

4.H GREENHOUSE GAS EMISSIONS

This section describes the affected environment and regulatory setting for greenhouse gas (GHG) emissions and climate change. It also describes the greenhouse gas emissions and climate change impacts that would result from implementation of the Seawall Lot 337 and Pier 48 Mixed-Use Project (Mission Rock Project or proposed project) and provides mitigation measures that would reduce these impacts, where applicable.

Issues identified in response to the notice of preparation (NOP) (Appendix 1) were considered in preparing this analysis. Applicable issues that were raised pertain to identifying GHG impacts and mitigation measures and including a GHG emissions analysis consistent with Assembly Bill 32, the California Global Warming Solutions Act.

ENVIRONMENTAL SETTING

GREENHOUSE GAS EMISSIONS AND CLIMATE CHANGE

Gases that trap heat in the atmosphere are referred to as GHGs because they capture heat radiated from the sun as it is reflected back into the atmosphere much like a greenhouse does. The accumulation of GHGs contributes to global climate change. The primary GHGs, or climate pollutants, are carbon dioxide (CO₂), black carbon, methane (CH₄), nitrous oxide (N₂O), ozone, and water vapor.

Individual projects contribute to the cumulative effects of climate change by emitting GHGs during demolition, construction, and operations. Although the presence of some of the primary GHGs in the atmosphere is naturally occurring, CO₂, CH₄, and N₂O are also emitted from human activities, accelerating the rate at which these compounds occur within the earth's atmosphere.

Emissions of CO₂ are largely by-products of fossil fuel combustion, whereas CH₄ results from off-gassing associated with agricultural practices and landfills. Black carbon has emerged as a major contributor to global climate change, possibly second only to CO₂. Black carbon is produced naturally and by human activities as a result of the incomplete combustion of fossil fuels, biofuels and biomass.¹ N₂O is a by-product of agricultural processes (e.g., fertilizer application), nylon production, fuel-fired power plants, nitric acid production, and vehicle emissions. Other GHGs include hydrofluorocarbons, perfluorocarbons, and sulfur

¹ Center for Climate and Energy Solutions. 2010. *What is Black Carbon?* April. Available: <http://www.c2es.org/docUploads/what-is-black-carbon.pdf>. Accessed: March 17, 2016.

hexafluoride, which are generated in certain industrial processes, such as the production of petrochemicals, aluminum, and magnesium.² GHGs are typically reported in “carbon dioxide-equivalent” measures (CO₂e).³

There is international scientific consensus that human-caused increases in GHGs contribute to global warming and, thus, climate change. Many impacts of climate change, including sea-level rise, a greater number of fires, floods, severe storms, and heat waves, already occur and will only become more severe and costly in the future.⁴ Secondary effects of climate change will most likely include impacts on agriculture, the state’s electricity system, and native freshwater fish ecosystems; an increase in the vulnerability of levees, such as in the Sacramento-San Joaquin Delta; changes in disease vectors; and changes in habitat and biodiversity.^{5,6}

GREENHOUSE GAS EMISSIONS ESTIMATES AND ENERGY PROVIDERS IN CALIFORNIA

The California Air Resources Board (ARB) estimated that, in 2010, California produced about 451.6 million gross metric tons of CO₂e (million MTCO₂e).^{7,8} ARB found that transportation is the source of 38 percent of the state’s GHG emissions, followed by electricity generation (both in-state generation and imported electricity) at 21 percent, and industrial sources at 19 percent. Commercial and residential fuel use (primarily for heating) accounted for 10 percent of GHG

² Intergovernmental Panel on Climate Change. 1996. *Revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories: Reference Manual*. Available: <http://www.ipcc-nggip.iges.or.jp/public/gl/guidelin/ch2ref1.pdf>. Accessed: September 23, 2016.

³ Because of the differential heat absorption potential of various GHGs, GHG emissions are frequently measured in “carbon dioxide equivalents,” which present a weighted average, based on each gas’s heat absorption (or “global warming”) potential.

⁴ Intergovernmental Panel on Climate Change. 2013. *Climate Change 2013: The Physical Science Basis, Working Group I Contribution to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change*. Available: http://www.climatechange2013.org/images/report/WG1AR5_ALL_FINAL.pdf. Accessed: March 17, 2016.

⁵ Intergovernmental Panel on Climate Change. 2013. *Climate Change 2013: The Physical Science Basis, Working Group I Contribution to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change*. Available: http://www.climatechange2013.org/images/report/WG1AR5_ALL_FINAL.pdf. Accessed: March 17, 2016.

⁶ California Climate Change Center. 2012. *Our Changing Climate 2012: Vulnerability and Adaptation to the Increasing Risks from Climate Change in California*. July. Available: http://www.energy.ca.gov/2012_publications/CEC-500-2012-007/CEC-500-2012-007.pdf. Accessed: March 17, 2016.

⁷ California Air Resources Board. n.d. *California Greenhouse Gas Inventory for 2000–2010— by Category, as Defined in the Scoping Plan*. Available: http://www.arb.ca.gov/cc/inventory/pubs/reports/2000_2010/ghg_inventory_scopingplan_00-10_2013-02-19.pdf. Accessed: March 17, 2016.

⁸ One metric tonne (MT) is 1,000 kilograms, or 2,204.6 pounds or 1.1 short tons. One short ton or U.S. ton is 2,000 pounds. The abbreviation for “million metric tonnes” is MMT; thus, million metric tons of CO₂ equivalent is MMTCO₂E.

emissions.⁹ In San Francisco, motorized transportation and natural gas sectors were the two largest sources of GHG emissions, accounting for approximately 42 percent (2.0 million MTCO_{2e}) and 31 percent (1.5 million MTCO_{2e}), respectively, of San Francisco's 4.75 million MTCO_{2e} emitted in 2012.¹⁰ Electricity consumption (building operations and transit) accounts for approximately 22 percent (1.0 million MTCO_{2e}) of San Francisco's GHG emissions.¹¹

Electricity in San Francisco is provided primarily by Pacific Gas & Electric (PG&E) and the San Francisco Public Utilities Commission (SFPUC). In 2012, electricity consumption in San Francisco was approximately 6.0 million megawatt-hours (MWh). Of this total, PG&E produced approximately 71 percent of electricity distributed (4.2 million MWh [about 81 percent of San Francisco's electricity-driven GHG emissions]), and the SFPUC produced approximately 16 percent of electricity distributed (0.9 million MWh [17 percent of San Francisco's electricity-driven GHG emissions]).¹²

The majority of land use projects in San Francisco are provided power by PG&E, whose 2015 power mix was as follows: 25 percent natural gas, 23 percent nuclear, 30 percent eligible renewables (described below), 6 percent large hydroelectric, and 17 percent unspecified power.^{13,14}

The SFPUC, which operates three hydroelectric power plants in association with San Francisco's Hetch Hetchy water supply system and distribution system, provides electrical power to the San Francisco Municipal Railway (Muni), city buildings, and a limited number of other commercial accounts in San Francisco. Electricity generated by the Hetch Hetchy system achieved net zero GHG emissions for 2012.¹⁵

⁹ California Air Resources Board. n.d. *California Greenhouse Gas Inventory for 2000–2010— by Category, as Defined in the Scoping Plan*. Available: http://www.arb.ca.gov/cc/inventory/pubs/reports/2000_2010/ghg_inventory_scopingplan_00-10_2013-02-19.pdf. Accessed: March 17, 2016.

¹⁰ San Francisco Department of the Environment. n.d. *Community GHG Inventory: 1990–2012*.

¹¹ San Francisco Department of the Environment. n.d. *Community GHG Inventory: 1990–2012*.

¹² San Francisco Department of the Environment. n.d. *Community GHG Inventory: 1990–2012*. (Note: The remaining electricity consumption is derived from third-party generators or other suppliers.)

¹³ Pacific Gas & Electric. n.d. *PG&E's 2015 Electric Delivery Mix*. Available: https://www.pge.com/pge_global/common/pdfs/your-account/your-bill/understand-your-bill/bill-inserts/2016/11.16_Power_Content.pdf. Accessed: January 25, 2017.

¹⁴ Beginning in 2010, transactions not specifically traceable to specific generation sources are designated as "unspecified" in accordance with AB 162's revisions to Public Utilities Code Section 398.2.

¹⁵ San Francisco Department of the Environment. n.d. *Community GHG Inventory: 1990–2012*.

REGULATORY FRAMEWORK

STATE

Executive Orders S-3-05 and B-30-15. Executive Order (EO) S-3-05 sets forth a series of target dates by which statewide emissions of GHGs need to be progressively reduced, as follows: by 2010, reduce GHG emissions to 2000 levels (approximately 457 million MTCO_{2e}); by 2020, reduce emissions to 1990 levels (approximately 427 million MTCO_{2e}); and by 2050, reduce emissions to 80 percent below 1990 levels (approximately 85 million MTCO_{2e}). As discussed in the Environmental Setting section above, California produced about 452 million MTCO_{2e} in 2010, thereby meeting the 2010 target date to reduce GHG emissions to 2000 levels.

EO B-30-15 set an additional interim statewide GHG emissions reduction target of 40 percent below 1990 levels, to be achieved by 2030. The purpose of this interim target is to ensure that California meets its target of reducing GHG emissions to 80 percent below 1990 levels by 2050.¹⁶ EO B-30-15 also requires all state agencies with jurisdiction over sources of GHG emissions to implement measures within their statutory authority to achieve reductions in GHG emissions to meet the 2030 and 2050 GHG emissions reduction targets.

