

4.8 GREENHOUSE GAS EMISSIONS

This section describes the existing greenhouse gas (GHG) conditions and analyzes the potential GHG emissions that would result from implementation of the project.

The information in this section is based on the following sources:

- Guidance adopted by the Bay Area Air Quality Management District (BAAQMD)
- An Air Quality and GHG Emissions Report provided by Illingworth and Rodkin, Inc. (see **Appendix B**)
- The Contra Costa County General Plan 2005-2020 (General Plan)
- The Contra Costa County Climate Action Plan (CCCCAP), adopted December 2015

The above-mentioned reports are available for review at the Contra Costa County (County) Department of Conservation and Development, Community Development Division, 30 Muir Road, Martinez, California.

No comments related to GHG emissions were received in response to the Notice of Preparation for this draft environmental impact report.

4.8.1 EXISTING CONDITIONS

Greenhouse gases trap heat in the atmosphere, preventing it from dissipating into outer space. The accumulation of GHGs in the atmosphere has been implicated as a driving force for global climate change. Definitions of climate change vary between regulatory authorities and the scientific community, but in general can be described as the changing of the earth's climate caused by natural fluctuations and anthropogenic activities that alter the composition of the global atmosphere.

Individual projects contribute to the cumulative effects of climate change by emitting GHGs during demolition, construction, and operational phases. The principal GHGs are carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), ozone (O₃), and water vapor. While the primary GHGs in the atmosphere are naturally occurring CO₂, CH₄, and N₂O are largely 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. Other GHGs, such as hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride have much greater heat absorption potential than CO₂, and are generated in certain industrial processes.

There is international scientific consensus that human-caused increases in atmospheric GHG concentrations have contributed and will continue to contribute to global warming, although there is uncertainty concerning the magnitude and rate of the warming. Potential global warming impacts in California may include, but are not limited to, loss in snowpack, sea-level rise, more extreme heat days per year, more high ozone days, more large forest fires, and more drought years. Secondary effects are likely to include global rise in sea-level, impacts to agriculture, changes in disease vectors, and changes in habitat and biodiversity.

The California Air Resources Board (ARB) estimated that in 2015 California produced about 440.4 million gross metric tons of carbon dioxide equivalent (CO₂e) emissions.¹ The ARB found that transportation is the source of 37 percent of the State's GHG emissions, followed by industrial sources at 21 percent, and electricity generation at 19 percent (ARB, 2017).

In the San Francisco Bay Area (Bay Area), fossil fuel consumption in the transportation sector (on-road motor vehicles, off-highway mobile sources, and aircraft) is the single largest source of GHG emissions, accounting for approximately 39.7 percent of the Bay Area's GHG emissions in 2011. Industrial and commercial sources (including office and retail uses) were the second largest contributors of GHG emissions with about 35.7 percent of total emissions. Electricity production accounts for almost 14 percent of the Bay Area's GHG emissions, followed by domestic sources (e.g., home water heaters, furnaces, etc.) at approximately 7.7 percent. Off-road equipment and farming account for approximately 1.5 percent of the total Bay Area GHG emissions (ARB, 2017).

4.8.2 REGULATORY SETTING

Federal

2009 Endangerment Finding

In December 2009, in response to a U.S. Supreme Court ruling, the U.S. Environmental Protection Agency (EPA) made a finding under the Federal Clean Air Act (CAA) that current and projected atmospheric concentrations of the six generally recognized GHGs (CO₂, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride) "threaten the public health and welfare of current and future generations," and that emissions of these gases from new cars and trucks "contribute to the greenhouse gas pollution which threatens public health and welfare" (BAAQMD, 2015).

¹ The effect of a project on global climate change is calculated by quantifying project emissions of GHG. CO₂ is the "reference gas" for climate change, meaning that emissions of GHGs are typically reported in CO₂e.

In conjunction with EPA, the National Highway Traffic Safety Administration of U.S. Department of Transportation (DOT) developed the National Program for Greenhouse Gas emissions. The first phase rulemaking applies to light duty cars and trucks in model years 2012-2016, and requires an average fuel economy standard of 32.6 miles per gallon (mpg) in 2015 and 34.1 mpg in 2016. If the automotive industry were to meet this CO₂ level entirely through fuel economy improvements, the total CO₂ emissions reductions would be approximately 1.8 billion barrels of oil savings between 2012 and 2016.

