

3.7 Greenhouse Gas Emissions

This section evaluates potential impacts related to greenhouse gas (GHG) emissions during construction, invasive plant management and maintenance of the Project. Construction activities include the earthwork involved in the estuarine restoration and infrastructure improvement portions of the Project. Invasive plant management activities include the removal of dense-flowered cordgrass (*Spartina densiflora*), European beachgrass (*Ammophila arenaria*), and dwarf eelgrass (*Zostera japonica*) using any one or a combination of the methods described in Section 2.5 (Proposed Invasive Plant Management). Maintenance activities include periodic repairs and improvements to the non-motorized boat put-in, trails, parking lots and road within the Project Area, and also include monitoring activities. Potential impacts from public access related to GHG emissions are also considered in this section. The study area for this section includes the Project Area and adjacent lands where sensitive receptors may be impacted by construction, invasive plant management or maintenance-related GHG emissions that would potentially occur from the Project.

3.7.1 Setting

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. The accumulation of GHGs has been implicated as the driving force for global climate change. The primary GHGs are carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), ozone (O₃), and water vapor (H₂O).

While GHGs in the atmosphere are naturally occurring, the emission rate of CO₂, CH₄ and N₂O has been accelerated by human activities. Emissions of CO₂ are largely a by-product of fossil fuel combustion, whereas CH₄ results from off-gassing associated with such activities as agricultural practices and landfills. Other GHGs include hydrofluorocarbons, perfluorocarbons and sulfur hexafluoride, which are generated during certain industrial processes. Greenhouse gases are typically reported in carbon-dioxide-equivalent measures (CO₂e), as each GHG has a different global warming potential.

The study area is located within a rural area generally comprised of agricultural land, undeveloped riverine floodplains, freshwater and estuarine wetlands, and single-family residences. Although agricultural activities do generate GHG emissions, the amount of active dairies or other similar uses within the study area is limited. Additionally, due to the rural nature of the study area, the demand for fossil fuels in the form of transportation is low. The majority of trips are associated with traveling to areas for recreational purposes, residents traveling to their respective homes and/or ranches, and maintenance of infrastructure and habitats in the Project Area. No other major sources of GHG emissions exist in the study area.

3.7.2 Regulatory Framework

Federal

The U.S. Environmental Protection Agency (EPA) is the federal agency responsible for implementing the Clean Air Act (CAA). The U.S. Supreme Court ruled on April 2, 2007 that CO₂ is an air pollutant under the CAA, and that EPA has the authority to regulate emissions of GHGs. For long-term actions that have annual direct emissions of less than 25,000 metric tons of carbon-dioxide-equivalents (MTCO_{2e}), the Council on Environmental Quality (CEQ) previously encouraged federal agencies to consider whether the action's long-term emissions should receive similar analysis. The CEQ's 2016 final guidance removed direct emissions criteria and contains no numeric recommendations.

State

Executive Order S-3-05

In 2005, the Governor of California signed Executive Order (EO) S-3-05, which established GHG emission reduction targets to reduce emissions as follows:

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

Assembly Bill 32, California Global Warming Solutions Act of 2006

In 2006, the Governor of California signed the Global Warming Solutions Act of 2006 (Assembly Bill [AB] 32), committing California to reducing GHG emissions to 1990 levels by 2020. The statute requires the California Air Resources Board (CARB) to track emissions through mandatory reporting, determine the 1990 emission levels, set annual emissions limits that would result in meeting the 2020 target, and design and implement regulations and other feasible and cost effective measures to ensure that statewide GHG emissions would be reduced to 1990 levels by 2020. CARB calculated the 2020 emissions limit as 431 million metric tons (MMT) CO_{2e}. Projected business-as-usual emissions for 2020 are 509 MMT CO_{2e}. A reduction of 78 MMT CO_{2e} is needed to meet the goal (CARB 2012).

Executive Order B-30-15

On April 29, 2015, the Governor of California announced EO B-30-15 and established the 2030 target of reducing GHG emissions to 40 percent below 1990 levels. The emission reduction target is an interim-year goal to provide substantial progress toward the ultimate goal of reducing emissions by 80 percent below 1990 levels by 2050.

Senate Bill 32 and Assembly Bill 197

Senate Bill (SB) 32, passed in 2016, extended the goals of AB 32 and codifies the GHG reduction target of 40 percent below 1990 levels by year 2030, consistent with EO B-30-15. The companion bill to SB 32, AB 197, provides additional direction to CARB in developing each update to the Climate Change Scoping Plan (see below).

