

4.6 Greenhouse Gas Emissions and Energy

This section analyzes the potential effects of development under the Inner Harbor Specific Plan to greenhouse gas (GHG) emissions and global climate change and energy. Discussed in this section are the physical and regulatory setting, including the current climate change science; the baseline for determining environmental impacts; the criteria used for determining the significance of environmental impacts; potential impacts associated with construction, operation, and maintenance of the development resulting from implementation of the Specific Plan; and mitigation measures to reduce or avoid environmental impacts determined to be potentially significant.

This section also presents a project-level analysis of the Harbor View project, which is located largely within the Specific Plan Area.

While potential effects of the environment on the project are arguably not required to be analyzed or mitigated under CEQA, this section nevertheless analyzes potential effects of greenhouse gas emissions and energy on the Specific Plan implementation as set forth in CEQA *Guidelines*, Appendix G, Significance Criteria, and in the interest of being conservative and providing information to the public and decision-makers. Specifically, this section discusses the potential effects of sea level rise - a phenomenon understood to be associated with GHG emissions - on the Specific Plan Area.¹

4.6.1 Environmental Setting

Greenhouse Gases and Climate Change

Greenhouse gas (GHG) emissions are a global concern. GHG emissions cumulatively contribute to planet-wide atmospheric accumulations and consequently, there are no regional “hot spots” of elevated concentrations of carbon dioxide or any other GHG. Therefore GHG emissions, existing or future, are not a localized phenomenon and there are no localized geographical constraints within the Inner Harbor Specific Plan Area relative to GHG emissions.

Gases that trap heat in the atmosphere are called greenhouse gases or GHGs. 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 fossil fuel-based 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. Global climate change is a change in the average weather on earth that can be measured by wind patterns, storms, precipitation, and temperature.

¹ An appellate court specifically identified the effect of sea level rise on a project as an impact of the environment on a project and, therefore, not required to be analyzed under CEQA.

Although there is disagreement as to the rate of global climate change and the extent of the impacts attributable to human activities, most in the scientific community agree that there is a direct link between increased emissions of GHGs and long term global temperature increases.

The principal GHGs are carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), sulfur hexafluoride (SF₆), perfluorocarbons (PFCs), and hydrofluorocarbons (HFCs). CO₂ is the most common reference gas for climate change. CO₂ accounts for approximately 85 percent of total human activity-generated GHG emissions. Emissions of other GHGs, such as methane and nitrous oxide, have also increased due to human activities and account for almost 14 percent of total GHG emissions. Each of these gases however contributes to global warming at a different relative rate. Methane has a global warming potential 23 times that of carbon dioxide, while the global warming potential of nitrous oxide is 296 times that of the same amount of carbon monoxide. To account for these differences in warming potential of different GHGs, estimates of GHG emissions are often quantified and described in terms of carbon dioxide equivalents (CO₂e). Large emission sources are reported in million metric tons of CO₂e.²

Potential Effects of Climate Change

Some of the potential effects of global warming in California 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 (CARB, 2009).

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 (IPCC, 2007):

- Higher maximum temperatures and more hot days over nearly all land areas;
- Higher minimum temperatures, fewer cold days and frost days over nearly all land areas;
- Reduced diurnal temperature range over most land areas;
- Increase of heat index over land areas; and
- More intense precipitation events.

Also, there are many secondary effects that are projected to result from global warming, including impacts to agriculture, changes in disease vectors, and changes in habitat and biodiversity. 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.

Globally, and for the Inner Harbor Specific Plan Area in particular, rise in sea level is the primary climate change issue, as discussed in greater detail below, under *Sea Level Rise*.

² The term metric ton is commonly used in the US to refer to the metric system unit, tonne, which is defined as a mass equal to 1,000 kilograms. A metric ton is approximately 1.1 short tons and approximately 2,204.6 pounds.

Existing GHG Emissions Conditions

Global and United States GHG Emissions. Worldwide emissions of GHGs in 2004 were 30 billion metric tons of CO₂e per year (UNFCCC, 2007) (including both ongoing emissions from industrial and agricultural sources, but excluding emissions from land-use changes). In the United States, GHG emissions were approximately 6.9 billion metric tons of CO₂e in 2008, representing a 13.5 percent increase over 1990 GHG emissions.

California GHG Emissions. The California Air Resources Board (CARB) estimated that in 2008, California produced 478 million gross metric tons of CO₂e emissions. CARB found that transportation was the source of 37 percent of the state's GHG emissions; followed by electricity generation at 24 percent, and industrial sources at 19 percent (CARB, 2012).

Bay Area and San Mateo County GHG Emissions. In the San Francisco Bay Area, GHG emissions from the transportation sector and industrial/ commercial sector represent the largest sources of the Bay Area's GHG emissions, each accounting for 36.4 percent of the Bay Area's 95.8 million metric tons of CO₂e in 2007. Electricity/co-generation sources account for about 15.9 percent of the Bay Area's GHG emissions, followed by residential fuel usage at about 7.1 percent. Off- road equipment and agricultural/farming sources currently account for approximately 3 percent and 1.2 percent of the total Bay Area GHG emissions, respectively (BAAQMD, 2010a).

The 2007 BAAQMD inventory provides breakdowns for each county. San Mateo County was estimated to emit almost 8.5 million metric tons of CO₂e emissions in 2007, in which 7.7 million metric tons were from CO₂ emissions. The transportation sector accounted for over half of those emissions.

Redwood City GHG Emissions. Existing land uses, transportation, and related activities in Redwood City and the Specific Plan Area generate GHG emissions. To better understand the GHG emissions impacts associated with the policies and development envisioned under the City's New General Plan, the City started by quantifying current GHG emissions. Since 2005, two inventories of the City's GHG emissions have been conducted and are discussed below.

- 1) *Community Climate Action Plan Inventory.* The City prepared and adopted (April 2013) a Community Climate Action Plan (CCAP), outlining a number of programs and strategies the City can use as a means to reduce GHG emissions. The CCAP included an inventory of GHG emissions in the city generated by various "sectors" including transportation, housing, commercial and industrial activities, and waste processing. The inventory was based on the year 2005 and was developed using the Clean Air and Climate Protection software developed by Local Governments for Sustainability (ICLEI). This inventory concluded that transportation, housing, commercial and industrial activities, and waste processing emitted 669,737 metric tons of CO₂e in the baseline year of 2005.

This 2005 emissions inventory only accounted for traffic that was confined within Redwood City. Therefore, the inventory did not account for trips generated by Redwood City that originated or were destined for points outside of the City.

- 2) *INDEX Inventory.* As part of Redwood City's comprehensive New General Plan, the City used a geographic information systems (GIS) based planning tool known as "INDEX" to

estimate the community’s current level of GHG emissions as well as the GHG emissions associated with the New General Plan. The INDEX model estimates CO₂e emissions from the following sources:

- Residential buildings
- Residential related vehicle travel
- Non-residential buildings
- Non-residential related vehicle travel
- Water conveyance

Table 4.6-1 shows estimated GHG emissions for Redwood City in 2008. Estimated GHG emissions from these land use and transportation sources were approximately 747,000 tons of CO₂ annually (City Redwood City, 2010).

