



SC DEPARTMENT *of*
**ENVIRONMENTAL
SERVICES**

**Bureau of Air Quality
Prevention of Significant Deterioration
Final Determination**

**Santee Cooper Cross Generating Station
553 Cross Station Road
Pineville, SC 29468
Pineville, South Carolina
Berkeley County**

Permit Number PSD-50000004
Agency Air Number: 0420-0030
March 5, 2025

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)

02-05-2004	The South Carolina Department of Health and Environmental Control (Department) Bureau of Air Quality (BAQ) issued a Final Determination and PSD/New Source Performance Standard (NSPS)/Case-by-Case MACT/Synthetic Minor Construction Permit No. 0420-0030-CI for Santee Cooper Cross Generating Station to add two (2) new coal-fired boilers at the Cross Generating Station located in Pineville, South Carolina. This permit contained synthetic minor limits for sulfuric acid (H_2SO_4) ¹ for the two new boilers, as well as the two existing boilers.
08-05-2004	The BAQ issued a revision of the construction permit, referred to as 0420-0030-CI-R1, removing condition number 62 as allowed by the Consent Decree.
04-14-2011	A Prevention of Significant Deterioration (PSD) pre-application meeting was held with representatives from Santee Cooper and the BAQ to discuss the potential removal of the synthetic minor limits for H_2SO_4 issued in PSD permit 0420-0030-CI by going through the PSD/BACT process for H_2SO_4 emissions.
08-18-2014	The BAQ received a PSD permit application from Santee Cooper.
09-05-2014	BAQ mailed a letter to Julie Jordan Metts informing her that BAQ had deemed the application incomplete, but the review process had begun.
09-10-2014	BAQ emailed a copy of the application to the U.S. Environmental Protection Agency (EPA) and informed them that BAQ was currently reviewing a PSD application from Santee Cooper.
09-10-2014	BAQ emailed the Federal Land Managers letters informing them that BAQ had received and was currently reviewing a PSD application from Santee Cooper.
09-24-2014	The BAQ received a revision to the PSD permit application.
10-09-2014	The Federal Land Manager requested that a Class I area Air Quality analysis be performed as a part of the permitting process due to the tons of H_2SO_4 potentially emitted.

¹ The PSD regulations address emissions of H_2SO_4 as sulfuric acid mist (SAM). In the original PSD permitting process, the limits and discussions referred to SAM as H_2SO_4 . The two references should be read as interchangeable. However, to ensure consistency with the PSD regulations, sulfuric acid mist or SAM will be used in the new PSD permit unless referring to the historical synthetic minor limits.

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03-25-2015	Santee Cooper requested testing the use of hydrated lime to control H ₂ SO ₄ in Boiler Unit 3 at the Cross facility.
04-20-2015	The BAQ received a copy of the Air Quality Related Values Modeling Analysis Protocol submitted to the Federal Land Managers by Santee Cooper.
09-28-2015	Santee Cooper requested testing the use of hydrated lime to control H ₂ SO ₄ in Boiler Unit 4 at the Cross facility.
06-29-2016	Santee Cooper requested to continue testing the use of hydrated lime to control H ₂ SO ₄ in Boiler Units 3 and 4 at the Cross facility.
02-27-2017	Santee Cooper requested testing the use of hydrated lime to control H ₂ SO ₄ in Boiler Unit 1 at the Cross facility.
12-31-2018	The BAQ received a revision to the PSD permit application.
01-11-2019	The BAQ requested additional information on the latest revised application.
05-13-2019	The BAQ received a revision to the PSD permit application.
05-28-2019	BAQ emailed a copy of the 05-13-2019 revised application to the EPA and informed them that BAQ had deemed the application incomplete.
05-28-2019	BAQ emailed the Federal Land Managers letters informing them that BAQ was in receipt of and was currently reviewing a PSD application revision from Santee Cooper.
06-06-2019	The BAQ requested additional information on the latest revised application.
06-10-2019	The BAQ received a revision to the Air Quality Analysis.
08-16-2019	The BAQ received a revision to the PSD permit application.
09-03-2019	The BAQ emailed a copy of the 08-16-2019 revised application to the EPA and informed them that BAQ had deemed the application incomplete.
09-03-2019	Air Permitting of BAQ emailed the Federal Land Managers letters informing them that BAQ was in receipt of and was reviewing the 08-16-2019 PSD application revision from Santee Cooper.
10-01-2019	The BAQ received comments from EPA on the draft 08-16-2019 application.