State

California has been at the vanguard of State efforts to regulate and reduce GHG emissions and to plan for the effects of global climate change. The State recognizes that “there appears to be a close relationship between the concentration of greenhouse gases in the atmosphere and global temperatures” and that “the “evidence for climate change is overwhelming.” The effects of climate change on California remain uncertain. According to a 2009 California Climate Adaptation Strategy final discussion report prepared by the California Climate Action Team Report, the following climate change effects and conditions can be expected to occur in California over the course of the next century:

- A change in the timing of precipitation, with more falling as rain and less as snow, resulting in a diminishing Sierra Nevada snowpack that would threaten the State’s water supply.
- Increased average temperatures of up to 4.0-9.0 degree Fahrenheit (°F).
- A 25 to 35 percent increase in the number of days ozone pollution levels are exceeded in most urban areas.
- Increased vulnerability of forests due to pest infestation, increased temperatures, and lightning storms without precipitation.
- Increased challenges for the State’s important agricultural industry from water shortages, increasing temperatures, and saltwater intrusion into the Delta.
- Increased electricity demand, particularly in the hot summer months.
- Sea-level rise of 12 to 18 inches by 2050 and 21 to 55 inches by 2100

State of California Executive Order S-3-05

In June 2005, in recognition of California’s vulnerability to the effects of climate change, Governor Schwarzenegger established Executive Order S-3-05, which sets forth a series of target dates by which statewide emission of GHGs would be progressively reduced, as follows: by 2010, reduce GHG emissions to 2000 levels; by 2020, reduce GHG emissions to 1990 levels; and by 2050, reduce GHG emissions to 80 percent below 1990 levels (ARB, 2017).

Executive Order B-30-15

Governor Jerry Brown signed Executive Order B-30-15s on April 29, 2015. The following are major provisions of the Executive Order:

1. A new interim statewide greenhouse gas emission reduction target to reduce greenhouse gas emissions to 40 percent below 1990 levels by 2030 is established in order to ensure California meets its target of reducing greenhouse gas emissions to 80 percent below 1990 levels by 2050.
2. All state agencies with jurisdiction over sources of greenhouse gas emissions shall implement measures, pursuant to statutory authority, to achieve reductions of greenhouse gas emissions to meet the 2030 and 2050 greenhouse gas emissions reductions targets.
3. The California Air Resources Board shall update the Climate Change Scoping Plan to express the 2030 target in terms of million metric tons of carbon dioxide equivalent.

The executive order does not apply directly to cities and counties, but will lead to the preparation of a new ARB Scoping Plan and the development of regulations to achieve post-2020 reduction targets.

Assembly Bill 32: The California Global Warming Solutions Act of 2006 (Scoping Plan Updated 2014)

In 2006, California passed the California Global Warming Solutions Act of 2006 (AB 32), which requires the ARB to design and implement emission limits, regulations, and other measures, such that feasible and cost-effective statewide GHG emissions are reduced to 1990 levels by 2020 (representing a 25 percent reduction in emissions).

AB 32 establishes a timetable for the ARB to adopt emission limits, rules, and regulations designed to achieve the intent of the Act. In order to meet these goals, California must reduce its GHG emissions by 30 percent below projected 2020 business as usual emissions levels or about 10 percent from today's levels. In May 2014, ARB released an updated Scoping Plan in 2014 to meet the 2020 GHG reduction limits outlined in AB 32. The Scoping Plan estimates a reduction of 174 million metric tons (about 191 million U.S. tons) of CO₂e (ARB, 2015).

Transportation Sector Reductions

Approximately one-third of the emissions reductions strategies fall within the transportation sector and include the following: California Light-Duty Vehicle GHG standards, the Low Carbon Fuel Standard, Heavy-Duty Vehicle GHG emission reductions and energy efficiency, and medium and heavy-duty vehicle hybridization, high speed rail, and efficiency improvements in goods movement.

Energy Sector Reductions

Emissions from the energy sector are expected to reduce another 25 million metric tons of CO₂e. Reductions from the electricity sector include building and appliance energy efficiency and conservation, increased combined heat and power, solar water heating (AB 1470), the renewable energy portfolio standard (33 percent renewable energy by 2020), and the existing million solar roofs program.

Other Reductions

Other reductions are expected from industrial sources, agriculture, forestry, recycling and waste, water, and emissions reductions from cap-and-trade programs. Regional GHG targets are also expected to yield a reduction of 23 million metric tons of CO₂e.