Assembly Bill 32 and the California Climate Change Scoping Plan. In 2006, the California legislature passed Assembly Bill 32 (California Health and Safety Code Division 25.5, Sections 38500 et seq., or AB 32), also known as the California Global Warming Solutions Act. AB 32 requires ARB to implement emission limits, regulations, and other feasible and cost-effective measures such that statewide GHG emissions are reduced to 1990 levels by 2020.

Pursuant to AB 32, ARB adopted the Climate Change Scoping Plan (Scoping Plan) in December 2008, which outlines measures for meeting the 2020 GHG emissions reduction limits. To meet the goals of AB 32, California must reduce its GHG emissions to 30 percent below projected 2020 business-as-usual emissions levels (approximately 15 percent below 2008 levels).¹⁷ The Scoping Plan estimates that GHG emissions from transportation, energy, agriculture, forestry, and other high global warming sectors can be reduced, as shown in Table 4.H-1 on the following page.¹⁸

¹⁶ Governor's Office. 2015. *Governor Brown Establishes Most Ambitious Greenhouse Gas Reduction Target in North America*. April 29. Available: <https://www.gov.ca.gov/news.php?id=18938>. Accessed: March 17, 2016.

¹⁷ California Air Resources Board. n.d. *California's Climate Plan: Fact Sheet*. Available: http://www.arb.ca.gov/cc/facts/scoping_plan_fs.pdf. Accessed: March 17, 2016.

¹⁸ California Air Resources Board. n.d. *California's Climate Plan: Fact Sheet*. Available: http://www.arb.ca.gov/cc/facts/scoping_plan_fs.pdf. Accessed: March 17, 2016.

TABLE 4.H-1. GHG EMISSIONS REDUCTIONS FROM THE AB 32 SCOPING PLAN CATEGORIES

Scoping Plan Category	GHG Emissions Reductions (million MTCO _{2e})
Transportation	62.3
Electricity and Natural Gas	49.7
Industry	1.4
Landfill Methane Control	1
Forestry	5
High Global Warming Potential GHGs	20.2
Additional Reductions Needed to Achieve the GHG Cap	34.4
Other Recommended Measures	
Government Operations	1–2
Agriculture – Methane Capture at Large Dairies	1
Water	4.8
Green Buildings	26
Recycling/Zero Waste	9
Total Reductions Counted Towards 2020 Target	216.8–217.8

Sources: California Air Resources Board, 2008¹⁹ and 2010.²⁰

The AB 32 Scoping Plan also anticipates that actions by local governments will reduce GHG emissions because local governments have the authority to plan, zone, approve, and permit development and thereby accommodate population growth and the changing needs of their jurisdictions.²¹ The Scoping Plan also relies on the requirements of Senate Bill (SB) 375 (discussed below) to align local land use and transportation planning and reduce GHG emissions.

The Scoping Plan must be updated every 5 years to evaluate AB 32 policies and ensure that California is on track to achieve the 2020 GHG emissions reduction goal. In 2014, ARB released the First Update to the Climate Change Scoping Plan (First Update), which builds upon the initial scoping plan with new strategies and recommendations. The First Update identifies opportunities to leverage existing and new funds and drive GHG emissions reductions through strategic planning and targeted low-carbon investments. This update defines ARB's climate

¹⁹ California Air Resources Board. 2008. *Climate Change Scoping Plan*. December. Available: http://www.arb.ca.gov/cc/scopingplan/document/adopted_scoping_plan.pdf. Accessed: March 17, 2016.

²⁰ California Air Resources Board. n.d. *California's Climate Plan: Fact Sheet*. Available: http://www.arb.ca.gov/cc/facts/scoping_plan_fs.pdf. Accessed: March 17, 2016.

²¹ California Agency Air Resources Board. 2008. *Climate Change Scoping Plan*, December. Available: http://www.arb.ca.gov/cc/scopingplan/document/adopted_scoping_plan.pdf. Accessed: March 3, 2016.

change priorities for the next 5 years and sets the groundwork for reaching the long-term goals set forth in EO S-3-05. The First Update highlights California's progress toward meeting the near-term 2020 GHG emissions reduction goals in the initial scoping plan. It also evaluates actions to align the state's longer-term GHG emissions reduction strategies with other state policy priorities for water, waste, natural resources, clean energy, transportation, and land use.²²

Senate Bill 375. The Scoping Plan also relies on the requirements of SB 375 (Chapter 728, Statutes of 2008), also known as the Sustainable Communities and Climate Protection Act of 2008, to reduce carbon emissions from land use. SB 375 requires regional transportation plans developed by each of the state's 18 metropolitan planning organizations (MPOs) to incorporate a "sustainable communities strategy" (SCS) in each regional transportation plan to achieve the GHG emissions reduction targets set by ARB. For the Bay Area, the per-capita GHG emissions reduction target is 7 percent by 2020 and 15 percent by 2035 from 2005 levels.²³ Plan Bay Area, the Metropolitan Transportation Commission's regional transportation plan, adopted in July 2013, is the region's first plan that will be subject to SB 375 requirements.²⁴

Senate Bill 32. On August 24, 2016, the California Legislature passed Senate Bill 32 (California Health and Safety Code Division 25.5, Section 38566), amending the California Global Warming Solutions Act of 2006. SB 32 directs ARB to adopt, to the extent technologically feasible and cost effective, any rules and regulations necessary to achieve a reduction in statewide GHG emissions of 40 percent below 1990 levels by 2030. The passage of SB 32 codifies the 2030 interim GHG emissions reduction target established by EO B-30-15.

SB 32 was paired with AB 197 (California Government Code Article 7.6 of Chapter 1.5 of Division 2 of Title 2, California Health and Safety Code Sections 39510, 39607, 38506, 38531, and 38562.5), which became effective on January 1, 2017, in order for SB 32 to become operative. AB 197 provides additional guidance on how to achieve the reduction targets established in EO B-30-15 and SB 32.

Senate Bills 1078, 107, X1-2, and 350 and Executive Orders S-14-08 and S-21-09. California established aggressive renewable portfolio standards under SB 1078 (Chapter 516, Statutes of 2002) and SB 107 (Chapter 464, Statutes of 2006), which require retail sellers of electricity to provide at least 20 percent of their electricity from renewable sources by 2010. EO S-14-08

²² California Air Resources Board. 2014. *First Update to the Climate Change Scoping Plan*. May. Available: http://www.arb.ca.gov/cc/scopingplan/2013_update/first_update_climate_change_scoping_plan.pdf. Accessed: March 17, 2016.

²³ California Air Resources Board. 2011. Executive Order No. G-11-024, Relating to Adoption of Regional Greenhouse Gas Emission Reduction Targets for Automobiles and Light Trucks Pursuant to Senate Bill 375. February. Available: http://www.arb.ca.gov/cc/sb375/executive_order_g11024.pdf. Accessed: March 17, 2016.

²⁴ Association of Bay Area Governments and Metropolitan Transportation Commission. 2014. *Plan Bay Area*. Adopted July 18, 2013. Available: <http://planbayarea.org/plan-bay-area.html>. Accessed: March 17, 2016.

(November 2008) increased the state's renewable portfolio standard for 2020 from 20 percent to 33 percent. In September 2009, Governor Schwarzenegger continued California's commitment to the renewable portfolio standard by signing EO S-21-09, which directed ARB to enact regulations to help California meet the renewable portfolio standard of 33 percent renewable energy by 2020.²⁵

In April 2011, Governor Brown signed SB X1-2 (Chapter 1, Statutes of 2011) codifying the GHG emissions reduction goal of 33 percent by 2020 for energy suppliers. This renewable portfolio standard preempts ARB's 33 percent renewable sources electricity standard and applies to all electricity suppliers (not just retail sellers) in the state, including publicly owned utilities, investor-owned utilities, electricity service providers, and community choice aggregators. Under SB X1-2, all of these entities must adopt the new renewable portfolio standard goals of 20 percent of retail sales from renewable sources by the end of 2013, 25 percent by the end of 2016, and 33 percent by the end of 2020.²⁶ Eligible renewable sources include geothermal, ocean wave, solar photovoltaic, and wind but exclude large hydroelectric (30 MW or more). Because the SFPUC receives more than 67 percent of its electricity from large hydroelectric facilities, the remaining electricity provided by the SFPUC is required to be 100 percent renewable.²⁷ SB 350 (Chapter 547, Statutes of 2015), signed by Governor Brown in October 2015, dramatically increased the stringency of the renewable portfolio standard. SB 350 establishes a renewable portfolio standard target of 50 percent by 2030, along with interim targets of 40 percent by 2024 and 45 percent by 2027.

REGIONAL

The Bay Area Air Quality Management District (BAAQMD) is responsible for attaining and maintaining federal and state air quality standards in the San Francisco Bay Area Air Basin (SFBAAB), as established by the federal Clean Air Act (CAA) and the California Clean Air Act (CCAA), respectively. The CAA and the CCAA require plans to be developed for areas that do not meet air quality standards, generally. The most recent air quality plan, the Bay Area 2010 Clean Air Plan, includes a goal of reducing GHG emissions to 1990 levels by 2020, 40 percent below 1990 levels by 2035, and 80 percent below 1990 levels by 2050.²⁸ In addition, the

²⁵ California Public Utilities Commission. n.d. *RPS Program Overview*, 2016. Available: http://www.cpuc.ca.gov/RPS_Overview/. Accessed: March 17, 2016.

