4.6 Greenhouse Gas Emissions

This section evaluates potential environmental impacts related to greenhouse gas (GHG) emissions during construction and operation of the project. In addition to the analysis provided in this section, the following subjects are related to GHG impacts, but are evaluated in other sections of this EIR:

- Potential impacts to air quality are addressed in Section 3.2, Air Quality.
- Potential energy implications are addressed in Chapter 5.0, Other CEQA-required Sections.

4.6.1 Existing 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 GHG has been implicated as the driving force for global climate change. The primary GHG 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 by-products 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. GHGs are typically reported in "carbon-dioxide-equivalent" measures (CO_2e) as each GHG has a different global warming potential.

Potential climate change impacts in California may include, but are not limited to, a decrease in snowpack; sea level rise; and a greater number of extreme heat days per year, high ozone days, large forest fires, and drought years. Secondary effects are likely to include impacts on agriculture, changes in disease vectors, and changes in habitat and biodiversity (ARB 2014).

The Environmental Protection Agency (EPA) reports U.S. GHG emissions for 2016 as 6,511 million metric tons of CO_2e (MMT CO_2e). Electricity production and the transportation sectors each contributed approximately 28 percent of national GHG emissions, followed by the industrial sector at approximately 22 percent. Commercial and residential fuel use and the agricultural sector accounted for the remaining 20 percent (U.S. EPA 2018).

The California Air Resources Board (ARB) estimated that in 2016 California produced about 429.4 MMT CO_2e. The transportation sector was the highest source at 41 percent of the State's total GHGs, followed by the industrial sector at 23 percent, and electricity generation (both in-state and out-of-state) at 16 percent. Commercial and residential fuel use, recycling and waste, high global warming potential, and agricultural sectors accounted for the remaining 20 percent of the State's total GHG emissions (ARB 2018).

In 2008, the Redwood Coast Energy Authority (RCEA) prepared a 1990 greenhouse gas inventory for Humboldt County. The estimated 1990 for the county was 1,821,532 MT CO_2e. Additionally, the estimated 2005 emissions were 1,336,333 MT CO_2e. In 2017, RCEA released an updated greenhouse gas inventory for unincorporated Humboldt County, which revised the 2005 inventory down to 1,145,324 MT CO_2e (Humboldt County 2017).

4.6.2 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 carbon dioxide is an air pollutant as defined under the CAA, and that EPA has the authority to regulate emissions of GHGs. In response to the mounting issue of climate change, EPA has taken actions to regulate, monitor, and potentially reduce GHG emissions. Actions include a national program to reduce GHG emissions and improve fuel economy for all new cars and trucks sold in the United States. However, there are no federal plans, policies, regulations, or laws related to GHGs that are directly applicable to the project.

Council on Environmental Quality

On February 18, 2010, the Council on Environmental Quality (CEQ) provided a draft guidance memorandum for public consideration and comment on the ways in which federal agencies can improve their consideration of the effects of greenhouse gas emissions and climate change in evaluations of proposals for federal actions under the National Environmental Policy Act (NEPA) (CEQ 2010). The CEQ updated that draft in 2014, and provided a final guidance on August 2, 2016 (CEQ 2016). The CEQ then withdrew their final guidance on consideration of greenhouse gas emissions on April 5, 2017 (Federal Register 2017).

The CEQ's 2010 draft guidance proposed to advise federal agencies to consider, in scoping their NEPA analyses, whether analysis of the direct and indirect greenhouse gas emissions from their proposed actions may provide meaningful information to decision makers and the public. Specifically, if a proposed action would be reasonably anticipated to cause direct emissions of 25,000 MT CO_2e or more emissions on an annual basis, agencies should consider this an indicator that a quantitative and qualitative assessment may be meaningful to decision makers and the public. For long-term actions that have annual direct emissions of less than 25,000 MT CO_2e, CEQ encouraged federal agencies to consider whether the action's long-term emissions should receive similar analysis. CEQ did not propose this as an indicator of a threshold of significant effects, but rather as an indicator of a minimum level of greenhouse gas emissions that may warrant some description in the appropriate NEPA analysis for agency actions involving direct emissions of greenhouse gases. The CEQ removed the direct emissions criteria from the 2016 final guidance, which contains no numeric recommendations. For comparison, the EPA's Greenhouse Gas Reporting Program requires mandatory reporting for 'large' industrial sources of GHG to report GHG data, and defines large industrial sources as those that emit more than 25,000 MT CO_2e per year.