**TABLE 4.6-1
ESTIMATED GREENHOUSE GAS EMISSIONS FOR REDWOOD CITY, 2008^a**

Sector / Emissions Source	Estimated Metric Tons / Year of CO ₂	Percentage of Total Emissions
Residential Buildings	134,962	18.1%
Residential Vehicle Trips	202,942	27.2%
Non-Residential Buildings	134,784	18%
Non-Residential Vehicle Trips	88,339	12%
Truck and Bus Activities *	85,580	11.5%
Industrial, Construction, Waste Management *	96,500	13%
Total (rounded)	747,000	100%

^a Estimates are for the City’s Sphere of Influence, which includes the unincorporated communities of Emerald Hills, North Fair Oaks and Selby.

* The INDEX model did not provide an estimate of GHG emissions associated with truck and bus activity, nor with activities at the Port of Redwood City. Therefore, the INDEX estimate was calibrated to included track and bus activity emissions. The estimate does not account for Port emissions, however, the INDEX inventory captures approximately 85 percent of total emissions and total emissions would be approximately 747,000 metric tons of CO₂/year.

SOURCE: City of Redwood City, *Stanford in Redwood City Precise Plan Draft EIR* Table 9.1, Illingworth and Rodkin, 2010

Sea Level Rise

As previously discussed, GHG emissions contribute to an increase in the average global temperature and continued global warming. A rise in global temperature is expected to be accompanied by a rise in the global sea level. Sea level rise, or the increasing volume of water in the global ocean, is affected by two distinct processes: thermal expansion of warming ocean water and melting of continental ice, including mountain glaciers and land bound polar ice on Greenland and Antarctica.

Observations of sea level rise made at the San Francisco tide gauge in the 20th century show that sea level rose nearly 0.2 meters (8 inches) during the 20th century. It is anticipated that rate of sea level rise will accelerate during the 21st century and beyond.

The existing hydrologic conditions in the Inner Harbor Specific Plan vicinity and conditions and applicable regulations that pertain to flooding and sea level rise are addressed in detail in Section 4.8, *Hydrology and Water Quality*, of this Draft EIR, in addition to an assessment of potential impacts from predicted increases in sea level.

4.6.2 Regulatory Setting

Federal

The federal Clean Air Act (CAA) requires U.S. Environmental Protection Agency (US EPA) to define national ambient air quality standards to protect public health and welfare in the U.S. The CAA does not specifically regulate GHG emissions; however, on April 2, 2007 the U.S. Supreme Court in *Massachusetts v. U.S. Environmental Protection Agency*, determined that GHGs are pollutants that can be regulated under the CAA. Currently, there are no federal regulations that establish ambient air quality standards for GHGs.

On December 7, 2009, US EPA adopted its Proposed Endangerment and Cause or Contribute Findings for Greenhouse Gases under the CAA (Endangerment Finding). Under the Endangerment Finding Administrator of US EPA found that atmospheric concentrations of GHGs endanger the public health and welfare within the meaning of Section 202(a) of the CAA. The Administrator of US EPA also found that GHG emissions from new motor vehicles and motor vehicle engines are contributing to air pollution, which is endangering public health and welfare. The findings do not in and of themselves impose any emission reduction requirements but, rather, allow US EPA to finalize the GHG standards proposed earlier in 2009 for new light-duty vehicles as part of the joint rulemaking with the Department of Transportation. All mobile sources would be required to comply with these regulations as they are implemented.

State of California

The CARB is the agency responsible for coordination and oversight of state and local air pollution control programs in California. There are currently no state regulations in California that establish ambient air quality standards for GHGs. However, California has passed laws directing CARB to develop actions to reduce GHG emissions, and several state legislative actions related to climate change and GHG emissions have come into play in the past decade.

Assembly Bill 1493

In 2002, then-Governor Gray Davis signed Assembly Bill (AB) 1493. AB 1493 requires that CARB develop and adopt, by January 1, 2005, regulations that achieve “the maximum feasible reduction of greenhouse gases emitted by passenger vehicles and light-duty trucks and other vehicles determined by CARB to be vehicles whose primary use is noncommercial personal transportation in the State.”

To meet the requirements of AB 1493, in 2004 CARB approved amendments to the California Code of Regulations (CCR) adding GHG emissions standards to California's existing standards for motor vehicle emissions. All mobile sources are required to comply with these regulations as they are phased in from 2009 through 2016.

Executive Order S-3-05

In 2005, in recognition of California's vulnerability to the effects of climate change, Governor Arnold 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

In September 2006, Governor Arnold Schwarzenegger signed the California Global Warming Solutions Act (AB 32; California Health and Safety Code Division 25.5, Sections 38500 - 38599). AB 32 establishes regulatory, reporting, and market mechanisms to achieve quantifiable reductions in GHG emissions and establishes a cap on statewide GHG emissions. AB 32 requires that statewide GHG emissions be reduced to 1990 levels by 2020. This reduction will be accomplished by enforcing a statewide cap on GHG emissions that will be phased in starting in 2012. To effectively implement the cap, AB 32 directs CARB to develop and implement regulations to reduce statewide GHG emissions from stationary sources. AB 32 specifies that regulations adopted in response to AB 1493 should be used to address GHG emissions from vehicles. However, AB 32 also includes language stating that if the AB 1493 regulations cannot be implemented, then CARB should develop new regulations to control vehicle GHG emissions under the authorization of AB 32.

AB 32 requires CARB to adopt a quantified cap on GHG emissions representing 1990 emissions levels and disclose how it arrived at the cap; institute a schedule to meet the emissions cap; and develop tracking, reporting, and enforcement mechanisms to ensure that the state reduces GHG emissions enough to meet the cap. AB 32 also includes guidance on instituting emissions reductions in an economically efficient manner, along with conditions to ensure that businesses and consumers are not unfairly affected by the reductions. According to CARB's *Climate Change Scoping Plan* (CARB, 2009), the 2020 target of 427 million metric tons of CO₂e requires the reduction of 169 million metric tons of CO₂e, or approximately 28.3 percent, from the state's projected 2020 business-as-usual (BAU) emissions level of 596 million metric tons of CO₂e. However, CARB has discretionary authority to seek greater reductions in more significant and growing GHG sectors, such as transportation, as compared to other sectors that are not anticipated to significantly increase emissions. In August 2011, the Scoping Plan was re-approved by the Board and includes the *Final Supplement to the Scoping Plan Functional Equivalent Document* (CARB, 2011). This document includes expanded analysis of project alternatives as well as updates the 2020 emission projections in light of the current economic forecasts. Considering the updated 2020 BAU estimate of 507 million metric tons of CO₂e, a 16 percent reduction below the

estimated BAU levels would be necessary to return to 1990 levels by 2020. The document also excludes one measure identified in the Scoping Plan that has been adopted and one measure that is no longer under consideration by CARB (CARB, 2011).

Executive Order S-1-07

Executive Order S-1-07, which was signed by Governor Schwarzenegger in 2007, proclaims that the transportation sector is the main source of GHG emissions in California, generating more than 40 percent of statewide emissions. It established a goal to reduce the carbon intensity of transportation fuels sold in California by at least 10 percent by 2020. This order also directs CARB to determine whether this Low Carbon Fuel Standard (LCFS) could be adopted as a discrete early-action measure as part of the effort to meet the mandates in AB 32.

