



4.7 GREENHOUSE GASES

<i>Would the project:</i>	Potentially Significant Impact	Less Than Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
a. Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?			✓	
b. Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?			✓	

Global Climate Change

California is a substantial contributor of global greenhouse gases (GHGs), emitting over 370 million tons of carbon dioxide (CO₂) in 2014.¹ Climate studies indicate that California is likely to see an increase of three to four degrees Fahrenheit (°F) over the next century. Methane (CH₄) is also an important GHG that potentially contributes to global climate change. GHGs are global in their effect, which is to increase the earth's ability to absorb heat in the atmosphere. As primary GHGs have a long lifetime in the atmosphere, accumulate over time, and are generally well-mixed, their impact on the atmosphere is mostly independent of the point of emission.

The impact of anthropogenic activities on global climate change is apparent in the observational record. Air trapped by ice has been extracted from core samples taken from polar ice sheets to determine the global atmospheric variation of CO₂, CH₄, and nitrous oxide (N₂O) from before the start of industrialization (approximately 1750), to over 650,000 years ago. For that period, it was found that CO₂ concentrations ranged from 180 parts per million (ppm) to 300 ppm. For the period from approximately 1750 to the present, global CO₂ concentrations increased from a pre-industrialization period concentration of 280 to 379 parts per million (ppm) in 2005, with the 2005 value far exceeding the upper end of the pre-industrial period range.

Regulations and Significance Criteria

The Intergovernmental Panel on Climate Change (IPCC) constructed several emission trajectories of GHGs needed to stabilize global temperatures and climate change impacts. It concluded that a stabilization of GHGs at 400 to 450 ppm, carbon dioxide equivalent (CO₂eq)² concentration, is required to keep global mean warming below 2 degrees Celsius (°C), which in turn is assumed to be necessary to avoid significant levels of climate change.

Executive Order S-3-05 was issued in June 2005, which established the following GHG emission reduction targets:

- 2010: Reduce GHG emissions to 2000 levels;
- 2020: Reduce GHG emissions to 1990 levels; and
- 2050: Reduce GHG emissions to 80 percent below 1990 levels.

Issued in April 2015, Executive Order B-30-15 requires statewide GHG emissions to be reduced 40 percent below 1990 levels by 2030. Assembly Bill 32 (AB 32) requires that the California Air Resources Board (CARB) determine what the statewide GHG emissions level was in 1990, and approve a statewide GHG emissions limit that is equivalent to that level, to be achieved by 2020. CARB has approved a 2020 emissions limit of 431 million metric tons (MT) of CO₂eq (MTCO₂eq). Effective September 8, 2016, Senate Bill 32 (SB 32) requires the State to reduce GHG emissions to 40 percent below 1990 levels by 2030 and Assembly Bill 197 (AB 197) creates a legislative committee to oversee regulators.

¹ California Environmental Protection Agency, *California Greenhouse Gas Emission Inventory - 2016 Edition*, <http://www.arb.ca.gov/cc/inventory/data/data.htm>, accessed May 23, 2017.

² Carbon Dioxide Equivalent (CO₂eq) – A metric measure used to compare the emissions from various greenhouse gases based upon their global warming potential.



Due to the nature of global climate change, it is not anticipated that any single development project would have a substantial effect on global climate change. In actuality, GHG emissions from the proposed project would combine with emissions emitted across California, the United States, and the world to cumulatively contribute to global climate change.

In June 2008, the California Governor's Office of Planning and Research (OPR) published a Technical Advisory, which provides informal guidance for public agencies as they address the issue of climate change in California Environmental Quality Act (CEQA) documents.³ This is assessed by determining whether a proposed project is consistent with or obstructs the 39 Recommended Actions identified by CARB in its *Climate Change Scoping Plan* which includes nine Early Action Measures (qualitative approach). The Attorney General's Mitigation Measures identify areas where GHG emissions reductions can be achieved in order to achieve the goals of AB 32. As set forth in the OPR Technical Advisory and in the proposed amendments to the *CEQA Guidelines* Section 15064.4, this analysis examines whether the project's GHG emissions are significant based on a qualitative and performance based standard (*CEQA Guidelines* Section 15064.4(a)(1) and (2)).

SCAQMD Thresholds

On December 5, 2008, the South Coast Air Quality Management District (SCAQMD) adopted GHG significance thresholds for Stationary Sources, Rules, and Plans where the SCAQMD is lead agency. The threshold uses a tiered approach. A proposed project is compared with the requirements of each tier sequentially and would not result in a significant impact if it complies with any tier. Tier 1 excludes projects that are specifically exempt from Senate Bill (SB) 97 from resulting in a significant impact. Tier 2 excludes projects that are consistent with a GHG reduction plan that has a certified final CEQA document and complies with AB 32 GHG reduction goals. Tier 3 excludes projects with annual emissions lower than a screening threshold. For industrial stationary source projects, the SCAQMD adopted a screening threshold of 10,000 MTCO₂eq per year (MTCO₂eq/yr). This threshold was selected to capture 90 percent of the GHG emissions from these types of projects where the combustion of natural gas is the primary source of GHG emissions. For all non-industrial projects, the SCAQMD is proposing a screening threshold of 3,000 MTCO₂eq/yr. SCAQMD concluded that projects with emissions less than the screening thresholds would not result in a significant cumulative impact.