California's Regional Transportation and Land Use Planning Efforts (Senate Bill 375)

In addition to policy directly guided by AB 32, in 2008 the legislature passed Senate Bill (SB) 375, which provides for regional coordination in land use and transportation to incorporate a “sustainable communities strategy” into regional transportation plans that will achieve GHG emission reduction targets set by ARB.² SB 375 also includes provisions for streamlined CEQA review for some infill projects such as transit-oriented development. The Metropolitan Transportation Commission’s (MTC) 2013 Regional Transportation Plan (RTP) will be its first plan subject to SB 375.

SB 375 requires ARB to establish regional GHG reduction targets for GHGs. ARB appointed a 21-member Regional Targets Advisory Committee to recommend factors to be considered and methodologies used in setting the regional goals; this committee provided its recommendations to ARB in September 2009.

Modification to the Public Resources Code (Senate Bill 97)

Pursuant to State Senate Bill (SB) 97, the Governor’s Office of Planning and Research (OPR) was required to “prepare, develop, and transmit” the guidelines to the Resources Agency on or before July 1, 2009. OPR transmitted draft guidelines to the Resources Agency in June 2009. In September 2009, the Resources Agency released draft amendments to the CEQA Guidelines regarding GHG reductions. These draft guidelines were adopted on December 30, 2009, and went into effect on March 18, 2010. These CEQA Guidelines provide direction for determining the significance of impacts from GHG emissions on the environment.

BAAQMD adopted Air Quality Guidelines in May 2012 that include a significance threshold for GHG emissions within the Bay Area region. Refer to **Subsection 4.8.3**

² Senate Bill 375 was amended in September 2008.

for further discussion of the significance thresholds used in evaluating global climate change and GHG emissions for this project.

California's Energy Efficiency Standards for Residential Buildings, Title 24, Part 6, of the California Code of Regulations and California Building Code (Cal Green)

The Energy Efficiency Standards for Residential Buildings were established in 1978 in response to a legislative mandate to reduce California's energy consumption. The standards are updated periodically to allow consideration and possible incorporation of new energy efficiency technologies and methods. Typically every three years energy efficiency standards are revised to include more stringent performance requirements. The 2016 standards went into effect January 2017 (California Building Standards Commission, 2017).

Regional

BAAQMD Climate Protection Program

In June 2005, BAAQMD established a Climate Protection Program to reduce pollutants that contribute to global climate change and affect air quality in the Bay Area. The climate protection program includes measures that promote energy efficiency, reduce vehicle miles traveled, and develop alternative sources of energy all of which assist in reducing emissions of GHG and in reducing air pollutants that affect the health of residents. BAAQMD also seeks to support current climate protection programs in the region and to stimulate additional efforts through public education and outreach, technical assistance to local governments and other interested parties, and promotion of collaborative efforts among stakeholders.

BAAQMD CEQA Guidelines

In June 2010, BAAQMD adopted thresholds of significance to assist in the review of projects under CEQA. BAAQMD adopted revisions to the Guidelines in May 2011 that clarify application of several thresholds. These thresholds were designed to establish the level at which BAAQMD believed air pollution emissions would cause significant environmental impacts under CEQA and were posted on BAAQMD's website and included in BAAQMD 2012 updated CEQA Guidelines (BAAQMD, 2012).

BAAQMD's adoption of the thresholds was called into question by an order issued March 5, 2012, in *California Building Industry Association v. BAAQMD* (Alameda Superior Court Case No. RGI0548693). The order required BAAQMD to set aside its approval of the thresholds until it has conducted environmental review under CEQA. The claims made in the case concerned the environmental impacts of adopting the thresholds, that is, how the thresholds would indirectly affect land use development patterns. Those issues are not relevant to the scientific basis of BAAQMD's analysis of what levels of pollutants should be deemed significant. In August 2013, the First

District Court of Appeal held the adoption of the thresholds was not a “project” subject to CEQA review. Then in December 2013, the California Supreme Court granted a petition to review the question of whether the guidelines could compel evaluation of impacts of the environment on a project (i.e., “CEQA in reverse”). In December 2015, the Court held that CEQA generally does not require such an analysis. This analysis considers the science informing the thresholds as being supported by substantial evidence. Scientific information supporting the thresholds was documented in BAAQMD’s proposed thresholds of significance analysis. This analysis herein uses the thresholds and methodologies from BAAQMD’s May 2011 CEQA Air Quality Guidelines to determine the potential impacts of the Project on the existing environment.

