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October 18, 2013

Mr. Jeffrey Robinson, Permit Section Chief
U.S. Environmental Protection Agency Region VI, (6PD-R)
Fountain Place 12th Floor, Suite 1200
1445 Ross Avenue
Dallas, TX 75202-2733

Reference: Prevention of Significant Deterioration Greenhouse Gas Permit Application for a Combined Cycle Electricity Generating Unit at Austin Energy Sand Hill Energy Center – Page Revisions

Dear Mr. Robinson:

On behalf of the City of Austin dba Austin Energy (Austin Energy), TRC Environmental Corporation submits the attached revised pages for the "Prevention of Significant Deterioration Greenhouse Gas Permit Application" that was sent to the U.S. Environmental Protection Agency (EPA) on September 14, 2013.

As described in the September 14 application, Austin Energy is proposing to build-out the Sand Hill Energy Center (SHEC) located in Del Valle, Texas by adding a new pipeline natural gas (PNG) fired combustion turbine generator (CTG) and heat recovery steam generator (HRSG) with natural gas fired duct burners to the existing combined cycle electricity generating unit at SHEC. The project is subject to prevention of significant deterioration (PSD) new source review program requirements for greenhouse gas (GHG) emissions. Sources of GHG emissions for the proposed project include the combustion turbine and duct burner combustion emissions of carbon dioxide (CO_2), nitrous oxide (N_2O) and methane (CH_4).

The revisions to the application are limited to revisions to pages 5-17 and 5-19 of the application support document. The revisions change the proposed averaging period for the output-based GHG emission limits from 30-day average basis to a 365-day rolling average basis, in order to be consistent with the most recent EPA BACT determinations for GHG emission from power generating facilities, including the recently published draft permit conditions for the Air Liquide Large Industries U.S., L.P. Bayou Cogeneration facility (PSD-TX-612-GHG).

We look forward to working with you and the U.S. EPA Region 6 team. Should you have technical questions regarding this application, please contact Mr. Ravi Joseph, P.E. at Austin Energy via telephone at 512.322.6284 or email at Ravi.Joseph@austinenergy.com.

Sincerely,

TRC Environmental Corporation

Gwen Eklund

Gwen Eklund
Project Manager

Attachment

cc: Mr. Ravi Joseph, P.E., The City of Austin dba Austin Energy
Mr. Lee Lewis, P.E., The City of Austin dba Austin Energy
Ms. Kathleen Garrett, The City of Austin dba Austin Energy
Mr. Mike Wilson, P.E., Director, Air Permits Division, TCEQ
Mr. Mike Robbins, TRC
Ms. Elizabeth Stanko, TRC
Mr. David Shotts, P.E., TRC

Attachment

Revised Pages for the
Prevention of Significant Deterioration
Greenhouse Gas Permit Application

TRC

simple cycle GHG limit corresponds to the combined cycle performance indicated above, the City of Austin proposes to perform the initial compliance test with only the new combined cycle unit operating (i.e., with SH5 off line). In order to regulate GHG emissions from all operating conditions, including those using evaporative cooling and with duct burner firing, the City of Austin is also proposing a GHG BACT limit on total annual GHG emissions for the combined cycle combustion turbine and duct burner:

- Annual emission cap of 1,461,818 tons CO_2e per year, for the addition of the second combustion turbine, HRSG and duct burner

The proposed GHG BACT limits for the proposed new unit are summarized in Table 5-4 below.

This approach of a combination of output based CO_2e limits and heat rate limits at standard conditions and an annual emission cap to cover other operating conditions and emissions has been used in other recent GHG BACT permit limits for combined cycle units.

Each of the proposed limits is calculated to include a 10% margin to account for measurement error, equipment and site variations, and degradation over time.

Compliance with the output based emission limits will be based on a 365-day rolling average and the annual tons/year limit will be based on a rolling 365-day total. In each case, SHEC proposes to calculate GHG emissions based on continuous monitoring of the fuel flow to the combustion turbine and duct burner using calibrated fuel flow meters, with heat input calculated based on weighted average monthly heating values provided by the pipeline natural gas supplier, and emissions of CO_2e calculated based on emission factors and GWPs from 40 CFR 98 (greenhouse gas monitoring rule). Gross output (kW) will be continuously measured and recorded at the combustion turbine generator.

5.2.2 BACT Analysis for Natural Gas Fugitives

Small amounts of methane may occur from leaking natural gas piping components (process fugitives) associated with the proposed Project. The methane emissions from process fugitives have been conservatively estimated to be 118.6 tons per year (see Table 3-2) as CO_2e. This is a negligible (0.011%) contribution to the total GHG emissions from the project. However, for completeness, they are addressed in this BACT analysis.

Table 5-4
Proposed Greenhouse Gas BACT Limits for SH8 (Simple Cycle Output Basis)

Form of Limit	Limit	Averaging Period	Basis
Output-Based GHG Limit	0.81 tons CO_2e/MWh [1]	365-day rolling average	Simple cycle combustion turbine only gross output basis at full load
Heat Rate Limit	13,872 Btu/kWh (HHV) [2]	365-day rolling average	Simple cycle combustion turbine only gross output basis at full load
Annual GHG Emission Cap	1,461,818 tons CO_2e/year	365-day rolling total	Includes all stack emissions from combustion turbine, duct burner, start-ups, shutdowns, malfunctions and effects of different operating conditions including evaporative inlet air cooling

1. Simple cycle (combustion turbine only) output based GHG limit is equivalent to 0.458 ton CO_2e/MWh (or 916 lb/MWh) for the combined cycle unit at full load at 68 degrees F
2. Simple cycle (combustion turbine only) heat rate limit is equivalent to 7,833 BTU/kWh (HHV) gross heat rate for the combined cycle unit at full load at 68 degrees F