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

The Secretary of the California Environmental Protection Agency (Cal/EPA) was designated to coordinate oversight of the multi-agency efforts made to meet the targets.

The Cal/EPA Secretary must also submit biannual reports to the governor and California Legislature describing the progress made toward the emissions targets, the impacts of global climate change on California's resources, and mitigation and adaptation plans to combat these impacts. To comply with the executive order, the Secretary of Cal/EPA created the California Climate Action Team (CAT), made up of members from various State agencies and commissions. The team released its first CAT Report in March 2006, with its most recent S-3-05-mandated CAT Report released in 2010. The report proposes to achieve the targets by building on the voluntary actions of California businesses, local governments, and communities and through State incentive and regulatory programs.

Executive Order B-30-15

On April 29, 2015, California Governor Jerry Brown announced E.O. B-30-15, which contains the following GHG emissions target:

- By 2030, California shall reduce GHG emissions to 40 percent below 1990 levels

The emission reduction target of 40 percent below 1990 levels by 2030 is an interim-year goal to provide substantial progress toward the ultimate goal of reducing emissions by 80 percent below 1990 levels by 2050.

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 32), committing the State of California to reducing GHG emissions to 1990 levels by 2020. The statute requires the ARB to track emissions through mandatory reporting, determine the 1990 emission levels, set annual emissions limits that will result in meeting the 2020 target, and design and implement regulations and other feasible and cost effective measures to ensure that statewide GHG emissions will be reduced to 1990 levels by 2020. In December 2007, the ARB approved the 2020 emissions limit at 427 MMT CO_2e. The Intergovernmental Panel on Climate Change (IPCC), which assesses scientific, technical, and socioeconomic information relevant to the understanding of climate change, has since revised the global warming potential of GHGs. Therefore, ARB recalculated the 2020 emissions limit as 431 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 (ARB 2014).

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 ARB for developing the Updated Scoping Plan.

Renewables Portfolio Standard

California's Renewables Portfolio Standard (RPS) requires retail sellers of electric services to increase procurement from eligible renewable energy resources to 33 percent of total retail sales by 2020. The 33 percent standard is consistent with the RPS goal established in the Scoping Plan. The passage of Senate Bill 350 in 2015 updates the RPS to require the amount of electricity generated and sold to retail customers per year from eligible renewable energy resources to increase to 50 percent by December 31, 2030. The bill would make other revisions to the RPS program and to certain other requirements on public utilities and publicly owned electric utilities.

Climate Change Scoping Plan

In December 2008, pursuant to AB 32, the ARB 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 CO_2e from various sectors including transportation, energy, forestry, and high global warming potential gas sectors (originally reported as 174 MMT CO_2e, but updated to 105.3 MMT CO_2e in the Status of Scoping Plan Recommended Measures [ARB 2012]). This is 24 percent more than is needed to meet the 2020 mandate.

The CARB has updated the Scoping Plan twice, approving the First Update to the Climate Change Scoping Plan (Updated Scoping Plan) in May 2014, and the 2017 Scoping Plan in December 2017.

The 2017 Scoping Plan identifies progress made to meet the near-term (2020) objectives of AB 32 and defines California's climate change priorities and activities for the next several years (ARB 2017). The 2017 Scoping Plan identifies the 2020 emissions limit as 431 MMT CO_2e and the 2020 business-as-usual forecast as 509 MMT CO_2e. The 2017 Climate Change Scoping Plan provides strategies for meeting the mid-term 2030 greenhouse gas reduction target set by SB 32. The plan also identifies how the State can substantially advance toward the 2050 greenhouse gas reduction target of Executive Order S-3-05, which consists of reducing greenhouse gas emissions to 80 percent below 1990 levels. The recommendations cover the key sectors, including: energy and industry; transportation; natural and working lands; waste management; and water. The recommended measures in the 2017 Scoping Plan are broad policy and regulatory initiatives that will be implemented at the State level and do not relate to the construction and operation of individual projects.