Tier 4 consists of three decision tree options. Under the Tier 4 first option, the project would be excluded if design features and/or mitigation measures resulted in emissions 30 percent lower than business as usual (BAU) emissions. However, the Working Group did not provide a recommendation for this approach. The Working Group folded the Tier 4 second option into the third Option. Under the Tier 4 third option, the project would be excluded if it was below an efficiency-based threshold of 4.8 MTCO₂eq per service population (SP) per year or 3.0 MTCO₂eq per SP for post-2020 projects.⁴ Tier 5 would exclude projects that implement offsite mitigation (GHG reduction projects) or purchase offsets to reduce GHG emission impacts to less than the proposed screening level.

While not adopted by the SCAQMD Board, the guidance document prepared for the stationary source threshold also suggested the same tiered approach for residential and commercial projects with a 3,000 MTCO₂eq/yr screening threshold. However, at the time of adoption of the industrial stationary source threshold, the SCAQMD felt additional analysis was required along with coordination with CARB's GHG significance threshold development efforts.

³ Governor's Office of Planning and Research, *CEQA and Climate Change: Addressing Climate Change Through California Environmental Quality Act (CEQA) Review*, 2008.

⁴ The project-level efficiency-based threshold of 4.8 MTCO₂eq per SP per year is relative to the 2020 target date. The SCAQMD has also proposed efficiency-based thresholds relative to the 2035 target date to be consistent with the GHG reduction target date of SB 375. GHG reductions by the SB 375 target date of 2035 would be approximately 40 percent. Applying this 40 percent reduction to the 2020 targets results in an efficiency threshold for plans of 4.1 MTCO₂eq per SP per year and an efficiency threshold at the project level of 3.0 MTCO₂eq/year.



At the November 2009 meeting of the SCAQMD GHG working group, SCAQMD staff presented two options for screening thresholds for residential and commercial projects. The first option would have different thresholds for specific land uses. The proposed threshold for residential projects is 3,500 MTCO₂eq/yr, the commercial threshold is 1,400 MTCO₂eq/yr, and the mixed-use threshold is 3,000 MTCO₂eq/yr. The second option would apply the 3,000 MTCO₂eq/yr screening threshold for all commercial/residential projects. Lead agencies would be able to select either option. These thresholds are based on capturing 90 percent of the emissions from projects and requiring them to comply with the higher tiers of the threshold (i.e., performance requirements or GHG reductions outside of the project) to not result in a significant impact.

SCAQMD staff also presented updates for compliance options for Tier 4 of the significance thresholds. The first option would be a reduction of 23.9 percent in GHG emissions over the base case. This percentage reduction represents the land use sector portion of the CARB's *Climate Change Scoping Plan's* overall reduction of 28 percent. This target would be updated as the AB 32 *Climate Change Scoping Plan* is revised. The base case scenario for this reduction still needs to be defined. Residual emissions would need to be less than 25,000 MTCO₂eq/yr to comply with the option. Staff proposed efficiency targets for the third option of 4.6 MTCO₂eq/yr per service population (population plus employment) for project level analysis and 6.6 MTCO₂eq/yr for plan level analyses. For project level analyses, residual emissions would need to be less than 25,000 MTCO₂eq/yr to comply with this option.

At the most recent meeting of the SCAQMD GHG working group, SCAQMD staff recommended extending the 10,000 MTCO₂eq/yr industrial project threshold for use by all lead agencies. The two options for land-use thresholds were reiterated with a recommendation that lead agencies use the second, 3,000 MTCO₂eq/yr threshold for all non-industrial development projects. Staff indicated that they would not be recommending a specific approach to address the first option of Tier 4, Percent Emissions Reduction Target. If lead agencies enquire about using this approach, staff will reference the approach recommended by the San Joaquin Valley Air Pollution Control District and describe the challenges to using this approach. For the third option of Tier 4, SCAQMD staff re-calculated the recommended Tier 4 efficiency targets for project level analyses to 4.8 MTCO₂eq/yr in 2020 and 3.0 MTCO₂eq/yr in 2035. The recommended plan level analysis efficiency target remains 6.6 MTCO₂eq/yr for 2020, but was lowered to 4.1 MTCO₂eq/yr for 2035. SCAQMD staff also stated that they are no longer proposing to include a 25,000 MTCO₂eq/yr maximum emissions requirement for compliance with Tier 4. Staff indicated that they hoped to bring the proposed GHG significance thresholds to the board for their December 2010 meeting; however, this did not occur.

