U.S. Environmental Protection Agency
Region 2
New York City, New York

CAA Permitting in New Jersey, New York, Puerto Rico, and the U.S. Virgin Islands

FACT SHEET

For a Clean Air Act
Prevention of Significant Deterioration of Air Quality
Draft Permit Revisions

Caithness Long Island Energy Center
Brookhaven, New York

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I. Background

Caithness Long Island Energy Center (CLIEC) is a 346 megawatts (MW) combined-cycle electric power generating facility located in the town of Brookhaven, Suffolk county, New York. CLIEC is authorized to operate under a Prevention of Significant Deterioration (PSD) permit issued by the US EPA Region 2 office (EPA) on April 7, 2006, pursuant to 40 CFR 52.21. A copy of the 2006 PSD permit is available on the EPA website at https://www.epa.gov/caa-permitting/caithness-long-island-llc-brookhaven-ny. The 2006 PSD permit allowed CLIEC to construct and operate 2 identical combined cycle combustion turbines generators (CTGs) and their associated Heat Recovery Steam Generators (HRSG), an auxiliary boiler, a fuel gas heater, and an emergency fire pump. Both the CTGs and auxiliary boiler were permitted to combust natural gas as the primary fuel with distillate fuel oil as back-up. The fuel gas heater and the HRSGs were permitted to combust only natural gas, and the emergency fire pump was permitted to combust only distillate fuel oil. The 2006 PSD permit limited the sulfur content of the natural gas to 0.35 grains per 100 standard cubic feet (gr/100 dscf) and the sulfur content of the distillate fuel oil to 0.04 percent by weight (% by weight). Further, the 2006 PSD permit established limits on the amount of fuel oil (in gallons per any consecutive 12-month period) that can be combusted by each of the CTGs, auxiliary boiler and emergency fire pump. The facility was designed to operate on a continuous basis but can also operate at partial loads when it is dispatched. Partial loads turbine operation was limited to between 75 and 100% of turbine load for both natural gas and distillate fuel oil firing.

The CLIEC project was subject to PSD for the following pollutants: nitrogen oxides (NO_x), carbon monoxide (CO), particulate matter (PM), particulate matter with an aerodynamic diameter of less than or equal to 10 micrometers (PM_{10}), sulfur dioxide (SO_2) and sulfuric acid mist (H_2SO_4). Thus, CLIEC was required to employ Best Available Control Technology (BACT) and comply with BACT emission limits for each of the above listed PSD affected pollutants. A selective catalytic reduction (SCR) system and an oxidation catalyst were installed to control NO_x, CO and VOC emissions from the CTGs and HRSGs. In addition, the CTGs inlet air was required to be cooled by the use of an evaporative cooler when the ambient temperature is high to improve the CTGs efficiency and increase generation output. The auxiliary boiler was required to employ a low-NO_x burner (LNB) and flue gas recirculation (FGR) to control emissions of NO_x. The fuel gas heater was required to use a forced draft burner to minimize NO_x emissions.

A detailed description of how each of the PSD affected pollutants is formed, and the control technology that EPA determined as BACT for each of the PSD affected pollutant at each combustion source can be found in the 2006 Fact Sheet pp. 2 to 3 on the EPA website at https://www.epa.gov/caa-permitting/caithness-long-island-llc-brookhaven-ny-0. Most relevant to the current action are the 2006 permit requirements for SO_2 and H_2SO_4. In particular, in 2006 EPA determined that SO_2 and H_2SO_4 emissions at CLIEC are directly related and formed as a result of oxidation of sulfur in the fuel being combusted. BACT for SO_2 and H_2SO_4 was determined to be the use of natural gas as the primary fuel and the use of fuel oil with 0.04% sulfur content by weight, as the backup fuel with restricted amounts of fuel oil combusted on an annual basis. No add-on air pollution equipment controls were selected as representing BACT for SO_2 and H_2SO_4.

Following the issuance of the 2006 PSD permit, the New York State Department of Conservation (NYSDEC) transferred the requirements of the 2006 PSD permit into the title V permit issued by NYSDEC for Caithness.

II. Summary of Proposed Revisions to the 2006 PSD Permit

A. Description and Basis of the Proposed Revisions to 2006 PSD Permit - 2019 PSD Application

On December 30, 2019, the EPA received a PSD permit application from CLIEC (2019 application).[1] The 2019 application requested revisions to the 2006 PSD permit as described below:

1. CLIEC requested that the sulfur content of the distillate fuel oil be reduced to 0.0015% by weight, which is a decrease of about 27 times the 2006 PSD permit limit of 0.04% by weight. The basis for this request is a change in a state regulation that as of July 1, 2016 requires a facility that uses distillate fuel oil, such as CLIEC, to use ultra-low sulfur diesel (ULSD) fuel oil with a sulfur-in-fuel limit of 0.0015% by weight. The new regulation is much more stringent than the limit in the 2006 PSD permit. The state regulation addressing the sulfur in fuel oil is codified at 6 NYCRR Part 225-1.2 "Sulfur-in-fuel-limitations" with an effective date of April 5, 2013.[2] Aligning the limit of the sulfur content of fuel oil in the PSD permit with the newer much more stringent limit of the sulfur content in fuel oil imposed by the new state regulation would make the PSD permit consistent with the new state regulation. The sulfur-in-fuel limit of 0.0015% has already been included in CLIEC's draft renewal title V permit.

