# 4.5 Greenhouse Gas Emissions

## 4.5.1 Introduction

Section 4.5, Greenhouse Gas Emissions, evaluates the potential significance of greenhouse gas (GHG) emissions related to construction and subsequent operation of the 201 Haskins Way Project (project). This section describes the existing conditions at the project site and the regulatory framework for this analysis. GHG emission impacts are presented and mitigation measures are identified. Appendix F discusses the methodologies used to assess the significance level of impacts related to GHG emissions in detail.

## 4.5.2 Environmental Setting

### EXISTING CONDITIONS

The project site is made up of eight parcels, which encompass approximately 18.2 acres. The parcel at 201 Haskins Way had a trucking distribution use that recently relocated out of South San Francisco. Five of the parcels currently have warehouse and distribution uses, one parcel is used for parking, and one parcel has an existing office/research and development (R&D) use. Seven of these parcels are currently zoned as mixed industrial, and one is zoned as business commercial. There is a one-story, 24,075-gross-square-foot (gsf) former trucking terminal building at the 201 Haskins Way parcel, two three-story office/R&D buildings on the 400-450 East Jamie Court parcel, and one- to two-story light industrial buildings on each of the parcels located at 101 Haskins Way, 151 Haskins Way, 410 East Grand Avenue, 430 East Grand Avenue, and 451 East Jamie Court. Additionally, there is a parking lot on a portion of the 451 East Jamie Court parcel and the parcel Assessor's Parcel Number 015-102-240, which has no address.

### GREENHOUSE GASES

Gases that trap heat in the atmosphere are referred to as GHGs and are regulated due to their contribution to anthropogenic climate change.[1] The most common GHGs and their typical emission sources are as follows:

- **Carbon dioxide ($CO_2$).** $CO_2$ is the most prevalent GHG and is produced by combustion of fossil fuels, combustion of biomass, and chemical reactions. It is also removed from the atmosphere via absorption by plants as part of the carbon cycle.
- **Methane ($CH_4$).** $CH_4$ is emitted from combustion, production of fossil fuels, livestock, agriculture, and municipal solid waste landfills.
- **Nitrous oxide ($N_2O$).** $N_2O$ is emitted from combustion, agricultural activities, and industrial processes.
- **Fluorinated gases.** Hydrofluorocarbons, perfluorocarbons, sulfur hexafluoride, and nitrogen trifluoride are synthetic GHGs that are emitted primarily from industrial processes. These gases

[1] U.S. Environmental Protection Agency. Overview of Greenhouse Gases. Available online: https://www.epa.gov/ghgemissions/overview-greenhouse-gases. Accessed May 29, 2018.

are sometimes referred to as High Global Warming Potential gases due to their potency to cause atmospheric warming.

Each GHG has a Global Warming Potential calculated to reflect how long it remains in the atmosphere, on average, and how strongly it absorbs energy. $CO_2$ is used as the reference GHG and by definition given a Global Warming Potential of 1. The Global Warming Potential for other GHGs is given in terms of $CO_2$ equivalent ($CO_2e$) and generally includes a timescale because some GHGs have shorter atmospheric lifespans. On a 100-year timescale, $CH_4$ is estimated to have a Global Warming Potential of 28–36 $CO_2e$, $N_2O$ has a Global Warming Potential 265–298 $CO_2e$, and fluorinated gases range from a Global Warming Potential of over a 1,000 to near 25,000 $CO_2e$.

The anticipated climate change impacts caused by GHGs include increasing global temperatures; rising sea levels; melting of permafrost, glaciers, and ice caps; changing weather patterns; ocean acidification; species extinction; and desertification. The San Francisco Bay Area, in particular, is impacted by sea level rise and changing weather patterns due to climate change. Although the impacts of climate change vary widely from region-to-region, GHGs are regulated for their contribution on a global level rather than a regional or local level, unlike criteria and toxic air pollutants. GHG concentrations are measured through a global monitoring network with stations typically sited remotely to minimize interference from nearby sources. No National Ambient Air Quality Standards (NAAQS) or California Ambient Air Quality Standards) CAAQS have been developed for GHGs.

## 4.5.3 Baseline Conditions

Since GHGs are regulated due to their contribution to climate change on a global level, localized baseline conditions do not factor into the analysis, except to the extent that existing GHG sources are removed. The Bay Area Air Quality Management District's (BAAQMD's) California Environmental Quality Act (CEQA) Guidelines establish quantitative GHG emission thresholds, expressed in terms of metric tons per year (MT/yr) of $CO_2e$ or $MTCO_2e$ per Service Population (SP) per year. The SP consists of the residents and employees served by the project.

If a proposed project involves the removal of existing GHG emission sources, the BAAQMD's CEQA Guidelines allows for subtracting the existing emissions levels from the emissions levels estimated for the new proposed land use. However, this net calculation is only allowed if the existing emission sources are operational at the time that the Notice of Preparation is circulated, and will continue if the proposed redevelopment project is not approved. As discussed further in "Approach to Analysis," pp. 4.5.9-4.5.11, in order to be conservative about project impacts, it is assumed that the current operational emissions from the mixed industrial activities on the Phase 1 and Phase 2 area parcels would continue regardless of project approval status.

## 4.5.4 Regulatory Framework

This section provides a summary of the greenhouse gas plans and policies of the City of South San Francisco (City), and regional, state, and federal agencies that have policy and regulatory control over the project site.

## FEDERAL CLEAN AIR ACT REGULATION OF GREENHOUSE GASES

The background and scope of the Federal Clean Air Act (CAA) is described in "Federal," in Section 4.2, Air Quality, pp. 4.2.4-4.2.5. Historically, GHGs were not directly regulated under the CAA[2]. However, the 2007 ruling by the U.S. Supreme Court in *Massachusetts v. EPA* found that U.S. Environmental Protection Agency (U.S. EPA) may regulate GHGs if they are determined to be a danger to human health. In response, President George W. Bush ordered U.S. EPA to use its existing authority under the CAA to regulate GHGs from mobile sources. The U.S. EPA issued its so-called Endangerment Finding in December 2009 which found that six GHGs do threaten the health and human welfare of current and future generations.