On April 23, 2009 CARB approved the proposed regulation to implement the LCFS. The LCFS will reduce GHG emissions from the transportation sector in California by about 16 million metric tons in 2020.

CARB Climate Change Scoping Plan

CARB's *Scoping Plan* (CARB, 2009) calculates 2020 BAU emissions as the emissions that would be expected to occur in the absence of any GHG reduction measures. The 2020 BAU emissions estimate was derived by projecting emissions from a past baseline year using growth factors specific to each of the different economic sectors, i.e. transportation, electrical power, commercial, residential, industrial etc. CARB used three-year average emissions, by sector, for 2002-2004 to forecast emissions to 2020. At the time CARB's *Scoping Plan* process was initiated, 2004 was the most recent year for which actual data was available. The measures described in CARB's *Scoping Plan* are intended to reduce the projected 2020 BAU to 1990 levels, as required by AB 32 (discussed above).

CARB's *Scoping Plan* also breaks down the amount of GHG emissions reductions CARB recommends for each emissions sector of the state's GHG inventory. CARB's *Scoping Plan* calls for the largest reductions in GHG emissions to be achieved by implementing the following measures and standards:

- Improved emissions standards for light-duty vehicles (estimated reductions of 31.7 million metric tons of CO₂e);
- The LCFS (15.0 million metric tons of CO₂e);
- Energy efficiency measures in buildings and appliances, and the widespread development of combined heat and power systems (26.3 million metric tons of CO₂e); and
- A renewable portfolio standard for electricity production (21.3 million metric tons of CO₂e).

CARB has identified a GHG reduction target of 5 million metric tons (of the 174 million metric ton total) for local land use changes (Table 2 of CARB's *Scoping Plan*), by Implementation of Reduction Strategy T-3 regarding Regional Transportation-Related GHG Targets. Additional land use reductions may be achieved as Senate Bill (SB) 375 is implemented. CARB's *Scoping Plan*

states that successful implementation of the plan relies on local governments' land use, planning, and urban growth decisions because local governments have primary authority to plan, zone, approve, and permit land development to accommodate population growth and the changing needs of their jurisdictions. CARB further acknowledges that decisions on how land is used will have large effects on the GHG emissions that will result from the transportation, housing, industry, forestry, water, agriculture, electricity, and natural gas emission sectors. CARB's *Scoping Plan* does not include any direct discussion about GHG emissions generated by construction activity.

CARB's *Scoping Plan* expands the list of nine Discrete Early Action Measures to a list of 39 Recommended Actions contained in Appendices C and E of CARB's *Scoping Plan*. These measures are presented in **Table 4.6-2: Recommended Actions from CARB Climate Change Scoping Plan**.

A draft Update to the initial Scoping Plan was developed by CARB in collaboration with the California Climate Action Team (CCAT) to address the requirement by AB 32 that the Scoping Plan be updated at least every five years. The draft Update builds upon the initial Scoping Plan with new strategies and expanded measures, and identifies opportunities to leverage existing and new funds to drive GHG emission reductions through strategic planning and targeted program investments. The first update to the AB 32 Scoping Plan was approved on May 22, 2014 by CARB.

As part of the update to the Scoping Plan, the emissions reductions required to meet the 2020 statewide GHG emissions limit were further adjusted. The primary reason for adjusting the 2020 statewide emissions limit was based on the fact that the original Scoping Plan relied on the IPCC's 1996 Second Assessment Report (SAR) to assign the global warming potentials (GWPs) of greenhouse gases. Recently, in accordance the United Nations Framework Convention on Climate Change (UNFCCC), international climate agencies have agreed to begin using the scientifically updated GWP values in the IPCC's Fourth Assessment Report (AR4) that was released in 2007. Because CARB has begun to transition to the use of the AR4 100-year GWPs in its climate change programs, CARB recalculated the Scoping Plan's 1990 GHG emissions level with the AR4 GWPs (CARB, 2014b).

Senate Bills 1078 and 107 and Executive Order S-14-08

SB 1078 (Chapter 516, Statutes of 2002) requires retail sellers of electricity, including investor-owned utilities and community choice aggregators, to provide at least 20 percent of their supply from renewable sources by 2017. SB 107 (Chapter 464, Statutes of 2006) changed the target date to 2010. In November 2008, Governor Schwarzenegger signed Executive Order S-14-08, which expands the State's Renewables Energy Standard to 33 percent renewable power by 2020. In April 2011, Governor Jerry Brown signed SB 2X, that created a legislative mandate codifying the 33 percent Renewables Portfolio Standard into law.

**TABLE 4.6-2
RECOMMENDED ACTIONS FROM CARB CLIMATE CHANGE SCOPING PLAN**

ID #	Sector	Strategy Name
T-1	Transportation	Pavley I and II – Light-Duty Vehicle GHG Standards
T-2	Transportation	LCFS (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 GHG 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 30,000GWh
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 CH ₄ Exemption from Existing Refinery Regulations
RW-1	Recycling and Waste Management	Landfill CH ₄ Control (Discrete Early Action)
RW-2	Recycling and Waste Management	Additional Reductions in Landfill CH ₄ – Capture Improvements
RW-3	Recycling and Waste Management	High Recycling/Zero Waste
F-1	Forestry	Sustainable Forest Target
H-1	High GWP Gases	Motor Vehicle Air Conditioning Systems (Discrete Early Action)
H-2	High GWP Gases	SF ₆ Limits in Non-Utility and Non-Semiconductor Applications (Discrete Early Action)
H-3	High GWP Gases	Reduction in Perfluorocarbons in Semiconductor Manufacturing (Discrete Early Action)
H-4	High GWP Gases	Limit High GWP Use in Consumer Products (Discrete Early Action, Adopted June 2008)
H-5	High GWP Gases	High GWP Reductions from Mobile Sources
H-6	High GWP Gases	High GWP Reductions from Stationary Sources
H-7	High GWP Gases	Mitigation Fee on High GWP Gases
A-1	Agriculture	CH ₄ Capture at Large Dairies

SOURCE: CARB, 2009.

Senate Bill 743

On September 27, 2013, Governor Jerry Brown signed SB 743 into law that would change transportation impact analysis as part of CEQA compliance. These changes included elimination of auto delay, level of service (LOS), and other similar measures of vehicular capacity or traffic congestion as a basis for determining significant impacts in many parts of California (if not statewide). Further, parking impacts will not be considered significant impacts on the environment for select development projects within infill areas with nearby frequent transit service. According to the legislative intent contained in SB 743, these changes to current practice were necessary to “more appropriately balance the needs of congestion management with statewide goals related to infill development, promotion of public health through active transportation, and reduction of greenhouse gas emissions.” Overall, SB 743 supports the reduced prioritization of motor vehicle traffic in the evaluation of environmental effects. As previously stated, use of motor vehicles contribute significantly to the concentration of GHGs in the atmosphere. On July 1, 2014, OPR released draft CEQA significance criteria for transportation, which would then be adopted by the Secretary of the Natural Resources Agency and become effective sometime in 2015.