For the proposed project, the 10,000 MTCO₂eq per year industrial screening threshold is used as the significance threshold, in addition to the qualitative thresholds of significance set forth below from Section VII of Appendix G to the *CEQA Guidelines*.

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

Less Than Significant Impact.

Project-Related Sources of Greenhouse Gases

Project-related GHG emissions typically include emissions from construction and operational activities. Construction of the project would result in direct emissions of CO₂, N₂O, and CH₄ from the operation of construction equipment. Transportation of materials and construction workers to and from the project site would also result in GHG emissions. Construction activities would be short-term in duration and would cease upon project completion. The proposed project involves construction of the MUST facility and associated conveyance facilities and does not propose facilities that would generate emissions. Further, the proposed project would only require two shifts of three operators Monday through Friday and two shifts of two operators Saturday and Sunday. The facility would be open to scheduled tours and educational events. However, the tours and events would infrequent, periodic, and would involve small groups of attendees. Thus, vehicle related emissions due to project operations would be minimal. Direct project-related GHG emissions include emissions from construction activities, while indirect sources include emissions from electricity consumption for the additional 14 sump pump stations averaging 10 horsepower each (a



total of 140 horsepower) and 100 kilowatts of treatment facility equipment. As such, operational GHG estimations are based on energy emissions from electricity.

Direct Project-Related Source of Greenhouse Gases

Construction Emissions. Construction GHG emissions are typically summed and amortized over the lifetime of the project (assumed to be 30 years), then added to the operational emissions.⁵ As shown in Table 4.7-1, Project Related Greenhouse Gas Emissions, the proposed project would result in 1.99 MTCO₂eq/yr (amortized over 30 years), which represents a total of 572.55 MTCO₂eq from construction activities.

**Table 4.7-1
Project Related Greenhouse Gas Emissions**

Source	CO ₂	CH ₄		N ₂ O		Total Metric Tons of CO ₂ eq
	Metric Tons/yr ¹	Metric Tons/yr ¹	Metric Tons of CO ₂ eq ²	Metric Tons/yr ¹	Metric Tons of CO ₂ eq ²	
Construction Emissions						
Total Construction Emissions (amortized over 30 years)	24.71	0.01	0.19	0.00	0.00	24.91
Indirect Emissions						
Energy ³	570.50	0.02	0.59	0.01	1.49	572.58
Total Unmitigated Project-Related Emissions⁴	597.49 MTCO₂eq/yr					
Notes:						
1. Emissions calculated using CalEEMod computer model.						
2. CO ₂ Equivalent values calculated using the US EPA Website, <i>Greenhouse Gas Equivalencies Calculator</i> , https://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator , accessed May 2017.						
3. Energy emissions from pumps were calculated separately. Emissions were based on energy consumption from operation of 14 sump pump stations averaging 10 horsepower each (a total of 140 horsepower) and 100 kilowatts of treatment facility equipment and Southern California Edison emissions factors from CalEEMod.						
4. Totals may be slightly off due to rounding.						
Refer to <u>Appendix A, Air Quality/Greenhouse Gas Emissions Data</u> , for detailed model input/output data.						

Indirect Project-Related Source of Greenhouse Gases

Energy Consumption. Energy consumption were calculated using CalEEMod GHG energy emissions factors and project energy consumption. Electricity would be provided to the project site via Southern California Edison (SCE). The proposed project would indirectly result in 574.53 MTCO₂eq/year due to energy consumption; refer to Table 4.7-1.

As shown in Table 4.7-1, the total amount of project-related emissions from direct and indirect sources combined would total 597.49 MTCO₂eq/yr, which is below the 10,000 MTCO₂eq/yr threshold. Therefore, the proposed project would result in a less than significant impact with regard to GHG emissions.

Mitigation Measures: No mitigation is required.

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

Less Than Significant Impact. The City adopted its Sustainable City Action Plan (CAP) in February 2010 to guide operational, policy, and financial decisions within the City. While the CAP provides a sustainable framework for future developments within the City, the goals outlined in the City’s CAP are primarily municipal in nature, and not

⁵ The project lifetime is based on the standard 30 year assumption of the South Coast Air Quality Management District (SCAQMD). SCAQMD, *Minutes for the GHG CEQA Significance Threshold Stakeholder Working Group #13*, August 26, 2009.



project-specific. Therefore, the implementation of the proposed project would not conflict with an adopted plan, policy, or regulation pertaining to GHGs. The proposed project involves construction of the MUST facility and associated conveyance facilities. As discussed above, the proposed project would not generate a significant amount of GHGs in an unmitigated condition and would not exceed the 10,000 MTCO₂eq/yr threshold. Thus, a less than significant impact would occur in this regard.

Mitigation Measures: No mitigation is required.



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