SC DEPARTMENT of ENVIRONMENTAL SERVICES

Bureau of Air Quality
Prevention of Significant Deterioration
Preliminary Determination
BACT Review

Dominion Energy South Carolina, Inc. - Canadys Station
13139 Augusta Highway
Walterboro, South Carolina 29488
Colleton County

Permit No. PSD-50000027 v1.0
Agency Air Number: 0740-0002
September 18, 2026

This review was performed by the Bureau of Air Quality of the South Carolina Department of Environmental Services in accordance with South Carolina Regulations for the Prevention of Significant Air Quality Deterioration.

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1.0 Timeline (Permitting Action History)

3/12/2026	A Prevention of Significant Deterioration (PSD) pre-application meeting was held with representatives from Dominion Energy South Carolina Inc Canadys Station, Tora Consulting, LLC and ALL4 Company, and the South Carolina Department of Environmental Services (SCDES), Bureau of Air Quality (BAQ).
4/24/2026	SCDES received a PSD permit application from Dominion Energy South Carolina Inc Canadys Station.
5/12/2026	Air Permitting of the BAQ submitted a copy of the application to the U.S. Environmental Protection Agency (EPA) via the EPA's Electronic Permit System.
7/10/2026	SCDES received an updated PSD permit application from Canadys.
7/22/2026	Air Permitting of BAQ emailed a letter to representatives of the U.S. EPA, Fish and Wildlife, National Park Service, and Department of Agriculture, informing them that the BAQ had deemed the application complete.
9/18/2026	The BAQ placed the PSD Preliminary Determination and PSD Construction Permit No. PSD-50000027 v1.0 on public notice for a thirty-(30) day comment period. All appropriate Federal and State Officials were notified.

2.0 Introduction and Preliminary Determination

2.1 Project Overview

Due to emissions increases associated with this proposal, the project is subject to S.C. Regulation 61-62.5, Standard No. 7, "Prevention of Significant Deterioration (PSD)." This regulation is equivalent to the Federal Prevention of Significant Deterioration of Air Quality regulations in Title 40 Code of Federal Regulations (CFR) Section 52.21. Pursuant to these regulations, new major stationary sources and modifications to major stationary sources of air pollution must demonstrate that they will not significantly deteriorate the air quality in their region. The facility has potential emissions for the pollutants listed in Table 1 below, which exceed the significance levels allowed in this regulation. The PSD review was conducted for each of these pollutants and includes a Best Available Control Technology (BACT) determinations and Ambient Air Impact Analyses.

As shown in Table 1, this project exceeds the significant threshold as defined under PSD for each pollutant listed as "Yes" for a significant increase.

Table 1 - PSD Applicability Analysis

Pollutant	Controlled Emissions Increase	PSD Significant Threshold	Significant Increase?
	TPY	TPY	
PM	617	25	Yes
PM_{10}	615	15	Yes
$PM_{2.5}$	613	10	Yes
SO_2	119	40	Yes
NO_X	731	40	Yes
CO	2,780	100	Yes
VOC	972	40	Yes
Sulfuric Acid Mist	197	7	Yes
Lead	0.08	0.6	No
GHG	7,890,000	75,000	Yes
Fluorides	---	3.0	No

3.0 Detailed Process Description

This project is for the construction of three (3) independent, advanced-class, multi-shaft, one-on-one (1x1) combined cycle combustion turbine (CCCT) power trains. Each power train will include a combustion turbine-generator (CTG), a heat recovery steam generator (HRSG) equipped with supplementary firing (duct burners), and a steam turbine-generator (STG), configured to operate in a combined cycle arrangement. Each CCCT will be equipped with selective catalytic reduction (SCR) for the control of nitrogen oxides (NO_x) and an oxidative catalyst (OXCAT) for the control of carbon monoxide (CO), volatile organic compounds (VOC) and organic hazardous air pollutants (HAPs). Water injection will also be available for control of NO_x when using fuel oil in the combustion turbines.

Ancillary equipment will include: one (1) natural gas-fired auxiliary boiler (ABO), three (3) diesel-fired emergency generators, two (2) diesel-fired emergency fire water pumps, four (4) natural gas-fired fuel gas heaters, sixty six (66) sulfur hexafluoride (SF6) high-voltage circuit breakers, two (2) three-million gallon aboveground storage tanks (ASTs) for fuel oil, three (3) 4000-gallon diesel belly tanks, two (2) 300-gallon diesel belly tanks, two (2) 40,000-gallon ASTs storing less than 20% aqueous ammonia to support the SCR system, six (6) inlet chiller towers, three (3) delugable air-cooled heat exchangers, and fugitive emission components (valves, flanges, etc.).

4.0 Regulatory Applicability

The project results in potential emissions that exceed the PSD significant thresholds. By virtue of the proposed increase, this project is subject to review under the following standards in S.C. Regulation 61-62 and Federal standards:

- S.C. Regulation 61-62.5, Standard No. 1, *Emissions from Fuel Burning Operations*
- S.C. Regulation 61-62.5, Standard No. 2, *Ambient Air Quality Standards*
- S.C. Regulation 61-62.5, Standard No. 4, *Emissions from Process Industries*
- S.C. Regulation 61-62.5, Standard No. 7, *Prevention of Significant Deterioration*
- S.C. Regulation 61-62.6, *Control of Fugitive Particulate Matter*
- S.C. Regulation 61-62.7, *Good Engineering Practice Stack Height*
- S.C. Regulation 61-62.60, *South Carolina Designated Facility Plan and New Source Performance Standards*
- S.C. Regulation 61-62.60 and 40 CFR 60, *Standards of Performance of New Stationary Sources*, Subpart Dc, *Standards of Performance for Small Industrial Commercial - Institutional Steam Generating Units*
- S.C. Regulation 61-62.60 and 40 CFR 60, *Standards of Performance of New Stationary Sources*, Subpart IIII, *Standards of Performance for Stationary Compression Ignition Internal Combustion Engines*
- S.C. Regulation 61-62.60 and 40 CFR 60, *Standards of Performance of New Stationary Sources*, Subpart KKKKa, *Standards of Performance for Stationary Combustion Turbines*
- S.C. Regulation 61-62.60 and 40 CFR 60, *Standards of Performance of New Stationary Sources*, Subpart TTTTa, *Standards of Performance for Greenhouse Gas Emissions for Modified Coal-Fired Steam Electric Generating Units and New Construction and Reconstruction Stationary Combustion Turbine Electric Generating Units*
- S.C. Regulation 61-62.63 and 40 CFR 63, *National Emission Standards for Hazardous Air Pollutants (NESHAP) for Source Categories*, Subpart YYYY, *National Emission Standards for Hazardous Air Pollutants for Stationary Combustion Turbines*
- 40 CFR 63, *National Emission Standards For Hazardous Air Pollutants For Source Categories*, Subpart ZZZZ, *National Emission Standards For Hazardous Air Pollutants For Stationary Reciprocating Internal Combustion Engines*
- 40 CFR 63, *National Emission Standards For Hazardous Air Pollutants For Source Categories*, Subpart DDDDD, *National Emission Standards for Hazardous Air Pollutants for Major Sources: Industrial, Commercial, and Institutional Boilers and Process Heaters*
- S.C. Regulation 61-62.70, *Title V Operating Permit Program*
- S.C. Regulation 61-62.72 and 40 CFR 72, 73, 74, 75, and 76, *Acid Rain*
- S.C. Regulation 61-62.96 and 40 CFR 96 *Nitrogen Oxides (NO_X) Budget Program*

- S.C. Regulation 61-62.97 and 40 CFR 97 *Cross-State Air Pollution Rule*

5.0 Best Available Control Technology (BACT) Determination

5.1 BACT Requirement

BACT is defined as "an emissions limitation (including a visible emission standard) based on the maximum degree of reduction for each pollutant, taking into account energy, environmental, and economic impacts." As per S.C. Regulation 61-62.5, Standard No. 7, the BACT requirement applies to each individual new or modified affected emissions unit and pollutant emitting activity at which a net emissions increase would occur. In no case can the application of BACT result in emissions of any pollutant which would exceed emissions allowed under any applicable standard under 40 CFR 60, *New Source Performance Standard (NSPS)*, 61, *National Emission Standards for Hazardous Air Pollutants (NESHAP),* or 63, *NESHAP for Source Categories*.

Chapter B of the draft *New Source Review Workshop Manual* (October 1990) defines the BACT determination process as a 5-step process.

Step 1 - Identify All Control Technologies
Step 2 - Eliminate Technically Infeasible Options
Step 3 - Rank Remaining Control Technologies by Control Effectiveness
Step 4 - Evaluate Most Effective Controls and Document Results
Step 5 - Select BACT

Opacity is not considered to be a PSD pollutant and therefore, opacity itself does not require a BACT evaluation and establishment of a BACT limit. However, BACT can include the use of visible emission limitations or work practice standards for regulated PSD pollutants. Opacity limits have been included in the draft permit as required by State and Federal regulations. BACT cannot be less stringent than an applicable NSPS or NESHAP as outlined in 40 CFR 60, 61, and 63.

The primary resource for establishing BACT is the RACT/BACT/LAER Clearinghouse (RBLC) on the Technology Transfer Network (TTN) maintained by the EPA. To establish BACT for a PSD source, state regulatory agencies query the RBLC. This database contains information about available control technologies for specific industry sources and lists the limits that other pollution control agencies have established for similar source types.

BAQ queried the RBLC for all process types and NSR applicable pollutants. An RBLC advanced search was queried using a standard industrial classification (SIC) code of 4911. In addition to the RBLC, operating permits for existing facilities with similar processes and the various control options used by those facilities were reviewed.

5.2 BACT for CO

Table 6 lists the CO emissions resulting from the following process/point sources.

Table 2 - Potential CO Emissions	
Equipment	**Potential Emissions (lb/hr)**
CT1, DB1, CT2, DB2, CT3, DB3	49.17 (each CCCT)
AB1	3.74
EG1, EG2, EG3	6.20 (each engine)
FP1, FP2	0.311 (each pump)
HT1, HT2, HT3	1.65 (each heater)
HT4	0.247

As stated in the regulatory definition, BACT is “an emissions limitation … based on the maximum degree of reduction for each regulated NSR pollutant … taking into account energy, environmental, and economic impacts ….” When BAQ determines that the imposition of an emissions limitation is not feasible, then “a design, equipment, work practice, operational standard, or combination thereof, may be prescribed” as BACT instead.

5.2.1 Step 1: Identify All Available Control Technologies

The BACT analysis identifies the following control technologies that could reduce CO emissions:

Emission Source: CCCTs - The duct burners associated with the CCCTs only operate when natural gas is combusted in the CCCTs and never operate separately from the CCCTs. They also share downstream control devices along with continuous monitoring. For this reason, the duct burners will be combined with the CCCTs for this BACT analysis. The following control technologies could reduce CO emissions from the combined cycle turbines:

- Good Combustion Practices – Good combustion practices refer to design and operational practices that promote complete combustion of the fuel. These practices include the following: tuning of the air-to-fuel ratio in the combustion zone to maintain combustion efficiency and performance mitigating the quantity of unburned carbon; proper combustor design that promotes air and fuel mixing, enhances the combustion chamber residence time, and ensures sufficient temperature and turbulence; and, maintenance and operation in accordance with the manufacturer’s specifications. Using good combustion practices allows for a more complete combustion resulting in more of the carbon in the fuel being converted to CO_2 rather than CO.

- Oxidation Catalyst - Oxidation catalysts serve as a post-combustion technology aimed at reducing CO in the exhaust gas stream from CCCTs. These catalysts facilitate the oxidation process by providing a surface that encourages the reaction between CO and the oxygen naturally present in the exhaust, leading to the conversion of these pollutants into CO_2. Notably, this process does not rely on the introduction of additional reactants, as is the case with SCR systems. Oxidation catalysts are typically made of a precious metal and operate at temperatures in the range of 650 °F to 1,000 °F. Technical factors relating to this technology include catalyst reactor design, optimum operating temperature, backpressure loss to the system, catalyst life, susceptibility to poisoning by fine particles in the exhaust gas which reduces the catalyst's effectiveness, and potential collateral increases in emissions of PM_{10}, $PM_{2.5}$, and sulfuric acid mist.

- Thermal Oxidation - Thermal oxidation is a means of controlling CO emissions via the introduction of oxygen and very high temperatures (1400-1600°F). The introduction of oxygen at sufficient temperatures results in the thermal oxidation of CO into CO_2.

Emission Source: AB1, HT1, HT2, HT3, HT4 – The following control technologies could reduce CO emissions from these sources:

- Good Combustion Practices – Good combustion practices is explained above for the CCCTs. Using good combustion practices allows for a more complete combustion resulting in more of the carbon in the fuel to be converted to CO_2 rather than CO.