For mobile sources, the Endangerment Finding led to the development by U.S. EPA and the National Highway Traffic Safety Administration of the Light-Duty Vehicle Greenhouse Gas Emission Standards and Corporate Average Fuel Economy Standards Rule (LDV Rule) in May 2010.[3] The LDV rule first applied to model years 2012–2017, but was later extended to the 2025 model year. It requires light-duty vehicles to comply with progressively more stringent GHG emission standards for the 2012–2025 model years.

For stationary sources, the Endangerment Finding led to the so-called Tailoring Rule in May 2010 which tailored permit trigger levels to the largest sources.[4] U.S. EPA phased in GHG permitting requirements for stationary sources from 2010-2014. The U.S. Supreme Court decision on June 23, 2014, in *Utility Air Regulatory Group v. EPA*, limited the applicability of GHG requirements to large sources that are already subject to major source permitting under the CAA due to other pollutants. The U.S. EPA has also developed New Source Performance Standards that cover GHGs for power plants and certain oil and gas sources, and maintain an annual GHG reporting program that covers multiple industrial sectors. However, none of the current CAA requirements for GHGs are expected to directly impact the proposed project.

## CALIFORNIA GHG REGULATION

The background and scope of air quality regulation in California is described in "State," in Section 4.2, Air Quality, pp. 4.2.5-4.2.6. For GHGs, Assembly Bill (AB) 32, the California Global Warming Solutions Act, was passed in 2006 as a landmark law requiring significant reduction in GHG emissions in California.[5] AB 32 directs the California Air Resources Board (CARB) to be the lead agency in implementing the law to achieve the goal of reducing GHG emissions to 1990 levels by 2020. An executive order set a statewide goal of 80 percent below 1990 levels by 2050 issued by former Governor Arnold Schwarzenegger in June 2005. Under AB 32, the CARB is required to prepare a Scoping Plan that

[2] U.S. EPA, Clean Air Act Permitting for Greenhouse Gases. Available on-line: https://www.epa.gov/nsr/clean-air-act-permitting-greenhouse-gases. Accessed May 29, 2018.
[3] U.S. EPA, Regulations for Emissions from Vehicles and Engines. Available on-line: https://www.epa.gov/regulations-emissions-vehicles-and-engines/greenhouse-gas-ghg-emission-standards-light-duty-vehicles. Accessed May 29, 2018.
[4] U.S. EPA, Clean Air Act Permitting for Greenhouse Gases. Available on-line: https://www.epa.gov/nsr/clean-air-act-permitting-greenhouse-gases. Accessed May 29, 2018.
[5] California Air Resources Board, Climate Change Programs. Available on-line: https://www.arb.ca.gov/cc/cc.htm. Accessed May 29, 2018.

outlines the strategies used to achieve the GHG emissions reduction goal by 2020. The CARB must update the Scoping Plan every five years. The Scoping Plan was approved in 2008, the first update approved in 2014, and an additional update was approved in 2017.

The initial Scoping Plan contains a range of GHG reduction actions which include direct regulations, alternative compliance mechanisms, monetary and non-monetary incentives, voluntary actions, market-based mechanisms including a cap-and-trade system, and an AB 32 program implementation fee regulation.[6] The first update to the Scoping Plan approved in 2014 summarized California's progress towards meeting its 2020 goals, and identified nine key focus areas: energy, transportation, agriculture, water, waste management, natural and working lands, short-lived climate pollutants, green buildings, and the cap-and-trade program.

To achieve further GHG reductions, California Senate Bill (SB) 32 was passed in 2016, requiring a reduction in GHG emissions to 40 percent below the 1990 levels by 2030. The CARB is charged with implementation of SB 32. The CARB approved its second update to the Scoping Plan in 2017 to incorporate the requirements of SB 32. The updated Scoping Plan includes policies to require direct GHG reductions through policies including lower GHG fuels, efficiency regulations, and the Cap-and-Trade Program. It also includes a summary of major climate statutes and regulations in Appendix H separated into the following sectors: low carbon energy, industry, transportation sustainability, lands and agriculture, waste management, water, and buildings. Appendix H is referenced herein as part of the regulatory framework for the proposed project.

The key activities and regulations outlined by the Scoping Plan in sectors with relevance to the proposed project are excerpted below:[7]

- **Energy** – CARB has implemented a Renewables Portfolio Standard (RPS) applicable to public utilities, as well as developed policies to further the use of combined heat and power systems, gas insulated switchgear, and distributed generation. The RPS requires retail sellers of electricity to have 33 percent of their load served by renewable sources by 2020 and 50 percent of their load served by renewable sources by 2030. In September 2018, the Legislature passed SB 100, which increased existing RPS targets and added new targets. Specifically, the total kilowatt hours of energy sold by electricity retailers to their end-use customers must consist of at least 50 percent renewable resources by December 31, 2026, 60 percent renewable resources by December 31, 2030, and 100 percent renewable resources by 2045. Additionally, beginning June 1, 2018, non-residential buildings greater than 50,000 square feet must report their energy use to the California Energy Commission (CEC). Low-carbon energy programs also include the CEC's Appliance Energy Efficiency standards.
- **Transportation, Fuels and Sustainable Communities** – CARB has developed requirements for light, medium, and heavy-duty vehicles, as well as a low carbon fuel standard. Measures are provided for certain equipment and non-road vehicles as well. Additionally, CARB has developed measures for strategic growth, land use, and infrastructure. State rules and regulations that reduce these emissions include SB 375 (Sustainable Communities Strategies Act) and SB 743 (Transit-

[6] California Air Resources Board, *AB 32 Scoping Plan*. Available on-line: https://www.arb.ca.gov/cc/scopingplan/scopingplan.htm. Accessed May 29, 2018.
[7] *Ibid*.

Oriented Development) the California Complete Streets Act, the Low Carbon Fuel Standard Program, and clean car standards.