Climate Change Scoping Plan

In December 2008, pursuant to AB 32, CARB adopted the Climate Change Scoping Plan (Scoping Plan), which outlined measures to attain the 2020 GHG emissions limit. The Scoping Plan estimated that implementation of identified measures would result in a reduction of 105.3 MMT CO₂e from various sectors. AB 32 requires CARB to update the Scoping Plan at least every five years. The 2017 Scoping Plan does not contain a recommended reduction level or percent for local government's municipal operations. However, the 2017 Scoping Plan does describe CARB's recommended statewide per-capita emissions targets for 2030 and 2050, and further details how local land-use agencies may derive quantitative locally-appropriate community-wide per capita emissions targets that align with the statewide targets.

Regional and Local

North Coast Unified Air Quality Management District

The North Coast Unified Air Quality Management District (NCUAQMD) is a regional environmental regulatory agency with jurisdiction over Humboldt County. The NCUAQMD enforces local, state and federal air quality regulations and air quality permits.

In 2011, NCUAQMD adopted Rule 111 (Federal Permitting Requirements for Sources of Greenhouse Gases) into the District rules and thus established a threshold above which New Source Review (NSR) and federal Title V permitting applies. Rule 111 also established federally enforceable limits on GHG emissions for stationary sources. This Project does not include any new stationary sources; therefore, Rule 111 would not apply.

The NCUAQMD has not adopted regulations regarding the evaluation of GHG emissions in a CEQA document, or established CEQA significance criteria specific to evaluating the effects of project-related GHG emissions.

Humboldt County

Portions of the study area (i.e., areas outside of the Project Area that are not owned by CDFW) are subject to local oversight and compliance with the Humboldt County General Plan and Eel River Area Local Coastal Plan. The County released a draft Climate Action Plan in January 2012, which contains an emissions inventory and forecast. The draft Climate Action Plan also includes a proposed emissions reduction target. However, the County has not yet adopted the Climate Action Plan.

The goals and policies within the Humboldt County General Plan that regulate GHG emissions include the following:

AQ-G4. Greenhouse Gas Emissions

Successful mitigation of GHG emissions associated with this Plan to levels of non-significance as established by the Global Warming Solutions Act and subsequent implementation of legislation and regulations.

AQ-P1. Reduce Length and Frequency of Vehicle Trips

Reduce the length and frequency of vehicle trips through land use and transportation policies by encouraging mixed-use development, compact

development patterns in areas served by public transit, and active modes of travel.

AQ-P9. County Climate Action Plan

Through public input and review, develop and implement a multi-jurisdictional Climate Action Plan to achieve reductions in GHG emissions consistent with the state Global Warming Solutions Act and subsequent implementing legislation and regulations.

AQ-11. Review of Projects for Greenhouse Gas Emission Reductions

The County shall evaluate the GHG emissions of new large-scale residential, commercial and industrial projects for compliance with state regulations and require feasible mitigation measures to minimize GHG emissions.

Eel River Area Local Coastal Plan

No GHG regulations are listed or discussed in the Eel River Area Local Coastal Plan.

3.7.3 Evaluation Criteria and Significance Thresholds

The Project would cause a significant impact related to GHG emissions, as defined by the CEQA Guidelines (Appendix G), if it would:

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

3.7.4 Methodology

The NCUAQMD has not adopted regulations regarding the evaluation of GHG emissions in a CEQA document, and has not established CEQA significance criteria to determine the significance of impacts with regard to GHGs (J. Davis. pers. comm. 2019). The NCUAQMD recommends considering the GHG emission CEQA standards from the Bay Area Air Quality Management District (BAAQMD) (J. Davis pers. comm. 2019). However, the BAAQMD does not contain quantitative GHG emission thresholds for Project construction (BAAQMD 2017). Therefore, due to a lack of local thresholds, this impact analysis applies the CARB's industrial Cap-and-Trade threshold of 25,000 MTCO_{2e} per year to determine the Project's impact for generation of GHGs.