CEQA Guidelines Revisions

In 2007, the State Legislature passed SB 97, which required amendment of the CEQA *Guidelines* to incorporate analysis of, and mitigation for, GHG emissions from projects subject to CEQA. The California Natural Resources Agency adopted these amendments on December 30, 2009. They took effect on 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. 15064.7) that specifically addresses the potential significance of GHG emissions. Section 15064.7 calls for a “good-faith effort” to “describe, calculate or estimate” GHG emissions. Section 15064.7 further states that the analysis of the significance of any GHG impacts should include consideration of the extent to which the project would increase or reduce GHG 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 new guidelines also state that a project may be found to have a less-than-significant impact on GHG emissions if it complies with an adopted plan that includes specific measures to sufficiently reduce GHG emissions (Sec. 15064(h)(3)). Importantly, however, the CEQA *Guidelines* do not require or recommend a specific analytical methodology or provide quantitative criteria for determining the significance of GHG emissions.

No quantitative significance threshold is included in the Amendments.

The Amendments also include a new Subdivision 15064.7(c) which clarifies that in developing thresholds of significance, a lead agency may appropriately review thresholds developed by other public agencies, or recommended by other experts, provided the decision of the lead agency to adopt such thresholds is supported by substantial evidence.

California Green Buildings Standards Code (CALGreen)

Effective January 2014, CALGreen supplements the California Building Standards Code (Title 24) and requires all new buildings in the state to incorporate energy saving features.

Bay Area Air Quality Management District 2010 CAP

On September 15, 2010, the Bay Area Air Quality Management District (BAAQMD) Board of Directors adopted the final *Bay Area 2010 Clean Air Plan* (2010 CAP). The 2010 CAP control strategies include revised, updated, and new measures in the three traditional control measure categories, including stationary sources measures, mobile source measures, and transportation control measures. In addition, the Bay Area 2010 CAP identifies two new categories of control measures, including land use and local impact measures and energy and climate measures (BAAQMD, 2010b).

City of Redwood City

Redwood City General Plan

The City of Redwood City's General Plan includes policies, programs, and descriptive contents that provide the general framework and direction the City may pursue regarding its future. The General Plan *Public Safety Element* contains policies and programs relevant to climate change and the Specific Plan and/or the Harbor View project. The policies listed below pertain to climate change and GHG emissions and were adopted for the purpose of avoiding or mitigating an environmental effect. Policies listed below that are also considered land use policies are addressed in Section 4.9, *Land Use and Planning*, of this Draft EIR

- Policy PS-4.4: Promote urban forestation and other ecosystems that offer significant carbon mitigation potential.
- Policy PS-5.2: Strive to reduce per capita greenhouse gas emissions and total municipal greenhouse gas emissions to 15 percent below 2005 levels by 2020.
- Policy PS-5.3: Reduce greenhouse gas emissions and adapt to climate change with efforts in the following areas. Major mitigation and adaptation strategies will include:
 - Energy: Incentivize renewable energy installation, facilitate green technology and business, and reduce community-wide energy consumption.
 - Land Use: Encourage investment and development in Downtown, transit-oriented development, compact development, infill development, and a mix of uses. Discourage development on land vulnerable to flooding from sea level rise where potential impacts cannot be adequately addressed.
 - Transportation: Enhance bicycling and walking infrastructure, and support public transit, including Caltrain, rapid rail, streetcars, and public bus service.
 - Buildings: Educate developers regarding the City's Green Building Ordinance, and develop an assessment of green building techniques as a formal stage of City design review. Consider strategies to encourage energy and water conservation retrofits in existing buildings. Adaptation strategies will also include increased water efficiency in buildings.

- Waste: Increase composting, recycling, and efforts to reduce waste generation, focusing especially on large commercial and industrial waste producers.
- Ecology: Plant trees and more vegetation, and endeavor to preserve open space. Major climate adaptation strategies will include native and drought-resistant planting and preservation of open space buffers near floodplains that may be affected by sea level rise.
- Communication and Programs: Develop or support energy- or climate change-themed publications and workshops, facilitate energy audits for residents, and establish partnerships to reduce greenhouse gas emissions.

Redwood City Community Climate Action Plan (CCAP) and Climate Action Plan (CAP)

The City’s Community Climate Action Plan (CCAP) provides tools and encouragement for residents and local businesses to coordinate with the City to reduce GHG emissions. The CCAP was drafted in conjunction with the City’s Climate Action Advisory Team and through extensive public outreach in the community.

Redwood City adopted a Climate Action Plan (CAP) in April 2013. The CAP does not contain any mechanisms by which to assess consistency of proposed development, such as what would occur with implementation of the Specific Plan. Therefore, the CAP does not represent a “Qualified GHG Reduction Strategy” pursuant to BAAQMD. The City will be carrying out the measures in its CAP toward complying with state regulations, which encourage local governments to reduce emissions in their jurisdictions to 15 percent below 2005 levels by 2020. According to Redwood City’s GHG inventories and forecast, by the end of 2020 an annual reduction of nearly 62,000 metric tons of carbon dioxide emissions would need to be accomplished throughout the community in order to achieve the state recommended target reductions. The measures contained in the City’s CAP are actually expected to exceed that goal by 2020, with a total annual reduction of an estimated 63,500 metric tons.

Redwood City Green Building Ordinance

“Green building” is the practice of decreasing a building’s demand for energy, water, and other materials and reducing a building’s negative impacts on human health and on the local environment. According to the U.S. Green Building Council, buildings annually consume more than 30 percent of the total energy and 60 percent of the electricity used in the United States. The City adopted a Green Building Ordinance (GBO) in 2009 that establishes building construction guidelines relating to, among other things, sustainable site development, water savings, energy efficiency, materials selection, and indoor environmental quality.

4.6.3 Project Baseline

Baseline conditions reflect the condition of the Specific Plan Area as it existed at the time of the issuance of the Notice of Preparation, (November 6, 2014). However, for the purposes of emissions calculations, as a conservative measure, baseline emissions at the Specific Plan Area are assumed to be zero.

4.6.4 Significance Criteria

Based on CEQA *Guidelines* Sections 15064.4 and 15064.4(c), as well as CEQA *Guidelines* Appendix G, a project would cause adverse impacts associated with GHG emissions if it would:

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

Based on CEQA *Guidelines* Section Appendix F, a project would cause adverse impacts associated with GHG emissions if it would:

- c) Result in a wasteful, inefficient and unnecessary use of energy; or
- d) Result in a significant demand on regional energy supply or requirements of substantial additional capacity.

Approach to Analysis

Inner Harbor Specific Plan and Harbor View Project

For quantifying a project's GHG emissions, BAAQMD recommends that all GHG emissions from a project be estimated, including a project's direct and indirect GHG emissions from operations. Direct emissions refer to emissions produced from onsite combustion of energy, such as natural gas used in furnaces and boilers, emissions from industrial processes, and fuel combustion from mobile sources. Indirect emissions are emissions produced offsite from energy production and water conveyance due to a project's energy use and water consumption. BAAQMD has provided guidance on detailed methods for modeling GHG emissions from proposed projects (BAAQMD, 2012).

In May of 2011 the BAAQMD adopted new Thresholds of Significance (2011 Thresholds) for GHG impacts. Subsequently, the Alameda Superior Court issued a stay and required the BAAQMD to conduct additional environmental review in connection with its adoption of the thresholds. However, in August 2013 the State Court of Appeal issued a full reversal of the Superior Court ruling, although at the time of this analysis, BAAQMD has not formally readopted these thresholds. Notwithstanding formal adoption, the 2011 Thresholds are based on substantial evidence provided by BAAQMD (BAAQMD, 2009).