- **Water** – CARB has developed programs for water use efficiency, water recycling, urban runoff, and landscape irrigation. In addition, the state has water use reduction requirements, such as Water Efficient Landscape Ordinance requirements in Title 24.
- **Waste Management/Recycling** – CARB has developed programs for waste minimization, landfills, and mandatory commercial recycling. Statutory requirements include mandatory commercial organics recycling and a 75 percent statewide recycling goal.
- **Green Buildings** – CARB has provided green building research and strategy, as well as a green building standards code, contained in Title 24 Part II of the CCR. Title 24 is updated every three years, resulting in ever increasing energy reductions. The latest update will be applicable to buildings constructed after January 1, 2019.
- **Cap-and-Trade Program** – The Cap-and-Trade Regulation is a market-based program that covers electric generating utilities, electricity importers, large industrial facilities, and fuel distributors. It requires annual reporting of GHG emissions, creates a market place for trading GHG allowances, and achieves reductions through a cap on emissions that decreases over time.

CARB works closely with local, regional, and state programs to implement the GHG programs.

Most recently, Governor Brown issued Executive Order B-55-18, establishing a state goal to achieve carbon neutrality no later than 2045, and achieve and maintain net negative emissions thereafter. This executive order directs CARB to work with state agencies to develop a framework for implementation and accounting that tracks progress for this goal and to include measures in the next Scoping Plan update to achieve carbon neutrality by 2045.

## PLAN BAY AREA

As required by SB 375, all metropolitan regions in California must complete a Sustainable Communities Strategy (SCS) as part of a *Regional Transportation Plan*. In the Bay Area, the Metropolitan Transportation Commission and the Association of Bay Area Governments are jointly responsible for developing and adopting a SCS that integrates transportation, land use and housing to meet greenhouse gas reduction targets set by CARB. SB 375 mandates that the SCS must address climate change by reducing per-capita $CO_2$ emissions from cars and light-duty trucks and must include sufficient housing for all of a region's projected population growth, regardless of income. The most recently adopted (July 2017) version of the SCS is called *Plan Bay Area 2040* (Plan Bay Area).

## BAY AREA AIR QUALITY MANAGEMENT DISTRICT

The background and scope of BAAQMD is described in "Bay Area Air Quality Management District (BAAQMD)," in Section 4.2, Air Quality, p. 4.2.6-4.2.7. The BAAQMD's *2017 Bay Area Clean Air Plan* includes several control measures designed to reduce GHGs, including the following examples with relevance to the proposed project: implement pricing measures to reduce travel demand; accelerate the widespread adoption of electric vehicles; promote the use of clean fuels; promote energy efficiency in

both new and existing buildings; and promote the switch from natural gas to electricity for space and water heating in Bay Area buildings.[8]

The BAAQMD's *CEQA Air Quality Guidelines* assists lead agencies in evaluating GHG impacts of projects and plans proposed in the Bay Area Air Basin.[9] For development projects, the Guidelines provide Thresholds of Significance and Screening Criteria to determine the level of analysis needed, and assessment methods and mitigation measures for operational and construction GHG emissions. The most recent version of the Guidelines, published in May 2017, has been used in the evaluation of GHG impacts from the proposed project. BAAQMD is undertaking another update to its GHG CEQA Guidelines to account for the passage of SB 32 and recent case law addressing the analysis of climate change in CEQA documents.

Additionally, the BAAQMD operates several programs related to climate protection, including a GHG measurement program, GHG emission inventories, rules with GHG emission requirements, and GHG emission fees for certain sources operating under a BAAQMD permit.

## SAN FRANCISCO BAY CONSERVATION AND DEVELOPMENT COMMISSION

The San Francisco Bay Conservation and Development Commission (BCDC) is a regional planning and regulatory agency for the San Francisco Bay, its shoreline band, and the Suisun Marsh. The BCDC issues permits for work in the Bay or within 100 feet of the shoreline. The BCDC has maintained the *San Francisco Bay Plan* since 1969 for the maintenance and protection of San Francisco Bay.[10] The BCDC approved an amendment to the plan in October 2011 to address climate change. The amendment includes policies that address the following actions:

- Require sea level rise risk assessments for projects within BCDC's jurisdiction.
- Protect existing and planned development from flooding as well as erosion.
- Incorporate shoreline protection structures with natural features whenever feasible for the project.
- Foster ecosystem protection and restoration.
- Encourage projects with regional benefits that outweigh the risk from flooding.
- Preserve undeveloped areas.
- Develop a regional strategy to protect critical developed areas from flooding, exchange the natural resources of the Bay, and improve the ability of communities to adapt to sea level rise.

Portions of the proposed project that could be developed within the 100-foot shoreline band as part of Phase 2 would be under the BCDC jurisdiction; this is discussed in Section 4.11, Less-than-Significant

[8] BAAQMD, Current Plans. Available on-line: http://www.baaqmd.gov/plans-and-climate/air-quality-plans/current-plans. Accessed May 29, 2018.
[9] BAAQMD, *CEQA Air Quality Guidelines.* Updated May 2017. Available on-line: http://www.baaqmd.gov/~/media/files/planning-and-research/ceqa/ceqa_guidelines_may2017-pdf.pdf?la=en. Accessed May 29, 2018
[10] BCDC, *San Francisco Bay Plan*. Available on-line: http://www.bcdc.ca.gov/plans/sfbay_plan.html. Accessed May 29, 2018.

Impacts, relating to Aesthetics impacts on p. 4.11.1. If the shoreline band is impacted, the applicable policies would be followed and proper permits obtained.

## CITY OF SOUTH SAN FRANCISCO GENERAL PLAN

The background and scope of the *City of South San Francisco General Plan* (General Plan), as well as its air quality policies is described in "Local," in Section 4.2, Air Quality, pp. 4.2.7-4.2.8. The General Plan includes a chapter that outlines policies relating to cultural and environmental resources including air quality and GHG emissions.[11] The key guiding policies and implementing polices that impact GHG are excerpted below:

Guiding Policies: Greenhouse Gas Emissions

**7.3-G-2:** Mitigate the community of South San Francisco's impact on climate change by reducing greenhouse gas emissions consistent with state guidance.

**7.3-G-3:** Reduce energy use in the built environment.

**7.3-G-4:** Encourage land use and transportation strategies that promote use of alternatives to the automobile for transportation, including bicycling, bus transit, and carpooling.

Implementing Policies: Greenhouse Gas Emissions

**7.3-I-2:** Use the City's development review process and the California Environmental Quality Act (CEQA) regulations to evaluate and mitigate the local and cumulative effects of new development on air quality and GHG emissions.