This threshold is also consistent with the EPA's Greenhouse Gas Reporting Program reporting threshold for 'large' industrial sources. This threshold was selected after review of multiple threshold options. The BAAQMD has adopted quantitative thresholds of significance for project operations. However, the BAAQMD's 'bright line' threshold was determined to not be appropriate for the proposed Project, as the threshold was developed using a 'gap-based approach' covering land use development. Land use development includes typical commercial and residential development, but not restoration projects. As stated by the BAAQMD:

This approach is intended to attribute an appropriate share of GHG emission reductions necessary to reach AB 32 goals to new land use development projects in BAAQMD's jurisdiction that are evaluated pursuant to CEQA. (BAAQMD 2009)

The CARB's industrial Cap-and-Trade threshold of 25,000 MTCO_{2e} per year was determined to be the most appropriate threshold for the Project, as it is not tied to land use development growth associated with a specific region, but applies state-wide. Additionally, the state requires participation in the Cap-and-Trade program for covered facilities with emissions in excess of the threshold.

California Emissions Estimator Model, CalEEMod, (Version 2016.3.2) was used to estimate air pollutant emissions from Project construction, invasive plant management and maintenance activities. The construction emissions modelling was based on the construction equipment inventories, schedule, and estimated hauling quantities developed for the Project. Greenhouse gas emissions from the proposed prescribed burning of 279 acres (113 hectares) of European beachgrass and 571 acres (231 hectares) of dense-flowered cordgrass was estimated using the Intergovernmental Panel on Climate Change (IPCC) Fourth Assessment Report (AR4) Equation 101, Category 3C1c (Biomass Burning in Grassland).

In order to assess the potential impact of construction-generated emissions and prescribed burning, the construction and prescribed burning GHG emissions were annualized over an assumed 30-year Project lifespan and added to estimated invasive plant management and maintenance emissions.

Post-construction Project emissions were also estimated using CalEEMod to evaluate emissions from invasive plant management activities, site maintenance, and use of the Project Area by the public, at an assumed rate of six trips per day. These emissions were modelled for year 2 of construction. It was assumed that ongoing invasive plant management activities include the use of up to three pieces of heavy equipment, including excavators, backhoes, and/or marshmasters, as well as off-road vehicles for site access.

3.7.5 Impacts and Mitigation Measures

Impact GG-1: Would the Project generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment?

As described above, there are no local thresholds for evaluating GHG emissions. As a result, CARB's industrial Cap-and-Trade threshold of 25,000 MTCO_{2e} per year was used to evaluate Project impacts from generation of GHGs during construction, invasive plant management, and maintenance activities.

Project construction activities would result in a temporary increase in GHG emissions, including exhaust emissions from on-road trucks, worker commute vehicles, and off-road heavy-duty equipment. Construction would require clearing, earthmoving, and operation of equipment, as used for similar projects, and which have been accounted for in the State's emission inventory and reduction strategy for both on and off-road vehicles. Construction emissions were estimated to be

approximately 990 MTCO_{2e} from all construction activities over the two-year construction period. Annualized construction emissions equal 33 MTCO_{2e}/year.

It is assumed that ongoing invasive plant management activities would occur for up to ten years or as long as needed to achieve control and/or eradication. Invasive plant management activities would generate an estimated 1,533 MTCO_{2e} and 750 MTCO_{2e} from prescribed burning of European beach grass and dense-flowered cordgrass, respectively, over a ten year treatment period. Annualized prescribed burning emissions equal 51 MTCO_{2e}/year and 25 MTCO_{2e}/year for European beach grass and dense-flowered cordgrass, respectively. Invasive plant management would also generate an estimated annual 15 MTCO_{2e} from machinery use. If invasive plant management activities were to persist beyond ten years, the annualized emissions would remain the same.

Table 3.7-1—Greenhouse Gas Pollutant Emissions summarizes Project construction, invasive plant management, maintenance and public access-related GHG emissions model results. Cumulatively, Project emissions total well below the established 25,000 MTCO_{2e} per year threshold.

Emissions during construction would not be a considerable contribution to the cumulative GHG impact, given that construction would be temporary, of short duration, and would not require a large fleet of earthmoving equipment and soil off hauling. Additionally, invasive plant management, maintenance, and public access emissions would not exceed the identified emission thresholds. Accordingly, the Project would not result in substantial long-term emissions of GHGs and would result in a less than significant impact.

