

Brenner Munger - ESPR - GHG Emissions Regarding Construction**DOCKET****00-AFC-14C**

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Date: 5/20/2010 11:20 AM
Subject: ESPR - GHG Emissions Regarding Construction
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Attachments: CEC_Public_2009_12_14_FSA_Supplement_ex200.pdf

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The construction emissions for the ESPR Project were included as part of the information submitted to the CEC for the 2005 final CEC approval of the project. Unfortunately, due to the approach used to calculate construction emissions (i.e., hp x load factor x g/bhp-hr) as part of the 2005 CEC approval of the ESPR Project, it is difficult to calculate the construction fuel use. Fuel use for the construction phase is necessary to calculate the GHG emissions for the construction phase. In order to estimate the construction phase GHG emissions associated with the ESPR Project, we suggest that the CEC staff refer to the construction phase GHG emissions calculated for the Carlsbad Energy Center Project (CECP). Both the ESPR Project and CECP are comprised of the installation of two rapid response combined cycle one on one gas turbine trains. In addition, both projects are comprised of the installation of nearly identical Siemens rapid response combined cycle (one on one) gas turbines. Please refer to Appendix Air-1, Greenhouse Gas Table 2 in the enclosed FSA for the CECP. For the ESPR Project the construction phase GHG emissions would be associated with site grading/prep (260 MTCO₂E) and main site construction (3,410 MTCO₂E) totaling approximately 3,670 MTCO₂E. For the ESPR Project, there is no tank demo, berm work, ocean water purification, or switchyard construction as there is for the CECP. If you have any questions, please let me know.

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**REVISED SECTIONS FOR THE CARLSBAD (07-AFC-6) FSA:
DATED NOVEMBER, 2009**

Air Quality and Worker (4.1) Safety and Fire Protection (4.14)

Revised December 2009

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The generation of electricity using fossil fuels, including natural gas, can produce air emissions known as greenhouse gases in addition to the criteria air pollutants that have been traditionally regulated under the federal and state Clean Air Acts. Greenhouse gas emissions contribute to the warming of the earth's atmosphere, leading to climate change. For fossil fuel-fired power plants, the GHG emissions include primarily carbon dioxide, with much smaller amounts of nitrous oxide (N₂O, not NO or NO₂, which are commonly known as NO_x or oxides of nitrogen), and methane (CH₄ – often from unburned natural gas). Also included are sulfur hexafluoride (SF₆) from high voltage equipment and hydrofluorocarbons (HFCs) and perfluorocarbons (PFCs) from refrigeration/chiller equipment. GHG emissions from the electricity sector are dominated by CO₂ emissions from the carbon-based fuels; other sources of GHG emissions are small and also are more likely to be easily controlled or reused or recycled, but are nevertheless documented here as some of the compounds have very high relative global warming potentials. Global warming potential is a relative measure, compared to carbon dioxide, of a compound's residence time in the atmosphere and ability to warm the planet. Mass emissions of GHGs are converted into carbon dioxide equivalent (CO₂E) metric tonnes (MT) for ease of comparison.

PROJECT CONSTRUCTION

Construction of industrial facilities such as power plants requires coordination of a variety of equipment and personnel. The concentrated on-site activities result in short-term, unavoidable increases in vehicle and equipment emissions that include greenhouse gases. The construction duration for the CECP is scheduled to last 25 months if built in one phase, but would be longer if the construction is separated into two phases for Units 6 and 7. **Greenhouse Gas Table 2** shows what the proposed project, as permitted, could potentially emit in greenhouse gases during construction. All emissions are converted to CO₂-equivalent (MTCO₂E) and totaled for the proposed 25 month construction schedule.

Greenhouse Gas Table 2
CECP Estimated Potential Construction Greenhouse Gas Emissions

Construction Element	CO ₂ Equivalent (MTCO ₂ E) ^a
Tank Demolition and Remediation	135
Site Grading and Preparation	260
Main Site Construction	3,410
Berm Work	512
Ocean Water Purification System	154
Switchyard Construction	215
Construction Total	4,686

Source: Staff estimate based on construction data provided by the applicant (CECP 2007a and SR 2007d, 2008a, 2008f, 2008h) where staff used the latest ARB GHG emission factor recommendations (ARB 2008a).

Note:

^a One metric tonne (mt) equals 1.1 short tons or 2,204.6 pounds or 1,000 kilograms

PROJECT OPERATIONS

The proposed Carlsbad Energy Center Project would be a rapid-response combined cycle facility that would be limited to an equivalent of 4,100 hours of full load operation.