**7.3-I-6:** Periodically update the inventory of community-wide GHG emissions and evaluate appropriate GHG emissions reduction targets, consistent with current State objectives, statewide guidance, and regulations.

**7.3-I-7:** Adopt and implement the City of South San Francisco's Climate Action Plan (CAP), which will identify a GHG emissions reduction target and measures and actions to achieve the reduction target.

**7.3-I-8:** Evaluate and regularly report to City Council, or its designee, on the implementation status of the CAP and update the CAP as necessary should the City find that adopted strategies are not achieving anticipated reductions, or to otherwise incorporate new opportunities.

**7.3-I-9:** Promote land uses that facilitate alternative transit use, including high-density housing, mixed uses, and affordable housing served by alternative transit infrastructure.

**7.3-I-10 - 7.3-I-13:** [These implementing policies promote energy efficiency in buildings and clean energy use.]

**7.3-I-15:** Demonstrate effective operations in municipal facilities that reduce GHG emissions.

As referenced above, the City adopted a *Climate Action Plan* in February 2014 to demonstrate the City's commitment to reduce GHG emissions.[12] The *Climate Action Plan* serves as an implementation tool of

[11] City of South San Francisco, *City of South San Francisco General Plan.* Available online: http://www.ssf.net/departments/economic-community-development/planning-division/general-plan. Accessed May 29, 2018.
[12] City of South San Francisco, 2014. *Climate Action Plan.* Available online: http://www.ssf.net/departments/economic-community-development/planning-division/planning-documents/approved-policy-documents. Accessed May 29, 2018.

the General Plan and provides specific programs and measures to reduce GHG emissions. The key guiding *Climate Action Plan* GHG reduction strategies are excerpted below:

**Measure 1.1:** Expand active transportation alternatives by providing infrastructure and enhancing connectivity for bicycle and pedestrian access;

**Measure 1.2:** Support expansion of public and private transit programs to reduce employee commutes;

**Measure 1.3:** Integrate higher-density development and mixed-use development near transit facilities and community facilities, and reduce dependence on autos through smart parking practices;

**Measure 2.1:** Expand the use of alternative-fuel vehicles, in part, by requiring new large-scale nonresidential developments to provide a conduit for future electric vehicle charging installations, and encouraging the installation of conduits or electric vehicle charging stations for all new development;

**Measure 2.2:** Reduce emissions from off-road vehicles and equipment, in part, by working with project applicants through the CEQA review process to reduce construction equipment emissions by encouraging the use of alternatively powered or grid-connected equipment;

**Measure 3.1:** Maximize energy efficiency in the built environment through standards and the plan review process;

**Measure 3.3:** Encourage energy efficiency retrofits to the existing nonresidential building stock that reduce operating costs and increase industry competitiveness;

**Measure 3.4:** Address heat island issues and expand the urban forest through continued enforcement of new tree planting in accordance with Chapter 13.30 of the Zoning Code;

**Measure 3.5:** Promote energy information and sharing, and educate the community about energy-efficient behaviors and construction;

**Measure 4.1:** Promote installation of alternative energy facilities, in part, by (i) requiring the construction of new nonresidential conditioned space of 5,000 square feet or more to meet energy reduction standards, through providing a minimum of 50 perfect of building electricity needs through on-site renewable energy, participating in a power purchase agreement to offset a minimum of 50 perfect of modeled building electricity use, or through compliance with CALGreen [Title 24 Green Building Standards] Tier 2 energy efficiency requirements to exceed mandatory energy efficiency requirements by 20 percent or more and (ii) requiring all new development to install a conduit to accommodate wiring for solar;

**Measure 5.1:** Develop a waste reduction strategy to increase recycling and reuse of materials to achieve a 75 percent diversion of landfilled waste by 2020;

**Measure 6.1:** Reduce water demand through continued implementation of the Urban Water Management Plan and Water Efficiency Landscape Ordinance;

**Measure 6.2:** Provide alternative water resources for irrigation;

In accordance with these plans and the BAAQMD CEQA Guidelines, the City assesses the GHG impacts of new development projects and requires mitigation of significant GHG impacts.

## 4.5.5 Impacts and Mitigation Measures

### SIGNIFICANCE CRITERIA

Per the CEQA Guidelines, Appendix G, a GHG impact is considered significant if project implementation would result in one or more of the following:

a. Generate GHG 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 GHGs.

BAAQMD has established Thresholds of Significance (thresholds) to determine whether a project's operations are likely to have a significant impact on the environment with respect to GHGs. Should a project's operations be below the established threshold, then it is assumed that the project would result in a less-than-significant impact related to global climate change. The thresholds established by BAAQMD are described below and shown in Table 1-1 of Appendix F on p. F-4. The SP threshold is based on achieving the GHG emission reductions required by AB 32. The BAAQMD Guidelines also establish a qualitative threshold: compliance with an applicable, qualified GHG Reduction Strategy.

For project operation GHG emissions other than stationary sources, the project must either comply with a qualified GHG Reduction strategy or meet an emission limitation threshold based on either 1,100 $MTCO_2e$ per year or 4.6 $MTCO_2e$/SP/yr. The SP for the proposed project would be considered the number of employees working in the project. Stationary sources have a separate threshold than direct or indirect emissions from project area or mobile sources. The threshold for all stationary sources is 10,000 $MTCO_2e$ for all stationary sources located at the project. The different threshold for stationary sources is due to the fact that stationary source emissions of GHG are potentially subject to state and federal GHG reporting requirements.

Though BAAQMD has not developed thresholds to assess the impacts related to GHG emissions from construction activities, it is recommended that effects from construction be evaluated against the AB 32 and relevant local air quality plan goals to determine impacts. The methodology for determining the impact of construction emissions on global climate change and whether these emissions contribute to cumulatively considerable impacts is discussed in the subsequent section.

### APPROACH TO ANALYSIS

The proposed project would rezone all eight parcels to a Business Technology Park (BTP) zoning district, which would allow construction of BTP office/R&D uses and associated parking. For the Phase 1 project, all existing light industrial operations located on 201 Haskins Way would cease, and the light industrial building and parking lot would be demolished; on the 400-450 East Jamie Court parcels, the two buildings would not be demolished and additional square footage would be constructed and current operations would continue.