²⁶ California Public Utilities Commission. n.d. *RPS Program Overview*, 2016. Available: http://www.cpuc.ca.gov/RPS_Overview/. Accessed: March 17, 2016.

²⁷ San Francisco Public Utilities Commission. 2011. *Approval of the Enforcement Program for the California Renewable Energy Resources Act*. December 13,. Available: <https://infrastructure.sfwater.org/fds/fds.aspx?lib=SFPUC&doc=741114&data=285328890>. Accessed: March 17, 2016.

²⁸ Bay Area Air Quality Management District. 2010. *Clean Air Plan*. September. Available: <http://www.baaqmd.gov/plans-and-climate/air-quality-plans/current-plans>. Accessed: March 17, 2016.

BAAQMD established a climate protection program to reduce pollutants that contribute to global climate change and affect air quality in the SFBAAB; the program includes GHG-emissions reduction measures that promote energy efficiency, reduce vehicle miles traveled, and develop alternative energy sources.²⁹

The BAAQMD California Environmental Quality Act (CEQA) Air Quality Guidelines helps lead agencies comply with the requirements of CEQA as they pertain to potentially adverse impacts on air quality. The BAAQMD advises lead agencies to consider adopting a GHG emissions reduction strategy that is capable of meeting AB 32 goals and then reviewing projects for compliance with the GHG emissions reduction strategy as a CEQA threshold of significance.³⁰ This is consistent with the approach to analyzing GHG emissions described in CEQA Guidelines Section 15183.5.

LOCAL

San Francisco Greenhouse Gas Reduction Ordinance. In May 2008, the City and County of San Francisco (City) adopted Ordinance No. 81-08, thereby amending the San Francisco Environment Code to establish GHG emissions targets, require departmental action plans, and authorize the San Francisco Department of the Environment to coordinate efforts to meet these targets. The City ordinance establishes the following GHG emissions reduction limits and target dates: determine 1990 citywide GHG emissions by 2008, the baseline level, with reference to which target reductions are set; reduce GHG emissions by 25 percent below 1990 levels by 2017; reduce GHG emissions by 40 percent below 1990 levels by 2025; and reduce GHG emissions by 80 percent below 1990 levels by 2050.³¹ The City's GHG emissions reduction targets are consistent with—in fact, are more ambitious than—those set forth in Governor Brown's EO B-30-15, targeting a 40 percent reduction in GHGs emissions by 2025 rather than a 40 percent reduction by 2030.

San Francisco Greenhouse Gas Reduction Strategy. San Francisco has developed a number of plans and programs to reduce the city's contribution to global climate change and meet the goals of the Greenhouse Gas Reduction Ordinance. The San Francisco Planning Department's *Strategies to Address Greenhouse Gas Emissions*³² documents City actions to pursue cleaner energy,

²⁹ Bay Area Air Quality Management District. n.d. *Climate Protection Program*. Available: <http://www.baaqmd.gov/plans-and-climate/climate-protection/climate-protection-program>. Accessed: March 17, 2016.

³⁰ Bay Area Air Quality Management District. 2012. *California Environmental Quality Act Air Quality Guidelines*. May. Available: http://www.baaqmd.gov/~media/Files/Planning%20and%20Research/CEQA/BAAQMD%20CEQA%20Guidelines_Final_May%202012.ashx?la=en. Accessed: March 17, 2016.

³¹ City and County of San Francisco. 2008. *Greenhouse Gas Emissions Targets and Departmental Action Plans*. May 13. Available: <http://environment.sanfranciscocode.org/9/>. Accessed: March 17, 2016.

³² San Francisco Planning Department. 2010. *Strategies to Address Greenhouse Gas Emissions*. November. Available: http://sfmea.sfplanning.org/GHG_Reduction_Strategy.pdf. Accessed: March 17, 2016.

energy conservation, alternative transportation, and solid waste policies. For instance, the City has implemented mandatory requirements and incentives that have reduced GHG emissions measurably. These include, but are not limited to, increasing the energy efficiency of new and existing buildings, installing solar panels on building roofs, implementing a green building strategy, adopting a zero waste strategy, adopting a construction and demolition debris recovery ordinance, creating a solar energy generation subsidy, incorporating alternative-fuel vehicles in the City's transportation fleet (including buses), and adopting a mandatory recycling and composting ordinance. The strategy also includes 30 specific regulations for new development to reduce a project's GHG emissions. The City's GHG emissions reduction actions resulted in a 23.3 percent reduction in GHG emissions in 2012 compared with 1990 levels,³³ thereby exceeding the 2020 reduction goals in the BAAQMD's Bay Area 2010 Clean Air Plan, EOs S-3-05 and B-30-15, and AB 32.

ENVIRONMENTAL IMPACTS

This section describes the impact analysis related to GHG emissions for the proposed project. It describes the methods used to determine the impacts of the proposed project and lists the thresholds used to conclude whether an impact would be significant. Measures to mitigate (i.e., avoid, minimize, rectify, reduce, eliminate, or compensate for) significant impacts accompany the discussion of each identified significant impact.

SIGNIFICANCE CRITERIA

The thresholds for determining the significance of impacts in this analysis are consistent with the environmental checklist in Appendix G of the State CEQA Guidelines, which has been adopted and modified by the San Francisco Planning Department. The proposed project would be considered to have a significant effect if it would result in any of the conditions listed below.

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

METHODS FOR ANALYSIS

GHG emissions and global climate change represent cumulative impacts of human activities and development projects locally, regionally, nationally, and worldwide. GHG emissions cumulatively contribute to the significant adverse environmental impacts of global climate

³³ ICF International. 2015. *Technical Review of the 2012 Community-wide Inventory for the City and County of San Francisco*. January 21.

change. No single project could generate enough GHG emissions to noticeably change the global average temperature; instead, the combination of GHG emissions from past, present, and future projects and activities have contributed and will contribute to global climate change and its associated environmental impacts.³⁴

The BAAQMD has prepared guidelines and methodologies for analyzing GHGs. These guidelines are consistent with CEQA Guidelines Sections 15064.4 and 15183.5, which address the analysis and determination of significant impacts from a proposed project's GHG emissions. CEQA Guidelines Section 15064.4 allows lead agencies to rely on a qualitative analysis or performance-based standards to describe, calculate, or estimate GHG emissions resulting from a project. CEQA Guidelines Section 15183.5 allows for public agencies to analyze and mitigate GHG emissions as part of a larger plan for the reduction of GHGs and describes the required contents of such a plan. Accordingly, San Francisco has prepared its own GHG emissions reduction strategy. As described above, San Francisco's *Strategies to Address Greenhouse Gas Emissions*³⁵ presents a comprehensive assessment of policies, programs, and ordinances that collectively represent San Francisco's Greenhouse Gas Reduction Strategy, in compliance with the BAAQMD and CEQA Guidelines. The BAAQMD has reviewed and concurred that the City's emission reduction strategy meets the BAAQMD's criteria for a qualified GHG emissions reduction strategy. In doing so, the BAAQMD concluded that "Aggressive GHG reduction targets and comprehensive strategies like San Francisco's help the Bay Area move toward reaching the state's AB 32 goals, and also serve as a model from which other communities can learn."³⁶ In addition, San Francisco's GHG emissions reduction goals are consistent with, or

³⁴ Climate change is a global problem, and GHGs are global pollutants, unlike criteria air pollutants (such as ozone precursors), which are primarily pollutants of regional and local concern. Given their long atmospheric lifetimes, GHGs emitted by countless sources worldwide accumulate in the atmosphere. No single emitter of GHGs is large enough to trigger global climate change on its own. Rather, climate change is the result of the individual contributions of countless past, present, and future sources. Therefore, GHG impacts are inherently cumulative.

³⁵ San Francisco Planning Department. 2010. *Strategies to Address Greenhouse Gas Emissions*. November. Available: http://sfmea.sfplanning.org/GHG_Reduction_Strategy.pdf. Accessed: March 3, 2016.

³⁶ San Francisco Planning Department. 2010. *Letter Regarding Draft GHG Reduction Strategy*. October 28. Available: http://www.sf-planning.org/ftp/files/MEA/GHG-Reduction_Letter.pdf. Accessed: March 17, 2016.

more aggressive than, the long-term goals established under EOs S-3-05³⁷ and B-30-15^{38,39} as well as SB 32.⁴⁰ Therefore, projects that are consistent with San Francisco's Greenhouse Gas Reduction Strategy would not result in GHG emissions that would have a significant effect on the environment and would not conflict with state, regional, or local GHG reduction plans and regulations.

As recently stated by the Court of Appeal of the State of California, First Appellate District: "At the heart of San Francisco's greenhouse gas strategy are measures, to be implemented on a project-by-project basis, that are designed to achieve the specified city-wide emission level. These measures focus on four primary areas for reducing greenhouse gas emissions: transportation, energy efficiency, renewable energy, and solid waste. The greenhouse gas strategy includes 42 specific regulations to reduce the emissions from new developments, such as energy efficiency standards and a construction debris recovery ordinance. The strategy includes measures such as tree planting and installation of bicycle racks, the effects of which plaintiffs minimize. But the greenhouse gas strategy also contains stringent energy usage and other regulations to reduce greenhouse gas emissions. San Francisco successfully reduced greenhouse gas emissions by 14.5 percent between 1990 and 2010 despite a population increase of 11 percent during that time period."⁴¹

The following analysis of the proposed project's impact on climate change focuses on its contribution to cumulatively significant GHG emissions. Because no individual project could emit GHGs at a level that could result in a significant impact on the global climate, this analysis is presented in a cumulative context. This section does not include an individual, project-specific impact statement.