- Oxidative Catalyst – See description above for CCCTs.

- Thermal Oxidation - See description above for CCCTs.

Emission Source: EG1, EG2, EG3, FP1, FP2 – The emergency engines are required to allow the turbines to startup (SU) and shutdown (SD) safely when power from the grid is not available. These engines, classified as emergency engines, must be available immediately to prevent damage to the turbines. Engines outside of the emergency class were not reviewed for this reason. The following control technologies could reduce CO emissions from these sources:

- Compliance with NSPS IIII and use of EPA certified engines - These control options ensure use of efficient, properly maintained modern engines, and are especially targeted toward reducing emissions of CO.

- Good combustion practices with fuel oil meeting the ULSD specification - Per 40 CFR 1090.305, ULSD must meet either a minimum cetane index of 40 (which correlates to the ease of ignition and combustion quality), or a maximum aromatic content of 35 volume percent, both of which reduce emissions from diesel combustion.

5.2.2 Step 2: Technical Feasibility of Options

After the identification of control options, the second step in the BACT assessment is to eliminate technically infeasible options. A control option is eliminated from consideration if there are process-specific conditions that would prohibit the implementation of the control or if the highest control efficiency of the option would result in an emission level that is higher than any applicable regulatory limits.

Emission Source: CCCTs – Thermal Oxidation is not technically feasible due to the low exhaust temperature of the combustion turbines.

Emission Source: AB1, HT1, HT2, HT3, HT4

- Oxidative Catalyst (Aux Boiler) - The exhaust from the auxiliary boiler would require supplementary heating to reach the temperatures necessary for oxidation catalyst to be effective. This additional heating would result in increased design complexity and emissions such as CO from the exhaust heater. The database review largely confirms that this technology is not feasible or available, with the one exception being the Cronus Chemicals facility in Tuscola, Illinois. The Cronus Chemicals facility lists catalytic oxidation as the control technology applied to an auxiliary boiler, but that facility has not been built and has not demonstrated the use of oxidation catalyst on an auxiliary boiler in practice. Therefore, this technology is deemed infeasible for the purpose of controlling CO from auxiliary boilers.

- Oxidative Catalyst (Fuel Gas Heaters) - As noted for the aux boiler, supplementary heating to reach the temperatures necessary for oxidation catalyst to be effective would be required resulting in increased CO emissions. In addition, due to the fuel gas heaters size, low exhaust temperature, and the lack of any proven examples of oxidation catalyst being operated on similar units in the database review, this technology is infeasible for use on fuel gas heaters.

- Thermal Oxidation - Thermal oxidation, similar to catalytic oxidation, requires significant heating of the exhaust stream to achieve destruction of CO emissions. The heating requires additional external combustion sources that would result in additional emissions of CO. There are no applications of thermal oxidation as a means to control CO from an auxiliary boiler or a fuel gas heater in the RBLC database. Therefore, these controls are deemed infeasible for this application.

Emission Source: EG1, EG2, EG3, FP1, FP2 – All available control options identified in Step 1 are considered technically feasible.

5.2.3 Step 3: Ranking of Control Technologies by Control Effectiveness

Emission Source: CCCTs - The use of good combustion practices coupled with oxidation catalyst, represents BACT for CO emissions from the proposed CCCTs. As such, a ranking is not required to establish the top control option.

Emission Source: AB1, HT1, HT2, HT3, HT4 – The use of good combustion practices represents BACT for CO emissions from the proposed heaters and aux boiler. This is the only technically feasible option and will be utilized as part of the project. Therefore, no ranking of the controls is necessary.

Emission Source: EG1, EG2, EG3, FP1, FP2 – The use of good combustion practices and Compliance with NSPS IIII and use of EPA certified engines represents BACT for CO emissions from the proposed engines. All technically feasible options will be utilized as part of the project. Therefore, no ranking of the controls is necessary.

5.2.4 Step 4: Evaluation of Most Effective Controls

Emission Source: CCCTs - The most effective control options were selected in Step 3. Therefore, further evaluation is unnecessary.

Emission Source: AB1, HT1, HT2, HT3, HT4 - The facility will use good combustion practices as discussed in Step 3. Therefore, further evaluation is unnecessary.

Emission Source: EG1, EG2, EG3, FP1, FP2 – The most effective control options were selected in Step 3. Therefore, further evaluation is unnecessary.

5.2.5 Step 5: Select BACT Controls and Limits

Emission Source: CCCTs - The proposed BACT limits are within the range of BACT determinations identified during the database review, which is summarized in Appendix C-1c and Appendix C-1f of the application. These limits apply across all normal operating conditions except SU/SD and the alternative operating scenarios.

The CO limits in the RBLC for combustion turbines firing natural gas and/or ULSD that utilize good combustion practices and oxidation catalyst generally range from 1 to 9 ppmvd at 15% O_2. The RBLC database review did not identify any recently permitted Mitsubishi 501JAC advanced-class combustion turbine in a dual-fuel arrangement with fuel oil firing capabilities. Limits in the RBLC that are lower than proposed for this project appear to be associated with other combustion turbine technologies (e.g., General Electric Vernova and/or Siemens Energy units). These turbines are H-frame turbines which have different operating characteristics than the proposed J frame for this project. The proposed CO BACT limits for this project match those applied in June 2024 to Georgia Power Company's Yates Steam-Electric Generating Plant Units 8, 9, and 10, which are dual-fuel (natural gas and fuel oil) Mitsubishi 501JAC combustion turbines, the same model combustion turbines proposed for this project. Because lower limits are not demonstrated in practice for this project's model combustion turbine, the same BACT limits as the Yates units in Georgia will be applied. Comparing BACT emission rates outside the class of turbines would redefine the project in this case. The J-Class turbines have different efficiencies and peak heat rates than the H-Class turbines. The J-Class turbines also have a quicker ramp-up rate allowing them to respond to fluctuations in the grid more quickly. Because J-Frame advance class turbines have higher heat inputs, a higher efficiency can be achieved based on the efficiency formula for a heat engine. A higher efficiency is achieved by limiting the amount of excess air entering the turbine. Limiting excess air reduces the O_2 available, resulting in a slight increase in CO formation. Although a review of the RBLC can be useful to compare what control technology is available for a source, comparing emission limits would not be appropriate because of design differences within the classes of turbines.

Compliance with the CO limits will be demonstrated using a CO CEMS on a 4-hour rolling average basis, which aligns with the Plant Yates BACT determination for the same model combustion turbine equipment and approaches the level of stringency of the lower BACT limits with longer averaging times. During hours when multiple limits apply, the applicable limit for that hour will be based on the operating condition corresponding to the highest limit. This approach is equivalent to that in NSPS KKKKa at 40 CFR §60.4320a(b)(1). The facility will operate the CO CEMs in compliance with the performance specifications and document the quality assurance/quality control procedures to be used to maintain proper operation of the CO CEMS.

The facility will also continuously monitor the inlet temperature to the catalyst, maintaining the inlet temperature within the range suggested by the catalyst manufacturer on a 4-hour rolling average basis as required by 40 CFR Part 63, Subpart YYYY. Because the oxidation catalyst will not achieve stable performance until optimal conditions are achieved. The facility will establish a secondary CO BACT limit for periods of SU/SD:

- Total CO emissions from all three (3) CCCT power trains combined will be limited to 2,745.41tons on a rolling 12-month basis, including periods of SU/SD.

- SU/SD operations will be limited to no more than 2,928.50 hours per rolling 12-month period, pooled across all three (3) of the CCCT power trains.

Emission Source: AB1, HT1, HT2, HT3, HT4 – The foregoing analysis indicates that the use of good combustion practices represent BACT for CO emissions from the proposed boiler and heaters. The auxiliary boiler will be limited to a capacity factor of 10% and no more than 2,000 hours/year of operation (exclusive of commissioning). No stack testing or numeric emission limits are proposed due to the limited use of the auxiliary boiler, the small size of the fuel gas heaters, and because emissions are inherently limited by the proposed operational limits and work practices proposed as BACT. Proper operation and maintenance of the boiler and heaters will ensure compliance with BACT.

Emission Source: EG1, EG2, EG3, FP1, FP2 – The emergency engines will be subject to NSPS IIII and will comply with the applicable provisions therein. The facility will install certified engines and will operate the engines in accordance with the manufacturer's written emissions-related instructions. Pursuant to 40 CFR §60.4207(b), Furthermore, the engines will be classified as emergency engines and will therefore each be limited to operating no more than 100 hours/year for readiness testing.

Table 3 - Selection of CO BACT and Proposed Limits

Process / Equipment	Control Method	Proposed BACT Limit
CCCTs / CT1, DB1, CT2, DB2, CT3, DB3 – Using Natural Gas	Catalytic Oxidation, Good Combustion Practices	3.5 ppmvd at 15% O_2
CCCTs / CT1, CT2, CT3 – Using Fuel Oil	Catalytic Oxidation, Good Combustion Practices	5 ppmvd at 15% O_2
CCCTs / CT1, CT2, CT3 – SU/SD	Limiting hours for SU/SD events	2,745.41 tons on a rolling 12-month basis, and 2,928.50 hours per rolling 12-month period, pooled across all three (3) of the CCCT power trains
Auxiliary Boiler / AB1	Good Combustion	---

Table 3 - Selection of CO BACT and Proposed Limits		
Process / Equipment	**Control Method**	**Proposed BACT Limit**
	Practices	
Fuel Heaters / HT1, HT2, HT3, HT4	Good Combustion Practices	---
Emergency Engines / EG1, EG2, EG3, FP1, FP2	Compliance with NSPS IIII	---

5.3 BACT for NO_x

Table 4 lists the NO_x emissions resulting from the following process/point sources.

Table 4 - Potential NO_x Emissions	
Equipment	**Potential NO_x Emissions (lb/hr)**
CT1, DB1, CT2, DB2, CT3, DB3	81.0 (each CCCT)
AB1	3.69
HT1, HT2, HT3	1.96 (each heater)
HT4	0.294
EG1, EG2, EG3	52.1 (each engine)
FP1, FP2	1.87 (each pump)

As stated in the regulatory definition, BACT is “an emissions limitation … based on the maximum degree of reduction for each regulated NSR pollutant … taking into account energy, environmental, and economic impacts ….” When BAQ determines that the imposition of an emissions limitation is not feasible, then “a design, equipment, work practice, operational standard, or combination thereof, may be prescribed” as BACT instead.

5.3.1 Step 1: Identify All Available Control Technologies

The BACT analysis identifies the following control technologies that could reduce NO_x emissions:

Emission Source: CCCTs – The duct burners associated with the CCCTs only operate when natural gas is combusted in the CCCTs and never operate separately from the CCCTs. They also share downstream control devices along with continuous monitoring. For this reason, the duct burners will be combined with the CCCTs for this BACT analysis. The control technologies could reduce NO_x emissions from the combined cycle turbines:

- Good Combustion Practices - Good combustion practices involve design and practices that ensure uniform combustion of fuel. Sudden increases in combustion conditions such as temperature and residence time can increase formation of NO_X. By ensuring the uniform combustion, and therefore uniform temperature and residence times, NO_X emissions are reduced.

- Use of Clean Fuels - Natural gas generally has the lowest emission rates for NO_X of any commercially available fuel. Fuel oil offers the facility a secondary fuel that will allow the facility to continue to supply power to the grid if the supply of natural gas is limited.

- Dry Low-NO_X Combustors (DLN) - Conventional burners are fed fuel and air separately, leading to uneven mixing, uneven combustion, and therefore regions of higher temperature, leading to greater NO_X formation. In a DLN burner, the fuel and air are well mixed prior to any combustion, leading to higher uniformity in the combustor, and reducing formation of NO_X. DLN burners are well suited to combined cycle turbines, do not cause wear and tear, and are compatible with other technologies.

- Water or Steam Injection - Delivery of water or steam to the combustion zone lowers combustion temperature, which reduces generation of thermal NO_X.

- Selective Catalytic Reduction (SCR) - SCR is a control technology used to convert NO_X into diatomic nitrogen (N_2) and H_2O using a catalyst. The reduction reactions used by a SCR require oxygen and are most effective at oxygen levels above 2-3%. Base metals, such as vanadium or titanium, are often used for the catalyst due to their effectiveness as a control technology for NO_X and cost-effectiveness for use with natural gas combustion. In addition, a reductant such as anhydrous or aqueous ammonia is added to the flue gas and absorbed onto the catalyst. The base metals used in SCR systems may lack thermal durability at high temperatures. This concern is mitigated in CCCT applications by placing the SCR reactor in a region of the exhaust train that is within the operating temperature of the base metal catalysts. Base metals used in SCR systems also have the potential to oxidize SO_2 into SO_3, which can lead to an increase in particulates in the form of ammonium sulfates.