Adoption and development under the Specific Plan would have a significant impact on the environment if it were to:

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

- a) For a project involving a land use development, produce total emissions of more than 1,100 metric tons of CO₂e annually **AND** more than 4.6 metric tons of CO₂e per service

population annually.³ The service population includes both the residents and the employees of the project. The project's impact would be considered significant if the emissions exceed **BOTH** the 1,100 metric tons threshold and the 4.6 metric tons threshold. Accordingly, the impact would be considered less than significant if the project's emissions are below **EITHER** of these thresholds.

- b) Fundamentally conflict with an applicable plan, policy, or regulation adopted for the purposes of reducing greenhouse gas emissions.

The above stated thresholds apply only to operational emissions. To date, the BAAQMD has not adopted numeric thresholds for the assessment of construction-related emissions.

As discussed under *4.6.3 Regulatory Setting*, above, the Redwood City CAP does not represent a "Qualified GHG Reduction Strategy" pursuant to the BAAQMD. Consequently, reliance on a qualitative assessment of a project or plans consistency with the CAP may not be adequate for impact assessment under CEQA, which requires not only an assessment of whether a project or plan may "conflict with any applicable plan, policy or regulation of an agency adopted for the purpose of reducing the emissions of greenhouse gases," but also whether it would "generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment."

In lieu of applying the compliance with a qualified GHG reduction strategy as a significance threshold, the use of the service population threshold (or "efficiency threshold") is what is most commonly applied throughout the Bay Area for assessment of GHG impacts relative to CEQA (i.e., emissions of 4.6 metric tons of CO₂e per year per capita for projects and Specific Plans, and 6.6 metric tons of CO₂e per capita per year for General Plans and regional plans).

Energy

Energy impacts are assessed not by comparison to a quantitative threshold but by a qualitative assessment of whether or not applicable energy demand reduction strategies are implemented by the Project to reduce wasteful and inefficient use of energy.

Cumulative

Both BAAQMD and California Air Pollution Control Officers Association (CAPCOA) consider GHG impacts to be exclusively cumulative impacts, in that no single project could, by itself, result in a substantial change in climate. (BAAQMD, 2012 and CAPCOA, 2008). Therefore, the evaluation of GHG impacts evaluates whether the project would make a considerable contribution to cumulative climate change effects.

³ The 2011 BAAQMD Guidelines state that the plan-level service threshold of 6.6 metric tons of CO₂e per service population annually should only be applied to general plans. For other types of plans, such as redevelopment plans and specific Plans, the Guidelines state that the project-level service threshold of 4.6 metric tons of CO₂e of service population annually should be used.

4.6.5 Program-Level Impacts of the Inner Harbor Specific Plan

Impact GHG-1.SP: Construction and operation of development under the Specific Plan would produce greenhouse gas emissions that exceed 1,100 metric tons of CO_{2e} per year, but would not exceed 4.6 metric tons of CO_{2e} per service population annually (Criterion a). (Less than Significant)

Construction and operation of development under the Specific Plan would generate GHG emissions, with the majority of energy consumption (and associated generation of GHG emissions) occurring during operation of that development. Overall, the following activities associated with development under the Specific Plan could contribute to the generation of GHG emissions:

- **Motor Vehicle Use.** Transportation associated with development under the Specific Plan would result in GHG emissions from the combustion of fossil fuels in daily automobile and truck trips.
- **Gas, Electric and Water Use.** Natural gas use results in the emissions of two GHGs: methane (the major component of natural gas) and carbon dioxide from the combustion of natural gas. Methane is released prior to initiation of combustion of the natural gas (as before a flame on a stove is sparked), and from the small amount of methane that is uncombusted in a natural gas flame. Electricity use can result in GHG production if the electricity is generated by combusting fossil fuel. California's water conveyance system is energy intensive (CEC, 2005).
- **Removal of Vegetation.** The net removal of vegetation for construction results in a loss of the carbon sequestration in plants. However, planting of additional vegetation would result in additional carbon sequestration and lower the carbon footprint of a project. (See City's Standard Conditions of Approval regarding *Landscape Requirements and Tree Replacement*, below).
- **Construction Activities.** Construction equipment typically uses fossil-based fuels to operate. The combustion of fossil-based fuels creates GHGs such as carbon dioxide, methane and nitrous oxide. Furthermore, methane is emitted during the fueling of heavy equipment.

GHG Emission Inventory for Development under the Specific Plan

Emissions included in the BAAQMD Guidelines, and therefore included in the GHG emissions inventory for the development under Specific Plan, are described below and quantified in **Table 4.6-3**:

- **Area Source Emissions.** These are direct emissions from sources that include natural gas combustion for heating, cooking, fireplaces, or boilers, as well as emissions from landscape maintenance equipment.
- **Transportation Emissions.** These are direct emissions from mobile sources including automobiles, trucks, motorcycles, and buses.
- **Operational Electricity Consumption.** These are indirect emissions emitted off-site via non-renewable, non-nuclear electricity generators as a result of increased electrical demand.
- **Solid Waste Disposal Emissions.** These are indirect emissions associated with waste generation. A large percentage of project waste would be diverted from landfills by waste reduction, recycling, and composting. Redwood City currently diverts a large portion of its

waste and has goals to even further reduce the amount of waste sent to a landfill. The remainder of the waste not diverted would be disposed of at a landfill. Landfills emit anthropogenic methane from the anaerobic breakdown of material.

- **Operational Fugitive (Direct) Emissions.** These direct emissions are most commonly associated with inadvertent emissions into the atmosphere due to leakage or inherent imperfections in a gas transport or collection system. Direct fugitive GHG emissions that may reasonably be expected to be generated by commercial buildings would consist of GHG refrigerants emitted from leaks or other imperfections in refrigeration or air cooling equipment.
- **Operational Water Emissions (embedded energy).** These indirect emissions are associated with the electricity used to convey water, due to increased water demand from adoption and development under the Specific Plan.
- **Operational Wastewater (non-biogenic).** These are indirect emissions from wastewater treatment associated with the electricity use in wastewater treatment (and not the biogenic CO₂ process emissions).

Emission sources that are not included in the BAAQMD Guidelines or relevant to development under the Specific Plan are not included in the adjusted GHG emissions inventory. These sources include emissions generated from permitted stationary source equipment, vegetation sequestration change, fugitive refrigeration emissions, life cycle emissions, agricultural emissions; and off road equipment emissions.

**TABLE 4.6-3
GHG EMISSIONS INVENTORY FROM DEVELOPMENT UNDER THE SPECIFIC PLAN**

Emission Source	Total Emissions (MT/Year)			
	CO ₂	CH ₄	N ₂ O	Total CO ₂ e
Area Sources	20	<1	<1	21
Energy Sources	7,486	<1	<1	7,519
Mobile Sources	14,375	<1	<1	14,387
Solid Waste	260	15	<1	583
Water and Wastewater	585	2	<1	686
Total	4,261	4	<1	23,196
Project and Plan level Significance Threshold				1,100
Exceeds Significance Threshold?				Yes
Service Population (1,211 residents and 4,880 employees)				6,091
Total Plan GHG Emissions by Service Population				3.80
Project level Significance Threshold ^a				4.6
Exceeds Significance Threshold?				No

Note: Columns may not total precisely due to rounding.