³⁷ Executive Order S-3-05 sets forth a series of target dates by which statewide emissions of GHGs need to be progressively reduced, as follows: by 2010, reduce GHG emissions to 2000 levels (approximately 457 million MTCO₂e); by 2020, reduce emissions to 1990 levels (approximately 427 million MTCO₂e); and by 2050, reduce emissions to 80 percent below 1990 levels (approximately 85 million MTCO₂e).

³⁸ Office of the Governor. 2015. *Executive Order B-30-15*. April 29. Available: <https://www.gov.ca.gov/news.php?id=18938>. Accessed: March 3, 2016. Executive Order B-30-15 sets a state GHG emissions reduction goal of 40 percent below 1990 levels by 2030.

³⁹ San Francisco's GHG reduction goals are codified in Section 902 of the Environment Code and include (i) by 2008, determine city GHG emissions for 1990; (ii) by 2017, reduce GHG emissions by 25 percent below 1990 levels; (iii) by 2025, reduce GHG emissions by 40 percent below 1990 levels; and by 2050, reduce GHG emissions by 80 percent below 1990 levels.

⁴⁰ Senate Bill 32 amends California Health and Safety Code Division 25.5 (also known as the California Global Warming Solutions Act of 2006) by adding Section 38566, which states that statewide GHG emissions shall be reduced by 40 percent below 1990 levels by 2030.

⁴¹ *Mission Bay Alliance v. Office of Cmty. Investment & Infrastructure*, No. A148865, Cal. Ct. App. (Nov. 29. 2016).

LAND USE ASSUMPTIONS

In the context of typical urban residential, commercial, or mixed-use development projects, impacts related to GHG emissions occur because of an increase in population and/or employment, which, in turn, results in an increase in the number of vehicle trips and additional demand for utilities, including commercial and residential energy and service systems. The analysis regarding changes related to population and employment induced by the proposed project is presented in Section 4.C, *Population and Housing*.

Because of the different development scenarios considered under the High Residential and High Commercial land use assumptions, the number of employees and residents would differ. Under the High Commercial Assumption, the 1,000 housing units that would be constructed would result in approximately 2,350 onsite residents and approximately 6,050 people would be employed onsite at the project site. Under the High Residential Assumption, the 1,600 proposed housing units would house an onsite residential population of 3,760, and approximately 4,510 people would be employed onsite at the project site.

Although construction activity is anticipated to be similar under both assumptions, differences in the gross square footage of residential and commercial land uses would influence long-term operational emissions. More housing is proposed under the High Residential Assumption, which could result in higher GHG emissions from operational sources than the High Commercial Assumption. Conversely, more commercial uses are proposed under the High Commercial Assumption, which could result in higher mobile-source emissions. Given the differences in the land use scenarios, operational impacts under both assumptions are evaluated in this section.

IMPACTS AND MITIGATION MEASURES

Impact GG-1. The proposed project would generate GHG emissions but not at levels that would result in a significant impact on the environment or conflict with any policy, plan, or regulation adopted for the purpose of reducing GHG emissions. (Less than Significant)

Mixed-use development projects could contribute to the cumulative effects of climate change by directly or indirectly emitting GHGs during construction and operational phases. Direct operational emissions from residential and commercial uses could include GHG emissions from new vehicle trips and area sources (e.g., natural gas combustion). Indirect emissions from residential and commercial uses could include emissions from electricity providers; the energy required to pump, treat, and convey water; and emissions associated with waste removal, disposal, and landfill operations.

The proposed project would increase the intensity of use at the project site by introducing new residential, commercial, parking, production, industrial, and active/retail uses. As a result, the proposed project would contribute to annual long-term increases in GHG emissions by

increasing the number of vehicle trips (i.e., mobile sources). In addition, residential, commercial/office, and retail operations at Seawall Lot 377 and industrial/production, office, retail, restaurant, and event-related operations at Pier 48 would result in an increase in energy use, water use, wastewater treatment, and solid waste disposal. Construction activities that generate mobile-source emissions, consume energy, use water, or generate waste would also result in temporary increases in GHG emissions. In terms of GHG emissions associated specifically with construction and operations of Pier 48, these would be similar to those associated with the rest of the project site (Seawall Lot 337). These sources would include energy in the form of natural gas, mobile sources associated with automotive trips by users of the site as well as from truck deliveries, waste- and water-related GHG emissions, and emissions associated with emergency generators. Pier 48 GHG emissions would be the same under both land use assumptions.

San Francisco has developed a number of plans and programs to reduce the city's contribution to global climate change and meet the goals of the City's Greenhouse Gas Reduction Ordinance. San Francisco's Greenhouse Gas Reduction Strategy identifies City actions to pursue cleaner energy, energy conservation, and alternative transportation and solid waste policies. The proposed project would be subject to San Francisco regulations adopted to reduce GHG emissions, as identified in the San Francisco Greenhouse Gas Reduction Strategy and Table 4.H-2, on the following page.⁴² As shown in the table and discussed below, compliance with regulations that apply to project-related activities would reduce project GHG emissions related to transportation, energy use, waste disposal, wood burning, and the use of refrigerants.

Compliance with the City's Commuter Benefits Program, Emergency Ride Home Program, Transportation Sustainability Fee (TSF), Jobs-Housing Linkage Program, transportation management programs, bicycle parking requirements, low-emissions car parking requirements, and car-sharing requirements would reduce the proposed project's transportation-related emissions. These regulations are designed to reduce GHG emissions from single-occupancy vehicles by promoting the use of alternative transportation modes with zero or lower GHG emissions on a per capita basis. Project compliance with these strategies, policies, and requirements is shown above in Table 4.H-2.

⁴² San Francisco Planning Department. 2016. *Greenhouse Gas Analysis: Compliance Checklist for Seawall Lot 337 and Pier 48 Mixed-Use Project*. March 23.

TABLE 4.H-2. COMPLIANCE CHECKLIST TABLE FOR GREENHOUSE GAS ANALYSIS

Code	Ordinance	Requirements	Project Compliance	Remarks
Transportation and Land Use				
SF Environment Code, Section 427(b)	Commuter Benefits Ordinance	All employers of 20 or more employees must provide at least one of the following benefit programs: (1) A Pre-Tax Election consistent with 26 U.S.C. § 132(f), allowing employees to elect to exclude from taxable wages and compensation employee commuting costs incurred for transit passes or vanpool charges, OR (2) Employer-Paid Benefit whereby the employer supplies a transit or vanpool subsidy for each Covered Employee. The subsidy must be at least equal in value to the current cost of the Muni Fast Pass, including BART travel, OR (3) Employer-Provided Transportation furnished by the employer at no cost to the employee in a vanpool or bus or similar multi-passenger vehicle operated by or for the employer.	<input checked="" type="checkbox"/> Project Complies <input type="checkbox"/> Not Applicable <input type="checkbox"/> Project Does Not Comply	Any and all construction contractors and end-user employers occupying the buildings, including Pier 48, (e.g., commercial retail, homeowners association [HOA]) would comply with relevant commuter benefit programs to the extent applicable and required.
SF Environment Code, Section 427(d)	Emergency Ride-Home Program	All San Francisco companies are eligible to register for the Emergency Ride-Home Program. Employers must register annually. Once registered, all San Francisco employees of the company are eligible to request reimbursement.	<input checked="" type="checkbox"/> Project Complies <input type="checkbox"/> Not Applicable <input type="checkbox"/> Project Does Not Comply	Any and all construction contractors and end-user employers occupying the buildings at the project site, including Pier 48, would be encouraged to enroll in the Emergency Ride-Home Program to the extent applicable and required.
SF Planning Code, Section 163	Transportation Management Programs	Requires new buildings or additions over a specified size (buildings > 25,000 gross square feet (gsf) or 100,000 gsf, depending on the use and zoning district) within certain zoning districts to implement a Transportation Management Program and provide onsite transportation management brokerage services for the life of the building.	<input type="checkbox"/> Project Complies <input checked="" type="checkbox"/> Not Applicable <input type="checkbox"/> Project Does Not Comply	The project site is not within the C-3, C-3-O(SD), SSO, or MUO District. As such, Section 163 does not apply to the project. However, a Transportation Demand Management Program (TDMP) would be prepared

Code	Ordinance	Requirements	Project Compliance	Remarks
SF Planning Code, Section 411A	Transportation Sustainability Fee	Establishes citywide fees for all new development. Fees based on a proportion of the gross area of the project and the type of use. Fees are paid to the Department of Building Inspection and provided to the San Francisco Municipal Transportation Agency to improve local transit services.	<input checked="" type="checkbox"/> Project Complies <input type="checkbox"/> Not Applicable <input type="checkbox"/> Project Does Not Comply	<p>for the project, which would provide a comprehensive strategy to manage the transportation demands created by the project. Among other TDMP strategies, the TDMP would require the appointment of a transportation coordinator to manage the transportation needs of project residents, visitors, and employees; educate the public about the transportation system serving the project area; implement and administer various TDMP elements; coordinate with the City, transit agencies, and other nearby developments; and manage and coordinate transportation needs for onsite special events. Therefore, the project meets the intent of this ordinance.</p> <p>The project, including Pier 48, would include approximately 1.2 to 1.6 million gsf of commercial and active/retail space and approximately 1.1 to 1.6 million gsf of residential space. Planning Code Section 411A establishes a Transportation Sustainability Fee (TSF), which applies to residential and non-residential uses and supersedes the</p>

