3.7 GREENHOUSE GAS

3.7.1 Setting

Environmental Setting

Global warming is the observed increase in the average temperature of the Earth's surface. The effects of increasing greenhouse concentration in the atmosphere may contribute to global warming. The major greenhouse gases (GHG)s are carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF_6).

GHGs in the atmosphere absorb solar radiation reflected by the earth, which leads to warming of the atmosphere. GHGs also radiate energy both upwards toward space and downward to the surface of the earth. The downward direction of GHGs radiation is commonly called the "greenhouse effect."

Most GHGs can be produced through biogenic (natural) and anthropogenic (human-caused) processes. Biogenic sources include the combustion of biological material in forest fires, fermentation, decomposition or processing of biologically based materials. Some of the main sources of greenhouse gases due to human activity are the burning of fossil fuels, agricultural activities, and the use of chlorofluorocarbons (CFCs) in refrigeration and fire suppression systems.

Global Warming Potential (GWP) is a measure of how much a greenhouse gas contributes to global warming relative to the heat contributed by a similar mass of carbon dioxide. CH_4 and N_2O have GWP of 21 and 310 times that of CO_2, respectively. For this analysis, greenhouse gases other than CO_2 will be scaled to a single factor to determine the equivalent amount of CO_2 (CO_2e) for each gas. For CO_2, the scaling factor is 1.0. The scaling factors for CH_4 and N_2O are 21 and 310, respectively. USEPA develops emission factor tables to estimate the greenhouse gas emissions from various equipment and activity. This Project involves the continued destruction of 88 tons of methane (57,221 tons CO_2e) annually from landfill gas while incorporating beneficial power production.

Applicable Regulations

Title 40 CFR, Part 52, Subpart A, Section 52.21 – Prevention of Significant Deterioration (PSD) of Air Quality

Beginning January 2, 2011, GHG is subject to PSD regulation with an emission increase threshold of 75,000 tons CO_2e per year. PSD review is not triggered solely based on GHG emissions. A facility will be required for PSD review if its annual CO_2e is equal or more than 75,000 tons and any of the regulated NSR (non-GHG) pollutants emissions exceed the applicable PSD threshold of 100 or 250 tons per year.

The Proposed Project is expected not to emit CO_2e more than 75,000 tons per year; therefore, PSD permitting for GHG emissions for the proposed Project is not required.

California AB 32 – Global Warming Solutions Act

AB 32, which was signed by Governor Schwarzenegger on September 27, 2006, is the first enforceable state-wide program in U.S. to limit all GHG emissions from major industries. AB 32 requires the state of California to reduce its GHG emissions to 1990 levels by 2020. California Air Resource Board (CAB) had developed emissions reduction plan to achieve this goal. The reduction plan includes adopting laws and regulations, developing cap and trade program, and expansion of energy efficiency and renewable programs.

The Scholl Canyon Landfill Power project is a renewable project which aligns with CARB GHG emissions reduction plan in expanding the Renewable Portfolio Standard (RPS). Governor Schwarzenegger signed Executive Order S-14-08 requiring all electricity retailers shall serve 33 percent of their load with renewable energy by 2020.

California Code of Regulations, Section 95100

This rule establishes mandatory GHG reporting, verification, and other requirements for certain facilities, including electrical power facilities. SCLF greenhouse gas emissions are estimated to exceed 25,000 metric tons CO2e per year; therefore, the facility will report emissions in accordance to the rule reporting requirements.

SCAQMD Rule 1714 – Prevention of Significant Deterioration for Greenhouse Gases

This rule sets forth preconstruction review requirements for GHG emissions. As discussed in the above section of 40 CFR, Part 52, Subpart A, Section 52.21, the proposed Project is not expected to exceed the PSD threshold of 75,000 CO_2e tons per year; therefore, PSD permitting is not required for the proposed Project.

3.7.2 Impact Analysis

Issues	Potentially Significant Impact	Less Than Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
GREENHOUSE GASES: Would the project:				
a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	☐	☐	☒	☐

Issues	Potentially Significant Impact	Less Than Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	☐	☐	☒	☐

Significance Criteria

The SCAQMD significance threshold for GHG emissions from an industrial project is 10,000 metric tons (MT) CO2e per year for industrial facilities. This threshold is a total of GHG emissions from both construction and operation of the Proposed Project. SCAQMD policy requires construction GHG emissions to be amortized over a 30-year project lifespan. The GHG operation emissions include both stationary and mobile sources.

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

Less than Significant Impact

Impact Discussion

The majority of landfill gas produced by the SCLF is currently piped and combusted in existing boilers at Glendale Water and Power's (GWP) Grayson Power Plant. The existing flares at the landfill also combust some landfill gas when the boilers are not operating due to an emergency or a maintenance situation. Table 3.7-1 summarizes greenhouse gas emissions from this existing equipment based on the estimated landfill gas production of 5,000 scfm.

Table 3.7-1 Baseline GHG Emission Rates

Devices	CO_2 (MT/year)	CH_4 (MT/year)	N_2O (MT/year)	Total CO_2e (MT/year)
Boilers and Flares	43,397	2.67	0.53	43,621

The Proposed Project will emit GHG emissions from the construction and operation activities. The construction GHG emissions would be generated primarily by the off-road equipment and on-road vehicles. For the operation activity, landfill gas combusted in the electrical generating units and existing flares will be the primary contributor of GHG emissions. Facility occupancy related activity, such as water usage, power usage, and vehicles will generate some GHG emissions.

CalEEMod was used to calculate GHG emissions from the construction activity and facility occupancy related activity. USEPA emission factors and estimated landfill gas production of 5,000 scfm were used to calculate GHG emissions from the proposed electrical generating equipment. Additionally, since natural gas may be utilized to augment combustion when the landfill gas production is not enough to operate the engines, GHG emissions from natural gas combustion were calculated. Table 3.7-2 and 3.7-3 summarizes the net increase of GHG emissions during construction and operation activities of the proposed Project. Detail GHG emission inventory is provided in Appendix E.

Table 3.7-2 Net Increase of GHG Emissions from the Construction Activities

Device/Activity	CO_2 (MT/year)	CH_4 (MT/year)	N_2O (MT/year)	Total CO_2e (MT/year)
Construction	257	0.06	0	258

Table 3.7-3 Net Increase of GHG Emissions from the Operation Activities

Device/Activity	CO_2 (MT/year)	CH_4 (MT/year)	N_2O (MT/year)	Total CO_2e (MT/year)
Proposed Engines	48,146	2.76	0.53	48,375
Occupants	49	0.13	1.29×10^{-3}	52
			Total GHG Emissions:	48,427
			Total Baseline GHG Emissions:	43,621
			Net Increase of GHG Emissions:	4,806

As shown in Table 3.7-2 and 3.7-3, the net increase of GHG emissions from the Proposed Project is below the significance threshold of 10,000 metric tons per year. Since GHG emissions is calculated mainly based on the landfill gas production, the net increase is from GHG emissions due to facility occupancy related activities.

Overall, the air quality impact of GHG emissions from the Proposed Project would be less than significant.

Mitigation Measures

None.

Residual Impacts

Residual impacts would be less than significant.

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

Less than Significant Impact

Impact Discussion

The Proposed Project will generate GHG emissions at a level that is below significance. Additionally, due to the nature of the project in terms of the construction and operational conditions, the project is not anticipated to conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing GHG emissions.

Mitigation Measures

None.

Residual Impacts

Residual impacts would be less than significant.