^a The BAAQMD Guidelines state that the plan-level service threshold of 6.6 metric tons of CO₂e per service population annually should only be applied to general plans. For other types of plans, such as redevelopment plans and specific plans, the Guidelines state that the project-level service threshold of 4.6 metric tons of CO₂e of service population annually should be used.

Source: ESA, 2015 (Appendix C)

Regulations, Policies, Programs, and Design Features Considered in the GHG Emissions Inventory

There are many ways to reduce GHG emissions generated by development under the Specific Plan through the design, construction and operations of individual development projects. Local conditions of approval, policies, programs and regulatory requirements (e.g., GHG Emissions Reduction Plan, Transportation Demand Management [TDM] Plan, Green Building Compliance, etc.) that apply to a project also combine to reduce plan level GHG emissions. Various conditions of approval, policies and regulatory requirements would be considered part of each future development project under the Specific Plan. Table 4.6-3 below provides a conservative estimate of total GHG emissions as it does not include these potential reductions which depend on the level of implementation by each individual project. However, the emissions in Table 4.6-3 do reflect regulatory efforts to control GHGs, such as the statewide Pavley fuel efficiency standard, the low carbon fuel standard, and energy efficiency measures for electricity and natural gas specified in the AB 32 Scoping Plan. These reductions also support a conservative analysis since the AB 32 reductions are based on a benchmark year of 2020, and the analysis in this EIR has a benchmark year of 2035, and further reductions would likely accrue in the additional 15 years beyond 2020.

Short-term GHG Emissions from Construction

The construction-generated GHG emissions from development under the Specific Plan were estimated based on potential land use development within the Plan Area and default construction equipment, schedule and area estimates of the CalEEMod model. Default assumptions were used since neither future projects nor the construction details for each can be known at this time. An estimated total of approximately **8,044 metric tons (MT) of CO₂e** would be emitted from construction of development under the Specific Plan through 2035.

Construction emissions are annualized because the proposed operational GHG emissions thresholds are analyzed in terms of metric tons “per year.” Assuming a 40-year life of the Specific Plan projects until development is demolished or remodeled for energy efficiency (which is the common standard currently used in practice), total construction emissions represent approximately **201 MT CO₂e annually**, over 40 years.

As previously discussed, the BAAQMD Guidelines do not include a specific threshold or methodology for assessing construction-related GHG emissions for CEQA analysis. The analysis of construction emissions only considers improvements in construction equipment exhaust emissions through manufacturer requirements and turnover. In addition to considering the CO₂e emission from construction activities, adoption and development under the Specific Plan would incorporate dust control measures recommended by BAAQMD, which also include some measures related to construction exhaust emissions. Equipment used during construction would be subject to the requirements of BAAQMD Rules and Regulations, specifically, BAAQMD Regulation 2 (Permits), Rule 1 (General Requirements) with respect to portable equipment unless exempt under Rule 2-1-105 (Exemption, Registered Statewide Portable Equipment); BAAQMD Regulation 8 (Organic Compounds), Rule 3 (Architectural Coatings); and BAAQMD Regulation 8 (Organic Compounds), Rule 15 (Emulsified and Liquid Asphalts). The construction activities of each project would adhere to each of these measures and requirements.

Long-Term Operational GHG Emissions

As introduced above, long-term operational GHG emissions associated with development under the Specific Plan include indirect emissions from mobile sources (motor vehicle trips), emissions from natural gas combustion used in non-residential buildings, emissions from electricity use in non-residential buildings (grid electricity), emissions from water conveyance and waste water treatment and conveyance, and emissions from area sources. Estimated emissions from each of these sources are reported in Table 4.6-3.

The conservative estimate presented in Table 4.6-3 does not fully factor in any reductions from design features specific to future projects in the Specific Plan since those future projects and their design details cannot be known at this time. The estimated emissions also do not include any reductions from the implementation of City policies and ordinances such as the Green Building Ordinance, but do include reductions from regulatory requirements such as implementation of Pavley GHG standards and the Low Carbon Fuel Standard (LCFS) for motor vehicles and other reduction measures from the AB 32 Scoping Plan.

As shown in Table 4.6-3 above, the Total Annual GHG emissions generated by development under the Specific Plan, excluding emissions from construction associated with that development (as required by the BAAQMD CEQA Guidelines), is approximately **23,196 MT CO₂e per year**, which exceeds the 1,100 MT CO₂e per year emissions threshold. However, factoring in the estimated service population (residents and employees) generated by development under the Specific Plan, would result in approximately **3.80 MT CO₂e per service population annually**. Based on the significance thresholds discussed above, development under the Specific Plan would have a less than significant impact because it would not exceed both of the thresholds; while it would produce total emissions that exceed 1,100 MT of CO₂e, the annual emissions per service population would be below the applicable threshold of 4.6 MT of CO₂e per service population annually.

Mitigation: None Required.

Impact GHG-2.SP: Adoption and development under the Specific Plan would not conflict with an applicable plan, policy or regulation of an appropriate regulatory agency adopted for the purpose of reducing greenhouse gas emissions (Criterion b). (Less than Significant)

GHG emissions generated by development under the Specific Plan would be less than the BAAQMD “efficiency threshold” of 4.6 metric tons of CO₂e per service population per year, as demonstrated in Table 4.6-3 and discussed in Impact GHG-1.SP, above. BAAQMD thresholds were crafted in a manner that defined a project’s (or plan’s) emissions significant if the resulting development would emit GHG emissions above the level needed to help achieve AB 32 goals. The efficiency threshold was developed for land uses that would involve population and employment growth (service population) under forecast conditions, and factored the emission rates that would accommodate growth while still allowing for consistency with the goals of AB 32 (i.e., 1990 GHG emissions levels by 2020) (BAAQMD, 2009). Since the GHG emissions generated by

development under the Specific Plan would not exceed the efficiency threshold, those levels would not be considered to impair attainment of GHG reduction goals established pursuant to AB 32 in the *Climate Change Scoping Plan*.

Further, adoption and development under the Specific Plan would be subject to all the regulatory requirements including the City's approach to reducing GHG emissions (and significant GHG emissions impacts, if applicable). This includes compliance with applicable policies in the City's General Plan as well as the Green Building Ordinance. Implementation of a TDM program, as required under Mitigation Measure AIR-1.SP and outlined in the Specific Plan would also reduce GHG emissions attributed to development under the Specific Plan. The Specific Plan further includes design guidelines and standards that could apply to buildings and landscapes that could be developed within the Plan Area and that align with energy efficiency measures in the Scoping Plan. Examples include design standards to orient buildings to maximize building energy efficiency and the use of landscaping to minimize the heat island effect. Moreover, as discussed in Impact GHG-1.SP, the annualized GHG emissions from construction of development under the Specific Plan would adhere to regulatory measures related to construction exhaust emissions and therefore would not conflict with the goals of AB 32.

Overall, adoption and development under the Specific Plan would not conflict with any applicable plans, policies or regulations adopted with the intent to reduce GHG emissions. The impact would be less than significant.

Mitigation: None Required.