Code	Ordinance	Requirements	Project Compliance	Remarks
SF Planning Code, Section 413	Jobs-Housing Linkage Program	The Jobs-Housing Program found that new large-scale developments attract new employees to the city who require housing. The program is designed to provide housing for new uses within San Francisco, thereby allowing employees to live close to their place of employment. The program requires a developer to pay a fee or contribute land suitable for housing to a housing developer or pay an in-lieu fee.	<input checked="" type="checkbox"/> Project Complies <input type="checkbox"/> Not Applicable <input type="checkbox"/> Project Does Not Comply	<p>application of the Transit Impact Development Fee (TIDF) for such uses. However, under the grandfathering provisions of Section 411A.3(e), the project sponsor would be required to pay 50% of the TSF for the residential portion of the project and the applicable TIDF rate for the non-residential portions of the project. The project sponsor would pay the applicable TIDF and TSF as required pursuant to Section 411A.3(e).</p> <p>The proposed project would include residential units on site. The project sponsor would pay a fee or contribute land suitable for housing to a housing developer or pay an in-lieu fee, as applicable.</p>
SF Planning Code, Section 155.4	Showers and Lockers	Requires showers and clothes lockers for short-term use by tenants or employees of the building in new and expanded buildings, change of occupancy, or increase of use intensity. Number of showers based on size and use of building (see Section 155.4(c)).	<input checked="" type="checkbox"/> Project Complies <input type="checkbox"/> Not Applicable <input type="checkbox"/> Project Does Not Comply	<p>The site would meet the San Francisco Planning Code requirement to provide shower and clothes locker facilities for tenants and employees in buildings with certain uses. Offices (including child-care centers, business services, and light manufacturing facilities) that exceed 10,000 gsf must provide at least one shower</p>

Code	Ordinance	Requirements	Project Compliance	Remarks
SF Planning Code, Section 155.2 and CALGreen, Section 5.106.4	Bicycle Parking	<p>Requires bicycle facilities for new and expanded buildings, new dwelling units, change of occupancy, increase of use intensity, and added parking capacity/area. Refer to Section 155.2 for requirements by use.</p> <p>Projects that add 10 or more tenant vehicular parking spaces: meet Planning Code Section 155 and CALGreen Section 5.106.4 (provide short- and long-term [secure] bicycle parking for at least 5% of motorized vehicle capacity), whichever is stricter.</p>	<input checked="" type="checkbox"/> Project Complies <input type="checkbox"/> Not Applicable <input type="checkbox"/> Project Does Not Comply	<p>and six clothes lockers; for facilities between 20,000 and 50,000 gsf, the building must provide two showers and 12 lockers. Those exceeding 50,000 gsf must provide four showers and 24 lockers. Retail stores and restaurants exceeding 25,000 gsf must also provide one shower and six clothes lockers; those exceeding 50,000 gsf must provide at least two showers and 12 lockers.</p> <p>The project, including Pier 48, would provide bicycle parking spaces in accordance with the San Francisco Planning Code, Section 155.2, and CALGreen, Section 5.106.4.</p> <p>For the High Commercial Assumption, the minimum number of bicycle parking spaces would be:</p> <ul style="list-style-type: none"> • 710 Class I bicycle spaces • 371 Class II bicycle spaces <p>For the High Residential Assumption, the minimum number of bicycle parking spaces would be:</p> <ul style="list-style-type: none"> • 765 Class I bicycle spaces • 388 Class II bicycle spaces

Code	Ordinance	Requirements	Project Compliance	Remarks
CALGreen, Section 5.106.5	Requirements for Fuel Efficient Vehicle and Carpool Parking	Requires new large commercial projects, large first-time commercial interior projects, and major commercial interior projects to provide designated parking for low-emitting, fuel-efficient, and carpool/vanpool vehicles. Refer to Table 5.106.5.2 to determine number of spaces. If more than 200 spaces, mark 8% of parking spaces for such vehicles. For non-residential additions and interior alterations to existing buildings, the regulation applies for projects that would add 10 or more parking spaces to the project site.	<input checked="" type="checkbox"/> Project Complies <input type="checkbox"/> Not Applicable <input type="checkbox"/> Project Does Not Comply	<p>The project would provide designated parking spaces for low-emitting, fuel efficient, and carpool/vanpool vehicles in accordance with the Port of San Francisco Green Building Standards Code.</p> <p>Both scenarios include 3,100 total parking spaces. For 3,100 spaces, the project would provide 8% or 248 designated parking spaces for low-emitting, fuel efficient, and carpool/vanpool vehicles.</p>
SF Planning Code, Section 166	Car-Sharing Requirements	New residential projects or renovation of buildings being converted to residential uses within most of the City's mixed-use and transit-oriented residential districts are required to provide car-share parking spaces (refer to Table 166 in the Planning Code).	<input checked="" type="checkbox"/> Project Complies <input type="checkbox"/> Not Applicable <input type="checkbox"/> Project Does Not Comply	<p>The project would provide car-share parking spaces in accordance with the San Francisco Planning Code, Section 166.</p> <p>For the High Commercial Assumption, the minimum number of car-share spaces would be 38 (31 for office and seven for residential uses).</p> <p>For the High Residential Assumption, the minimum number of car-share spaces would be: 31 (23 for office and eight for residential uses).</p>

Code	Ordinance	Requirements	Project Compliance	Remarks
Energy Efficiency Sector				
Port of San Francisco Green Building Standards Code, Sections 4.103, 5.103	Requirements for Energy Efficiency	<p>4.103.1: New residential buildings must be GreenPoint Rated and applicants must submit documentation demonstrating that a minimum of 75 GreenPoints from the GreenPoints Single Family New Construction Checklist or the GreenPoints Multifamily New Construction Checklist will be achieved. Alternatively, this rating requirement may be met by obtaining LEED® Silver certification.</p> <p>5.103.1: Permit applicants for new large commercial buildings must submit documentation to achieve LEED® “Gold” certification.</p> <p>5.103.1.4 Commissioning. Permit applicants for new large commercial buildings must submit documentation verifying that the facility has been or will meet the criteria necessary to achieve CALGreen section 5.410.2 and Option 1 of LEED EA credit (Enhanced Commissioning), in addition to LEED EA Prerequisite (Fundamental Commissioning) and Verification.</p>	<input checked="" type="checkbox"/> Project Complies <input type="checkbox"/> Not Applicable <input type="checkbox"/> Project Does Not Comply	The project would comply with the Port’s Green Building Standard by attaining a LEED Gold rating for non-residential buildings and a LEED Silver rating for residential buildings.
Port of San Francisco Green Building Standards Code Sections 5.410.2, 5.410.4; CALGreen, Sections 5.410.2, 5.410.4	Commissioning of Building Energy and Water Systems	<p>New non-residential buildings and alterations to non-residential buildings must conduct design and construction commissioning to verify that energy- and water-using components meet the owner’s or owner representative’s project requirements. Commissioning requirements apply to all building operating systems covered by Title 24, Part 6, as well as process equipment and controls and renewable energy systems.</p> <ul style="list-style-type: none"> Non-residential new buildings and alterations < 25,000 and ≥ 10,000 gsf: commission all energy systems (CALGreen, Section 5.410.2) Non-residential new buildings and alterations less than 10,000 gsf, complete testing and adjusting of energy systems (CALGreen, Section 5.410.4) 	<input checked="" type="checkbox"/> Project Complies <input type="checkbox"/> Not Applicable <input type="checkbox"/> Project Does Not Comply	The project, including Pier 48, would comply with the CALGreen by attaining LEED Gold rating for all non-residential buildings and a LEED Silver rating for all residential buildings. In addition, the project would commission building energy systems to meet LEED EA c3 and LEED prerequisite EA p1.