The initial Scoping Plan recommended that local governments achieve a 15-percent reduction below 2005 levels by 2020, which aligns with the State's goal of not exceeding 1990 emissions levels by 2020. However, the 2017 Scoping Plan does not contain a recommended reduction level or percent for local government's municipal operations. The 2017 Scoping Plan contain "potential additional or supporting action" for the wastewater sector; however, those measures are applicable to the wastewater utility districts, recommending adoption of specific energy goals, development of renewable energy, and incentivizing methane capture systems. Specifically, the 2017 Scoping Plan provides the following potential additional or supporting actions:

- Where technically feasible and cost-effective, local water and wastewater utilities should adopt a long-term goal to reduce GHGs by 80 percent below 1990 levels by 2050 (consistent with DWR's Climate Action Plan), and thereafter move toward low carbon or net-zero carbon water management systems.
- Local water and wastewater utilities should develop distributed renewable energy where feasible, using the expanded Local Government Renewable Energy Bill Credit (RES-BCT) tariff and new Net Energy Metering (which allow for installation without system size limit).
- In support of the Short-Lived Climate Pollutant Strategy, encourage resource recovering wastewater treatment projects to help achieve the goal of reducing fugitive methane by 40 percent by 2030, to include:
  - Determining opportunities to support co-digestion of food-related waste streams at wastewater treatment plants.
  - Incentivizing methane capture systems at wastewater treatment plants to produce renewable electricity, transportation fuel, or pipeline biomethane.

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.

The NCUAQMD has not developed CEQA guidelines or significance thresholds for use in GHG analyses. However, NCUAQMD Rule 111 (Federal Permitting Requirements for Sources of Greenhouse Gases) was adopted in 2011 to regulate GHG emissions from stationary sources. A new stationary source subject to this rule must be permitted and must implement Best Available Control Technology for greenhouse gas emissions.

Humboldt County General Plan

None of the policies from the Humboldt County General Plan are applicable to the project with regard to greenhouse gases. General Plan policy AQ-P11, Review of Projects for Greenhouse Gas Emission Reductions, applies to, “new large scale residential, commercial and industrial projects.”

Humboldt County Draft Climate Action Plan and GHG Emission Reduction Targets

In January 2012, Humboldt County prepared a Draft Climate Action Plan (CAP) to reduce GHG emissions in the unincorporated County, which also relied upon the 2008 RCEA emissions inventory. The target set forth in the 2012 Draft CAP is to reduce county emissions to 1990 levels by 2020, consistent with AB 32. The 2012 Draft CAP also set an additional target to achieve no net increase of CO_2 emissions compared to business as usual emissions from the 1984 General Plan for new residential development within the County by the year 2025. To be compliant with SB 32, the draft CAP will need to be revised to include targets for 2030 and to update the calculation of the 1990 GHG Community Emissions inventory in accordance with the current methodology. The County is in-process of updating the CAP.

4.6.3 Evaluation Criteria and Thresholds of Significance

For the purpose of this EIR, the evaluation criteria and significance thresholds summarized below are used to determine if the project would have a significant effect related to greenhouse gases. The following questions are from CEQA Guidelines’ Appendix G Environmental Checklist Section VII. Would the project:

a. Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?

   - Generate more than 25,000 MT CO_2e per year.

b. Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?

   - Conflict with the 2017 Scoping Plan.

4.6.4 Methodology

There is currently no applicable federal, State, or local significance thresholds pertaining to construction activities. Therefore, the analysis of construction-related GHG emissions uses a qualitative approach in accordance with Section 15064.4(a)(2) of the CEQA Guidelines.