- Selective Non-catalytic Reduction (SNCR) – Selective non-catalytic reduction (SNCR) is a post-combustion control technology for NO_X emissions that uses a reduction-oxidation reaction to convert NO_X into N_2, H_2O, and CO_2. Like SCR, SNCR involves injecting ammonia (or urea) into the flue gas stream, which must be approximately 1400-2000°F for the chemical reaction to occur.

Emission Source: AB1, HT1, HT2, HT3, HT4 – The following control technologies could reduce NO_x emissions from these sources:

- Clean Fuels - NO_X emissions from boilers can arise from nitrogen contained in the fuel itself. Due to the processes that formed the fuel, landfill gas, coal and biomass contain nitrogen, which is converted to NO_X during combustion. Pipeline quality natural gas contains virtually no nitrogen and is therefore a cleaner fuel with respect to NO_X generation.

- Good Combustion Practices - Such practices, including maintenance and periodic tuning, minimize performance degradation and help maintain the efficiency of the unit, leading to more heat obtained from consumed fuel, and therefore fewer emissions generated.

- Low NO_x Burners (LNB) – This type of burner reduces NO_x emissions by minimizing the formation of thermal NO_x. A LNB delays combustion by staging the air or fuel in multiple zones and thus limiting peak flame temperatures. This results in uniform temperatures below the peak NO_X formation temperature range thereby lowering NO_X emissions.

- Ultra-Low NO_x Burners (ULNB) – Like low NO_x burners, this type of burner reduces NO_x emissions by reducing thermal NO_x. Along with staged combustion which will be advanced based on geometry differences, ULNB also uses internal flue gas recirculation which also reduces peak flame temperatures.

- Flue Gas Recirculation (FGR) - The technology works by returning up to 25% of the flue gas from a burner back to the combustion chamber. This can be done with hot gas fans and combustion air duct mixing devices (known as forced FGR) or via induced FGR, which routes flue gas through ducts directly into the existing forced draft fan inlet. The flue gas absorbs heat from the flame, lowering the peak flame temperature and reducing NO_X formation. The flue gas also mixes with the combustion air and lowers the oxygen content of the air, thereby limiting the NO_X-forming reaction.

- Selective Catalytic Reduction (SCR) - SCR is a control technology used to convert NO_X into diatomic nitrogen (N_2) and H_2O using a catalyst. The reduction reactions used by SCR require O_2 and are most effective at O_2 levels above 2-3%. Base metals, such as vanadium or titanium, are often used for the catalyst due to their effectiveness as a control technology for NO_X and cost-effectiveness for use with natural gas combustion. In addition, a reductant such as anhydrous ammonia or NH_3(aq) is added to the flue gas and absorbed onto the catalyst. The downside of the catalysts used for SCR is the base metals' lack of high thermal durability and their potential to oxidize SO_2 into SO_3. The exhaust stream passes through a catalyst, and the NO_X reacts with ammonia (or another reagent such as anhydrous ammonia or urea), leading to formation of water and gaseous nitrogen (N_2). Typically, the ammonia is fed to the SCR through an ammonia injection grid and may be vaporized or directly injected through a series of spray nozzles.

- Selective Non-Catalytic Reduction (SNCR) - SNCR is a post-combustion control technology for NO_X emissions that uses a reduction-oxidation reaction to convert NO_X into N_2, H_2O, and CO_2. Like SCR, SNCR involves injecting ammonia (or urea) into the flue gas stream, which must be approximately 1400-2000°F for the chemical reaction to occur. SNCR can be more economically desirable because a catalyst is not required and, in theory, SNCR can control NO_X emissions with an efficiency similar to that of SCR (i.e., 90%). However, operating constraints on temperature, reaction time, and mixing often lead to less effective results when using SNCR in practice.

Emission Source: EG1, EG2, EG3, FP1, FP2 – The emergency engines are required to allow the turbines to startup and shutdown safely when power from the grid is not available. These engines, classified as emergency engines, must be available immediately to prevent damage to the turbine. The following control technologies could reduce NO_x emissions from these sources:

- Compliance with NSPS IIII and use of EPA certified engines - These control options ensure use of efficient, properly maintained modern engines, and are especially targeted toward reducing emissions of NO_x.

- Good combustion practices with fuel oil meeting the ULSD specification - Per 40 CFR 1090.305, ULSD must meet either a minimum cetane index of 40 (which correlates to the ease of ignition and combustion quality), or a maximum aromatic content of 35 volume percent, both of which reduce emissions from diesel combustion.

- Limited hours of operation - Limited hours of operation, especially applicable for emergency engines, reduces generation of all pollutants.

- SCR – See description above for CCCTs.

- Selective Non-Catalytic Reduction (SNCR) - See description above for CCCTs.

5.3.2 Step 2: Technical Feasibility of Options

After the identification of control options, the second step in the BACT assessment is to eliminate technically infeasible options. A control option is eliminated from consideration if there are process-specific conditions that would prohibit the implementation of the control or if the highest control efficiency of the option would result in an emission level that is higher than any applicable regulatory limits.

Emission Source: CCCTs – The control options identified in Step 1 comprising good combustion practices, use of clean fuels, DLN combustors, water or steam injection, and SCR are considered technically feasible. The exhaust gases from the CCCTs are relatively cool as a result of converting as much thermal energy into power as possible, by passing the hot exhaust through each stage of the combined cycle power train. This results in an exhaust temperature that is lower than the temperatures an SNCR requires for operation. Therefore, SNCR is not a feasible control technology for the proposed CCCTs. This conclusion is supported by the database search.

Emission Source: AB1, HT1, HT2, HT3, HT4 – The following control technologies from Step 1 are not technically feasible:

- Flue Gas Recirculation - FGR is not an effective control technique for the auxiliary boiler due to the low utilization and operation at low firing rate, and is not feasible for the fuel gas heaters due to their size and operational profile. Due to the low-load operations and limited use of the auxiliary boiler and fuel gas heaters, FGR was not considered further in this analysis.

- Low NO_x Burners (LNB) – The fuel gas heaters are designed to deliver natural gas at a specific temperature to the combustion turbine. They are designed specifically to work with the turbine. Due to their smaller size and design, the elongated design of a low-NO_x burner is not technically feasible for the fuel heaters.

- Ultra-Low NO_x Burners (ULNB) – For similar reasons to low NO_x burners, ULNB's are not technically feasible for fuel gas heaters. Due to the geometry and design of ULNB's, they can be susceptible to unstable flames or flameouts when operating at a lower rate input than designed. Because the auxiliary boiler operates at varying rates, a ULNB would not be technically feasible.

- Selective Catalytic Reduction - The auxiliary boiler will be limited to no more than 10% capacity factor and is only used when steam is otherwise unavailable from an operating CCCT power train. SCR may be technically feasible on larger boilers that are not subject to limited, as-needed, operation; however, the general operating condition of the auxiliary boiler is expected to be at low load where the exhaust gas temperature will be below the minimum needed for effective SCR control. When the auxiliary boiler does operate at higher loads, the duration of such operation is expected to be short, limiting the effectiveness of an SCR. Therefore, the SCR control technology is not considered to be technically feasible for the auxiliary boiler and is not considered further.

  The database and permit reviews conducted as a part of this BACT analysis did not identify SCR as being used for heaters in a size range similar to that of the proposed fuel gas heaters. As such, SCR is not considered an available technology for these heaters.

- Selective Non-catalytic Reduction - The exhaust streams from the auxiliary boiler and fuel gas heaters are lower than the temperature required to operate an SNCR system efficiently. Therefore, SNCR is considered technically infeasible for the auxiliary boiler or the fuel gas heaters.

Emission Source: EG1, EG2, EG3, FP1, FP2 – The following control technologies from Step 1 are not technically feasible:

- Other than a generator equipped with SCR to achieve LAER standards (RLBC entry NY-0103), no add-on control devices for NO_X were identified during the database review and thus are not considered in this BACT analysis. SCR has been applied in base-load (non-emergency) diesel engine applications where engines are operated primarily at high capacity for extended periods of time for industrial and power generation purposes. Because of the quick startups required to provide the necessary emergency backup power and short operating durations, SCR is not technically feasible for emergency engines.

5.3.3 Step 3: Ranking of Control Technologies by Control Effectiveness

Emission Source: CCCTs – All technically feasible control technologies have been chosen. Therefore, ranking is not required.

Emission Source: AB1, HT1, HT2, HT3, HT4 – All technically feasible control technologies have been chosen. Therefore, ranking is not required.

Emission Source: EG1, EG2, EG3, FP1, FP2 – All technically feasible control technologies have been chosen. Therefore, ranking is not required.

5.3.4 Step 4: Evaluation of Most Effective Controls

Emission Source: CCCTs – The most effective control options were selected in Step 3. Therefore, further evaluation is unnecessary.

Emission Source: AB1, HT1, HT2, HT3, HT4 – The most effective control options were selected in Step 3. Therefore, further evaluation is unnecessary.

Emission Source: EG1, EG2, EG3, FP1, FP2 – The most effective control options were selected in Step 3. Therefore, further evaluation is unnecessary.

5.3.5 Step 5: Select BACT Controls and Limits

Emission Source: CCCTs – The above analysis indicates that the use of SCR, good combustion practices, clean burning fuel, DLN combustors and water injection (when firing fuel oil), represent BACT for NO_X emissions from the proposed CCCTs. Fuel oil usage will be limited to 720 hours/year. The proposed BACT limits associated with normal operation, exclusive of SU/SD and the alternative operating scenarios. For the alternative operating scenarios, the facility's CCCT power trains may operate under limited alternate operating scenarios, including online combustion turbine compressor water washing, combustion system tuning, and online fuel transfers. These operating scenarios are infrequent, limited in duration, and ancillary to normal operation of the CCCTs. A NO_x CEMs will be used for monitoring.

The proposed NO_X limit associated with natural gas firing is equivalent to the lowest identified in the RBLC. The 24-hour averaging period aligns with recent determinations and is proposed to account for operational variability of the CCCT power trains. The proposed NO_X limit associated with fuel oil firing is among the lowest identified in the RBLC, with only five (5) entries having a lower value (4 ppmvd):

- Two (2) units at the Renovo Energy Center (PA-0334)
- One (1) unit at the Killingly Energy Center (CT-0161)
- One (1) unit at the PSEG Sewaren Generating Station (NJ-0084)
- One (1) unit at the Middlesex Energy Center (NJ-0085)

The Renovo Energy Center, Killingly Energy Center, and Middlesex Energy Center projects have all been cancelled and therefore the BACT limits associated with these facilities were never demonstrated. The Renova, Sewaren, and Middlesex proposed turbines were all GE H-Class units which operate at a lower firing temperature and have a lower combustion turbine exhaust NO_X emission rate relative to the proposed combustion turbines. For the Killingly project, the proposed turbine was a Siemens Model SGT6-8000H which also operates at a lower peak heat rate. Only the Sewaren Generating Station unit was constructed. Given the differences between the combustion turbines for the Sewaren Generating Station unit and the proposed units, a NO_X limit of 5 ppmvd is more appropriate when firing fuel oil. Operation on fuel oil will be limited to no more than 720 hours/year as previously discussed.

Emission Source: AB1, HT1, HT2, HT3, HT4 – The previous steps indicate that the use of clean fuels, good combustion practices, and combustion controls represent BACT for NO_X emissions from the proposed auxiliary boiler. The auxiliary boiler will be limited to a capacity factor of 10% and no more than 2,000 hours/year of operation (exclusive of initial commissioning of the CCCT power trains). No stack testing or numeric emission limits are proposed due to the limited use of the auxiliary boiler and because emissions are inherently limited by the proposed operational limits and work practices proposed as BACT.

The use of clean fuels and good combustion practices will be used to minimize NO_X emissions from the fuel gas heaters. No numeric limits or stack testing are proposed due to the small size of the heaters and because emissions are inherently limited by the work practices proposed as BACT. Proper operation and maintenance of the heaters will ensure compliance with BACT.

Emission Source: EG1, EG2, EG3, FP1, FP2 – The emergency engines will be subject to NSPS IIII and will comply with the applicable provisions thereof. The facility will install certified engines and will operate the engines in accordance with the manufacturer's written emissions-related instructions. Pursuant to 40 CFR §60.4207(b), only diesel fuel meeting the ULSD specification will be purchased. Furthermore, the engines will be classified as emergency engines and will therefore each be limited to operating no more than 100 hours/year for readiness testing and maintenance check purposes in accordance with 40 CFR §60.4211(f). No numerical limits are proposed. The combination of all these control methods will be considered BACT for the control of NO_X from diesel-fired emergency engines. No stack testing or numeric emission limits are proposed due to the limited use of the engines and because emissions are inherently limited by the proposed operational limits and work practices proposed as BACT.