Code	Ordinance	Requirements	Project Compliance	Remarks
SF Building Code - Housing Code, Chapter 12	Residential Energy Conservation Ordinance	<p>Prior to transfer of title as a result of sale (including condominiums), for residential properties that received a building permit prior to July 1978, the seller must provide the buyer with a certificate of compliance, and the certificate must be recorded with the San Francisco Recorder’s Office. To comply, install the following, as applicable:</p> <ul style="list-style-type: none"> • Attic insulation, weather stripping for all doors leading from heated to unheated areas, insulation for hot-water heaters and hot-water pipes, and low-flow showerheads. Also, caulking and sealing any openings or cracks in the building’s exterior and insulating accessible heating and cooling ducts. Apartment buildings and hotels are also required to insulate steam and hot-water pipes and tanks, clean and tune their boilers, repair boiler leaks, and install a time clock on the burner. • Maximum required expenditure: \$1,300 for one- or two-unit dwellings; for buildings with three or more units, 1% of the assessed value or purchase, price as applicable. Although these requirements apply to existing buildings, compliance must be completed through the Department of Building Inspection, for which a discretionary permit (subject to CEQA) would be issued. 	<input type="checkbox"/> Project Complies <input checked="" type="checkbox"/> Not Applicable <input type="checkbox"/> Project Does Not Comply	<p>The project would not contain residential properties that received a building permit prior to 1978.</p>
SF Environment Code, Chapter 20	Existing Commercial Buildings Energy Performance Ordinance	<p>Owners of nonresidential buildings in San Francisco with ≥ 10,000 gsf that is heated or cooled must conduct energy efficiency audits and annually measure and disclose energy performance. Certain exceptions apply for new construction or if specified performance criteria are met.</p>	<input checked="" type="checkbox"/> Project Complies <input type="checkbox"/> Not Applicable <input type="checkbox"/> Project Does Not Comply	<p>The project, including Pier 48, would include nonresidential space greater than 10,000 gsf, and therefore would comply with all standards in the San Francisco Existing Commercial Buildings Energy Performance Ordinance as applicable and/or required.</p>

Code	Ordinance	Requirements	Project Compliance	Remarks
CALGreen, Section 5.106.8	Light Pollution Reduction	For nonresidential projects, comply with lighting power requirements in the California Energy Code, CCR Part 6. Meet California Energy Code minimum requirements for Lighting Zones 1–4, with backlight/uplight/glare ratings meeting CALGreen Table 5.106.8.	<input checked="" type="checkbox"/> Project Complies <input type="checkbox"/> Not Applicable <input type="checkbox"/> Project Does Not Comply	The project, including Pier 48, would include nonresidential uses and would comply with the lighting power requirements of the California Energy Code, CCR Part 6.
SF Environment Code, Chapter 26, SF Planning Code, Section 149	Better Roof Requirements	<p>All new residential buildings between four and 10 stories must install solar photovoltaic systems and/or solar thermal systems in the solar zone, as required by Title 24, Part 6, Section 110.10</p> <p>This section has been added by Ordinance 71-16 (approved May 2016) and applies to projects beginning January 1, 2017.</p> <p>Projects with a gross floor area of at least 2,000 square feet, with 10 or fewer occupied floors, and disturbing 5,000 square feet of ground surface or more may install a living roof as an alternative to the solar roof requirement, pursuant to SF Planning Code Section 149.</p>	<input checked="" type="checkbox"/> Project Complies <input type="checkbox"/> Not Applicable <input type="checkbox"/> Project Does Not Comply	The project, including Pier 48, would comply with the Better Roof Requirements or equivalent as required by the San Francisco Environment Code, Chapter 26 and San Francisco Planning Code Section 149.
SF Administrative Code, Chapter 63	Water Efficient Irrigation Ordinance	<p>Projects that include 500 square feet or more of new or modified landscape are subject to this ordinance, which requires that landscape projects be installed, constructed, operated, and maintained in accordance with rules adopted by the SFPUC that establish a water budget for outdoor water consumption.</p> <p>Tier 1: 1,000 square feet <= project’s modified landscape < 2,500 square feet</p> <p>Tier 2: (A) New project landscape area is greater than or equal to 500 square feet or (B) the project’s modified landscape area is greater than or equal to 2,500 square feet. Note: Tier 2 compliance requires the services of landscape professionals.</p> <p>See the SFPUC web site for information regarding exemptions to this requirement: www.sfwater.org/landscape.</p>	<input checked="" type="checkbox"/> Project Complies <input type="checkbox"/> Not Applicable <input type="checkbox"/> Project Does Not Comply	<p>The project would include new parks, landscaped green space, and additional landscape features. The proposed project would comply with the San Francisco Water-Efficient Irrigation Ordinance.</p> <p>A landscape professional would be retained to implement the requirements of this ordinance per Tier 2 design controls.</p>

Code	Ordinance	Requirements	Project Compliance	Remarks
SF Health Code, Article 12C	Alternate Water Sources for Non-Potable Applications	Large development projects (equal to or greater than 250,000 gsf) should meet toilet and urinal flushing and irrigation demands through the collection and reuse of available onsite rainwater, graywater, and foundation drainage to the extent required by application of the water budget documentation developed for each development project. Small development projects should use the water budget calculator, as provided by the general manager's rules, to prepare a water budget assessing the amount of rainwater, graywater and foundation drainage produced onsite and the planned toilet and urinal flushing and irrigation demands. Prior to initiating installation of any alternate water source project, project applicants shall submit to the director an application for permits to operate alternate water source systems.	<input checked="" type="checkbox"/> Project Complies <input type="checkbox"/> Not Applicable <input type="checkbox"/> Project Does Not Comply	The project would exceed 250,000 gsf and therefore comply with the Alternate Water Sources for Non-Potable Application Ordinance.
Zero Waste				
SF Environment Code, Chapter 19 CALGreen, Section 5.410.1	Mandatory Recycling and Composting Ordinance	<p>All persons in San Francisco are required to separate their refuse into recyclables, compostables, and trash and place each type of refuse in a separate container designated for disposal of that type of refuse (San Francisco Environment Code, Chapter 19).</p> <p>All new construction, renovation, and alterations must provide for the storage, collection, and loading of recyclables, compost, and solid waste in a manner that is convenient for all users of the building (San Francisco Environment Code, Chapter 19, and CALGreen, Section 5.410.1)</p>	<input checked="" type="checkbox"/> Project Complies <input type="checkbox"/> Not Applicable <input type="checkbox"/> Project Does Not Comply	The project, including Pier 48, would comply with San Francisco Green Building Requirements for solid waste by providing space for recycling, composting, and trash storage, collection, and loading that is convenient for all users of the buildings.
SF Environment Code, Chapter 14	Construction and Demolition Debris Recovery Ordinance	<p>Applies to all projects: No construction and demolition material may be taken to a landfill or placed in the garbage. All mixed debris must be transported by a registered hauler to a registered facility to be processed for recycling. Source-separated material must be taken to a facility that recycles or reuses those materials.</p> <p>Additionally, projects that include full demolition of an existing structure must submit a waste diversion plan to the Director of the Department Environment. The plan</p>	<input checked="" type="checkbox"/> Project Complies <input type="checkbox"/> Not Applicable <input type="checkbox"/> Project Does Not Comply	Disposal of construction and demolition material would comply with the Construction and Demolition Debris Recovery Ordinance.

Code	Ordinance	Requirements	Project Compliance	Remarks
		must provide for a minimum of 65% diversion from landfill of construction and demolition debris, including materials source separated for reuse or recycling.		
Port of San Francisco Green Building Standards Code, Sections 5.103.1.3.1 and 4.103.2.3	Construction and Demolition Debris Recycling Requirements	In addition to complying with the Construction and Demolition Debris Recovery Ordinance, new commercial buildings of ≥ 25,000 gsf and new residential buildings of four or more occupied floors must develop a plan to divert a minimum of 75% of construction and demolition debris from the landfill and meet LEED® Materials and Resources Credit 2.	<input checked="" type="checkbox"/> Project Complies <input type="checkbox"/> Not Applicable <input type="checkbox"/> Project Does Not Comply	The project would include a new commercial building greater than 25,000 gsf. Construction and demolition activities associated with the project would comply with the Port of San Francisco Green Building Requirements for Construction and Demolition Debris Recycling.
Environment/Conservation Sector				
SF Public Works Code, Section 806(d)	Street Tree Planting Requirements	Public Works Code, Section 806(d) requires projects that include new construction, significant alterations, new curb cuts, a new garage, or new dwelling units to plant a 24-inch box tree for every 20 feet along the property's street frontage.	<input checked="" type="checkbox"/> Project Complies <input type="checkbox"/> Not Applicable <input type="checkbox"/> Project Does Not Comply	The project would comply with Planning Code Section 138.1 by placing new trees along the street frontage, providing sidewalk landscaping, and/or paying in-lieu fees as appropriate given the project site's constraints and design objectives.
CALGreen, Sections 5.508.1.-5.508.2	Enhanced Refrigerant Management	Commercial buildings must not install equipment that contains chlorofluorocarbons (CFCs) or halons. Applies to new construction and all alterations. For new commercial refrigeration systems containing refrigerants with a Global Warming Potential (GWP) of 150 or greater installed in food stores with 8,000 gsf or more of refrigerated display cases, walk-in coolers, or freezers connected to remote compressor units or condensing units, piping shall meet all requirements of Section 5.508.2 (all sections) and shall undergo pressure testing during installation prior to evacuation and charging. System shall stand unaltered for 24 hours with no more than a 1 pound pressure change from 300 psig.	<input checked="" type="checkbox"/> Project Complies <input type="checkbox"/> Not Applicable <input type="checkbox"/> Project Does Not Comply	The project, including Pier 48, would comply with all standards pursuant to enhanced refrigerant management as applicable and/or required.