Additionally, there is currently no applicable federal, State, or local adopted significance thresholds for operational activities. Therefore, for the purposes of analyzing the proposed project, Humboldt County will apply the CEQ's draft guidance, as discussed in Section 4.6.2. For operation, per CEQ's draft guidance, a new project would be considered a "major source" of greenhouse gases if it has the potential to emit greenhouse gas emissions greater than or equal to 25,000 tons CO_2e per year (CEQ 2010). California Emissions Estimator Model (CalEEMod) version 2016.3.2 was used to estimate greenhouse gas emissions from project operation (see Appendix D). Operational emissions were estimated using the land use types and amounts identified in Section 3, Project Description, and the solids hauling trip generation rate and trip distance, and energy consumption estimates. Those parameters are summarized below:

- 4 haul trips per year at 162 miles 1-way
- 52,595 kilowatt hours per year (kWh/year) at year 2021 (Short-Term Phase)
- 99,090 kWh/year at year 2030 (Short-Term Phase + Long-Term Phase)

The model's construction phase was used to estimate greenhouse gas emissions from handling of dried solids by a backhoe. Emissions modeling included testing of the project's four emergency backup generators. It is assumed that each generator would be a 500 horsepower diesel generator and operate a maximum of 60 minutes per day on when it is tested, for no more than 50 hours per year.

CalEEMod's default energy intensity for energy generated by PG&E is based on PG&E's reporting for year 2008. Therefore, the energy intensity factors were updated to reflect the 5-year average of PG&E's reporting between 2012-2018 (Climate Registry 2018).

- Carbon dioxide: 401.00 pound per megawatt hour (lb/MWh)
- Methane: 0.029 lb/MWh
- Nitrous oxide: 0.00617 lb/MWh

For determining a conflict with an applicable plan, the project is evaluated for its compliance with the State's 2017 Climate Change Scoping Plan (the implementing tool of AB 32) as a plan adopted for the purpose of reducing GHG emissions. There are no county-level plans that have been adopted for the purpose of reducing GHG emissions.

GHG emissions, by their nature, represent a cumulative impact. No single project could generate enough greenhouse gas 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 is discussed in the context of the cumulative impact.

4.6.5 Impact Analysis

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

This impact analysis addresses CEQA Guidelines Appendix G checklist item VII.a) identified in Section 4.6.3.

Construction

Project construction activities would result in a temporary increase in greenhouse gas emissions, including exhaust emissions from on-road haul trucks, worker commute vehicles, and off-road heavy duty equipment. Emissions during construction would not be a considerable contribution to the cumulative greenhouse gas impact, given that construction would be temporary, of short duration, and would not require a large fleet of earthmoving equipment and soil off hauling beyond the normal equipment and activities related to such utility or infrastructure projects. Therefore, the project's construction-related emissions would be **less than significant**.

Operation

Operational or long-term emissions would occur annually over the life of the project. The project's operational emissions in years 2021 (Short-Term phase) and 2030 (Long-Term phase) are shown in Table 4.6-1 and Table 4.6-2, respectively. The project would generate approximately 54 MT CO_2e per year in 2021 and 67 MT CO_2e per year in 2030, which is less than the significance threshold of 25,000 MT CO_2e. Therefore, the project's operational emissions would be **less than significant**.

Table 4.6-1 Operational Greenhouse Gas Emissions 2021 (Short-Term Phase)

Parameter	Emissions per Year (MT CO_2e)
Solids Handling and Hauling	1.6
Energy	9.6
Mobile	1.9
Stationary Equipment	38.2
Wastewater Processing	2.5
Total Operation 2021	**53.9**
Threshold Applied	25,000
Significant Impact?	No

Table 4.6-2 Operational Greenhouse Gas Emissions 2030 (Long-Term Phase)

Parameter	Emissions per Year (MT CO_2e)
Solids Handling and Hauling	1.6
Energy	18.1
Mobile	1.4
Stationary Equipment	38.2
Wastewater Processing	7.5
Total Operation 2030	**66.9**
Threshold Applied	25,000
Significant Impact?	No

Summary

Project construction would be temporary and limited in nature and, therefore, would be **less than significant**. Project operations would not exceed the threshold of significance applied; therefore, project operations would be **less than significant**.