BAAQMD framework is designed to implement AB 32. To derive its significance thresholds, BAAQMD estimated the growth in statewide GHG emissions between 1990 and 2020 attributable to “land use” related planning. These planning considerations include transportation, electric power, commercial and residential configurations (influencing vehicle miles traveled), and recycling and waste. BAAQMD documents show that a 26.2 percent reduction from statewide land use related greenhouse gas emissions would be necessary to meet the AB 32 goals. To effect these reductions, BAAQMD adopted an efficiency threshold (i.e., 4.6 metric tons of carbon dioxide equivalent emissions per member of a project service population). This threshold is discussed in **Subsection 4.8.3**.

Local

Contra Costa County General Plan

The General Plan recognizes the positive impact that judicious land use and transportation planning at the city and county level represents another means of improving air quality. The following General Plan policies pertaining to GHG emissions apply to the project:

- 8-103: When there is a finding that a proposed project might significantly affect air quality, appropriate mitigation measures shall be imposed.
- 8-104: Proposed projects shall be reviewed for their potential to generate hazardous air pollutants.
- 8-107: New Housing in infill and peripheral areas which are adjacent to existing residential development shall be encouraged.

Project Consistency Analysis

The project conforms to the General Plan policies 8-103 and 8-104, through the compilation of this draft environmental impact report, and the identification of mitigation measures necessary to remediate the emissions from project buildout. Additionally, the project is consistent with General Plan policy 8-107, as the project

is in within the Urban Limit Line (ULL) and would be utilizing previously developed space to construct new residential units, as well as dedicating the existing open space to the Land Conservancy trust, the HOA, or public agency.

Contra Costa County Climate Action Plan

On December 15, 2015, the Board of Supervisors approved the CCCCAP. The CCCCAP identifies specific measures on how the County can achieve a GHG reduction target of 15 percent below baseline levels by the year 2020. In addition to reducing GHGs, the CCCCAP includes policies and actions to improve public health and provide additional community benefits, and it lays the groundwork for achieving long-term greenhouse reduction goals for a qualified 2020 and 2035 GHG Reduction Strategy. The CCCCAP contains an analysis demonstrating that it meets BAAQMD's minimum standards for a qualified GHG reduction strategy. Therefore, the primary means of determining project significance is through an assessment of consistency of the project with the CCCCAP.

Project Consistency Analysis

The CCCCAP provides performance criteria to ensure that new projects are consistent with and do not compromise the County's ability to attain GHG reduction targets. As discussed in **Subsection 4.8.3**, the project would be consistent with applicable CCCCAP GHG reduction measures with application of **Mitigation Measure GHG-1**.

4.8.3 IMPACTS AND MITIGATION MEASURES

Significance Criteria

Appendix G of the CEQA Guidelines identifies environmental issues a lead agency can consider when determining whether a project could have significant effects on the environment. The project would have a significant impact if it would:

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

GHG impacts are evaluated in the context of the cumulative condition, since no single land use (during construction or operation) can generate enough project-level emissions to change the global average temperature. No project-level impacts are therefore identified.

BAAQMD adopted the following CEQA thresholds of significance to clarify the evaluation of GHG emissions in the cumulative context:

- 1,100 metric tons (MT) of CO₂e per year); or

- 4.6 MT of CO₂e per project service population member per year.

Discussion of Less-than-Significant Impacts

Would the project generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment?

Short-term GHG emissions associated with project construction activities, would consist primarily of emissions from equipment exhaust and worker and vendor trips. There would also be long-term operational emissions associated with vehicular traffic within the project vicinity, energy and water usage, and solid waste disposal. Emissions for the project are discussed below and were analyzed using the methodology recommended in the 2011 BAAQMD CEQA Air Quality Guidelines.

Construction

Neither BAAQMD nor the County has an adopted threshold of significance for construction-related GHG emissions. For the purpose of this analysis, GHGs emitted during project construction were compared to BAAQMD's 1,100 MT of CO₂e per year threshold for operational impacts. Construction-related GHG emissions were estimated at 274 MT of CO₂e (see **Appendix B**), well below the applicable threshold.