Impact GHG-3.SP: Development under the Specific Plan would not result in wasteful, inefficient and unnecessary use of energy and would not require substantial additional capacity. (Criteria c and d) (Less than Significant)

Development under the Specific Plan would result in demolition and construction activities resulting in a net increase of up to approximately 450 residential units, 1.2 million square feet of commercial office space, 40,000 square feet of commercial retail space, and areas of passive and active open space areas over the planning period. Construction activities would require energy for the operation of off-road construction equipment, vendor and construction worker vehicle trips and material haul trips which would require the use of diesel fuel. Once constructed over time, the development projects under the Specific Plan would increase energy demand for electricity, natural gas, as well as gasoline for increased motor vehicle trips compared to existing conditions.

Types of land uses envisioned to occur under the Specific Plan would involve energy consumption quantities typical for the development of a mixed use waterfront neighborhood within an area of approximately 99.7 acres. No construction activities or land uses would occur that have extraordinary energy consumption. In addition, several aspects of future development in the Plan Area would help manage the amount and efficiency of energy consumption and would ensure that the related consumption is not inefficient, wasteful or unnecessary or place a significant demand on regional energy supplies. These are discussed below.

Reduced Energy Demand Strategies

Through the City's administration of the requirements of the California Building Standards Code, energy conservation requirements in Title 24, Part 6, California Code of Regulations, would be applied. The California Energy Commission (CEC) adopted new Energy Efficiency Standards for Residential and Nonresidential Buildings that went into effect on January 1, 2014. Among the reasons that the Energy Commission adopted the 2013 changes to the Building Energy Efficiency Standards was to respond to AB32 and climate change concerns. The Commission also wanted to emphasize energy efficiency measures that save energy at peak periods and seasons and to improve the quality of installation of energy efficiency measures. Projects that apply for a building permit on or after January 1, 2014, must comply with the 2013 standards. According to the California Energy Commission, the 2013 Standards are 25 percent more efficient than previous standards for residential construction and 30 percent better for nonresidential construction.

Pursuant to the California Building Standards Code and the Energy Efficiency Standards, each individual development project under the Specific Plan would be subject to the City Building Inspection Division's review of the project's design components and energy conservation measures when they are proposed for development. These measures could include: insulation; use of energy-efficient heating, ventilation and air conditioning equipment (HVAC); solar-reflective roofing materials; energy-efficient indoor and outdoor lighting systems; reclamation of heat rejection from refrigeration equipment to generate hot water; incorporation of skylights, etc.

In the coming years, a greater percentage of building energy is projected to be generated from renewable sources. Other regulations also are likely to result in more efficient use of all types of energy, and reduction in reliance on non-renewable sources of energy. These include the federal Energy Policy Act of 2005, which is designed to reduce reliance on non-renewable energy resources and provide incentives to reduce demand by means such as federal tax credits for purchasing fuel-efficient items, developing energy efficient buildings, and improving the energy efficiency of commercial buildings. This law also promotes innovation through such measures as providing tax credits for certain fuel cells, stationary microturbine power plants, and solar power equipment. Federal regulations also encourage more fuel-efficient engines that achieve higher mileage (the U.S. Department of Energy reports that fuel efficiency standards have evolved from 18 miles per gallon in 1978 to a requirement for 54.5 miles per gallon by 2025).

The Redwood City General Plan contains several policies that relate to energy conservation and would apply to development such as the proposed project. These policies promote efficient management and use of energy resources and encourage the use of greener, alternative energy sources. Several policies also address ways to reduce vehicle trips and vehicle miles traveled thereby reducing associated energy use.

Infill Development Strategies

Development under the Specific Plan would represent in-fill development, located in an urbanized area where existing infrastructure provides for efficient delivery of electricity and natural gas. Electrical and gas services to the Plan Area would be provided by Pacific, Gas & Electric (PG&E). PG&E has not identified any deficiencies in electric and gas service in the Plan Area. The Plan Area would also have connections to existing transit options, including Caltrain and bus service, thereby reducing vehicle miles travelled from Specific Plan development and the associated energy used by Specific Plan generated vehicle trips. Development and implementation of a TDM program for all projects developed under the Specific Plan (as required under Mitigation Measure AIR-1.SP) would further reduce vehicle trips generated to the area, consequently reducing the vehicle miles travelled and the energy usage associated with travel.

Existing regulations and policies combine with attributes of the Specific Plan Area's location to prevent wasteful and unnecessary. Therefore, the impact on energy consumed by development under the Specific Plan would be less than significant.

Mitigation: None Required.

4.6.6 Project-Level Impacts of the Harbor View Project

Impact GHG-1.HV: Construction and operation of the Harbor View Project would produce greenhouse gas emissions that exceed 1,100 metric tons of CO_{2e} per year, but would not exceed 4.6 metric tons of CO_{2e} per service population annually (Criterion a). (Less than Significant)

Construction and operation of the Harbor View project would generate GHG emissions. The use of fossil fuels in construction equipment used to develop the proposed project would generate GHGs such as carbon dioxide, methane and nitrous oxide. Once operational, the proposed project would generate GHG emissions primarily from motor vehicle use, gas, electricity and water use. The Harbor View project would result in a net increase in vegetated areas than currently exist on its approximately 25-acre project site.

GHG Emission Inventory for the Harbor View Project

Table 4.6-4 summarizes the GHG inventory for the Harbor View project. The table includes those emission sources that are included in the BAAQMD Guidelines, such as area sources, transportation, operational electricity consumption, solid waste disposal, operational fugitive emissions, water usage and wastewater generation. Emission sources that are not included in the BAAQMD Guidelines or relevant to the project, such as emissions generated from permitted stationary source equipment, change in vegetation sequestration, fugitive refrigeration emissions, life cycle emissions, agricultural emissions, and off road equipment emissions, are not included in the inventory.

**TABLE 4.6-4
GHG EMISSIONS INVENTORY FOR THE HARBOR VIEW PROJECT**

Emission Source	Total Emissions (MT/Year)			
	CO ₂	CH ₄	N ₂ O	Total CO ₂ e
Area Sources	<0.1	<0.1	0	0.03
Energy Sources	6,280	0.3	<0.1	6,306
Mobile Sources	15,839	0.7	0	15,854
Solid Waste	264	15.6	0	592
Water and Wastewater	635	0.3	0.2	703
Total	23,018	17	<1	23,455
Project level Significance Threshold				1,100
Exceeds Significance Threshold?				Yes
Service Population (5,600 employees)				5,600
Total Plan GHG Emissions by Service Population				4.2
Project level Significance Threshold				4.6
Exceeds Significance Threshold?				No

Note: Columns may not total precisely due to rounding.
Source: ESA, 2015 (Appendix C)

GHG Emissions from Construction of the Harbor View Project

GHG emissions from construction of the Harbor View project were estimated using CalEEMod. Project specific data provided by the sponsor was used for equipment fleet, construction schedule and phasing. Model default emission factors were used. An estimated total of approximately **3,227 metric tons (MT) of CO₂e** would be emitted from construction activities over the 19 month period during which the project will be constructed.

Construction emissions are annualized because the proposed operational GHG emissions thresholds are analyzed in terms of metric tons “per year.” Assuming a 40-year development life of the project (after which it is assumed to be demolished or remodeled for energy efficiency, which is the common standard currently used in practice, total construction emissions represent approximately **80.6 MT CO₂e annually, over 40 years**.