It is uncertain when or if Phase 2 development would occur, or if it did, whether it would occur as a single redevelopment of all Phase 2 area parcels (such as illustrated in the conceptual development plan) or as separate redevelopment of one or more Phase 2 area parcels. If a proposed project involves the removal of existing GHG emission sources, BAAQMD's CEQA Guidelines allow for subtracting the existing emissions levels from the emissions levels estimated for the new proposed land use. In order to be conservative about project impacts and notwithstanding BAAQMD's CEQA Guidelines, existing operational emission levels are not subtracted from the projected project operational emission levels to determine impacts.

A quantitative approach to demonstrating the significance level of project emissions was taken to determine whether the project operations would have a significant and cumulatively considerable impact on global climate. The operational-related project emissions were compared against the 4.6 $MTCO_2e$/SP/yr threshold established by BAAQMD.

To quantitatively assess whether the project construction emissions would contribute to significant and cumulatively considerable impacts, total construction emissions from each construction phase were quantified and an average annual emission rate in MT/yr was determined based on an assumed BTP district building lifespan of 40 years.[13] This averaging of emissions emitted during construction over the life of the project is needed to allow construction emissions to be added to operational emissions. In addition, this approach reflects that emissions stay in the atmosphere for some years after being emitted. These construction emissions were added to the maximum annual operating emissions from Phase 1 alone and the total project MT/yr emissions as appropriate to thoroughly assess emission levels per service population during various stages of project buildout.

This method of quantifying and assessing construction emissions as part of the operational threshold is an approach designed to assess the project impacts holistically as well as evaluate construction impacts, as recommended by BAAQMD, in a quantitative manner. It is assumed that if the project operation threshold is met when accounting for both average annual construction emissions and annual operational-related emissions, the overall project GHG emissions would not contribute to significant impacts and would be compatible with state goals to prevent cumulatively considerable contributions to significant cumulative impacts on global climate. Assessing construction impacts utilizing the methodology described above is now considered standard practice among jurisdictions in the Bay Area. Carbon sequestration resulting from net new trees is also amortized over 50 years for consistency.

Project GHG emissions from construction and operation excluding stationary sources were quantified using California Emissions Estimator Model Version 2016.3.2 (CalEEMod)[14]. Emissions from emergency diesel-powered generator engines were quantified based on the engine specifications, proposed operating

[13] The BAAQMD Guidelines do not identify an approach to assessing the significance of construction-related GHG emissions. The approach of amortizing construction emissions over the anticipated life of the building and adding them to operational emissions is thus conservative. For the purposes of air quality analysis, the anticipated 40-year building lifespan is used as a conservative assumption.

[14] California Emissions Estimator Model. Developed for CAPCOA in Collaboration with California Air Districts. The model can be downloaded from: http://caleemod.com/. Accessed May 29, 2018.

schedules, and Subpart C[15] emission factors specific to diesel fuel (petroleum distillate No. 2) combustion.

In addition, the analysis considers the project's consistency with the City's CAP and *Plan Bay Area*. The CAP has a target reduction of 15 percent below baseline 2005 GHG emissions levels by 2020. The City's baseline GHG emissions are lower than the statewide average baseline. Accordingly, the CAP's 2020 threshold is 3.58 $MTCO_2e$/SP/year rather than 4.6 $MTCO_2e$/SP/year. The CAP also determined that consistency with its programs and actions would result in emissions of 3.08 $MTCO_2e$/SP/year in 2035. Notably, because the CAP was prepared in 2014, it did not account for regulations adopted since that time, including the adoption of 2019 Title 24, which results in additional emission reductions from building's operational emissions. The CAP also includes a number of reduction strategies applicable to the project, as discussed above in "Regulatory Framework," p. 4.5.8 and the consistency analysis determines if the project would comply with those strategies. *Plan Bay Area* also includes a few project-specific policies designed to meet the regions SB 375 emission reduction targets for 2020 and 2035 and the project is analyzed for consistency with those policies.

Finally, long-term GHG impacts are addressed qualitatively because no quantitative thresholds exist beyond 2020, but project operations are anticipated to occur for 50 years. This assessment examines whether the project would impede the state from meeting its 2030 and 2050 GHG emission reduction goals. A qualitative analysis is appropriate because anticipating technological and regulatory changes that will occur in the future, particularly by 2050, is too speculative for a quantitative analysis.

## IMPACT EVALUATION

### Greenhouse Gas Emissions

**Impact GHG-1: The proposed project would result in GHG emissions; however, the emissions from the project would be below the applicable thresholds of significance.** ***(Less than Significant)***

#### *Project Construction Greenhouse Gas Emissions*

BAAQMD has no established threshold for evaluating GHG emission impacts from construction. Therefore, to evaluate the project impacts for construction, construction emissions are amortized and added to the project emissions shown in Table 4.5.2 to assess impacts resulting from non-stationary sources associated with the project construction and operation. This is a conservative method for assessing both construction and non-stationary source operational-related GHG emission impacts. **Table 4.5.1: Construction GHG Emissions for Phase 1 and Phase 2** shows construction-related GHG emissions during Phase 1 and Phase 2 of project construction. Construction is anticipated to occur over an 18-month period for each phase, for a total of 3 years. These 3 years of construction emissions are amortized over a 40-year period and added to the non-stationary source operational emissions to assess project impacts. The combined non-stationary source operational and average annual construction emissions for each phase of the project were then compared against the $MTCO_2e$/SP/yr thresholds shown

[15] US EPA. 40 CFR Part 98, Subpart C Table C-1 and C-2 emission factors specific to diesel fuel (petroleum distillate No. 2) combustion.

in **Table 4.5.2: Combined Annual Operation and Average Annual Construction Emissions During Project Buildout (Excludes Stationary Sources)**. As shown in Table 4.5.2, the GHG emissions from the project would be less than the applicable operational-related thresholds when including both annual project operational-related emissions and project amortized construction emissions. Therefore, using this methodology, if non-stationary source operational-related GHG emissions including amortized construction emissions are determined to be less than the applicable operational GHG emission threshold of significance, it can also be assumed that construction-related GHG emissions would have a less-than-significant impact on global climate.