Code	Ordinance	Requirements	Project Compliance	Remarks
CALGreen, Sections 5.504 (non-residential) and 4.504 (residential)	Low-emitting Adhesives, Sealants, Caulks, Paints, and Coatings	<p>Paints and Coatings – Comply with VOC limits in the California Air Resources Board’s Architectural Coatings Suggested Control Measure. Aerosol paints and coatings should meet BAAQMD VOC limits (Regulation 8, Rule 49) and product-weighted MIR limits for reactive organic compounds (CCR Title 17, Section 94520).</p> <p>Adhesives, Sealants, and Caulks – Comply with VOC limits in SCAQMD Rule 1168 and VOC limits and California Code of Regulations, Title 17, for aerosol adhesives.</p> <p>See CALGreen Tables 4.504.1–4.504.3 for details for residential and Tables 5.504.1–5.504.3 for non-residential.</p>	<input checked="" type="checkbox"/> Project Complies <input type="checkbox"/> Not Applicable <input type="checkbox"/> Project Does Not Comply	The project, including Pier 48, would comply with all standards for low-emitting adhesives, sealants, caulks, paints, and coatings as applicable and/or required in CALGreen 5.504 and 4.504.
CALGreen, Sections 5.504 (non-residential) and 4.504 (residential)	Carpet, Wood, and Flooring	<p>All carpet cushions must meet Carpet and Rug Institute Green Label standards, and indoor carpet adhesive and carpet pad adhesive must not exceed 50 g/L VOC content (Tables 4.504.1 and 5.504.4.1). In addition, all carpet must meet one of the following:</p> <ol style="list-style-type: none"> (1) Carpet and Rug Institute Green Label Plus Program, (2) California Department of Public Health Standard Practice for the Testing of VOCs (Specification 01350), (3) NSF/ANSI 140 at the Gold level, (4) Scientific Certifications Systems Sustainable Choice, <p>OR</p> <ol style="list-style-type: none"> (5) For non-residential, compliance with the Collaborative for High-Performance Schools (CHPS) California Criteria Interpretation for EQ 7.0 and EQ 7.1, dated July 2012 and listed in the CHPS High-Performance Product Database. <p>Composite Wood – Meet CARB Air Toxics Control Measure for Composite Wood, including meeting the emission limits in CALGreen Tables 5.504.4.5 and 4.504.5.</p> <p>Resilient Flooring Systems – For 80% of floor area receiving resilient flooring, install resilient flooring that is:</p> <ol style="list-style-type: none"> (1) Certified under the Resilient Floor Covering Institute (RFCI) FloorScore program, 	<input checked="" type="checkbox"/> Project Complies <input type="checkbox"/> Not Applicable <input type="checkbox"/> Project Does Not Comply	The project, including Pier 48, would comply with all standards for flooring as applicable and/or required in CALGreen 5.404 and 4.504.

Code	Ordinance	Requirements	Project Compliance	Remarks
		(2) Compliant with the VOC-emission limits and testing requirements of California Department of Public Health 2010 Standard Method for the Testing and Evaluation Chambers, v.1.1, (3) Compliant with the CHPS and listed in the CHPS High-Performance Product Database, OR (4) Certified under UL GREENGUARD Gold.		
Port of SF Building Code, Section 3111 CALGreen, Sections 4.503.1 and 5.503.1	Wood-Burning Fireplace Ordinance	Bans the installation of wood-burning fireplaces (except those that are designed for food preparation in new or existing restaurants or bakeries OR historic wood-burning appliances installed with approval in historic structures), except for direct-vent or sealed-combustion units that are compliant with EPA Phase II limits (CALGreen, Sections 4.503.1 and 5.503.1) and at least one of the following: (1) Pellet-fueled wood heater, (2) EPA- approved wood heater, or (3) Wood heater approved by the Northern Sonoma Air Pollution Control District.	<input type="checkbox"/> Project Complies <input checked="" type="checkbox"/> Not Applicable <input type="checkbox"/> Project Does Not Comply	The project, including Pier 48, would not include wood-burning fireplaces, except that restaurant or bakery uses could include wood-burning appliances that are designed primarily for food preparation, which are exempt from the Wood-Burning Fireplace Ordinance. As such, this requirement is not applicable to the non-residential portion of the project.
Water Efficiency				
SF Public Works Code, Article 4.2 (Section 147)	Stormwater Management Ordinance	All projects that will disturb 5,000 square feet or more of impervious surface must manage stormwater onsite using a low-impact design and must apply for a Construction Site Runoff Control Permit prior to commencing a project. Comply with the Stormwater Management Ordinance, including SFPUC Stormwater Design Guidelines. Every small development project (between 2,500 and 5,000 square feet of impervious surface) shall implement post-construction stormwater controls and submit documentation of these measures, as described in the Stormwater Management Requirements and Design Guidelines, in accordance with Article 4.2.	<input checked="" type="checkbox"/> Project Complies <input type="checkbox"/> Not Applicable <input type="checkbox"/> Project Does Not Comply	A Stormwater Control Plan would be designed for review and approval by the San Francisco Public Utilities Commission because the proposed project, with the exception of Pier 48, would result in ground disturbance of an area greater than 5,000 square feet. The project would be required to manage stormwater onsite using low-impact design. The project sponsor would also include a signed maintenance

Code	Ordinance	Requirements	Project Compliance	Remarks
Port of SF Green Building Standards Code, Sections 4.103.2.2 (residential), 5.103.1.2 (non-residential), CALGreen, Sections 4.303.1, 5.303	Requirements for Water Use Reduction	All new buildings must comply with current California water fixture and fitting efficiency requirements. New buildings or additions greater than 50,000 gsf must install metering devices. All fixtures and fittings within areas of alteration, or serving areas of alteration, must be upgraded to current California and San Francisco fixture and fitting water efficiency requirements. (For local requirements applicable to alterations, see Commercial Water Conservation Ordinance and Residential Water Conservation Ordinance below.) Additionally, new large commercial and high-rise residential projects must submit documentation verifying that a minimum 30% reduction in the use of indoor potable water has been achieved, as calculated to meet LEED® WE3.2.	<input checked="" type="checkbox"/> Project Complies <input type="checkbox"/> Not Applicable <input type="checkbox"/> Project Does Not Comply	agreement to ensure proper care of the necessary stormwater controls. The project, including Pier 48, would comply with the current California water fixture and fitting efficiency requirements by incorporating fixtures and fittings that would reduce domestic water consumption by 30% and wastewater by 20%.
Port of SF Building Code, Chapter 13A	Commercial Water Conservation Ordinance	Water conservation measures required for alterations to commercial buildings on or before January 1, 2017: 1. If showerheads have a maximum flow > 2.5 gallons per minute (gpm), replace with unit meeting California Code of Regulations, Title 20 requirements 2. All showers shall have no more than one showerhead per valve 3. If faucets and faucet aerators have a maximum flow rate > 2.2 gpm, replace with unit meeting California Code of Regulations, Title 20 requirements 4. If toilets have a rated water consumption >1.6 gallons per flush (gpf), replace with fixtures meeting San Francisco Plumbing Code, Chapter 4 requirements 5. If urinals have a maximum flow rate >1.0 gpf, replace with fixtures meeting San Francisco Plumbing Code, Chapter 4 requirements 6. Repair all water leaks	<input checked="" type="checkbox"/> Project Complies <input type="checkbox"/> Not Applicable <input type="checkbox"/> Project Does Not Comply	The project would comply with all standards in the Commercial Water Conservation Ordinance by meeting at least the minimum standards specified in the ordinance as applicable and/or required.

Code	Ordinance	Requirements	Project Compliance	Remarks
Port of SF Building Code - Housing Code, Chapter 12A	Residential Water Conservation Ordinance	<p>Requires all residential properties (existing and new) prior to sale and during major improvement projects to upgrade to the following minimum standards:</p> <ol style="list-style-type: none"> 1. f showerheads have a maximum flow > 2.5 gallons per minute (gpm), replace with unit meeting California Code of Regulations, Title 20 requirements 2. All showers shall have no more than one showerhead per valve 3. If faucets and faucet aerators have a maximum flow rate > 2.2 gpm, replace with unit meeting California Code of Regulations, Title 20 requirements 4. If toilets have a rated water consumption >1.6 gallons per flush (gpf), replace with fixtures meeting San Francisco Plumbing Code, Chapter 4 requirements 5. Repair all water leaks. Although these requirements apply to existing buildings, compliance must be completed through the Department of Building Inspection, for which a discretionary permit (subject to CEQA) would be issued. 	<input checked="" type="checkbox"/> Project Complies <input type="checkbox"/> Not Applicable <input type="checkbox"/> Project Does Not Comply	<p>The project would comply with all standards in the Residential Water Conservation Ordinance by meeting at least the minimum standards specified in the ordinance as applicable and/or required.</p>
SF Public Works Code, Article 4.2 (Section 146.5)	Construction Site Runoff Pollution Prevention for New Construction	<p>Construction site runoff pollution prevention requirements depend upon project size, occupancy, and the location in areas served by combined or separate sewer systems.</p> <p>Any project disturbing ≥ 5,000 square feet of ground surface is required to submit and receive approval of an Erosion and Sediment Control Plan prior to commencing any construction-related activities. The plan must be site specific, detailing the use, location, and emplacement of the sediment and erosion control devices at the project site.</p> <p>All construction sites, regardless of size, must implement BMPs to prevent illicit discharges into the sewer system. For more information on San Francisco’s requirements, see www.sfwater.org.</p>	<input checked="" type="checkbox"/> Project Complies <input type="checkbox"/> Not Applicable <input type="checkbox"/> Project Does Not Comply	<p>The ordinance applies to the project because it would include more than 5,000 square feet of soil disturbance. Erosion and sediment control BMPs would be implemented for project construction occurring during the wet season. Additional BMPs for wind and rain would be implemented as applicable. The project would comply with all applicable construction site runoff pollution prevention requirements and BMPs.</p>

In addition, as shown in Table 4.H-2, page 4.H-14, any and all construction contractors and end-user employers occupying the buildings would comply with relevant commuter benefit programs, to the extent applicable and required. The project sponsor would be required to pay 50 percent of the TSF for the residential portion of the project and the applicable Transit Impact Development Fee (TIDF) rate for the nonresidential portions of the project, which would go to support public transportation. The project sponsor would pay a fee or contribute land suitable for housing to a housing developer or pay an in-lieu fee, as applicable under the Jobs-Housing Linkage Program, to address the effects of housing demand caused by the project. These programs help to reduce commutes and the use of single-occupancy vehicles.