Table 3.7-1. Greenhouse Gas Pollutant Emissions

Parameter	Emissions (metric tons per year)
Mobile (Trips to Project Site for invasive plant management, maintenance, and public access)	92
Invasive Plant Management (Off-road equipment)	15
Annualized Prescribed Burning (European beach grass)	51
Annualized Prescribed Burning (dense-flowered cordgrass)	25
Annualized Construction	33
Total	216
<i>Threshold of Significance</i>	25,000
<i>Significant Impact (Yes/No)</i>	No

Notes: Table 3.7-1 includes estimated emissions from Project activities annualized over a 30 year period. The emissions are presented in metric tons per year based off of estimated annual emissions, assuming a 30 year period.

The Project would result in an increase in coastal and salt marsh wetland habitat. A recent summary of existing data (William et al. 2009) suggests that freshwater wetlands, riparian forest, brackish wetlands, and salt marsh all have high rates of carbon sequestration. However, wetlands also produce methane, which is a potent GHG, during anaerobic decomposition in low-salinity, saturated soils. Methods for measuring carbon sequestration and methane production in wetlands are just becoming standardized.

According to the IPCC's 2013 Supplement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories – Wetlands:

Rewetting can also restore wetlands to a state where net CO₂ emissions are greatly reduced or even become negative, causing the wetlands to function as a net remover of greenhouse gases from the atmosphere. (IPCC 2013)

The amount of GHGs produced or sequestered for any given wetland or wetland restoration project is in large part determined by the type of wetland and other site-specific conditions. For instance, the carbon sequestration benefit of freshwater wetlands is offset by their production of methane. Seasonal wetlands and riparian habitat produce less methane than perennial freshwater wetlands because they dry out during summer when methane production in saturated soils is greatest, due to anoxic conditions (Williams et al. 2009). While mudflats produce little methane, they also sequester less carbon. Therefore, restoring salt marsh and brackish wetlands is an effective means to sequester carbon while reducing methane emissions.

Mitigation Measures: No mitigation is necessary.

Level of Significance: Less than significant.

Impact GG-2: Would the Project conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs?

The Project was evaluated for consistency with the CARB 2017 Climate Change Scoping Plan. The Scoping Plan provides California's climate policy portfolio and recommended strategies to put the state on a path to achieve the 2030 target. The scenario includes ongoing and statutorily required programs, continuing the Cap-and-Trade Program, and high-level objectives and goals to reduce GHGs across multiple economic sectors.

The Project would cause a temporary increase in GHGs; however, invasive plant management, maintenance and public access emissions would not exceed the identified emission thresholds, as shown in Impact GG-1. Table 3.7-2 summarizes the Project's consistency with the 2017 Climate Change Scoping Plan.

Table 3.7-2. Consistency Analysis Between Project and Climate Change Scoping Plan

Scoping Plan Reduction Measures	Consistency/Applicability Determination
<p>California Cap-and-Trade Program Linked to Western Climate Initiative. Implement a broad-based California Cap-and-Trade program to provide a firm limit on emissions. Link the California cap-and-trade program with other Western Climate Initiatives. Partner programs to create a regional market system to achieve greater environmental and economic benefits for California. Ensure California's program meets all applicable AB 32 requirements for market-based mechanisms.</p>	<p>Not Applicable. This reflects the adoption of a state-wide measure that cannot be implemented by the lead agency. The Project would not include facilities or emissions sources subject to this measure.</p>
<p>California Light-Duty Vehicle GHG Standards. Implement adopted standards and planned second phase of the program. Align zero-emission vehicle, alternative and renewable fuel and vehicle technology programs with long-term climate change goals</p>	<p>Not Applicable. This reflects the adoption of a state-wide standard that cannot be implemented by the lead agency.</p>
<p>Energy Efficiency. Maximize energy efficiency building and appliance standards; pursue additional efficiency including new technologies, policy, and implementation mechanisms. Pursue comparable investment in energy efficiency from all retail providers of electricity in California.</p>	<p>Not Applicable. This is a measure for the state to increase its energy efficiency standards in new buildings. The Project would not include buildings or facilities.</p>
<p>Renewable Portfolio Standard. Achieve 33 percent renewable energy generation mix statewide. Renewable energy sources include (but are not limited to) wind, solar, geothermal, small hydroelectric, biomass, anaerobic digestion, and landfill gas.</p>	<p>Not Applicable. This reflects the adoption of a statewide standard that cannot be implemented by the lead agency. The Project would not include energy-utilizing facilities.</p>
<p>Low Carbon Fuel Standard. Develop and adopt the Low Carbon Fuel Standard.</p>	<p>Not Applicable. This reflects the adoption of a state-wide standard that cannot be implemented by the lead agency. When this measure is initiated, the standard would be applicable to the fuel used by</p>