Table 5 - Selection of NO_x BACT and Proposed Limits

Process/Equipment	Control Method	Proposed BACT Limit
CCCTs / CT1, DB1, CT2, DB2, CT3, DB3 – Using Natural Gas	SCR, DLN, clean fuels, good Combustion practices	2 ppmv @ 15% O_2 based on a 24-hour rolling average
CCCTs / CT1, CT2, CT3 – Using Fuel Oil	SCR, DLN, CTG water injection, clean fuels, good combustion practices, Limited Fuel Oil Usage	5 ppmv @ 15% O_2 based on a 24-hour rolling average
CCCTs / CT1, CT2, CT3 – SU/SD and Alternate Operating Scenario	Limit hours of SU/SD	96 ppmv @ 15% O_2 based on a 24-hour rolling average
Auxiliary Boiler / AB1	Clean Fuels Low-NOx Burners	---
Fuel Heaters / HT1, HT2, HT3, HT4	Good Combustion Practices, Clean Fuels	---
Emergency Engines / EGO1, EG02, EG03, FP01, FP02	Compliance with NSPS IIII, ULSD Fuel Only	---

5.4 BACT for VOC

Table 6 lists the VOC emissions resulting from the following process/point sources.

Table 6 - Potential VOC Emissions	
Equipment	**Potential Emissions (lb/hr)**
CT1, CT2, CT3	15.0 (each CCCT)
AB1	0.538
EG1, EG2, EG3	1.14 (each engine)
FP1, FP2	0.041 (each pump)
HT1, HT2, HT3	1.08 (each heater)
HT4	0.00162
EGBT1, EGBT2, EGBT3	0.000473 (each belly tank)
FPBT1, FPBT2	4.05E-05 (each belly tank)
AST1, AST2	0.115 (each tank)
FUGNG	0.119

As stated in the regulatory definition, BACT is "an emissions limitation … based on the maximum degree of reduction for each regulated NSR pollutant … taking into account energy, environmental, and economic impacts …." When BAQ determines that the imposition of an emissions limitation is not feasible, then "a design, equipment, work practice, operational standard, or combination thereof, may be prescribed" as BACT instead.

5.4.1 Step 1: Identify All Available Control Technologies

The BACT analysis identifies the following control technologies that could reduce VOC emissions:

Emission Source: CCCTs - The following control technologies could reduce VOC emissions from the combined cycle turbines:

- Good Combustion Practices – Good combustion practices is explained in Section 5.2.1. The trace amounts of VOC in the fuel are also converted to CO_2 and H_2O when a more complete combustion is achieved.

- Oxidation Catalyst - Oxidation catalysts reduce the required temperature for complete oxidation by bringing the gas stream into contact with a catalyst. The VOC that are present in the gas stream as a result of incomplete combustion are oxidized into CO_2 by the oxidation catalyst. Oxidation catalysts are often comprised of platinum group metals and configured for maximum surface area but require the exhaust stream to be at a certain temperature for the catalyst to work effectively.

- Technical factors relating to this technology include catalyst reactor design, optimum operating temperature, backpressure loss to the system, catalyst life, susceptibility to poisoning by fine particles in the exhaust gas which reduces the catalyst's effectiveness, and potential collateral increases in emissions of PM_{10}, $PM_{2.5}$, and sulfuric acid mist.

Emission Source: AB1, HT1, HT2, HT3, HT4 – The following control technologies could reduce VOC emissions from these sources:

- Good Combustion Practices - Good combustion practices is explained in Section 5.2.1. The trace amounts of VOC in the fuel are also converted to CO_2 and H_2O when a more complete combustion is achieved.

- Oxidative Catalyst - Oxidation catalysts reduce the required temperature for complete oxidation by bringing the gas stream into contact with a catalyst. The VOC that are present in the gas stream as a result of incomplete combustion are oxidized into CO_2 by the oxidation catalyst. Oxidation catalysts are often comprised of platinum group metals and configured for maximum surface area but require the exhaust stream to be at a certain temperature for the catalyst to work effectively.

- Thermal Oxidation - Thermal oxidation is a means of controlling both VOC emissions via the introduction of oxygen and very high temperatures (1400-1600°F). The introduction of oxygen at sufficient temperatures results in the thermal oxidation of VOC into water (H_2O) and CO_2.

Emission Source: EG1, EG2, EG3, FP1, FP2 – The emergency engines are required to allow the turbines to startup and shutdown safely when power from the grid is not available. These engines must be available immediately. Engines outside of the emergency class were not reviewed for this reason. The following control technologies could reduce VOC emissions from these sources:

- Compliance with NSPS IIII and use of EPA certified engines - These control options ensure use of efficient, properly maintained modern engines, and are especially targeted toward reducing emissions of VOC.

- Good combustion practices with fuel oil meeting the ULSD specification - Per 40 CFR 1090.305, ULSD must meet either a minimum cetane index of 40 (which correlates to the ease of ignition and combustion quality), or a maximum aromatic content of 35 volume percent, both of which reduce emissions from diesel combustion.

Emission Source: Fuel Storage Tanks - A review of the RBLC database and other relevant permits indicates that diesel fuel storage tanks generally have no add-on control technologies. The following control technologies could reduce VOC emissions from these sources:

- Submerged filling – Submerged filling of tanks reduces the loss of VOC during tank filling by reducing the vapor formation and turbulence during tank filling operations.

Emission Source: Fugitive Piping Components - The following control technologies could reduce VOC emissions from these sources:

- Development and implementation of a leak detection and repair (LDAR) program - LDAR involves the use of monitoring technology to identify leaking components and subsequent repair of such components. LDAR programs have been used as a work practice under numerous federal regulations to reduce fugitive emissions from chemical manufacturing, natural gas processing, and other industries. Monitoring is generally performed using handheld gas analyzers in accordance with Method 21 in Appendix A-7 of 40 CFR Part 60 or Optical Gas Imaging Cameras (OGICs). When a leak is identified, repair is generally required within a specified timeframe to minimize the fugitive emission.

- Performance of audio/visual/olfactory (AVO) inspections - AVO inspections involve the use of audio, visual, and olfactory senses to detect leaks. Pressurized natural gas escaping through a leaking component may generate an audible "hiss". The pressure drop across the leak interface may result in visual leak indicators such as condensation or ice formation. Finally, natural gas is odorized with mercaptan for safety and thus has a discernible odor. Components exhibiting audio, visual, or olfactory indications of a leak are repaired within a specified timeframe to minimize the fugitive emission.

- Use of low-emission piping component design practices - Emissions from leaking components can be reduced using welded connections, leakless valves, and sealless pumps. Common leakless valves include bellows valves and diaphragm valves. Common sealless pumps are diaphragm pumps, canned motor pumps, and magnetic drive pumps. Although effective at minimizing leaks, the use of leakless components may be limited by materials of construction considerations and process operating conditions.

5.4.2 Step 2: Technical Feasibility of Options

After the identification of control options, the second step in the BACT assessment is to eliminate technically infeasible options. A control option is eliminated from consideration if there are process-specific conditions that would prohibit the implementation of the control or if the highest control efficiency of the option would result in an emission level that is higher than any applicable regulatory limits.

Emission Source: CCCTs - All available control options identified in Step 1 (good combustion practices and oxidation catalyst) are considered technically feasible.

Emission Source: AB1, HT1, HT2, HT3, HT4

- Oxidative Catalyst (Aux Boiler) - The exhaust from the auxiliary boiler would require supplementary heating to reach the temperatures necessary for oxidation catalyst to be effective. This additional heating would result in increased design complexity and emissions from the exhaust heater. The database review largely confirms that this technology is not feasible or available, with the one exception being the Cronus Chemicals facility in Tuscola, Illinois. The Cronus Chemicals facility lists catalytic oxidation as the control technology applied to an auxiliary boiler, but that facility has not been built and has not demonstrated the use of oxidation catalyst on an auxiliary boiler in practice. Therefore, this technology is deemed infeasible for the purpose of controlling VOC from auxiliary boilers.

- Oxidative Catalyst (Fuel Gas Heaters) - Due to the fuel gas heaters size, low exhaust temperature, and the lack of any proven examples of oxidation catalyst being operated on similar units in the database review, this technology is infeasible for use on fuel gas heaters.

- Thermal Oxidation - Thermal oxidation, similar to catalytic oxidation, requires significant heating of the exhaust stream to achieve destruction of VOC emissions. The heating requires additional external combustion sources that would result in additional emissions of VOC. There are no applications of thermal oxidation as a means to control VOC from an auxiliary boiler or a fuel gas heater in the RBLC database. Therefore, these controls are deemed infeasible for this application.

Emission Source: EG1, EG2, EG3, FP1, FP2 – All available control options identified in Step 1 are considered technically feasible.

Emission Source: Fuel Storage Tanks - All available control options identified in Step 1 are considered technically feasible.

Emission Source: Fugitive Piping Components

- Use of low-emission piping component design practices - Leakless technologies do exist, but they are not commonly used in natural gas fuel system piping components. Failure of a welded connection or valve joint would require a system shutdown and the repair would likely result in additional emissions due to the purging of gas within the system. Due to these maintenance challenges and given that leakless technologies are not commonly used for this application, the use of leakless components is not considered technically feasible and can be eliminated from further evaluation.

5.4.3 Step 3: Ranking of Control Technologies by Control Effectiveness

Emission Source: CCCTs - The use of good combustion practices coupled with oxidation catalyst represents BACT for VOC emissions from the proposed CCCTs. As such, a ranking is not required to establish the top control option.

Emission Source: AB1, HT1, HT2, HT3, HT4 - Good combustion practices is the only technically feasible option and will be utilized as part of the project. Therefore, no ranking of the controls is necessary.

Emission Source: EG1, EG2, EG3, FP1, FP2 – All technically feasible options and will be utilized as part of the project. Therefore, no ranking of the controls is necessary.

Emission Source: Fuel Storage Tanks - All technically feasible options and will be utilized as part of the project. Therefore, no ranking of the controls is necessary.

Emission Source: Fugitive Piping Components - All technically feasible options and will be utilized as part of the project. Therefore, no ranking of the controls is necessary.

5.4.4 Step 4: Evaluation of Most Effective Controls

Emission Source: CCCTs - The most effective control options were selected in Step 3. Therefore, further evaluation is unnecessary.

Emission Source: AB1, HT1, HT2, HT3, HT4 - The facility will use good combustion practices as discussed in Step 3. Therefore, further evaluation is unnecessary.

Emission Source: EG1, EG2, EG3, FP1, FP2 – The most effective control options were selected in Step 3. Therefore, further evaluation is unnecessary.

Emission Source: Fuel Storage Tanks - The most effective control options were selected in Step 3. Therefore, further evaluation is unnecessary.

Emission Source: Fugitive Piping Components - The most effective control options were selected in Step 3. Therefore, further evaluation is unnecessary.

5.4.5 Step 5: Select BACT Controls and Limits

Emission Source: CCCTs - The proposed BACT limits are within the range of BACT determinations identified during the RBLC database review, which is summarized in Appendix C-1c and Appendix C-1f of the application. These limits apply across all normal operating conditions except SU/SD and the alternative operating scenarios.

Compliance with the VOC limits will be demonstrated via initial compliance testing using EPA Reference Method 25A (or approved alternative). Ongoing compliance with the CO limits, demonstrated via CEMS as discussed Section 5.4.4, will serve as an indicator of good combustion and ongoing compliance with the VOC BACT limits. The facility will also continuously monitor the inlet temperature to the catalyst, maintaining the inlet temperature within the range suggested by the catalyst manufacturer on a 4-hour rolling average basis as required by 40 CFR Part 63, Subpart YYYY. Because the oxidation catalyst will not achieve stable performance until optimal conditions are achieved. The facility will establish secondary VOC BACT limits for periods of SU/SD:

- Compliance with the proposed CO BACT limit will serve as an indicator for VOC; therefore, separate VOC limits are unnecessary.
- SU/SD operations will be limited to no more than 2,928.50 hours per rolling 12-month period, pooled across all three (3) of the CCCT power trains.

Emission Source: AB1, HT1, HT2, HT3, HT4 – The previous steps indicate that the use of good combustion practices represent BACT for VOC emissions from the proposed boiler and heaters. The auxiliary boiler will be limited to a capacity factor of 10% and no more than 2,000 hours/year of operation (exclusive of commissioning). No stack testing or numeric emission limits are proposed due to the limited use of the auxiliary boiler, the small size of the fuel gas heaters, and because emissions are inherently limited by the proposed operational limits and work practices proposed as BACT. Proper operation and maintenance of the boiler and heaters will ensure compliance with BACT.

