

Santee Cooper - Cross Generating Station

Notice of Planned Participation - Annual Report of Progress

(40 CFR Part 423 Section 19, Paragraph (h)(3) and (h)(4))

Date Submitted: October 10, 2022

Santee Cooper's Cross Generating Station (Cross) is a four-unit, coal-fired electric generating station located in Pineville, South Carolina. Cross is subject to EPA's Effluent Limit Guidelines (ELGs) under 40 CFR 423: Steam Electric Power Generating Point Source. Revised ELGs under the Steam Electric Reconsideration Rule were published on October 13, 2020 and included new requirements for flue gas desulfurization (FGD) wastewater (WW) discharges. Santee Cooper submitted a Notice of Planned Participation (NOPP) for Cross on a contingent basis, on October 13, 2021 to SCDHEC Water Facility Permitting Division, noting the potential for Cross to establish effluent discharge limitations set by the Voluntary Incentives Program (VIP) under 40 CFR Part 423 Section 13 Paragraph g3i.

The purpose of this document is to provide a progress report to DHEC regarding Cross's contingent election to comply with the voluntary incentive plan (VIP) requirements for FGD wastewater treatment required by 40 CFR Part 423 Section 19, Paragraph h3 and h4.

40 CFR Part 423.19.h(3) Annual progress report. After submission of the Notice of Planned Participation in paragraph (h)(1), a progress report shall be filed with the permitting authority, or control authority in the case of an indirect discharger.

40 CFR Part 423.19.h (4) Contents. An Annual Progress Report shall detail the completion of interim milestones presented in the engineering dependency chart from the Notice of Planned Participation since the previous progress report, provide a narrative discussion of completed, missed, or delayed milestones, and provide updated milestones.

Membrane Treatment (VIP) Milestone Progress

The October 2021 NOPP was submitted to retain the VIP alternative as an option while biological treatment systems pilots for BAT continued, and additional data and cost were evaluated. Since submission of the October 2021 NOPP, an Engineering Contractor has been selected to assist with evaluation of both the VIP and BAT options.

FGD WW Characterization / Scrubber Water Balance

Compliance strategy options were developed and raw, untreated FGD wastewater has been preliminarily characterized. A detailed water balance of FGD scrubber operations has been completed. Opportunities to reduce volume of wastewater generated are evaluated and trialed on an ongoing basis to determine their effectiveness to reduce the volume of wastewater that requires treatment.

Develop Specifications, Bench & Pilot Testing

The characterization data, technical specifications have been provided to vendors for purposes of evaluating vendor technology proposals for economic feasibility of VIP options in direct comparison to currently available biological based treatment technologies for BAT limits. Pilot testing of VIP system options have not yet been conducted.

Biological Treatment (BAT) Status

Santee Cooper also provided SCDHEC with a proposed schedule for compliance with the 2020 ELG Rule generally applicable limitations for Cross Generating Station on March 2, 2021. Cross conducted pilots of two commercially available biological treatment technologies from April until November of 2021 to evaluate the viability of the best available technology economically achievable (BAT) treatment options for Cross. Physical Chemical Treatment followed by biological treatment and ultrafiltration demonstrated the ability to meet the 2020 ELG limits for FGD wastewater when additional pretreatment or post polishing were included. The biological treatment pilots highlighted that pretreatment, such as advanced oxidation, is required for Cross to oxidize reduced selenium species to selenite or selenate prior to biological treatment. This pretreatment will be necessary to meet the generally applicable limitations due to the higher concentration of reduced Se species in the raw wastewater at Cross compared to other facilities.

Cross is also conducting a pilot of a biological membrane treatment in collaboration with EPRI and the DOE of a technology that is not a current commercially available technology. This pilot is scheduled to begin August 2022 and be completed by October 2022, with the benefit to Santee Cooper of additional FGD wastewater characterization. After completion of the 2021 pilot treatment systems, Cross conducted evaluations of technical proposals provided by vendors and is now continuing to evaluate the proposals in comparison with proposals provided for VIP treatment systems.

Projected Milestone Delays

Announcement and delay of the proposed ELG revised rule along with finalization of the Cross NPDES permit have delayed final decisions regarding the technology path to proceed with. On November 19, 2021, Santee Cooper requested that DHEC include provisions similar to Plant Bowen in Georgia, allowing BAT and VIP in the Cross NPDES permit. The regulatory uncertainty has delayed both the BAT and VIP option schedules, as strategic decisions on current technology proposals have been placed on hold until the November of 2022 in expectation that a draft ELG Revised Rule will provide additional certainty and minimize the risk of financial impact to Santee Cooper's customers.

The preliminary milestones and engineering dependency chart previously provided in October of 2021 for compliance with VIP limitations has been further expanded and updated in the previous year based on the information provided above and included in Attachment 1.

Engineering Dependency Schedule Updates for VIP Option

Task Name		Baseline*		Revised#		2026												2027												2028																						
		Start	End	Start	End	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12											
Define Phase	Santee Cooper Cross Station FGD VIP Engineering Dependency Chart		12/31/2028																																																	
	FGD WW Treatment Project Initiation	1/1/2021	12/30/2021																																																	
	Engineering contractor selected, project kickoff, compliance strategy, FGD characterization, develop FGD water balance	1/1/2021	12/30/2021																																																	
	FGD WW Pilot Testing	1/1/2021	4/30/2023	1/1/2021	9/28/2023																																															
	Provide FGD characterization data, develop specifications, provide bulk volumes for bench testing w/ vendors, obtain pilot approval, conduct pilots	1/1/2021	4/30/2023	1/1/2021	9/28/2023																																															
	EPA Rule Draft Release Expected																																																			
	EPA Final Rule Expected																																																			
	Cross NPDES Permit Final - Date Needed to Proceed																																																			
	Finalize FGD WW Treatment Specifications																																																			
	Finalize Engineering Procurement Construction Contract																																																			
Preliminary Engineering - Fixation																																																				
Obtain Funding																																																				
Execution Phase	Complete Detailed Engineering Design	5/1/2023	9/30/2024	4/22/2024	10/20/2025																																															
	VIP Engineering			4/22/2024	10/20/2025																																															
	Fixation Engineering			4/22/2024	4/22/2025																																															
	Permitting	1/1/2024	9/30/2024	3/1/2024	4/1/2025																																															
	Preliminary Engineering Report (PER) for Wastewater Construction Permitting			3/1/2024	5/30/2024																																															
	Permit Application Preparation			9/1/2024	12/30/2024																																															
	Submit Request/Obtain Approval to Construct from DHEC (some parallel activities with detailed design), obtain permits	1/1/2024	9/30/2024	12/1/2024	4/1/2025																																															
	Construction	10/1/2024	3/31/2026	10/10/2024	4/28/2027																																															
	Procurement & Delivery Equipment			10/10/2024	5/13/2026																																															
	VIP Construction			10/21/2025	4/28/2027																																															
	Fixation Construction			4/23/2025	6/18/2026																																															
	Commissioning	4/1/2026	11/30/2028	6/19/2026	4/25/2028																																															
	Membrane system testing & commissioning	4/1/2026	6/30/2026	4/29/2027	4/25/2028																																															
	Fixation Testing & Commissioning			6/19/2026	9/25/2026																																															
	Approval to Operate - Discharge (DHEC)																																																			
Develop bring solidification formula (if selected), finalize thermal evaporative system tie ins, overall system commissioning	6/1/2026	11/30/2028																																																		
ELG Applicability Date																																																				

*Baseline- As provided to DHEC on 10/14/2021
#VIP Schedule Dated June 2022

- KEY:
- Completed
 - Planned