The project, per a Development Agreement between the City and the project sponsor, has proposed a Transportation Demand Management Program (TDMP) as part of the project, as outlined in Chapter 2, *Project Description*. A Transportation Program also would be prepared for the project, which would provide a comprehensive strategy to manage the transportation demands created by the project. The proposed project would provide 3,100 total parking spaces between the Block D parking structure, Mission Rock Square garage, and in-building parking as well as bicycle parking in parking garages and residential buildings. With respect to low-emissions car-parking requirements and car-sharing requirements, the proposed project would provide designated parking spaces for low-emitting, fuel-efficient carpool/van pool and car-sharing vehicles, in accordance with the San Francisco Planning Code and Port of San Francisco Green Building Standards Code

The proposed project would also be required to comply with the energy efficiency requirements of the Port of San Francisco Green Building Standards Code, Stormwater Management Ordinance, Water Conservation Ordinance, and Irrigation Ordinance, which promote energy and water efficiency. This would reduce GHG emissions associated with the proposed project's consumption of energy to serve project buildings and open spaces during their operation.⁴³ Additionally, new buildings associated with the proposed project would be required to meet the renewable energy criteria of the Port of San Francisco Green Building Standards Code, thereby further reducing the project's energy-related GHG emissions.

The proposed project's waste-related emissions both during construction and operation of project buildings would be reduced through compliance with the Port's Recycling and Composting Ordinance, Construction and Demolition Debris Recovery Ordinance, and Green Building Standards Code. These regulations reduce the amount of material sent to landfills to

⁴³ Compliance with water conservation measures would reduce the amount of energy required to convey, pump, and treat water required for the proposed project. GHG emissions would also be reduced.

reduce GHGs emitted by landfill operations. These regulations also promote reuse of materials, thereby conserving their embodied energy⁴⁴ and reducing the energy required to produce new materials.

The project sponsor had proposed a landscape plan that would be approved as part of the project approvals. The landscape plan obligates to project sponsor to install and maintain landscape improvements that would be included in project construction and operations. Project compliance with, or potential exceedance of, the City's street tree planting requirements would serve to increase carbon sequestration. Other regulations, including those that limit refrigerant emissions, would reduce emissions of GHGs. Regulations that require the use of low-emitting finishes would reduce volatile organic compounds (VOCs).⁴⁵ Thus, it was determined that the proposed project would be consistent with San Francisco's GHG emissions reduction strategy, thereby reducing the proposed project's GHG emissions in all categories (transportation, energy efficiency and waste reduction).⁴⁶

Further, the proposed project would include the following design features to reduce GHG emissions. To help meet environmental goals, the project sponsor and the Port of San Francisco (Port) and other City agencies have designated the project site as a Type 1⁴⁷ Eco-District through the Sustainable City initiative,⁴⁸ which focuses on the creation of a low-carbon neighborhood. A Type 1 Eco-District is characterized by a large amount of undeveloped land that is typically owned by a single property owner, enabling horizontal infrastructure development to be implemented concurrent with vertical development to maximize efficiency through district-wide infrastructure systems. Designation of a Type I Ecodistrict does not have specific requirements for GHG emissions but does have the following GHG objectives: (1) to reduce vehicle miles traveled and achieve a reduction in single-vehicle occupancy trips; (2) to achieve a GHG-free, renewable, and resilient energy system; (3) to capture all cost-effective energy efficiency; and (4) to increase renewable energy procurement and generation. The project sponsor, in conjunction with the Port and other City agencies, would develop an integrated Eco-District Plan that identifies measurable goals, standards, and performance metrics. Single-

⁴⁴ Embodied energy is the total energy required for the extraction, processing, manufacture, and delivery of building materials to the building site.

⁴⁵ Although not a GHG, VOCs are precursor pollutants that form ground-level ozone. Increased ground-level ozone is an anticipated effect of future global warming that would result in added health effects locally. Reducing VOC emissions would reduce the anticipated local effects of global warming. The project would implement Mitigation Measure AQ-1.4, which would require the use of low-VOC coatings.

⁴⁶ San Francisco Planning Department. 2016. *Greenhouse Gas Analysis: Compliance Checklist for Seawall Lot 337 and Pier 48 Mixed-Use Project*. March 23.

⁴⁷ The Planning Department has identified four types of Eco-Districts within the city, each defined by the community that exists within the district.

⁴⁸ San Francisco Planning Department. n.d. *Sustainable City*. Available: <http://sf-planning.org/sustainable-development>.

occupancy vehicle use and building operations are two of the largest sources of GHG emissions at the proposed project site. The proposed project would focus on GHG emissions reduction measures to reduce single-occupancy vehicle use through measures outlined in the TDMP plan and offset all GHG emissions from building operations through purchase of onsite and offsite renewable energy.⁴⁹ Multiple sustainable site approaches, which would be part of the Eco-District Plan, to reduce energy use, water use, waste generation, and vehicle miles traveled would be considered from the outset of horizontal development to enable vertical development design proposals to exceed Port of San Francisco Building Code requirements and deliver a low-carbon community.

As part of complying with the Port of San Francisco Green Building Standards Code, the goal for overall development of the project would include Leadership in Energy and Environmental Design (LEED) Gold certification for all commercial office/retail/industrial buildings, including Pier 48, and LEED Silver certification for all residential development onsite, as outlined in the Port of San Francisco Green Building Standards Code. As part of these compliance requirements, the project sponsor would implement a comprehensive Sustainability Strategy, which would include strategies for achieving LEED certification; outline the targets for carbon reductions; and explain how the infrastructure, buildings, and community would coordinate to achieve these targets consistent with design controls. The project sponsor would collaborate with the City through the SFPUC, the Department of the Environment, the Planning Department, and the Port to develop the Sustainability Strategy. The project sponsor would be required to comply with these regulations, which have proven effective in reducing GHG emissions, as demonstrated by San Francisco's Greenhouse Gas Reduction Strategy and the success of energy savings, LEED certification, and the TDMP in reducing both the city's and the state's GHG emissions.

In addition, the project sponsor is also pursuing a goal of meeting 100 percent of the project's building energy demands with renewable energy by investing in energy conservation as well as onsite and offsite renewable energy projects. Additionally, the proposed project would include the installation of an onsite looped recycled water distribution system in order to conserve water. These strategies comply with the mitigation measures outlined in CEQA Guidelines Appendix F, which aim to improve energy efficiency, conserve energy and water, and use alternative sources of energy.

San Francisco's local GHG emissions reduction targets are consistent with the long-term GHG emissions reduction goals of EO S-3-05, EO B-30-15, AB 32, SB 32 and the Bay Area 2010 Clean Air Plan. San Francisco's GHG emissions have decreased measurably compared with 1990

⁴⁹ The City's Sustainability Plan (Executive Summary and Section 10, GHG Emission Assessment) illustrates the estimated reduction in GHG emissions that can be achieved by employing sustainable site approaches compared to a typical San Francisco development.

levels, demonstrating that San Francisco's Greenhouse Gas Reduction Strategy has been effective. The City has met or exceeded the EO S-3-05, AB 32, and Bay Area 2010 Clean Air Plan GHG emissions reduction goals for 2020. Further, the project would be consistent with Plan Bay Area because it would be located in an urban infill, priority development area that is identified as an appropriate place for development to meet the Plan Bay Area's per-capita GHG emissions reduction targets. Other existing regulations, such as those implemented through AB 32, including the Pavley vehicle emissions standards, the renewables portfolio standard, and the low-carbon fuel standard, will continue to reduce contributions to climate change from proposed projects.

Pier 48 would be subject to all applicable requirements of the City's Greenhouse Gas Reduction Strategy, including transportation and transit requirements, TDM, and other transportation requirements (e.g., providing bicycle parking to employees), which would reduce GHG emissions from vehicular emissions associated with the Pier 48 use. Other Greenhouse Gas Reduction Strategy requirements applicable to building renovations would also apply. Also, the emergency generators at Pier 48 would be subject to the mitigation requirements set forth in the Section 4.5, *Air Quality*. Moreover, as part of the requirement to comply with the Port's Green Building Standards Code, including preparing a project, the Sustainability Strategy for Pier 48 would include Leadership in Energy and Environmental Design (LEED) Gold certification. Pier 48 would require permits from BAAQMD for its stationary source (i.e., combustion sources); however, BAAQMD does not have any permit requirements that would specifically apply to GHG emissions.

As documented in Table 4.H-2, it was determined that the proposed project's construction and operation would be consistent with San Francisco's energy and conservation standards, as reflected in San Francisco's Greenhouse Gas Reduction Strategy. As explained, compliance with the strategy would reduce specific sources of GHG emissions that would otherwise occur from the proposed project. San Francisco has been successful in meeting its stated GHG reduction goal through implementation of the strategy, and those goals are consistent with state GHG reduction goals. Therefore, the proposed project would also be consistent with the GHG emissions reduction goals of EO S-3-05, EO B-30-15, AB 32, SB 32, and the Bay Area 2010 Clean Air Plan. It would not conflict with these plans and would not exceed San Francisco's applicable GHG emissions threshold of significance. As such, the proposed project would result in a *less-than-significant* impact with respect to project-level and cumulative GHG emissions. No mitigation measures are necessary.