Emission Source: EG1, EG2, EG3, FP1, FP2 – The emergency engines will be subject to NSPS IIII and will comply with the applicable provisions therein. The facility will install certified engines and will operate the engines in accordance with the manufacturer's written emissions-related instructions. Pursuant to 40 CFR §60.4207(b), Furthermore, the engines will be classified as emergency engines and will therefore each be limited to operating no more than 100 hours/year for readiness testing.

Emission Source: Fuel Storage Tanks – BACT will be the use of submerged filling to minimize working and breathing losses from the tanks. Monthly inspections of the tanks and loading components will be performed.

Emission Source: Fugitive Piping Components – The facility will implement weekly AVO and LDAR inspections (AVO Program) as BACT for fugitive VOC emissions from project fuel gas system piping components. The proposed BACT is in alignment with BACT determinations made for fugitive VOC emissions from piping components at other power generation facilities.

Table 7 - Selection of VOC BACT and Proposed Limits

Process / Equipment Pollutant	Control Method	Proposed BACT Limit
CCCTs / CT1, DB1, CT2, DB2, CT3, DB3 – Using Natural Gas	OXCAT, Good Combustion Practices	2 ppmvd at 15% O_2
CCCTs / CT1, CT2, CT3 – Using Fuel Oil	OXCAT, Good Combustion Practices	2 ppmvd at 15% O_2
CCCTs / CT1, CT2, CT3 – SU/SD and Alternate Operating Scenario	Limiting hours for SU/SD events	967.98 tons on a rolling 12-month basis, 2,928.50 hours per rolling 12-month period, pooled across all three (3) of the CCCT power trains
Auxiliary Boiler / AB1	Good Combustion Practices, Limited Operation	---
Fuel Heaters / HT1, HT2, HT3, HT4	Good Combustion Practices	---
Emergency Engines / EG1, EG2, EG3, FP1, FP2	Compliance with NSPS IIII	---
Fuel Tanks / EGBT1, EGBT2, EGBT3, FPBT1, FPBT2, AST1,	Submerged Fuel Loading	---

Table 7 - Selection of VOC BACT and Proposed Limits		
Process / Equipment Pollutant	**Control Method**	**Proposed BACT Limit**
AST2		
Fugitive Piping Components / FUGNG	Weekly AVO Program Inspections	---

5.5 BACT for PM, PM_{10}, $PM_{2.5}$

Table lists the PM, PM_{10}, $PM_{2.5}$ emissions resulting from the following process/point sources.

Table 8 - Potential PM, PM_{10}, $PM_{2.5}$ Emissions	
Equipment	**Potential PM, PM_{10}, $PM_{2.5}$ Emissions (lb/hr)***
CT1, DB1, CT2, DB2, CT3, DB3	93.0 (each CCCT)
AB1	0.744
EG1, EG2, EG3	PM = 0.41, PM_{10}, $PM_{2.5}$ = 0.47 (each engine)
FP1, FP2	PM = 0.52, PM_{10}, $PM_{2.5}$ = 0.60 (each pump)
HT1, HT2, HT3	0.149 (each heater)
HT4	0.00224
COOL1 – COOL6	PM = 0.54, PM_{10}=0.379, $PM_{2.5}$ = 0.227 (total)
DELUGE1 – DELUGE3	PM = 1.13, PM_{10}=0.789, $PM_{2.5}$ = 0.473 (total)

*PM, PM_{10}, and $PM_{2.5}$ emissions are all equal unless otherwise noted

As stated in the regulatory definition, BACT is "an emissions limitation … based on the maximum degree of reduction for each regulated NSR pollutant … taking into account energy, environmental, and economic impacts …." When BAQ determines that the imposition of an emissions limitation is not feasible, then "a design, equipment, work practice, operational standard, or combination thereof, may be prescribed" as BACT instead.

5.5.1 Step 1: Identify All Available Control Technologies

The BACT analysis identifies the following control technologies that could reduce PM, PM_{10}, $PM_{2.5}$ emissions:

Emission Source: CCCTs - The following control technologies could reduce PM, PM_{10}, $PM_{2.5}$ emissions from the combined cycle turbines:

- Low Ash/Low Sulfur Clean Burning Fuel - Particulate emissions from CCCTs are influenced by the concentration of ash and sulfur compounds in the fuel(s) burned. Ash is directly emitted as PM, PM_{10}, and $PM_{2.5}$, while sulfur compounds react in the exhaust stream to form sulfuric acid mist, $(NH_4)_2SO_4$, and NH_4HSO_4, which are all considered particulates. Minimizing the concentration of ash and sulfur compounds in the fuel can reduce particulate emissions from combustion turbines.

Natural gas and No. 2 fuel oil are considered clean fuels, having no ash content or negligible ash content, respectively. Likewise, natural gas and No. 2 fuel oil have low concentrations of sulfur compounds that would contribute to the formation of sulfur-related particulate emissions. No. 2 fuel oil is proposed to be used in the combustion turbines in a limited capacity. The duct burners will only combust natural gas.

- Inlet Air Filtration - Particulates in combustion air drawn into the combustion turbine compressor section pass through to the combustion turbine exhaust. Such particulates include pollen, dust, and other naturally occurring air contaminants. The use of inlet air filtration equipment minimizes the concentration of particulates drawn into the compressor section of the combustion turbine, thereby reducing the amount of particulates passing through to the exhaust.

- Good Combustion - Good combustion practices refer to design and operational practices that promote complete combustion of the fuel. These practices include the following: tuning of the air-to-fuel ratio in the combustion zone to maintain combustion efficiency and performance mitigating the quantity of unburned carbon; proper combustor design that promotes air and fuel mixing, enhances the combustion chamber residence time, and ensures sufficient temperature and turbulence; and, maintenance and operation in accordance with the manufacturer's specifications.

- Post-combustion control systems such as fabric filters, electrostatic precipitators, wet scrubbers, and cyclones - These controls are commonly used for emissions from stationary sources with fairly high outlet dust loading. These technologies are most effective at controlling larger particles.

Emission Source: AB1, HT1, HT2, HT3, HT4 - The auxiliary boiler and the fuel gas heaters are similar in size and burn natural gas only. Therefore, they will be grouped together for this analysis. The following control technologies could reduce PM, PM_{10}, $PM_{2.5}$ emissions from the auxiliary boiler and the fuel gas heaters:

- Use of low ash/sulfur fuels – See discussion above in this section for the CCCTs.

- Good combustion practices - See discussion above in this section for the CCCTs.

- Post-combustion control systems - See discussion above in this section for the CCCTs.

Emission Source: EG1, EG2, EG3, FP1, FP2 - The emergency engines are required to allow the turbines to startup and shutdown safely when power from the grid is not available. These engines must be available immediately. Engines outside of the emergency class were not reviewed for this reason. The following control technologies could reduce PM, PM_{10}, $PM_{2.5}$ emissions from the engines:

- Good combustion practices with clean fuel (fuel oil meeting the ULSD specification) – See discussion above in this section for the CCCTs

- Limited hours of operation - Limited hours of operation, especially applicable for emergency engines, reduces generation of air pollutants

- Compliance with NSPS IIII and use of EPA certified engines - Compliance with NSPS IIII and use of EPA certified engines ensures use of efficient, properly maintained modern engines, which also generally reduces emissions.

- Diesel particulate filter (DPF) - DPF were developed to reduce PM emissions from diesel engines. They generally consist of a wall-flow type filter positioned in the exhaust stream of the engine. As exhaust gases pass through the system, particulates are removed and retained on the filter media.

Emission Source: COOL1, COOL2, COOL3, COOL4, COOL5, COOL6 - Particulate emissions from inlet chiller cooling towers result from dissolved solids in the circulating water,

such as suspended and dissolved minerals. As water evaporates in the cooling tower, small droplets of this water, known as drift, can be entrained in the air stream exiting the tower. The following control technologies could reduce PM, PM_{10}, and $PM_{2.5}$ emissions from the cooling towers:

- High Efficiency Drift Eliminators (HEDES) - Drift eliminators allow air to exit the cooling tower while capturing entrained liquid water droplets and returning them back to the tower's water basin. This conserves water, reduces particulate emissions, and helps protect nearby equipment from water deposition. Drift eliminators are a proven, highly effective, and commercially available technology with demonstrated effectiveness and relatively low capital and operating costs.

- Proper equipment design, operation, and maintenance - Maintaining proper water balance, inspecting drift eliminators regularly, replacing damaged sections promptly, and properly operating fans per their design can assist in the effectiveness of the drift eliminators.

Emission Source: DELUGE1, DELUGE2, DELUGE3 - Delugable cooling systems operate on an intermittent basis and primarily operate on a dry mode (normal operation), producing no emissions. When the ambient temperature becomes too high that dry cooling cannot maintain the required process temperature, water is sprayed (or deluged) into the system, which can result in particulate emissions. The following control technologies could reduce PM, PM_{10}, and $PM_{2.5}$ emissions from the heat exchangers:

- Drift Eliminators - Drift eliminators allow air to exit the cooling tower while capturing entrained liquid water droplets and returning them back to the tower's water basin. This conserves water, reduces particulate emissions, and helps protect nearby equipment from water deposition. Drift eliminators are a proven, highly effective, and commercially available technology with demonstrated effectiveness and relatively low capital and operating costs.

- HEDES – This type of drift eliminator operates in a similar manner as a standard drift eliminator but differs in internal design. A HEDES utilizes intricate cellular or tightly nested multipass chevron geometries. Standard drift eliminators utilize common blade chevron designs. Proper equipment design, operation, and maintenance - Maintaining proper water balance, inspecting drift eliminators regularly, replacing damaged sections promptly, and properly operating fans per their design can assist in the effectiveness of the drift eliminators.

5.5.2 Step 2: Technical Feasibility of Options

After the identification of control options, the second step in the BACT assessment is to eliminate technically infeasible options. A control option is eliminated from consideration if there are process-specific conditions that would prohibit the implementation of the control or if the highest control efficiency of the option would result in an emission level that is higher than any applicable regulatory limits.

Emission Source: CCCTs, AB1, HT1, HT2, HT3, HT4 - The following control technologies are technically infeasible:

- Post-combustion control systems such as fabric filters, electrostatic precipitators, wet scrubbers, and cyclones – These controls are commonly used for emissions from stationary sources with fairly high outlet dust loading. However, the database and permit review did not identify any such technologies as having been used to control PM, PM_{10}, and $PM_{2.5}$ emissions from a CCCT. These particulate control technologies are most suitable for high-dust applications such as solid fuel-fired combustion units and material handling. The outlet particulate loading from combustion of natural gas or fuel oil in a combustion turbine is below the level at which these technologies would be effective. These technologies are most effective at controlling larger particles and the PM that results from combustion turbines is primarily less than 1 micron in diameter. For example, a fabric filter typically relies on some buildup of a filter cake to help provide control of dust; no such filter cake would form in this application. Thus, such technologies are not technically feasible.

Emission Source: EG1, EG2, EG3, FP1, FP2 - - All available control technologies are considered technically feasible for reducing emissions of PM, PM_{10}, and $PM_{2.5}$, from the proposed emergency engines.

Emission Source: COOL1, COOL2, COOL3, COOL4, COOL5, COOL6 - All available control technologies are considered technically feasible for reducing emissions of PM, PM_{10}, and $PM_{2.5}$, from the proposed inlet chillers.

Emission Source: DELUGE1, DELUGE2, DELUGE3 – All available control technologies are considered technically feasible for reducing emissions of PM, PM_{10}, and $PM_{2.5}$, from the proposed cooling towers with the exception of HEDES. HEDEs are not technically feasible for installation on a delugable air-cooled heat exchanger due to the system’s configuration and operational requirements. High efficiency drift eliminators are not inherent to delugable air-cooled heat exchangers Unlike standard cooling towers, delugable cooling systems do not operate with a continuous water flow and the air path is different than a traditional cooling tower system.

5.5.3 Step 3: Ranking of Control Technologies by Control Effectiveness

Emission Source: CCCTs - The use of low ash/low sulfur fuels, such as natural gas and fuel oil, coupled with inlet air filtration and good combustion practices represents BACT for PM, PM_{10}, and $PM_{2.5}$ emissions from the proposed CCCTs. All technically feasible control technologies were chosen, as such, a ranking is not required to establish the top control option.

Emission Source: AB1, HT1, HT2, HT3, HT4 - The use of low ash/low sulfur fuels, such as natural gas and good combustion practices represents BACT for PM, PM_{10}, and $PM_{2.5}$ emissions from these sources. All technically feasible control technologies were chosen, as such, a ranking is not required to establish the top control option.

Emission Source: EG1, EG2, EG3, FP1, FP2 - All technically feasible control technologies were chosen, as such, a ranking is not required to establish the top control option.

Emission Source: COOL1, COOL2, COOL3, COOL4, COOL5, COOL6 - All technically feasible control technologies were chosen, as such, a ranking is not required to establish the top control option.