**Table 4.5.1: Construction GHG Emissions for Phase 1 and Phase 2**

| Construction Year | Phase 1 Construction (MT/yr) | Phase 2 Construction (MT/yr) |
|---|---|---|
| 2018 | 57.67 | 0 |
| 2019 | 1438.74 | 0 |
| 2020 | 801.04 | 235.19 |
| 2021 | 0 | 1255.03 |
| 2022 | 0 | 563.30 |
| **Total Construction Emissions (MT/yr)** | **2297.44** | **2053.53** |
| **Construction MT/yr (amortized)[1]** | **45.95** | **41.07** |

[1] Total construction emissions of $CO_2e$ in metric tons is distributed over 40 years (assumed lifetime of new development in the BTP district) to calculate an average annual MT/yr emission rate so that construction emissions can be added to operational emissions of the project. In this way, all project GHG emissions can be quantitatively assessed against the BAAQMD Thresholds.

Source: CalEEMod version 2016.3.2. See **Appendix F** for emission model outputs.

**Table 4.5.2: Combined Annual Operation and Average Annual Construction Emissions During Project Buildout (Excludes Stationary Sources)**

| Source Description | Phase 1 Operation/Construction (MT/yr) | Phase 1 Operation/ Phase 1&2 Construction (MT/yr) | Phase 1&2 Operation/Construction (MT/yr) |
|---|---|---|---|
| Area | 0.02 | 0.02 | 0.04 |
| Energy | 2070.09 | 2070.09 | 3904.37 |
| Mobile | 486.46 | 486.46 | 955.07 |
| Off-Road | 27.46 | 27.46 | 54.92 |
| Waste | 157.32 | 157.32 | 316.91 |
| Water | 213.31 | 213.31 | 429.70 |
| Vegetation (amortized)[1] | -0.88 | -0.88 | -2.01 |
| Construction (amortized)[1] | 45.95 | 87.02 | 87.02 |
| **Maximum Annual Emissions (MT/yr)** | **2999.73** | **3040.80** | **5746.02** |
| Service Population (SP) | 1120 | 1120 | 2260 |
| Emissions per SP (MT/SP/yr) | 2.68 | 2.72 | 2.54 |
| BAAQMD Thresholds (MT/SP/yr) | 4.6 | 4.6 | 4.6 |
| **Exceeds Thresholds?** | **No** | **No** | **No** |

[1] Total construction emissions of $CO_2e$ is metric tons is distributed over 50 years (assumed lifetime of the BTP district) to calculate an average annual MT/yr emission rate so that construction emissions can be added to operational emissions of the project. In this way, all project GHG emissions can be quantitatively assessed against the BAAQMD Thresholds. Reduction in $CO_2e$ from net new tree sequestration is also amortized over 50 years for consistency.

Source: CalEEMod version 2016.3.2. See **Appendix F** for emission model outputs.

### *Project Operation Greenhouse Gas Emissions*

BAAQMD significance thresholds for evaluating project operational impacts are shown in Table 1-1 of Appendix F. The threshold of significance for non-stationary sources is compliance with a qualified GHG reduction strategy or emissions below either 1,100 $MTCO_2e$/yr, or 4.6 $MTCO_2e$/SP/yr. BAAQMD Guidelines state that GHG emissions from stationary sources associated with a project (such as back-up generators) should not be added to the project's total emissions when assessing impacts. There is a separate threshold (10,000 $MTCO_2e$/yr) which should be used to assess impacts with respect to stationary source operation.

### *Non-stationary Sources*

GHG emissions from the project operation (excluding stationary sources) were determined to have a less-than-significant impact since the emissions would be less than the BAAQMD's established thresholds for operation of the project throughout all phases of project buildout. As discussed above, amortized construction emissions are included in the results shown in Table 4.5.2 to demonstrate that impacts from non-stationary sources during project construction and operation would be below the 4.6 $MTCO_2e$/SP/yr threshold established by BAAQMD for project operational emissions for sources other than stationary sources. The BAAQMD service population threshold is based on the emission reductions required for the region under the BAAQMD's jurisdiction to meet the reduction targets in AB 32. Although BAAQMD has not established a regional threshold for meeting the SB 32 target, based on the same methodology BAAQMD used to establish the 4.6 threshold, the threshold would be 2.7 $MTCO_2e$/SP/yr. Both Phase 1 and Phase 2 are anticipated to be constructed by 2030. As shown in Table 4.5.2, emissions from Phase 1 and Phase 2 non-stationary operational sources would be below 2.7 $MTCO_2e$/SP/yr. BAAQMD specifies that if operational project emissions are less than the thresholds prior to mitigation, the project would result in a less-than-significant impact on global climate. Therefore, GHG emissions from project buildout and operation are determined to have a less-than-significant impact.

### *Project Stationary Source Greenhouse Gas Emissions*

The stationary source emissions from the completed project operation (Phase 1 and Phase 2) are based on the emissions from four diesel-fueled emergency generators. Emissions from all four units combined would be 104.5 $MTCO_2e$/yr, well below the 10,000 $MTCO_2e$/yr threshold for stationary sources. Therefore, the emission impacts from the project stationary sources would be less than significant.

## Greenhouse Gas Emission Reduction Plan Consistency

**Impact GHG-2: The proposed project's contribution to significant cumulative impacts related to GHGs would not conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs.** ***(Less than Significant)***

The proposed project would be generally consistent with applicable city, county, and state plans or regulations designed to limit impacts to global climate change. BAAQMD's thresholds were specifically set to ensure that new project development remains consistent with local and statewide GHG emission reduction goals. BAAQMD considered numerous statewide plans and regulations (e.g., the AB 32 Scoping Plan and the low carbon fuel standard) when developing the threshold. Therefore, since the

project emissions are below the thresholds for $MTCO_2e$/SP/yr established by BAAQMD, project impacts are considered less than significant, with no mitigation necessary.

### *Climate Action Plan*

The CAP sets a 2020 service population threshold of 3.58 $MTCO_2e$/SP/year. As shown in Table 4.5.2, Phase 1 and Phase 1 and 2 project emissions would be less than this threshold. Phase 1 and Phase 1 and 2 project emissions also would be less than SP emissions the CAP anticipates for 2035, which are 3.08 $MTCO_2e$/SP/year. **Table 4.5.3: Analysis of Consistency with the CAP** shows that the project would be consistent with the CAP's GHG emission reduction policies. Because the project is consistent with the CAP's quantitative and qualitative thresholds, the project's contribution to significant cumulative impacts from GHG emissions is less than cumulatively considerable.