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10-10-2019	The BAQ submitted EPA's comments to Santee Cooper for consideration. Santee Cooper also provided Class I modeling to the BAQ.
10-16-2019	The BAQ received a revision to the Air Quality Analysis.
12-12-2019	Santee Cooper responded to EPA's comments regarding the application.
01-08-2020	The BAQ submitted Santee Cooper's response to EPA's 10-01-2019 comments for consideration.
01-31-2020	Conference call with EPA regarding Santee Cooper's 01-08-2020 response.
02-03-2020	The BAQ received an email from EPA requesting specific information to assist in reviewing Santee Cooper's 01-08-2020 response.
02-03-2020	The BAQ forwarded EPA's 02-03-2020 request to Santee Cooper.
02-06-2020	Conference call with EPA regarding the comments and responses from 10-01-2019 to the present. The BAQ provided EPA with some historical documents regarding the sulfuric acid permitting at Santee Cooper.
03-09-2020	The BAQ received a revised PSD construction permit application from Santee Cooper.
03-11-2020	The BAQ emailed the revised PSD construction permit application to EPA for review. The application remained incomplete.
09-14-2020	EPA provided comments on the 03-11-2020 revised PSD construction permit application.
09-24-2020	The BAQ forwarded EPA's comments to Santee Cooper.
10-01-2020	Santee Cooper provided responses to EPA's comments concerning Units 1 and 2.
11-06-2020	The BAQ sent Santee Cooper an email requesting additional items in addition to EPA's comments that need to be addressed.
12-10-2020	Santee Cooper provided responses to EPA comments concerning the BACT analysis for Units 3 and 4 and the BAQ's email.
12-10-2020	Santee Cooper provided responses to BAQ's 11-06-2020 request.
12-17-2020	The BAQ sent EPA Santee Cooper's 12-10-2020 responses.

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04-05-2021	The BAQ received a revised PSD construction permit application from Santee Cooper. Hard copy received on 04-15-2021.
04-06-2021	The BAQ forwarded the electronic copy of Santee Cooper's revised application to the EPA.
05-07-2021	The BAQ emailed the Federal Land Managers informing them that the BAQ was currently reviewing the October 2019 revision to the Air Quality Analysis.
05-11-2021	Santee Cooper submitted a Class II Impacts Analysis
05-17-2021	The BAQ provided Santee Cooper with a preliminary copy of the draft permit.
05-20-2021	Santee Cooper submitted comments on the 05-17-2021 draft permit.
06-07-2021	The BAQ received Information supporting the PSD construction permit application from Santee Cooper.
06-08-2021	The BAQ received additional Information supporting the PSD construction permit application from Santee Cooper.
08-08-2021	The BAQ provided Santee Cooper with a copy of the updated draft permit and statement of basis.
08-09-2021	Santee Cooper submitted comments on the 08-08-2021 draft permit and statement of basis.
08-26-2021	The BAQ received an addendum to the April 2021 PSD construction permit application from Santee Cooper addressing the lime silos.
09-27-2021	The BAQ provided Santee Cooper with a copy of the updated draft permit and statement of basis.
10-06-2021	Santee Cooper submitted comments on the 09-27-2021 draft permit and statement of basis.
10-08-2021	The BAQ requested information as a follow-up to Santee Cooper's 10-06-2021 comments.
10-12-2021	Santee Cooper responses to the follow-up information requested by the BAQ on 10-08-2021.
10-19-2021	The BAQ provided Santee Cooper with a copy of the draft preliminary determination with request for additional information on the application.

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10-27-2021	Santee Cooper provided a response to the BAQ's 10-19-2021 request.
11-04-2021	Santee Cooper provided comments draft permit language.
12-03-2021	The BAQ emailed EPA a copy of the draft PSD Construction permit, statement of basis and preliminary determination.
02-24-2023	BAQ sent an email to Stephanie Shealy informing her that BAQ had deemed the application complete; the application will undergo a preliminary determination.
02-24-2023	BAQ sent Catherine Collins and AQ_Permits@fws.gov an email informing them that the BAQ had deemed the application complete and was reviewing the PSD application from Santee Cooper Cross Generating Station.
02-24-2023	BAQ sent Lori Shephard and NSRsubmittals@epa.gov an email informing EPA that BAQ had deemed the application complete and was reviewing the PSD application from Santee Cooper Cross Generating Station.
06-28-2023	The BAQ provided Santee Cooper with a copy of the updated draft permit, statement of basis, and preliminary determination.
06-29-2023	Santee Cooper provided comments on the 06-28-2023 drafts.
07-11-2023	The BAQ provided Santee Cooper with a copy of the updated draft permit, statement of basis, and preliminary determination.
07-20-2023	Santee Cooper provided comments on the 07-11-2023 drafts.
09-14-2023	The BAQ provided Santee Cooper with a copy of the updated draft permit.
10-16-2023	Santee Cooper provided comments on the 09-14-2023 draft permit.
10-24-2023	Santee Cooper provided additional comments on the 09-14-2023 draft permit.
10-27-2023	Santee Cooper provided comments on the 09-14-2023 draft permit.
10-31-2023	Santee Cooper provided comments on the 09-14-2023 draft permit.
11-30-2023	The BAQ received Information supporting the PSD construction permit application from Santee Cooper.
12-15-2023	The BAQ provided Santee Cooper with a copy of the updated draft permit