Significance *Less than Significant*

Mitigation **None Required**

Impact GHG-2: **Would the project conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?**

This impact analysis addresses CEQA Guidelines Appendix G checklist item VII.b) identified in Section 4.6.3.

The Project is not located within a jurisdiction covered by an applicable, or "qualified", Climate Action Plan or other qualified greenhouse gas reduction strategy.

The 2017 Scoping Plan identifies progress made to meet the near-term (2020) objectives of AB 32 and defines California's climate change priorities and activities for the next several years (ARB 2017). The plan also identifies how the State can substantially advance toward the 2050 greenhouse gas reduction target of Executive Order S-3-05, which consists of reducing greenhouse gas emissions to 80 percent below 1990 levels. The recommendations cover the key sectors, including: energy and industry; transportation; natural and working lands; waste management; and water. The recommended measures in the 2017 Scoping Plan are broad policy and regulatory initiatives that will be implemented

at the State level and do not relate to the construction and operation of individual projects. Therefore, the Project would not conflict with this statewide policy document. The Project would result in **no impact**.

Significance *No Impact*

Mitigation **None Required**

4.6.6 Cumulative Impacts

Impact GHG-C-1: Would the project result in a cumulatively considerable contribution to a cumulative impact related to greenhouse gases?

Greenhouse gas impacts are cumulative in nature. The Project's cumulative contribution to greenhouse gas impacts is addressed in Impact GHG-1. As identified in Impact GHG-1, the Project would not exceed the CEQ's draft recommended threshold of significance for greenhouse gas emissions. The project's contribution to the cumulative impact would not be considerable.

Significance *Less than Cumulatively Considerable (Less than Significant)*

Mitigation **None Required**

4.6.7 References

California Air Resources Board (ARB). 2014. 2020 BAU Emissions by Scoping Plan Categories. [(Mid Case) Forecast for Updated Scoping Plan – MMTCO2e (AR4)]. Website: https://www.arb.ca.gov/cc/inventory/data/bau.htm. Accessed October 30, 2018.

ARB. 2017. California's 2017 Climate Change Scoping Plan. November.

ARB. 2018. California Greenhouse Gas Emission Inventory Program. Website: https://www.arb.ca.gov/cc/inventory/inventory.htm. Accessed October 23, 2018.

Climate Registry. 2018. CRIS Public Reports. Website: https://www.theclimateregistry.org/our-members/cris-public-reports/. Accessed October 5, 2018.

Council on Environmental Quality (CEQ). 2010. Draft NEPA Guidance on Consideration of the Effects of Climate Change and Greenhouse Gas Emissions. February 18.

CEQ. 2016. Final Guidance for Federal Department and Agencies on Consideration of Greenhouse Gas Emission and the Effects of Climate Change in National Environmental Policy Act Reviews. August 1.

CEQ. 2018. Draft NEPA Guidance on Consideration of the Effects of Climate Change and Greenhouse Gas Emissions. February 18.

Federal Register. 2017. Withdrawal of Final Guidance for Federal Departments and Agencies on Consideration of Greenhouse Gas Emissions and the Effects of Climate Change in National Environmental Policy Act Reviews. April 4. Website: https://www.federalregister.gov/documents/2017/04/05/2017-06770/withdrawal-of-final-guidance-for-federal-departments-and-agencies-on-consideration-of-greenhouse-gas. Accessed October 23, 2018.

Humboldt County. 2017. Humboldt county General Plan Update Revised Draft Environmental Impact Report. April 19.

U.S. EPA. 2018. Inventory of U.S. Greenhouse Gas Emissions and Sinks. Website: https://www.epa.gov/ghgemissions/inventory-us-greenhouse-gas-emissions-and-sinks. Accessed October 23, 2018.