Emission Source: DELUGE1, DELUGE2, DELUGE3 – All technically feasible control technologies were chosen, as such, a ranking is not required to establish the top control option.

5.5.4 Step 4: Evaluation of Most Effective Controls

Emission Source: CCCTs - The most effective control options were selected in Step 3. Therefore, further evaluation is unnecessary.

Emission Source: AB1, HT1, HT2, HT3, HT4 - The most effective control options were selected in Step 3. Therefore, further evaluation is unnecessary.

Emission Source: EG1, EG2, EG3, FP1, FP2 - The most effective control options were selected in Step 3. Therefore, further evaluation is unnecessary.

Emission Source: COOL1, COOL2, COOL3, COOL4, COOL5, COOL6 - The most effective control options were selected in Step 3. Therefore, further evaluation is unnecessary.

Emission Source: DELUGE1, DELUGE2, DELUGE3 – The most effective control options were selected in Step 3. Therefore, further evaluation is unnecessary.

5.5.5 Step 5: Select BACT Controls and Limits

Emission Source: CCCTs – The use of low ash/low sulfur fuels, such as natural gas and fuel oil, coupled with inlet air filtration and good combustion practices represents BACT for particulate emissions from the proposed CCCTs. A performance test will be performed to demonstrate compliance with the limits for natural gas and No. 2 fuel oil. For ongoing compliance, fuel supplier certification or fuel sulfur testing will be used to demonstrate the sulfur content does not exceed the allowable concentration. A monitoring plan will be used to ensure the air inlet filter is operating properly. A CO CEMs will be used to demonstrate good combustion is being achieved. The presence of excess carbon monoxide is an indicator that complete combustion is not being achieved.

Emission Source: AB1, HT1, HT2, HT3, HT4 – These sources will use the same natural gas as the CCCTs and will use the same suppler certification for ongoing compliance. A maintenance and operation plan in accordance with the manufacturer's specifications will be used to demonstrate good combustion is maintained. Additionally, a 10% capacity factor and a 2,000 hours/year operational limit is proposed for the auxiliary boiler. This period excludes initial CCTs power train commissioning. These control options are consistent with recent determinations as identified in the RBLC database, as well as the applicable requirements of NSPS Dc and NESHAP DDDDD. Because emissions are inherently limited by the proposed work practices and the equipment does not have any addon controls, no numerical BACT limits are proposed.

Emission Source: EG1, EG2, EG3, FP1, FP2 - The emergency engines will be subject to NSPS IIII and will comply with the applicable provisions therein. The facility will install certified engines and will operate the engines in accordance with the manufacturer's written emissions-related instructions to ensure good combustion practices. Pursuant to 40 CFR §60.4207(b), the facility will only purchase and use diesel fuel meeting the ULSD specification. Furthermore, the engines will be classified as emergency engines and will therefore each be limited to operating no more than 100 hours/year for readiness testing. Because emissions are inherently limited by the operational limits and proposed work practices, and the equipment does not have any addon controls, no numerical BACT limits are proposed.

Emission Source: COOL1, COOL2, COOL3, COOL4, COOL5, COOL6 - Based on this analysis, the facility has determined that BACT for PM, PM_{10}, and $PM_{2.5}$ emissions from the proposed inlet chiller cooling towers is the use of high efficiency drift eliminators (HEDES), in conjunction with proper design, operation, and maintenance. Because emissions are inherently limited by the proposed work practices and the equipment does not have any addon controls, no numerical BACT limits are proposed.

Emission Source: DELUGE1, DELUGE2, DELUGE3 - Based on this analysis, the facility has determined that BACT for PM, PM_{10}, and $PM_{2.5}$ emissions from the proposed inlet chiller cooling towers is the use of drift eliminators in conjunction with proper design, operation, and maintenance. Because emissions are inherently limited by the proposed work practices and the equipment does not have any addon controls, no numerical BACT limits are proposed.

Table 9 - Selection of PM, PM_{10}, $PM_{2.5}$ BACT and Proposed Limits

Process/Equipment	Control Method	Proposed BACT Limit
CCCTs / CT1, DB1, CT2,	low ash/low sulfur fuels,	≤0.009 lb/Million Btu

Table 9 - Selection of PM, PM_{10}, $PM_{2.5}$ BACT and Proposed Limits		
Process/Equipment	**Control Method**	**Proposed BACT Limit**
DB2, CT3, DB3 – Using Natural Gas	inlet air filtration, and good combustion practices	
CCCTs / CT1, CT2, CT3* – Using Fuel Oil	low ash/low sulfur fuels, inlet air filtration, and good combustion practices	≤0.027 lb/Million Btu
Auxiliary Boiler and Fuel Heaters / AB1, HT1, HT2, HT3, HT4	natural gas with a sulfur content ≤0.5 gr/scf	---
Auxiliary Boiler / AB1	10% capacity factor and a 2,000 hours/year operational limit	---
Emergency Engines / EG1, EG2, EG3, FP1, FP2	Compliance with NSPS IIII, Limited hours of operation, Use of ULSD as fuel	---
Inlet Chiller Towers / COOL1, COOL2, COOL3, COOL4, COOL5, COOL6	HEDES and proper design, operation, and maintenance	---
Delugable Cooling System / DELUGE1, DELUGE2, DELUGE3	Drift Eliminator and proper design, operation, and maintenance	---

*The use of fuel oil does not include the duct burners which can only use natural gas

5.6 BACT for SO_2 and Sulfuric Acid Mist

Table 4 lists the SO_2 and Sulfuric Acid Mist emissions resulting from the following process/point sources.

Table 10 - Potential SO_2 and Sulfuric Acid Mist Emissions	
Equipment	**Potential SO_2 Emissions (lb/hr)**
CT1, DB1, CT2, DB2, CT3, DB3	7.00 (each CCCT)
AB1	0.0587
EG1, EG2, EG3	0.04 (each engine)
FP1, FP2	0.003 (each pump)
HT1, HT2, HT3	0.0118 (each heater)
HT4	0.00176
Equipment	**Potential Sulfuric Acid Mist Emissions (lb/hr)**
CT1, DB1, CT2, DB2, CT3, DB3	12.0 (each CCCT)

As stated in the regulatory definition, BACT is "an emissions limitation … based on the maximum degree of reduction for each regulated NSR pollutant … taking into account energy, environmental, and economic impacts …." When BAQ determines that the imposition of an emissions limitation is not feasible, then "a design, equipment, work practice, operational standard, or combination thereof, may be prescribed" as BACT instead.

5.6.1 Step 1: Identify All Available Control Technologies

Emission Source: CCCTs - Emissions of SO_2 from the CCCTs result primarily from oxidation of sulfur compounds present in the fuel. Emissions of Sulfuric Acid Mist arise from conversion of SO_2 into SO_3, due to the high temperatures and catalytic activity of the SCR and oxidation catalyst. The SO_3 forms H_2SO_4 in the presence of water vapor in the exhaust.

The following control technologies could reduce SO_2 and Sulfuric Acid Mist emissions from the combined cycle turbines:

- Flue Gas Desulfurization (FGD) - Flue gas desulfurization equipment (FGD scrubber) is a demonstrated technology for the removal of SO_2 from exhaust streams with pollutant concentrations ranging from 250 to 10,000 ppmv. FGD typically works by adding limestone to the flue gas resulting in the following reaction:

  $CaCO_3 + SO_2 \rightarrow CaSO_3 + CO_2$

- Low Sulfur Fuel Oil - SO_2 and H_2SO_4 emissions originate from sulfur present in the fuel by the following reactions:

  $S + O_2 \rightarrow SO_2$ $2S + O_2 \rightarrow 2SO_3$ $SO_3 + H_2O \rightarrow H_2SO_4$

  Using low sulfur fuel reduces the available sulfur needed for the formation of SO_2 and H_2SO_4.

Emission Source: AB1, HT1, HT2, HT3, HT4 – The following control technologies could reduce SO_2 emissions from these sources.

- Low Sulfur Fuel Oil – As discussed above, the use of low sulfur fuel reduces the available sulfur needed for the formation of SO_2.

Emission Source: EG1, EG2, EG3, FP1, FP2 – The emergency engines are required to allow the turbines to startup and shutdown safely when power from the grid is not available. These engines must be available immediately. Engines outside of the emergency class were not reviewed for this reason. No add-on control devices were identified in the RBLC for the reduction of SO_2 for these sources. The following control technologies could reduce SO_2 emissions from these sources.

- Diesel Fuel meeting the ultra-low sulfur diesel (ULSD) specification – The ULSD specification requires the sulfur content of the diesel fuel to be less than or equal to 15 ppmw. As mentioned above in this section, the use of low sulfur fuel reduces the available sulfur needed for the formation of SO_2.

5.6.2 Step 2: Technical Feasibility of Options

After the identification of control options, the second step in the BACT assessment is to eliminate technically infeasible options. A control option is eliminated from consideration if there are process-specific conditions that would prohibit the implementation of the control or if the highest control efficiency of the option would result in an emission level that is higher than any applicable regulatory limits.

Emission Source: CCCTs:

- Flue Gas Desulfurization (FGD) – As mentioned in Section 5.3.1, FGD is demonstrated technology for the removal of SO_2 from exhaust streams with pollutant concentrations ranging from 250 to 10,000 ppmv. The sulfur content of natural gas and fuel oil results in SO_2 concentrations well below this level from the combustion of these fuels. The RBLC did not show any natural gas-fired CCCTs where FGD scrubber technology was utilized as an available BACT control option. Therefore, FGD is not considered technically feasible.

Emission Source: AB1, HT1, HT2, HT3, HT4 – All available control technologies are considered technically feasible for reducing emissions of SO_2 from the auxiliary boiler and fuel heaters.

Emission Source: EG1, EG2, EG3, FP1, FP2 – All available control technologies are considered technically feasible for reducing emissions of SO_2 from the auxiliary boiler and fuel heaters.

5.6.3 Step 3: Ranking of Control Technologies by Control Effectiveness

Emission Source: CCCTs: The use of low sulfur fuels, specifically low sulfur natural gas and fuel oil that meet the ULSD composition standard, represents BACT for SO_2 and sulfuric acid mist emissions from the proposed CCCTs. As such, a ranking is not required to establish the top control option.

Emission Source: AB1, HT1, HT2, HT3, HT4 – The only technically feasible option is the use of low sulfur fuel. As such, a ranking is not required to establish the top control option.

Emission Source: EG1, EG2, EG3, FP1, FP2 – The only technically feasible option is the use of ULSD as fuel. As such, a ranking is not required to establish the top control option.

5.6.4 Step 4: Evaluation of Most Effective Controls

Emission Source: CCCTs - The most effective control options were selected in Step 3. Therefore, further evaluation is unnecessary.

Emission Source: AB1, HT1, HT2, HT3, HT4 – The most effective control options were selected in Step 3. Therefore, further evaluation is unnecessary.

Emission Source: EG1, EG2, EG3, FP1, FP2 – The most effective control options were selected in Step 3. Therefore, further evaluation is unnecessary.

5.6.5 Step 5: Select BACT Controls and Limits

Emission Source: CCCTs - The preceding steps indicate that the use of low sulfur fuels represents BACT for SO_2 and sulfuric acid mist emissions from the proposed CCCTs. The proposed BACT meets the requirements of NSPS KKKKa for SO_2. BACT limits associated with the selected control option are summarized below in Table 5. Periodic fuel monitoring and/or fuel supplier certifications will be used to ensure compliance.

Emission Source: AB1, HT1, HT2, HT3, HT4 – The preceding steps indicate the combustion of natural gas with a sulfur content ≤0.5 gr/scf as BACT for the auxiliary boiler and fuel gas heaters. Additionally, a 10% capacity factor and a 2,000 hours/year operational limit is proposed for the auxiliary boiler, excluding periods of initial CCCT power train commissioning. These control options are consistent with recent determinations as identified in the RBLC database search, which is as well as the applicable requirements of NSPS Dc and NESHAP DDDDD. No stack testing or numeric emission limits are proposed due to the limited use of the auxiliary boiler, the small size of the fuel gas heaters, and because emissions are inherently limited sulfur content of the natural gas.

Emission Source: EG1, EG2, EG3, FP1, FP2 – The preceding steps indicate that the use of diesel fuel for the engines that meets the ULSD specification will be BACT for SO_2 emissions.

