

Meeting with Southern Company and Georgia Power Company**Final Notes****August 24, 2020**

Purpose: On August 14, 2020, EPA participated in a call with representatives from Southern Company and Georgia Power Company for the purpose of obtaining information regarding the research/pilot studies at Plant Scherer.

Attendees:

- Melissa (Higgins) Horton, Government Affairs Director, Southern Company
- Jeffrey Burleson, Vice President, Environmental and System Planning, Southern Company
- Aaron Mitchell, General Manager, Environmental Affairs, Georgia Power Company
- Dave Ross, Assistant Administrator, EPA Office of Water
- Anna Wildeman, Principal Deputy Assistant Administrator, EPA Office of Water
- Charlotte Bertrand, Deputy Assistant Administrator, EPA Office of Water
- Deborah, Nagle, Director, Office of Science and Technology, EPA Office of Water
- Janita Aguirre, Special Assistant, EPA Office of Water

Discussion:

Southern Company and Georgia Power Company representatives provided general background about their research program and pilot program and, in response to EPA's questions, provided greater detail in the following areas:

1. Do your companies have plans to install a full-scale membrane system to treat flue gas desulfurization (FGD) wastewater at Plant Scherer? What is the status of the 50 gallon per minute (gpm) membrane pilot study? What is the duration of the pilot?

The companies' current Environmental Compliance Plan (approved by the Georgia Public Service Commission (PSC)) does not include the membrane/New Logic VSEP technology, but instead outlines plans to use a biological treatment system with chemical pretreatment to meet the applicable effluent limitation guidelines (ELGs). The companies provide annual updates of this Compliance Plan to the PSC that become part of the companies' Integrated Resource Plan. These Integrated Resource Plans outline plans to comply with environmental regulations over a 20-year period, and are approved by the PSC every three years. Integrated Resource Plans are available for the public, including EPA, to view at any time. Integrated Resource Plans may include confidential business information, but special requests can be made to the PSC to review that material as well.

The companies described their research and development (R&D) program, including a partnership with EPRI started in 2012-2013. This partnership established a Water Research

Center at Plant Bowen for vendors to test their technologies on real power plant waste products. It was from this partnership that the companies first conducted a bench-scale test for the VSEP membrane technology. Following the initial bench-scale test on a slip stream of scrubber wastewater, the companies' R&D teams conducted a larger test using mocked-up scrubber wastewater. It was only after these tests that the companies decided to plan a longer-term pilot at Plant Scherer, which will be the first continuous use testing of the membrane filtration technology. The long-term pilot at Plant Scherer will test the effectiveness of the technology under dynamic operation and maintenance conditions. The companies noted the purpose of the pilot was to determine whether the system can continuously treat FGD wastewater to ELG limitations; understand the chemical and energy expenses, including the magnitude of pretreatment needed, and how performance may vary in off-peak and peak operation and during startup and shutdown. The companies noted that they were not sure how the anti-fouling controls for a membrane would perform under continuous operation and varying wastewater conditions. Additional questions to be addressed as the pilot progresses include brine management such as encapsulation and whether encapsulated brine produces leachate, and potential state-level landfill disposal engineering and approval requirements.

At this point in time and given the number of questions that need to be addressed during the pilot, the companies stated they have not decided whether to install a full-scale membrane system at Plant Scherer to comply with the new ELG rule. Although the April 30, 2020 letter from Georgia Power estimated the start-up of the year-long VSEP/membrane pilot in June 2020, it has been delayed in part due to the Coronavirus pandemic. The Plant Scherer 50 gpm VSEP/membrane pilot test is now targeted to begin in September 2020. The required storage construction for the pilot is not expected to be completed until November 2020, while the testing of brine management is expected to begin in 2021.

The companies explained the long-term pilot study will evaluate two treatment technologies concurrently: the VSEP/membrane technology and a biological treatment system with chemical pretreatment. The company intends to compare the performance of the two systems using the FGD waste stream for approximately one year to understand how they each handle seasonal, operational and other variables in the volume and content of the waste stream. The company reported that performance of the VSEP technology to treat nitrates in the FGD wastewater stream is an important part of this concurrent pilot, despite vendor claims that the systems will treat this pollutant to a certain level. The pilot biological treatment equipment is expected to begin operation between September and November 2020.

2. If you had to pick a technology to deploy at Plant Scherer to comply with the 2015 ELG, would it be membranes?

The companies reiterated that there is no plan to install full-scale membrane technology to treat the FGD waste stream at Plant Scherer. Many questions will be answered during the long-term 50 gpm pilot at Plant Scherer, however additional questions on how to scale up the pilot to be fully functional will remain.

The companies explained that the 50 gpm membrane system has been constructed as a research system, and estimated that a capacity of 150-200 gpm is expected for full-scale FGD wastewater treatment at Plant Scherer. The companies also explained that a 25 gpm membrane system was purchased in 2015 for use in a pilot study at Plant Bowen—this system was moved to Plant Scherer for the long-term pilot. The companies then purchased another 25 gpm system to expand the scale of the pilot study at Plant Scherer. Although the companies purchased the equipment to be used in the Plant Scherer pilot, if the pilot is successful and the company chooses to install membrane technology for compliance with the ELG rule, the companies stated that they would remove the pilot test equipment and replace the majority of components with new, higher quality, more robust, and reliable equipment (including valve and pump replacement) before putting the system into full-scale operation. The companies noted that the pilot test equipment has no redundancy and could not be used currently for compliance purposes.

The companies also noted that they would use the final 2020 rule requirements to determine what additional adjustments could be made during the pilot to test the systems performance and ability to meet the effluent limitations of the final 2020 rule. The companies noted that if the effluent limits in the VIP option remain consistent with those in the proposed rule, Plant Scherer would not pursue the VIP option because Scherer's FGD wastewater is high in nitrates and a membrane system would be unlikely to treat this waste stream to the proposed VIP nitrate/nitrite limits.

The companies also noted that if the VSEP technology will work in their fleet, Scherer is the only candidate; no other plants across their fleet would be candidates for installing membrane technology to meet the requirements of the ELG rule.

3. If you chose to pursue membranes at some point in the future, would it be more difficult to obtain favorable financing if you are the first facility to install membrane for FGD?

Because the companies have a well-established R&D program that the PSC is familiar with and because they fund assets in the aggregate, the companies do not anticipate complications if it chose to pursue financing for an innovative technology like a membrane system. However, the companies reiterated that no decision had been made to install membrane or other technologies at this time. The companies also noted that independent power producers (that may not have the R&D experience, relationship with PSC, or aggregate funding structure) may have trouble with borrowing for new or unproven technologies.

4. Have you provided the information discussed with us today previously to EPA staff?

The companies indicated that most of the information had been shared previously with EPA, either in phone calls, in response to questions, or in the three letters from the companies (April, May, and June 2020). Updated information, such as the timing related to the start of the VSEP/membrane and biological treatment pilot, was provided in today's call.