Operation

In their May 2011 update to the CEQA Air Quality Guidelines, BAAQMD identified screening sizes for land use projects that could result in significant GHG emissions. For operational impacts related to single-family residential projects, the screening size is 56 dwelling units. GHG emissions from operation of single-family projects below this threshold are expected to be below BAAQMD significance threshold of 1,100 MT of CO₂e. Since the project proposes 35 dwelling units, this operational impact would be less than significant.

Discussion of Potentially Significant Impacts

Would the project conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases?

Impact GHG-1: The project could conflict with the Contra Costa County Climate Action Plan.

As noted above, the project would emit greenhouse gases in amounts significantly below BAAQMD's thresholds and screening criteria, and therefore the project is consistent with BAAQMD policies. The project is also consistent with Plan Bay Area, the region's sustainable communities strategy. While not located in a Priority Development Area (PDA), the project site is located near the PDA that encompasses Danville, and is located less than 1 mile from Interstate 680, a major transportation

corridor providing project residents with access to complementary uses that minimizes vehicle miles traveled.

Additionally, the CCCCAP serves as a Qualified Greenhouse Gas Reduction Strategy approved by BAAQMD to reduce GHG emissions in accordance with AB 32 goals. As discussed in **Appendix B**, Appendix E of the CCCCAP provides the following performance criteria to ensure that new projects are consistent with, and do not compromise, the County's ability to attain GHG reduction targets:

- **Measure EE 1: Energy-Efficient Retrofits – Residential Buildings.** Provide opportunities for residential buildings to become more energy efficient.
- **Measure EE 6: Energy-Efficient New Buildings.** Support the statewide transition to net zero energy construction for new residential buildings by 2020.
- **Measure RE 1: Alternative Energy Installations.** Promote installation of alternative energy facilities on homes and businesses.
- **Measure LUT 2: Alternative-Fuel Infrastructure.** Expand the use of alternative fuels in vehicle travel.

A significant impact would occur if the project did not comply with these GHG reduction goals. **Mitigation Measure GHG-1** would require improvements to achieve consistency with applicable CCCCAP GHG reduction measures.

Mitigation Measure GHG-1: The following improvements will be included as requirements for building permits for any applicable structure on the project site:

- The proposed project shall install high-efficiency kitchen and laundry appliances (e.g., Energy Star-rated appliances or equivalent). Tankless water heaters or a similar hot water energy-saving device or system shall be installed.
- The project proponent will develop a solar exposure study to determine which residences would benefit from solar energy. The solar study will be submitted prior to obtaining a building permit. Residences that would cost-effectively benefit from solar energy shall be wired to be solar ready, as defined by the California Building Standards Code. Residences that would not cost-effectively benefit from solar energy shall have the attic insulated with R-49 insulation batts to prepare for the statewide transition to zero net energy.
- The proposed project shall provide prewiring for electric vehicle charging stations for each residence.

Significance after Mitigation: With implementation of the energy-saving measures established by **Mitigation Measure GHG-1**, the project would comply with applicable performance criteria established by the CCCCAP. This impact would be less than significant.

4.8.4 REFERENCES

- Bay Area Air Quality Management District, 2015. *Bay Area Emissions Inventory Summary Report: Greenhouse Gases (Base Year 2011)*. Available: http://www.baaqmd.gov/~media/Files/Planning%20and%20Research/Emission%20Inventory/BY2011_GHGSummary.ashx?la=en. Accessed September 10, 2015.
- Bay Area Air Quality Management District, 2012. *CEQA Air Quality Guidelines 2012*. Available: http://www.baaqmd.gov/~media/files/planning-and-research/ceqa/baaqmd-ceqa-guidelines_final_may-2012.pdf?la=en. Accessed September 15, 2015.
- California Air Resources Board, 2017. *California Greenhouse Gas Emissions Inventory for 2000-2015*. Available: https://www.arb.ca.gov/cc/inventory/pubs/reports/2000_2015/ghg_inventory_trends_00-15.pdf. Accessed July 13, 2017.
- California Air Resources Board, 2014. *Climate Change Scoping Plan*. Available: http://www.arb.ca.gov/cc/scopingplan/2013_update/first_update_climate_change_scoping_plan.pdf. Accessed September 15, 2015.
- California Building Standards Commission, 2017. *Building Energy Efficiency Program*. Available: <http://www.energy.ca.gov/title24/>. Accessed July 13, 2017.
- Illingworth and Rodkin, Inc, 2017. *Ball Estates Project Air Quality and Greenhouse Gas Emissions Assessment*.

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