Table 11 - Selection of SO_2 and Sulfuric Acid Mist BACT and Proposed Limits

Process/Equipment	Control Method	Proposed BACT Limit
CCCTs / CT1, DB1, CT2, DB2, CT3, DB3 – Using Natural Gas	Natural Gas Sulfur Content	≤0.5 gr/100 scf on a 12-month rolling average
CCCTs / CT1, CT2, CT3 – Using Fuel Oil	Fuel Oil Sulfur Content	≤15 ppmw on a 12-month rolling average
Auxiliary Boiler and Heaters / AB1, HT1, HT2, HT3, HT4	Natural Gas Sulfur Content	≤0.5 gr/100 scf on a 12-month rolling average
Emergency Engines / EG1, EG2, EG3, FP1, FP2	Diesel Fuel Sulfur Content	≤15 ppmw on a 12-month rolling average

5.7 BACT for GHG

Table 12 lists the GHG emissions resulting from the following process/point sources.

Table 12 - Potential GHG Emissions	
Equipment	**Potential GHG Emissions (lb/hr)**
CT1, DB1, CT2, DB2, CT3, DB3	597,000 (each turbine)
AB1	11,800
HT1, HT2, HT3	2,370 (each heater)
HT4	355
EG1, EG2, EG3	3,760 (each engine)
FP1, FP2	336 (each pump)
FUGSF6	170

As stated in the regulatory definition, BACT is "an emissions limitation … based on the maximum degree of reduction for each regulated NSR pollutant … taking into account energy, environmental, and economic impacts …." When BAQ determines that the imposition of an emissions limitation is not feasible, then "a design, equipment, work practice, operational standard, or combination thereof, may be prescribed" as BACT instead.

5.7.1 Step 1: Identify All Available Control Technologies

The BACT analysis identifies the following control technologies that could reduce GHG emissions:

Emission Source: CCCTs - The following control technologies could reduce GHG emissions from the combined cycle turbines:

- Use of Clean/Low-Carbon Fuels - The use of clean and low-carbon fuels, such as natural gas, was identified as a GHG control option during the RBLC. Natural gas and fuel oil were both considered "clean fuels" for the purposes of establishing the BSER for NSPS TTTT and NSPS TTTTa. The amount of CO_2 produced when a fossil fuel is burned is a function of the carbon content of the fuel. Natural gas primarily consists of CH_4, which has a high energy content and the lowest carbon intensity amongst available fossil fuels. The proposed combustion turbines will be fired primarily on natural gas and the HRSG duct burners will be fired exclusively on natural gas.

- Energy Efficient and Inherently Lower-Emitting Processes/Work Practices/Designs - U.S. EPA indicates in its 2011 PSD and Title Permitting Guidance for Greenhouse Gases that inherently lower-polluting processes are appropriate for consideration as available control alternatives. Ways to incorporate energy efficiency (good combustion practices) into a CCCT project include, but are not limited to, the following: installing efficient CTGs, limiting hours in simple cycle mode, and employing a maintenance program. The following are examples of inherently lower-emitting processes, work practices, and design:

    - Use of CTGs with the latest design to maximize fuel energy efficiency for electrical generation,
    - Maximizing the heat recovery in the HRSG,
    - Flue gas oxygen monitoring, and
    - Insulation.

- Good Combustion Practices - These practices for CCCTs include the following:

    - Good air/fuel mixing in the combustion zone,
    - Sufficient residence time to complete combustion,
    - Proper fuel gas supply system design and operation in order to minimize fluctuations in fuel gas quality,
    - Good burner maintenance and operation practices.

- Carbon Capture and Sequestration - Carbon capture and sequestration (CCS), or carbon capture, utilization, and/or sequestration (CCUS), is an emerging technology that could theoretically be utilized to mitigate CO_2 emissions from utility scale CCCTs. CCS consists of capturing and separating CO_2 from combustion exhaust gases and ultimately depositing the CO_2 within underground geological formations. These formations include oil and gas reservoirs, un-minable coal seams, and deep saline formations – geological structures which have stored these resources for millions of years.

  Various technologies are theoretically available to capture CO_2 at the source. These technologies fall into three categories: post-combustion carbon capture, pre-combustion carbon capture, and oxy-fuel combustion systems. Post-combustion carbon capture involves the use of various sorbents and solvents to separate CO_2 from combustion gases. Pre-combustion technologies are still in very early stages of development and involve the gasification of fuels to separate out the CO_2. Oxy-fuel combustion consists of burning the fuel in a nearly pure-oxygen environment rather than regular air, which results in a more concentrated stream of CO_2 that can be captured using post-combustion carbon capture techniques.

- Hydrogen/Hydrogen Co-Firing - In the proposal for NSPS TTTTa, EPA considered establishing co-firing with low GHG -hydrogen as a potential GHG emission reduction option. Because hydrogen does not contain carbon, mixing hydrogen with a carbon containing fuel such as natural gas or fuel oil will reduce the amount of GHG formation.

Emission Source: AB1, HT1, HT2, HT3, HT4 – The following control technologies could reduce GHG emissions from the combined cycle turbines:

- Use of Low Carbon Fuels – See discussion in this section for the CCCTs.

- Good Combustion Practices - Good combustion practices refer to design and operational practices that promote complete combustion of the fuel. These practices include the following: tuning of the air-to-fuel ratio in the combustion zone to mitigate the quantity of unburned carbon; proper burner design that promotes air and fuel mixing and ensures sufficient temperature and turbulence; and maintenance and operation in accordance with the manufacturer's specifications. Good combustion can decrease the amount of CO_2 emitted by allowing the source to operate in the most efficient manner, reducing the amount of fuel needed.

- Carbon Capture and Sequestration - See discussion in this section for the CCCTs.

- Hydrogen/Hydrogen Co-Firing - See discussion in this section for the CCCTs.

Emission Source: EG1, EG2, EG3, FP1, FP2 – The following control technologies could reduce GHG emissions from these sources:

- Compliance with NSPS IIII and use of EPA certified engines - These control options ensure use of efficient, properly maintained modern engines, and are especially targeted toward reducing emissions of CO and VOC.
- Good combustion practices with fuel oil meeting the ULSD specification - Per 40 CFR 1090.305, ULSD must meet either a minimum cetane index of 40 (which correlates to the ease of ignition and combustion quality), or a maximum aromatic content of 35 volume percent, both of which reduce emissions from diesel combustion.

- Limited hours of operation - Limited hours of operation, especially applicable for emergency engines, reduces generation of all pollutants.

Emission Source: SF_6 Circuit Breakers - The following control technologies could reduce GHG emissions from these sources:

- low-pressure leak detection systems – A leak detection system will minimize the escape of GHG by alerting the facility of a possible leak.

- SF_6 free or non GHG insulating material such as dielectric oil and compressed air.

Emission Source: Fugitive Piping Components - The following control technologies could reduce GHG emissions from these sources:

- Development and implementation of a leak detection and repair (LDAR) program - LDAR involves the use of monitoring technology to identify leaking components and subsequent repair of such components. LDAR programs have been used as a work practice under numerous federal regulations to reduce fugitive emissions from chemical manufacturing, natural gas processing, and other industries.66 Monitoring is generally performed using handheld gas analyzers in accordance with Method 21 in Appendix A-7 of 40 CFR Part 60 or Optical Gas Imaging Cameras (OGICs). When a leak is identified, repair is generally required within a specified timeframe to minimize the fugitive emission.

- Performance of audio/visual/olfactory (AVO) inspections - AVO inspections involve the use of audio, visual, and olfactory senses to detect leaks. Pressurized natural gas escaping through a leaking component may generate an audible “hiss”. The pressure drop across the leak interface may result in visual leak indicators such as condensation or ice formation. Finally, natural gas is odorized with mercaptan for safety and thus has a discernible odor. Components exhibiting audio, visual, or olfactory indications of a leak are repaired within a specified timeframe to minimize the fugitive emission.

- Use of low-emission piping component design practices - Emissions from leaking components can be reduced using welded connections, leakless valves, and sealless pumps. Common leakless valves include bellows valves and diaphragm valves. Common sealless pumps are diaphragm pumps, canned motor pumps, and magnetic drive pumps. Although effective at minimizing leaks, the use of leakless components may be limited by materials of construction considerations and process operating conditions.

5.7.2 Step 2: Technical Feasibility of Options

After the identification of control options, the second step in the BACT assessment is to eliminate technically infeasible options. A control option is eliminated from consideration if there are process-specific conditions that would prohibit the implementation of the control or if the highest control efficiency of the option would result in an emission level that is higher than any applicable regulatory limits.

Emission Source: CCCTs – The following control technologies from Step 1 are not technically feasible:

- Carbon Capture and Sequestration - According to a report[1] published by the United States Department of Energy (U.S. DOE), existing commercial facilities capable of capturing the largest quantities of CO_2 were all associated with gas streams containing relatively high concentrations of CO_2 (25%-70%) such as natural gas processing operations and synthetic gas production. CO_2 concentrations in CCCT exhaust streams tend to be considerably more dilute and thus would require significant quantities of post-combustion sorbents and, incidentally, substantial operating capital to effectively capture CO_2 at-scale. Additionally, trace impurities present in the exhaust gas further complicate the capturing process and can quickly degrade the sorbents resulting in a significant reduction in capture efficiency.

  Captured CO_2 must be transported to a site capable of safely and effectively storing the material. According to the report published by the U.S. DOE cited above, there are currently no CO_2 pipelines in the general vicinity of the facility. As a result, an extensive and protracted construction project would have to be undertaken to install the requisite infrastructure to transport the captured CO_2.

  Upon reaching its storage destination, transported CO_2 would need to be injected deep underground for geologic storage. USGS has studied portions of the Atlantic Coastal Plain for prospective CO_2 storage, and while no oil fields typically considered for CCS/CCUS are in the area, the study did identify potential saline aquifers in the region.[2] [3] Despite these studies, no CCS/CCUS storage infrastructure has been initiated, let alone completed, within at least 350 miles of the project site.[4] [5] [6] At present, CO_2 is not geologically stored in South Carolina and

[1] A Review of the CO2 Pipeline Infrastructure in the U.S., United States Department of Energy, DOE/NETL-2014/1681. 21 April 2015

[2] https://energy.usgs.gov/co2public/, accessed 27 October 2025.

[3] Craddock, et al, 2018, Geologic framework for the national assessment of carbon dioxide storage resources—Atlantic Coastal Plain and Eastern Mesozoic Rift Basins, U.S. Geological Survey Open-File Report.

[4] https://americancarbonalliance.org/map-of-us-pipelines/, accessed 27 October 2025

[5] https://www.catf.us/ccsmapus/, accessed 27 October 2025

[6] Wernette, Southern States Energy Board. Southeast Regional Carbon Utilization and Storage Acceleration (SECARB-USA)

identification of a suitable storage site would require an intensive and costly engineering evaluation. At present, CO_2 storage infrastructure is not considered available for this project.

NSPS TTTTa established CO_2 standards for new stationary combustion turbines that become effective for the 12-month period beginning after December 2031, referred to as the Phase 2 standards. The Phase 2 standards for base load combustion turbines assume the use of CCS. On June 17, 2025, the EPA proposed to repeal NSPS TTTT and NSPS TTTTa entirely based on the U.S. EPA's lack of GHG regulatory authority under section 111 of the CAA or, as an alternative, limit the repeal to the Phase 2 standards of NSPS TTTTa requiring the use of CCS based on technical shortcomings in its BSER analysis. The proposal indicates that EPA erred when it established CCS as the BSER because CCS has not yet been adequately demonstrated, citing operational, reliability, and performance issues at the Boundary Dam and Petra Nova facilities, two power plants in North America where CO_2 capture has been attempted. 58 Both of these carbon capture projects, which are associated with relatively small coal-fired power generation assets, have: experienced significant challenges achieving stated objectives, only been able to process a portion of exhaust gases from the associated power generation assets, and reported significant downtime relative to generation asset operation.

The Boundary Dam and Petra Nova projects demonstrate that CO_2 capture technology has not developed to the point where it could be considered available for reliable, long-term, use at the commercial scale that would be necessary for this project. Even if adequate CO_2 capture technology was available (which is not the case), the lack of CO_2 transportation and storage/use infrastructure in the region would render the use of such technology infeasible for the project.

- Hydrogen/Hydrogen Co-Firing - In the proposal for NSPS TTTTa, EPA considered establishing co-firing with low GHG -hydrogen as a potential GHG emission reduction option. However, this control option was not included in the final rule and is not part of the BACT floor established by NSPS TTTTa. [7] Hydrogen is not an available fuel in the large quantities required for the proposed facility as there is no existing or proposed infrastructure in the vicinity of the project to generate and convey hydrogen in the quantities that would be necessary to fuel, or partially fuel, a baseload power plant. The facility is being designed to utilize natural gas as a primary fuel and fuel oil as a secondary fuel. The pipeline infrastructure being constructed by others to supply firm transportation of natural gas to the facility will also meet critical natural gas supply demands of other customers in the region, demands that would not be met by an alternative hydrogen pipeline. Given that hydrogen is not an available GHG control option and would fundamentally redefine the project, which is being designed to utilize natural gas and fuel oil, consideration of hydrogen fuels is excluded from this technology review.