The BAAQMD Guidelines do not include a specific threshold or methodology for assessing construction-related GHG emissions for CEQA analysis. The analysis of construction emissions only considers improvements in construction equipment exhaust emissions through manufacturer requirements and turnover. The proposed project would incorporate dust control measures recommended by BAAQMD (Mitigation Measures AIR-1A.HV and AIR-1B.HV, see Section 4.2 *Air Quality*, in this Draft EIR), which primarily include dust abatement measures and measures to reduce construction exhaust emissions. Construction equipment would be subject to all applicable BAAQMD Rules and Regulations. (See applicable supplemental discussion under Impact GHG-1.SP, above.) Required compliance with these measures would ensure that the annualized GHG emissions from construction of the proposed project would not conflict with the goals of AB 32.

Long-Term Operational GHG Emissions of the Harbor View Project

The proposed project would also generate GHG emissions during the operational phase. These would include direct emissions from motor vehicle trips and natural gas combustion for heating in buildings; indirect emissions from electricity use in buildings (grid electricity), water conveyance and waste water conveyance and treatment; and emissions from area sources. Estimated emissions from each of these sources are reported in Table 4.6-5.

The emissions inventory in Table 4.6-5 is a conservative estimate as it does not factor in any reductions from design features specific to the proposed project. As previously discussed in this section, the estimated emissions also do not include any reductions from the implementation of City policies and ordinances such as the Green Building Ordinance, but do include reductions from regulatory requirements such as implementation of Pavley GHG standards and the LCFS for motor vehicles, and other reduction measures from the AB 32 Scoping Plan. (See applicable supplemental discussion under Impact GHG-1.SP, above.)

Table 4.6-5 shows the Total Annual GHG emissions generated by the Harbor View project, excluding emissions from construction associated with that development (as required by the BAAQMD CEQA Guidelines), is approximately **23,455 MT CO₂e per year**, which is above the 1,100 MT CO₂e per year emissions threshold. Considering the estimated service population of approximately 5,600 employees associated with the proposed project (which includes commercial uses only), the project would result in approximately **4.2 MT CO₂e per service population annually**. Therefore, the proposed project would have a less than significant impact because it would not exceed both significance thresholds; while it would produce total emissions that exceed 1,100 MT of CO₂e, the annual emissions per service population would be below the applicable threshold of 4.6 MT of CO₂e per service population annually.

Mitigation: None Required.

Impact GHG-2.HV: Development of the Harbor View Project would not conflict with an applicable plan, policy or regulation of an appropriate regulatory agency adopted for the purpose of reducing greenhouse gas emissions (Criterion b). (Less than Significant)

GHG emissions generated by the Harbor View project would be less than the BAAQMD's project level "efficiency threshold" of 4.6 metric tons of CO₂e per service population per year (see Impact GHG-1.HV, above). As described in Impact GHG-2.SP, above, given the bases upon which the efficiency threshold was developed, which factored in GHG emissions needed to help achieve AB 32 goals and considered population and employment growth, the proposed project would not be considered to impair attainment of GHG reduction goals established pursuant to AB 32 in the *Climate Change Scoping Plan*.

Further, the project would be required to comply with all applicable policies in the City's General Plan as well as the Green Building Ordinance. The project sponsor has also indicated that the project will be designed to a LEED gold standard and will meet all new state energy requirements

for both buildings and site design components. The project also includes a project-specific TDM plan that includes several potential strategies that are consistent with the measures outlined in County's TDM Guidelines and that supplement those required by Mitigation Measure AIR-1.SP for the Specific Plan. Some of the Harbor View TDM strategies are aimed at peak hour employee trips by allowing alternative work schedules and telecommuting, local shuttle and commute bus services, bicycle storage facilities, employee showers and changing rooms. Also, the proposed project includes extensive onsite amenities intended to reduce peak hour traffic by encouraging employees to arrive early or stay late.

Overall, development of the proposed project would not conflict with any applicable plans, policies or regulations adopted with the intent to reduce GHG emissions. The impact would be less than significant.

Mitigation: None Required.

Impact GHG-3.HV: Construction and operation of the Harbor View Project would not result in wasteful, inefficient and unnecessary use of energy and the Project would not require substantial additional capacity. (Criterion c and d) (Less than Significant)

During construction of the Harbor View project, energy use would be consumed primarily in the form of diesel fuel in onsite construction equipment and off site heavy duty trucks during the project's 19 month construction period. Once operational, the proposed project would involve energy demand for electricity, natural gas, as well as gasoline for motor vehicle trips attributed to the project. As discussed under Impact GHG-3.SP, energy service to the Harbor View project, which is located largely within the Specific Plan Area, will be provided by PG&E, which currently serves the area. The project sponsor estimates the total energy demand for the project to be **105,007 MW per year**. This does not include energy demand in the form of gasoline fuel used in vehicle trips generated by the project.

The overall energy usage at the project site would likely increase with the proposed 1.2 million square-foot (msf) of commercial office use compared to existing uses on the project site. However, the levels would be typical for the proposed type and size of development; no aspect of the proposed project or land use would involve higher than typical energy demands. Several features of project design discussed above for Impact GHG-2.HV would promote energy efficiency and conservation. Further, the project would be subject to all regulations and General Plan policies, as previously discussed for Impact GHG-3.SP, and more stringent fuel efficiency regulations and Title 24 standards in the future would continue to reduce the energy demand from the project. Therefore, the energy demand from the construction and operation of the Harbor View project would not result in wasteful, inefficient and unnecessary use of energy. This impact would be less than significant.

Mitigation: None Required.

4.6.7 Cumulative Impacts

Impact GHG-1.CU: Development under the Specific Plan and/or the Harbor View Place project, combined with cumulative development in the Plan Area and citywide, including past, present, existing, approved, pending, and reasonably foreseeable future development in the Plan Area and its vicinity, would result in cumulative impacts regarding GHG emissions and climate change (Criterion c). (Less than Significant)

Climate change is a global problem. GHGs are global pollutants, which are pollutants of regional and local concern. Whereas pollutants with localized air quality effects have relatively short atmospheric lifetimes (about 1 day), GHGs have long atmospheric lifetimes (1 year to several thousand years). GHGs persist in the atmosphere for long enough time periods to be dispersed around the globe. Therefore, the effects of GHGs are also experienced globally. The atmospheric concentration of GHGs determines the intensity of climate change, with current levels already leading to increases in global temperatures, sea level rise, severe weather, and other environmental impacts. The continued increase in atmospheric GHG concentrations will only worsen the severity and intensity of climate change, leading to irrevocable environmental changes. Therefore, from the standpoint of CEQA, GHG impacts to global climate change are inherently cumulative. No single project could generate enough GHG emissions to contribute noticeably to a change in the global average temperature. However, the combination of GHG emissions from past, present, and future projects contribute substantially to the phenomenon of global climate change and its associated environmental impacts.

As discussed under **Impacts GHG-1.SP and GHG-1.HV**, GHG emissions from the construction and development of the Specific Plan and the Harbor View project would be less than significant. Therefore, their contribution to the global cumulative impact would be **less than significant**.

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