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01-10-2024	Santee Cooper provided comments on the 12-15-2023 draft permit.
09-23-2024	Santee Cooper provided additional comments on the 12-15-2023 draft permit.
11-18-2024	The BAQ provided Santee Cooper with a copy of the updated draft permit and statement of basis.
11-18-2024	The BAQ emailed Lori Shepherd of the EPA a copy of the draft PSD Construction permit, statement of basis.
11-22-2024	Santee Cooper provided comments on the draft permit.
12-03-2024	The BAQ provided Santee Cooper with a copy of the updated draft preliminary determination.
12-03-2024	The BAQ emailed Lori Shepherd of the EPA a copy of the draft preliminary determination.
12-10-2024	The BAQ placed the PSD Preliminary Determination and PSD Construction Permit No. PSD-50000004 v1.0 on public notice for a thirty-(30) day comment period. All appropriate Federal and State Officials were notified.
03-05-2025	The BAQ issued a Final Determination and Construction Permit No. PSD-50000004.

2.0 Introduction

2.1 Project Overview

This project concerns a retroactive review of the installation of two coal-fired boilers (Boilers 3 and 4) at the Santee Cooper Cross Generating Station (Cross facility) based on the removal of synthetic minor sulfuric acid mist (SAM) limits imposed at the time of the boilers' installation. The project is subject to review under S.C. Regulation 61-62.5, Standard No. 7 (Standard 7), "Prevention of Significant Deterioration" (PSD). This regulation is equivalent to federal PSD regulations in Title 40 Code of Federal Regulations (CFR) Section 52.21. Pursuant to these regulations, new major stationary sources and major modifications to major stationary sources of air pollution must demonstrate that they will not significantly deteriorate the air quality in their region. Pursuant to Section (R)(4) of Standard 7, the removal of limits taken by a source or modification to avoid PSD review may subject that source or modification to PSD review "as though construction had not yet commenced on the source or modification." Because the Cross facility seeks the removal of synthetic minor SAM limits previously established to avoid PSD review for Boilers 3 and 4, a PSD review has been conducted for SAM emissions from Boilers 3 and 4, including a Best Available Control Technology (BACT) determination and Ambient Air Impact Analysis, as though construction had not yet been commenced on these sources. In addition, because the installation of controls for SAM emissions will result in additional sources of PM and PM₁₀ emissions, this project includes additional review and analysis associated with PM and PM₁₀ emissions from SAM controls.

As stated in the 2004 Preliminary Determination for the original PSD construction permit authorizing installation of Boilers 3 and 4, the installation of Boilers 3 and 4 was initially subject to PSD review as a major modification based on significant increases in emissions of Particulate Matter less than 10 Microns in Diameter (PM₁₀), Carbon Monoxide (CO), Volatile Organic Compounds (VOCs), lead (Pb), beryllium, and mercury. The PSD review included a BACT Determination, an Ambient Air Impact Analysis, and a Class I Area Impact Analysis. In addition to the PSD review for PM, PM₁₀, CO, VOCs, Pb, beryllium, and mercury, the installation of Boiler 3 and Boiler 4 netted out of PSD review for SO₂, NO_x, and H₂SO₄ pollutants and synthetic minor limitations were established for SO₂, NO_x, and H₂SO₄.

After Boiler 4 became operational, the Cross facility was unable to show compliance with the synthetic minor SAM limits that had been established. After additional research and evaluation of source testing information, it was determined that the installation of Boiler 3 and Boiler 4 should have been subject to PSD review for SAM emissions instead of netting out through the establishment of synthetic minor limits, as was allowed during the original permitting process. As such, the BAQ required the Cross facility to submit a new application in accordance with Section (R)(4) of Standard 7 for emissions of SAM from Boilers 3 and 4.

In light of this permitting context, this PSD permit addressed only the PSD review for the SAM emissions from the installation, operation, and control of emissions from Boiler 3 and Boiler 4, with a small discussion on the additional sources of PM and PM₁₀ emissions associated with the control method required for the reduction of sulfuric acid mist emissions.