Emission Source: AB1, HT1, HT2, HT3, HT4 – CCS and hydrogen co-firing are not available for this project as discussed for the CCCTs.

Emission Source: EG1, EG2, EG3, FP1, FP2 – All available control options identified in Step 1 are

Initiative: An Overview. https://netl.doe.gov/sites/default/files/netl-file/24CM/24CM_CTS3_6_Wernette2.pdf

[7] https://americancarbonalliance.org/map-of-us-pipelines/, accessed 27 October 2025.

considered technically feasible.

Emission Source: SF_6 Circuit Breakers – The following control technologies from Step 1 are not technically feasible:

- Alternate non GHG insulating material such as dielectric oil and compressed air - Availability of spare circuit breakers and personnel with the expertise to safely install and maintain the equipment is required to ensure grid reliability. The wide adoption of SF_6 circuit breaker technology in the industry, and within the Applicant networks, ensures availability in the event of component failure. Project Developer's personnel and others in the region who would assist with maintenance activities in the event of a natural disaster are trained in the safe operation and maintenance of SF_6 circuit breakers. Without wider adoption of non-SF_6 circuit breaker technology in the industry, the lack of adequate inventory and trained personnel poses serious risks to safety and grid reliability. For the reasons discussed above, there are currently no technically feasible alternatives to the of SF6 circuit breakers for this project. A recent construction project at the Urquhart Station in South Carolina has proposed using SF_6 free circuit breakers in the 19.8 kV range. This represents a small portion of the overall circuit breaker usage which contains SF6. As mentioned above, this project is reliant on the availability of spare parts and personnel training in the usage of SF_6 circuit breakers.

Emission Source: Fugitive Piping Components – The following control technologies from Step 1 are not technically feasible:

- Leakless technologies do exist, but they are not commonly used in natural gas fuel system piping components. Failure of a welded connection or valve joint would require a system shutdown and the repair would likely result in additional emissions due to the purging of gas within the system. Due to these maintenance challenges and given that leakless technologies are not commonly used for this application, the use of leakless components is not considered technically feasible.

5.7.3 Step 3: Ranking of Control Technologies by Control Effectiveness

Emission Source: CCCTs – All available and technically feasible control options are being proposed for this project. Therefore, no ranking is necessary.

Emission Source: AB1, HT1, HT2, HT3, HT4 – All available and technically feasible control options are being proposed for this project. Therefore, no ranking is necessary.

Emission Source: EG1, EG2, EG3, FP1, FP2 – All technically feasible options and will be utilized as part of the project. Therefore, no ranking of the controls is necessary.

Emission Source: SF_6 Circuit Breakers – All technically feasible options and will be utilized as part of the Project. Therefore, no ranking of the controls is necessary.

Emission Source: Fugitive Piping Components – All technically feasible options and will be utilized as part of the project. Therefore, no ranking of the controls is necessary.

5.7.4 Step 4: Evaluation of Most Effective Controls

Emission Source: CCCTs – The most effective control options were selected in Step 3. Therefore, further evaluation is unnecessary.

Emission Source: AB1, HT1, HT2, HT3, HT4 – The most effective control options were selected in Step 3. Therefore, further evaluation is unnecessary.

Emission Source: EG1, EG2, EG3, FP1, FP2 – The most effective control options were selected in Step 3. Therefore, further evaluation is unnecessary.

Emission Source: SF_6 Circuit Breakers – The most effective control options were selected in Step 3. Therefore, further evaluation is unnecessary.

Emission Source: Fugitive Piping Components – The most effective control options were selected in Step 3. Therefore, further evaluation is unnecessary.

5.7.5 Step 5: Select BACT Controls and Limits

Emission Source: CCCTs – The facility will use of clean/low-carbon fuels, energy efficient and inherently lower-emitting processes/work practices/designs, and good combustion practices as BACT. These available control technologies include the following:

- Combustion turbine energy efficiency design, practices, and procedures:
  - Efficient combustion turbine design;
  - Periodic combustion turbine burner tuning;
  - Reduction in heat loss (i.e., insulation); and
  - Instrumentation and controls.
- HRSG energy efficiency design, practices, and procedures:
  - Efficient heat exchanger design;
  - Reduction in heat loss (i.e., insulation of HRSG); and
  - Repair of steam leaks identified during periodic facility inspections.
- Plant-wide energy efficiency design, practices, and procedures:
  - Fuel gas preheating;
  - Drain operation;
  - Maximizing HRSG design to allow for the most efficient combination of CTG and STG design;
  - Monitoring flue gas in the design of the unit through tune-ups to minimize excess oxygen within safety limits in order to maximize thermal efficiency; and
  - Addition of extra insulation of the combustion turbine combustion section and HRSG compared to older designs will minimize heat losses, thereby reducing fuel input and in turn reduce GHG emissions.
- Clean and low carbon fuels.

Fuel oil usage will be limited to 720 hours annually.

Monitoring of CO_2 emissions will be performed in accordance with 40 CFR §60.5535a, §60.5560a, and §60.5555a, respectively.

Emission Source: AB1, HT1, HT2, HT3, HT4 – BACT will be good combustion practices and combustion of low-carbon fuels for the auxiliary boiler and fuel gas heaters. Additionally, the boiler will be limited to a capacity factor of 10% and no more than 2,000 hours/year of operation (exclusive of commissioning). No stack testing or numeric emission limits are proposed due to the limited use of the auxiliary boiler, the small size of the fuel gas heaters, and because emissions are inherently limited by the proposed operational limits and work practices proposed as BACT. Proper operation and maintenance of the heaters will ensure compliance with BACT. The proposed BACT is consistent with the results of the RBLC review.

Emission Source: EG1, EG2, EG3, FP1, FP2 – The emergency engines will be subject to NSPS IIII and will comply with the applicable provisions therein. The facility will install certified engines and will operate the engines in accordance with the manufacturer's written emissions-related instructions, ensuring good combustion practices will be maintained. Pursuant to 40 CFR §60.4207(b), Applicant will only purchase and use diesel fuel meeting the ULSD specification. Furthermore, the engines will be classified as emergency engines and will therefore each be limited to operating no more than 100 hours/year for readiness testing.

Emission Source: SF_6 Circuit Breakers – Based on the above analysis, the use of state-of-the-art, totally-enclosed SF_6 circuit breakers equipped with leak detection alarms as BACT for SF_6 circuit breakers.

Emission Source: Fugitive Piping Components – The facility will implement weekly AVO program inspections as BACT for fugitive GHG emissions from project fuel gas system piping components. The proposed BACT is in alignment with BACT determinations made for fugitive GHG emissions from piping components at other power generation facilities.

Table 13 - Selection of GHG BACT and Proposed Limits

Process/Equipment	Control Method	Proposed BACT Limit
CCCTs / CT1, DB1, CT2, DB2, CT3, DB3	Clean and low carbon fuels, Energy Efficiency	2,610,340 tons (as CO_2) /12-month period (each CCCT) and any applicable limit under 40 CFR 60 Subpart TTTTa
Auxiliary Boiler / AB1	Good Combustion Practices, low carbon fuel, and limited operation	---
Fuel Heaters / HT1, HT2, HT3, HT4	Good Combustion Practices and low carbon fuel	---
Emergency Engines / EG1, EG2, EG3, FP1, FP2	Compliance with NSPS IIII and limited operation and	---

Table 13 - Selection of GHG BACT and Proposed Limits		
Process/Equipment	**Control Method**	**Proposed BACT Limit**
	good combustion practices	
SF_6 Circuit Breakers / FUGSF6	Leak Detection Alarms	---
Fugitive Piping Components / FUGNG	Weekly AVO Program Inspections	---

6.0 Summary of BACT Limits

The BACT Determinations are summarized in Table 12.

Table 14 - Summary of BACT

Process	Pollutant	BACT Control Method	BACT Limit
CCCTs / Natural Gas	CO	Catalytic Oxidation, Good Combustion Practices	3.5 ppmvd at 15% O_2 based on a 4-hour rolling average
CCCTs / Fuel Oil	CO	Catalytic Oxidation, Good Combustion Practices	5 ppmvd at 15% O_2 based on a 4-hour rolling average
CCCTs / SU/SD	CO	Limiting hours for SU/SD events	2,745.41 tons on a rolling 12-month basis, and 2,928.50 hours per rolling 12-month period, pooled across all three (3) of the CCCT power trains
Aux Boiler	CO	Good Combustion Practices, Limited Operation	---
Fuel Heaters	CO	Good Combustion Practices	---
Emergency Engines	CO	Compliance with NSPS IIII	---
CCCTs / Natural Gas	NO_x	SCR, DLN, clean fuels, good Combustion practices	2 ppmv @ 15% O_2
CCCTs / Fuel Oil	NO_x	SCR, DLN, CTG water injection, clean fuels, good combustion practices, Limited Fuel Oil Usage	5 ppmv @ 15% O_2
CCCTs / SU/SD and	NO_x	Limit hours of SU/SD	96 ppmv @ 15% O_2
Auxiliary Boiler	NO_x	Limited operation, Clean Fuels, Low-NOx Burners	---
Fuel Heaters	NO_x	Good Combustion Practices, Clean Fuels	---
CCCTS / Natural Gas	VOC	Catalytic Oxidation, Good Combustion Practices	2 ppmvd at 15% O_2
CCCTs / Fuel Oil	VOC	Catalytic Oxidation,	2 ppmvd at 15% O_2

		Good Combustion Practices	
CCCTs / SU/SD	VOC	Limiting hours for SU/SD events	967.98 tons on a rolling 12-month basis, 2,928.50 hours per rolling 12-month period, pooled across all three (3) of the CCCT power trains
Aux Boiler	VOC	Good Combustion Practices, Limited Operation	---
Fuel Heaters	VOC	Good Combustion Practices	---
Emergency Engines	VOC	Compliance with NSPS IIII	---
Fuel Tanks	VOC	Submerged Fuel Loading	---
Fugitive Piping Components	VOC	Weekly AVO Program Inspections	---
CCCTs / Natural Gas Combustion	PM, PM_{10}, $PM_{2.5}$	low ash/low sulfur fuels, inlet air filtration, and good combustion practices	$\leq$0.009 lb/Million Btu
CCCTs / Fuel Oil Combustion	PM, PM_{10}, $PM_{2.5}$	low ash/low sulfur fuels, inlet air filtration, and good combustion practices	$\leq$0.027 lb/Million Btu
Auxiliary Boiler and Fuel Heaters	PM, PM_{10}, $PM_{2.5}$	natural gas with a sulfur content ≤0.5 gr/scf	---
Auxiliary Boiler	PM, PM_{10}, $PM_{2.5}$	10% capacity factor and a 2,000 hours/year operational limit (excludes CCCT commissioning)	---
Emergency Engines	PM, PM_{10}, $PM_{2.5}$	Compliance with NSPS IIII, Limited hours of operation, Use of ULSD as fuel	---
Inlet Cooling Towers	PM, PM_{10}, $PM_{2.5}$	HEDES and proper design, operation, and maintenance	---
Delugable Air-Cooled	PM, PM_{10}, $PM_{2.5}$	Drift Eliminator and	---

Heat Exchangers		proper design, operation, and maintenance	
CCCTs using natural gas	SO_2 and Sulfuric Acid Mist	Natural Gas Sulfur Content	≤0.5 gr/100 scf on a 12-month rolling average
CCCTs using fuel oil	SO_2 and Sulfuric Acid Mist	Fuel Oil Sulfur Content	≤15 ppmw on a 12-month rolling average
Auxiliary Boiler and Fuel Heaters	SO_2 and Sulfuric Acid Mist	Natural Gas Sulfur Content	≤0.5 gr/100 scf on a 12-month rolling average
Auxiliary Boiler	SO_2 and Sulfuric Acid Mist	Limited Operation	10% capacity factor and a 2,000 hours/year operational limit (excludes CCCT commissioning)
Emergency Engines	SO_2 and Sulfuric Acid Mist	Diesel Fuel Sulfur Content	≤15 ppmw on a 12-month rolling average
CCCTs	GHG	Low carbon fuels, Energy Efficiency	2,610,340 tons (as CO_2) /12-month period and any applicable limit under 40 CFR 60 Subpart TTTTa
Aux Boiler	GHG	Good Combustion Practices, low carbon fuel, and limited operation	---
Fuel Heaters	GHG	Good Combustion Practices and low carbon fuel	---
Emergency Engines	GHG	Compliance with NSPS IIII and limited operation	---
SF6 Circuit Breakers	GHG	Leak Detection Alarms	---
Fugitive Piping Components	GHG	Weekly AVO Inspections and LDAR Program	---