Scoping Plan Reduction Measures	Consistency/Applicability Determination
<p>Regional Transportation-Related GHG Targets. Develop regional GHG emissions reduction targets for passenger vehicles. This measure refers to SB 375.</p>	<p>Not applicable. This is a statewide measure calling for the development of GHG emission reduction targets that cannot be implemented by the lead agency.</p>
<p>Vehicle Efficiency Measures. Implement light-duty vehicle efficiency measures.</p>	<p>Not applicable. This reflects the adoption of a statewide standard that cannot be implemented by the lead agency.</p>
<p>Goods Movement. Implement adopted regulations for the use of shore power for ships at berth. Improve efficiency in goods movement activities.</p>	<p>Not applicable. The Project does not propose any changes to modes of transportation of goods.</p>
<p>Million Solar Roofs Program. Install 3,000 megawatts (MW) of solar-electric capacity under California's existing solar programs.</p>	<p>Not Applicable. This measure is intended to increase solar power throughout California, which is being done by various utility companies and solar programs. The Project would not include energy-utilizing facilities that could utilize solar power.</p>
<p>Medium/Heavy-Duty Vehicles. Adopt medium and heavy-duty vehicle efficiency measures.</p>	<p>Not applicable. This reflects the adoption of a statewide standard that cannot be implemented by the lead agency.</p>
<p>Industrial Emissions. Require assessment of large industrial sources to determine whether individual sources within a facility can cost-effectively reduce GHG emissions and provide other pollution reduction co-benefits. Reduce GHG emissions from fugitive emissions from oil and gas extraction and gas transmission. Adopt and implement regulations to control fugitive methane emissions and reduce flaring at refineries.</p>	<p>Not applicable. This measure would apply to the direct GHG emissions at major industrial facilities. The Project is not industrial.</p>

Scoping Plan Reduction Measures	Consistency/Applicability Determination
High Speed Rail. Support implementation of a high-speed rail system.	Not applicable. This is a state-wide measure that cannot be implemented by the lead agency.
Green Building Strategy. Expand the use of green building practices to reduce the carbon footprint of California's new and existing inventory of buildings.	Not Applicable. The Project would not include buildings that could utilize green building practices.
High Global Warming Potential Gases. Adopt measures to reduce high global warming potential gases.	Not Applicable. This measure is applicable to the high global warming potential gases such as hydrofluorocarbons, perfluorocarbons and sulfur hexafluoride found in air conditioning and commercial refrigerators. The Project would not include such equipment.
Recycling and Waste. Reduce methane emissions at landfills. Increase waste diversion, composting, and commercial recycling. Move toward zero-waste.	Not Applicable. The Project does not include a landfill and would not generate a notable amount of waste that would need to be placed in a landfill.
Sustainable Forests. Preserve forest sequestration and encourage the use of forest biomass for sustainable energy generation.	Not Applicable. The Project Area is not and would not be forested.
Water. Continue efficiency programs and use cleaner energy sources to move and treat water.	Not Applicable. The Project would not move or treat water.
Agriculture. In the near-term, encourage investment in manure digesters and at the five- year Scoping Plan update determine if the program should be made mandatory by 2020.	Not applicable. The Project does not include agricultural production.

Source of Scoping Plan Reduction Measures: CARB 2008

As described in Table 3.7-2, the Project is consistent with AB 32, as outlined in the 2008 and 2017 Climate Change Scoping Plans. Therefore, the Project would have no impact on a plan, policy or regulation adopted for the purposes of reducing GHG emissions.

Mitigation Measures: No mitigation is necessary.

Level of Significance: No impact.

3.7.6 Cumulative Impacts

Impact GG-C-1: Would the Project contribute to a cumulatively significant impact relative to GHG emissions?

GHG emissions, by their nature, represent a cumulative impact. No single project could generate enough GHG emissions to noticeably change the global average temperature. Instead, GHG emissions contribute, on a cumulative basis, to the significant adverse environmental impacts of global climate change. Therefore, the Project analysis presented above represents the cumulative analysis for impacts from GHG emissions. Any increases in Project-related GHG emissions would not impede the state in meeting AB 32 GHG reduction goals (as implemented through the Scoping Plan). The Project would not contribute to a significant impact related to GHG emissions.

Mitigation Measures: No mitigation is necessary.

Level of Significance: No impact.

3.7.7 References

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