an in-lieu impact fee. Developers may choose from a menu of TDM strategies including transit subsidies to employees.



**TABLE 4.6-7 (Continued)**  
**CLIMATE ACTION PLAN STRATEGIES TO BE IMPLEMENTED AT THE COMMUNITY LEVEL**

CAP Community Strategy	Elements of the Proposed Project Consistent with the Strategy
13. Resident Education on Trip Reduction	This strategy is not applicable to local development as it is a City sponsored education program designated for further study.
14. Zero Waste/Commercial Recycling and Construction Debris Ordinance Updates.	These strategies are designated for further study and would be City sponsored infrastructure and/or ordinance efforts to reduce solid waste disposal that would not be applicable to a land use project.
15. Menlo Park Municipal Water District Conservation Program	This strategy designated for further study would implement further water conservation programs such as installation of artificial turf at playing fields and gray-water recycling. LEED designated construction strategies proposed by the Plan would install low flow water facilities in new and redeveloped construction and would not conflict with this pending effort to reduce water demand.
16. Landscape Ordinance Update	This strategy designated for further study is not applicable to local development as it would be a City sponsored update to its existing ordinance required by State law (AB1881). Development under the Specific Plan would be required to comply with the conditions of this updated ordinance once it is fully implemented.

SOURCE: Environmental Science Associates, 2010.

hybrid electric vehicles. Consequently, a mitigation measure is identified to amend the Specific Plan to include a guideline that would implement this strategy of the City’s Clean Air Plan.

Given that the Specific Plan would conflict with implementation of AB 32 although it includes a variety of sustainability measures and guidelines that would serve to initiate implementation of Menlo Park’s Climate Action Plan, it would have a significant impact with regard to climate change planning. Mitigation Measure GHG-2 below is identified to complete the Specific Plan’s implementation of strategies identified in the Climate Action Plan. Implementation of Mitigation Measure GHG-1 will also mitigate this impact.

**Mitigation Measure GHG-2a:** All residential and/or mixed use developments of sufficient size to require LEED certification under the Specific Plan shall be shall install one dedicated electric vehicle/plug-in hybrid electric vehicle recharging station for every 20 residential parking spaces provided. Per the Climate Action Plan the complying applicant could receive incentives, such as streamlined permit processing, fee discounts, or design templates.

**Mitigation Measure GHG-2b:** The City could implement a pilot program in the Specific Plan area to require mandatory commercial recycling, either at all buildings or, at a minimum, at newly constructed buildings. Such a program, identified in the AB 32 Scoping Plan and included in the City’s Climate Action Plan as a measure for future study, could reduce GHG emissions in the Plan area and, if successful, could be implemented citywide.

**Significance after Mitigation:** Significant and unavoidable.

As discussed in Impact GHG-1, even with the adoption of all identified mitigation measures, the proposed project would still result in GHG emissions greater than the significance threshold developed by BAAQMD based on AB 32 attainment goals. Therefore the project would result in a significant and unavoidable impact with regard to its conflict with the planning goals of AB 32.

---