### *Plan Bay Area*

*Plan Bay Area* is the Bay Area's SCS, and compliance with its policies results in the region achieving state-mandated emission reductions from cars and light-duty vehicles. Under the current targets, the Bay Area region must reduce its per capita vehicle emissions 7 percent by 2020 and 15 percent by 2035. Beginning October 1, 2018, the Bay Area region must reduce its per capita vehicle emissions 10 percent by 2020 and 19 percent by 2035.

The majority of SCS strategies do not apply to individual development projects. Nevertheless, the project would not impede the region from complying with the SCS. The SCS has two policies that apply to the project and with which the project would comply: encourage Transportation Demand Management (TDM) strategies and alternative fuel and vehicle strategies. As discussed above, the project includes a TDM plan and would provide charger ready parking spaces in its parking lots.

**Table 4.5.3: Analysis of Consistency with the CAP**

| CAP Measures and Actions | Consistency Analysis |
|---|---|
| Measure 1.1: Expand active transportation alternatives by providing infrastructure and enhancing connectivity for bicycle and pedestrian access; | The proposed project would involve construction of new sidewalks, walkways, and bicycle amenities (bicycle parking spaces, showers, lockers, etc.). The project sponsor would also contribute to the Commute.org shuttle program and coordinate with other program participants to expand shuttle service. |
| Measure 1.2: Support expansion of public and private transit programs to reduce employee commutes.<br>Work with businesses to support and expand shuttle connections to transit.<br>Continue to enforce the City's Transportation Demand Management (TDM) program to require employers to demonstrate achieved mode share and to continually adjust their programs to meet the requisite goals.<br>Partner with local businesses to expand private shuttle programs for employee commutes, share local lessons learned, and connect businesses to shuttle resources.<br>Implement programs and encourage employers to provide additional voluntary subsidies or incentives | The proposed project would involve preparation and implementation of a TDM Plan, subject to review by the Chief Planner and approval by the Planning Commission. The TDM Plan would include various measures to promote alternative transportation, including contribution to the Commute.org shuttle program and coordination with other program participants to expand shuttle service. |

| CAP Measures and Actions | Consistency Analysis |
|---|---|
| Measure 1.3: Integrate higher-density development and mixed-use development near transit facilities and community facilities, and reduce dependence on autos through smart parking practices.<br>Revise the existing traffic impact fee for development east of US Route 101 to fund the bicycle and pedestrian improvements for the portions of the city identified in the Bicycle and Pedestrian Master Plans. | The project site is not located near a major transit hub or community facility. However, the proposed project would involve contribution to the Commute.org shuttle program, which provides connectivity to BART, Caltrain, and ferry services.<br>In addition to paying into the traffic impact fee, the proposed project would involve construction of new sidewalks and bicycle amenities (bicycle parking spaces, showers, lockers, etc.) to encourage pedestrian and bicycle activity. |
| Measure 2.1: Expand the use of alternative-fuel vehicles.<br>• Revise parking design guidelines to include designated spaces for electric vehicles, carpool vehicles, and other low-emissions vehicles.<br>• Require new large-scale nonresidential developments to provide a conduit for future electric vehicle charging installations, and encourage the installation of conduits or electric vehicle charging stations for all new development. | The proposed project would provide off-street parking spaces, including designated spaces for electric vehicles, carpool, vanpool, and other shared vehicle uses. |
| Measure 2.2: Reduce emissions from off-road vehicles and equipment.<br>• Work with applicants through the CEQA review process to reduce construction equipment emissions by encouraging the use of alternatively powered or grid-connected equipment. | The proposed project would contribute emissions from off-road vehicles and equipment during the construction period. As a condition of approval, the City will require the construction contractor to use alternatively powered or electrically-driven construction vehicles and equipment when feasible. |
| Measure 3.1: Maximize energy efficiency in the built environment through standards and the plan review process.<br>• Encourage the use of CALGreen energy efficiency measures as a preferred mitigation for CAP streamlining. | The proposed project would be designed to enhance resource efficiency and ensure good indoor environmental quality, as well as reduce energy consumption, water consumption, and waste. The project would be designed to meet the standards of the City Municipal Code and CALGreen building requirements, as well as LEED v4 “Gold” design standards. The project would be designed to meet International WELL and FITWELL Building Institute Standards and may also be certified thereto. |
| Measure 3.3: Encourage energy efficiency retrofits to the existing nonresidential building stock that reduce operating costs and increase industry competitiveness.<br>• Encourage all nonresidential properties to provide buyers or tenants with the previous year's energy use by documenting use through the EPA's EnergyStar Portfolio Manager.<br>• Require nonresidential alterations or additions of at least 5,000 square feet or greater in size to comply with minimum CALGreen requirements.<br>• Encourage the use of smart grid, energy-efficient, or Energy Star appliances in new development. | The proposed project would not involve retrofits to existing nonresidential buildings. However, the proposed project would be designed to enhance resource efficiency and reduce energy consumption per CALGreen building requirements, LEED v4 “Gold” design standards and International WELL Building Institute Standards. |
| Measure 3.4: Address heat island issues and expand the urban forest.<br>• Encourage the use of high albedo surfaces and technologies as appropriate, as identified in the voluntary CALGreen standards.<br>• Continue to require tree planting in new development in accordance with Chapter 13.30 of the Zoning Code, and encourage tree placement to maximize building shading. | The proposed project would involve planting of approximately 263 new trees, including street trees and on-site landscaping. |
| Measure 4.1: Promote installation of alternative energy facilities.<br>• Require the construction of any new nonresidential conditioned space 5,000 square feet or more, or the | The proposed project would be designed to meet the standards of the City Municipal Code and CALGreen Tier 2 energy efficiency requirements, as well as LEED v4 “Gold” design standards and International WELL Building Institute |