2. Additionally, CLIEC requested that the oil-fired mass emission rates of SO_2 and H_2SO_4 expressed as pounds per hour (lb/hr) and pounds per million British Thermal Units (lb/MMBTU) for the CTGs and the oil-fired mass emission rates of SO_2 expressed as lb/MMBTU for the auxiliary boiler and emergency fire pump be removed from the 2006 PSD permit. The above oil-fired emission rates of SO_2 and H_2SO_4 of the 2006 PSD permit were determined based on sulfur content of distillate fuel oil combusted by the CTGs, auxiliary boiler and emergency fire pump of 0.04% by weight and they represented BACT limits for those emissions sources. As previously discussed, emissions of SO_2 and H_2SO_4 are directly related to the sulfur content of the fuel. Based on 0.0015% by weight sulfur content in fuel oil, the oil-fired mass emission rates of SO_2 and H_2SO_4 were calculated to be about 27 times lower than those in the 2006 PSD permit. Thus, compliance with the much more stringent sulfur-in-fuel content of 0.0015% by weight required by the NY state regulation, and proposed to be incorporated into the PSD permit, would also ensure compliance with the oil-fired mass emission limits for SO_2 and H_2SO_4 that were in the 2006 PSD permit. As such, CLIEC requests removal of these emission limits from the permit.

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[1] The 2019 application is available on the EPA's website at https://www.epa.gov/caa-permitting/caa-permits-issued-epa-region-2#pendingpsd

[2] 6 NYCRR Part 225-1.2 was approved by the EPA into the SIP on August 23, 2018.

The revisions requested by CLIEC do not modify the limits on the amount of the fuel oil (in gallons per any consecutive 12-month period) that can be combusted by each of the CTGs, auxiliary boiler and emergency fire pump. Further, the proposed revisions will not result in any emission increases. On the contrary, they will result in decreases of SO_2 and H_2SO_4 emissions to levels below major source thresholds.

B. 2006 PSD Permit conditions altered by the revisions requested by CLIEC

EPA Region 2 has concluded that the CLIEC's 2019 application is complete and provides information showing that the revisions requested to the 2006 PSD permit do not conflict with the federal PSD regulations at 40 C.F.R. §52.21. The CLIEC's proposed revisions would make the sulfur content in fuel oil requirements of the 2006 PSD permit consistent with the more stringent requirements established by a state regulation that became effective after the issuance of the 2006 PSD permit, and with the requirements of the CLIEC's title V permit.

The proposed revisions alter the conditions of the 2006 PSD permit as follows:

1. Update Conditions VII.A. 4, VII.B.4 andVII.D.1 of the 2006 PSD permit by substituting the sulfur content of the distillate oil of "0.04% by weight" with "0.0015% .by weight".

2. Update Conditions VII.A.5, VII.B.5 of the 2006 PSD permit by substituting the reference to "distillate oil" with "ultra-low sulfur distillate oil".

3. Update Conditions VII.A.1, VII.B.1 of the 2006 PSD permit by substituting the reference to "low sulfur distillate oil" with "ultra-low sulfur distillate oil"

4. Update Condition VII.D.1 of the 2006 PSD permit by substituting the reference to "low fuel oil" with "ultra-low sulfur distillate oil".

5. Update Conditions VII.D.2 of the 2006 PSD permit by substituting the reference to "fuel oil" with "ultra-low sulfur distillate oil".

6. Remove the oil-fired mass-emission rates of SO_2 that are included at Conditions VIII.A.4.c and d, VIII.B.4.b., and VIII.D.4 of the 2006 PSD permit.

7. Remove the oil-fired mass-emission rates of H_2SO_4 that are included at Conditions VIII.A.5 c. and d of the 2006 PSD permit.

8. Update Condition XII.2 of the 2006 PSD permit by substituting "0.04% by weigh" with "0.0015% by weight".

9. Update Condition XIII.1.i of the 2006 PSD permit by substituting "0.04%" with "0.0015%".

III. Administrative Procedures and Public Participation

40 C.F.R. part 124 establishes EPA's procedures for issuing PSD permits. EPA follows the requirements of 40 C.F.R § 124.8 in processing this permit revision, which requires the preparation of a fact sheet. As required in 40 C.F.R. § 124.10, EPA will provide a public announcement and offer the public the opportunity to comment on the draft permit conditions during a 30-day public comment period. All persons, including the applicant, who have comments on any condition of the Draft Revised Permit, must raise all issues and submit all available arguments and all supporting materials for their arguments in full by the close of the 30-day public comment period. The commence and closure dates of the public comment period will be available on the EPA's website at https://www.epa.gov/caa-permitting/draft-prevention-significant-deterioration-air-quality-permit-revisions-caithness along with the administrative record for the draft permit. Additionally, EPA will hold a Public Hearing[3] if the Regional Administrator determines that there is a significant degree of public interest in the draft permit. Following the close of the public comment period, and after the public hearing, if one is be held, the EPA will prepare a response to all substantive comments and make the responses available to the public on the EPA's website at https://www.epa.gov/caa-permitting/caa-permits-issued-epa-region-2#pendingpsd. EPA will consider all written and oral comments submitted during the public comment period and during the public hearing, if one is held, before issuing a final permit decision on the PSD permit application. See the public announcement, which is available on the EPA's website at https://www.epa.gov/caa-permitting/draft-prevention-significant-deterioration-air-quality-permit-revisions-caithness for more details.

[3] *See* 40 C.F.R. §§ 124.12