3.0 Regulatory Applicability

Retroactive review of this project (installation of Boilers 3 and 4) results in potential sulfuric acid emissions that exceed the PSD significant thresholds. This regulatory review is based on the SAM emissions from Boilers 3 and 4 and the smaller amount of particulate matter emissions from the hydrated lime handling system determined to represent BACT. It should be noted that Boilers 3 and 4 are subject to additional regulations as outlined in the original permitting process in 2004. By virtue of this proposed project and associated emissions increases, 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. 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 61-62.70, *Title V Operating Permit Program*

3.1 Significant Emission Rates

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

Table 1 - PSD Applicability Analysis			
Pollutant	Controlled Emissions Increase	PSD Significant Threshold	Significant Increase?
	TPY	TPY	
sulfuric acid mist (SAM)	426 ²	7	Yes
PM	0.24 (HLIS 3 & 4)	25	Yes ³
PM ₁₀	0.08 (HLIS 3 & 4)	15	Yes ³

As stated in the 2004 Preliminary Determination for the original PSD construction permit authorizing installation of Boilers 3 and 4, the installation of Boilers 3 and 4 was initially subject to PSD review as a major modification based on significant increases in emissions of Particulate Matter less than 10 Microns in Diameter (PM₁₀), Carbon Monoxide (CO), Volatile Organic Compounds (VOCs), lead (Pb),

² The SAM project emissions listed above replace those permitted in the original PSD construction permit.

³ While the PM and PM₁₀ emissions from the hydrated lime handling systems do not themselves exceed the PSD significance level, they must be considered with the PM and PM₁₀ emissions permitted in the original PSD construction permit (0420-0030-CI). In the original PSD permit the project emissions increase for PM and PM₁₀ exceeded the 25/15 TPY significance level. PM_{2.5} was not required to be quantified in 2004 when 0420-0030-CI was issued.

beryllium, and mercury. The PSD review included a BACT Determination, an Ambient Air Impact Analysis, and a Class I Area Impact Analysis. In addition to the PSD review for PM, PM₁₀, CO, VOCs, Pb, beryllium, and mercury, the installation of Boiler 3 and Boiler 4 netted out of PSD review for SO₂, NO_x, and H₂SO₄ pollutants and synthetic minor limitations were established for SO₂, NO_x, and H₂SO₄.

After Boiler 4 became operational, the Cross facility was unable to show compliance with the synthetic minor SAM limits that had been established. After additional research and evaluation of source testing information, it was determined that the installation of Boiler 3 and Boiler 4 should have been subject to PSD review for SAM emissions instead of netting out through the establishment of synthetic minor limits, as was allowed during the original permitting process. As such, the BAQ required the Cross facility to submit a new application in accordance with Section (R)(4) of Standard 7 for emissions of SAM from Boilers 3 and 4.

In light of this permitting context, this PSD permit addressed only the PSD review for the SAM emissions from the installation, operation, and control of emissions from Boiler 3 and Boiler 4, with a small discussion on the additional sources of PM and PM₁₀ emissions associated with the control method required for the reduction of sulfuric acid mist emissions.

4.0 Final Determination

On December 10, 2024, the BAQ made a preliminary determination that Santee Cooper Cross Generating Station may install a permanent hydrated lime injection system on Boiler 3 (EU 09) and Boiler 4 (EU 10) as the control method for emissions of sulfuric acid (H₂SO₄) mist (SAM) and to install associated hydrated lime handling systems if the emission limitations and conditions as outlined in the draft PSD Construction Permit PSD-50000004 are met. This draft construction permit was included as part of the Preliminary Determination. The Statement of Basis, which contains explanations of the permitting actions, was also included as a part of the Preliminary Determination. The public comment period closed on January 8, 2025. No comments were received from the Federal Land Manager(s) (FLM), Santee Cooper Cross Generating Station, or members of the public during the public comment period.

The recommendations received from the United States Environmental Protection Agency (EPA) were considered by the Department. No changes to the draft documents or determinations were made. For a summary of the recommendations and the Department's responses, see accompanying document *Response to Comments on Air Quality*.

BAQ has made a final determination that the Santee Cooper Cross Generating Station proposed project may be approved, provided that the emission limitations and conditions, as outlined in Construction Permit No. PSD-50000004, are met. A copy of the final issued construction permit is included as part of this Final Determination.

The final BACT determinations are summarized in the following table(s).

Table 2 - Summary of BACT			
Process	Pollutant	BACT Control Method	BACT Limit
Boiler 3	Sulfuric Acid Mist (SAM)	Hydrated Lime Injection	0.009 lbs/MMBtu
Boiler 4	Sulfuric Acid Mist (SAM)	Hydrated Lime Injection	0.009 lbs/MMBtu
HL-HAND 3	PM	Proper Operation of Silo and Inherent Bin Vent	0.03 lb/hr
HL-HAND 3	PM ₁₀	Proper Operation of Silo and Inherent Bin Vent	0.01 lb/hr
HL-HAND 4	PM	Proper Operation of Silo and Inherent Bin Vent	0.03 lb/hr
HL-HAND 4	PM ₁₀	Proper Operation of Silo and Inherent Bin Vent	0.01 lb/hr