| CAP Measures and Actions | Consistency Analysis |
|---|---|
| conversion of unconditioned space 5,000 square feet or more, to comply with one of the following standards:<br>• Meet a minimum of 50% of modeled building electricity needs with on-site renewable energy sources. To calculate 50% of building electricity needs for the new conditioned space, the applicant shall calculate building electricity use as part of the Title 24 compliance process. Total electricity use shall include total use for the new conditioned space excluding process energy.<br>• Participate in a power purchase agreement to offset a minimum of 50% of modeled building electricity use. Building electricity use shall be calculated using the method identified above.<br>• Comply with CALGreen Tier 2 energy efficiency requirements to exceed mandatory energy efficiency requirements by 20% or more. For additions to existing development of 5,000 square feet or more, CALGreen Tier 2 shall be calculated as part of the Title 24 compliance process. Existing building space already permitted shall not be subject to CALGreen Tier 2 requirements.<br>• Require all new development to install conduit to accommodate wiring for solar. | Standards. The project design would include construction of rooftop solar photovoltaic panel connectivity located on the parking garage. |
| Measure 5.1: Develop a waste reduction strategy to increase recycling and reuse of materials to achieve a 75% diversion of landfilled waste by 2020.<br>• Continue to enforce the existing construction and demolition recycling ordinance, requiring 100% of inert waste and 65% of noninert waste to be recycled from all eligible projects. | The proposed project would be designed to reduce waste. The project would be designed to meet the standards of the City Municipal Code and CALGreen building requirements, as well as LEED v4 “Gold” design standards and International WELL Building Institute Standards.<br>For construction and demolition, 100 percent of all inert solids (building materials) and 65 percent of non-inert solids (all other materials) would be recycled as required by the City under Chapter 15.60 of the Municipal Code. Additionally, the project sponsor would submit a Waste Management Plan |
| Measure 6.1: Reduce water demand.<br>• Revitalize implementation and enforcement of the Water Efficient Landscape Ordinance by undertaking the following:<br>o Establishing a variable-speed pump exchange for water features.<br>o Limiting turf area in commercial and large multi-family projects.<br>o Restricting hours of irrigation to occur between 3:00 a.m. and two hours after sunrise.<br>o Installing irrigation controllers with rain sensors.<br>o Landscaping with native, water-efficient plants.<br>o Installing drip irrigation systems.<br>o Reducing impervious surfaces. | The proposed project would be designed to reduce water consumption. The project would not involve construction of new on-site turf areas or water features. Landscaping and irrigation would be designed to meet the standards of the City Municipal Code and CALGreen building requirements, as well as LEED v4 “Gold” design standards.<br>The proposed project would also be designed to conserve resources and protect water quality through the management of stormwater runoff as part of green infrastructure through low-impact development (LID). This approach implements engineered controls to allow stormwater filtering, storage, and flood control. |
| Measure 6.2: Provide alternative water resources for irrigation.<br>• Create water policies for the stormwater management strategy that seek to capture storm runoff (e.g., bioswale, rainwater collection, and irrigation programs).<br>• Continue to implement the City’s Water Efficient Landscape Guidelines. | The proposed project would be designed to conserve water resources including controlled stormwater flows through paved areas into designated bioretention areas or storm drains. Portions of roof areas would also be designed as green roofs that would provide filtration. Stormwater received through all proposed roof areas would be routed to the ground level through downspouts and conveyed to bioretention areas. The proposed new office/R&D uses would adhere to LEED, City, and NPDES conservation measures applicable to water conservation, LID, and landscaping requirements. |

### *Consistency with State's 2030 Target and Long-Term Emission Reduction Goal*

With the passage of SB 32 (2016), the state adopted a 2030 target to reduce GHG emissions 40 percent below 1990 levels. In addition, the state has a long-term emission reduction goal to reduce emissions 80 percent below 1990 levels by 2050.

Based on CARB's 2017 Scoping Plan, many of the reductions needed to meet the 2030 target will come from state regulations, including cap-and-trade, the requirement for increased renewable energy sources in California's energy supply, updates to Title 24, and increased emission reduction requirements for mobile sources. The project would not impede the implementation of any of these regulations.

Executive Order S-03-05 established the state's long-term goal to reduce GHG emissions 80 percent from 1990 levels by 2050. Executive Order B-55-18 sets a more ambitious state goal of net zero GHG emissions by 2045. Executive orders are not binding on local jurisdictions that lack specific strategies or implementation measures to achieve their goals. Nevertheless, the Executive Orders' goals are based on a report from the Intergovernmental Panel on Climate Change regarding the global emission reductions needed to stabilize the climate and provides the best available lens for examining a project's long-range climate change impacts. Although the project's emissions level in 2045 cannot be reliably quantified, state-wide efforts are underway to facilitate the state's achievement of its 2045 goal. According to a report commissioned by the CEC, four key elements are critical for the state to achieve the 2050 GHG reduction goal in Executive Order S-03-05: (1) aggressive energy efficiency; (2) clean electricity; (3) widespread electrification of passenger vehicles, building heating and industry heating; and (4) large-scale production of low-carbon footprint biofuels to largely replace petroleum-based liquid fuels.[16] The majority of reductions required to meet the 2045 and 2050 goals will come from decarbonizing the state's energy and fuel supplies, which can only be accomplished by state-wide programs outside any individual jurisdiction's control. The project would not impede the state's ability to decarbonize its energy and fuel supplies. Should the state continue to make progress on reducing emissions from the energy sector until it meets the requirement for 100 percent renewable sources by 2045 and as technological advances occur, particularly in vehicles (whose fuel is regulated through the state's cap-and-trade program), it is reasonable to expect the project's emissions profile to decline. In addition, over the project's life, it is reasonable to anticipate certain building systems and fixtures will be upgraded in ways that will reduce its GHG emissions. For these reasons, the project would not impede the state's ability to reach the 2045 or 2050 GHG emission reduction goals.

## Cumulative Impact on Climate Change

The analysis of climate change is inherently cumulative. Thus, BAAQMD's CEQA guidelines clearly state that if annual emissions of operational-related GHGs do not exceed established thresholds, then the proposed project would not result in a cumulatively considerable contribution to GHG emissions or a cumulatively significant impact on global climate change. Therefore, as elucidated when addressing other potential impacts, the project emissions would be below the thresholds and would not result in impacts on GHG emissions, nor contribute considerably to significant cumulative impacts on global climate.

[16] University of California, Berkeley and Lawrence Berkeley National Laboratory, Scenarios for Meeting California's 2050 Climate Goals (September 2013).

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