

ELG Permanent Cessation of Coal Combustion Progress Update

TVA Cumberland Fossil Plant – NPDES permit No. TN0005789

2024 Annual Report

Introduction

Part I. Section 1.3 of the NPDES permit for Cumberland Fossil Plant (CUF) requires the Tennessee Valley Authority (TVA) to provide the Tennessee Department of Environment and Conservation (TDEC) with an annual report detailing the completion of any interim milestones listed in CUF’s Notice of Planned Participation in the retirement subcategory of the Effluent Limitation Guidelines (ELGs), in alignment with CFR 423.19(g).

2024 Calendar Year Update

TVA issued a Record of Decision on January 10, 2023, to cease coal combustion activities at CUF and proceed with construction of a combined cycle/aeroderivative natural gas plant for replacement generation one coal-fired unit. The timeline for cessation of coal combustion at CUF remains within that allowable under the retirement subcategory of the ELGs. With planned retirement and construction of replacement generation underway, TVA is not currently planning any additional upgrades for flue gas desulfurization wastewater (FGD) treatment or bottom ash transport water (BATW) systems at this site.

See below for a listing of milestones submitted with CUF’s NOPP in the retirement subcategory:

Milestone	Activity	Date Completed
Integrated Resource Plan	TVA posted the final Record of Decision for the 2019 IRP.	September 17, 2019
National Environmental Policy Act (NEPA) Review	TVA Environmental Impact Statement (EIS) to assess the impacts associated with the proposed retirement of CUF and the replacement generation alternatives	December 9, 2022
Decision to Retire CUF	Record of Decision	January 10, 2023
Cessation of Coal Combustion Activities	TVA to cease coal combustion at CUF	On or before December 31, 2028

Regulatory & Compliance Developments

2020 ELG Rule

On October 13, 2020, the United States Environmental Protection Agency (EPA) published revisions to the ELGs in 40 CFR Part 423. The revised rule modified technology-based effluent limitations for FGD wastewater and BATW. The rule also established several new subcategories that provide separate compliance pathways based on unit operation and asset operating plans.

For facilities planning to cease coal combustion by December 31, 2028, a “retirement subcategory” was established. Best available technology economically achievable effluent limitations for FGD wastewater and BATW discharges in the retirement subcategory are equivalent to those previously established.

2021 Modified NPDES Permit Request and Supplemental Developments

TVA applied for an NPDES permit modification on January 8, 2021, pursuant to the revised ELGs, to incorporate revised limitations based on multiple asset operating scenarios. On May 6, 2021, the TVA Board of Directors held its quarterly meeting during which TVA's Chief Executive Officer discussed planning assumptions for the retirement of TVA's coal fleet by 2035 and announced TVA's intent to prepare an Environmental Impact Statement (EIS) to assess the impacts associated with the proposed retirement of CUF and the replacement generation alternatives. On May 11, 2021, TVA published a Notice of Intent (NOI) for the EIS in the Federal Register.

On May 21, 2021, TVA submitted to TDEC supplemental relevant information for review and consideration in the modified NPDES permit request relevant to the Board's decision to assess closure alternatives for CUF.

2021 Notice of Planned Participation - Cessation of Coal Combustion Activities

On October 6, 2021, TVA submitted a Notice of Planned Participation (NOPP) in the retirement subcategory for FGD wastewater and BATW for the two coal combustion units at CUF. CUF's retirement EIS was published in the Federal Register on December 9, 2022 and a Record of Decision to cease coal combustion at Cumberland was signed January 10, 2023. This decision aligns with TVA's NOPP for the retirement subcategory of the 2020 ELGs.

2023 CUF NPDES Permit TN0005452 Renewal

On October 10, 2023, TDEC issued a draft NPDES permit that included permit updates based on the 2020 ELG rule and TVA's modification request. TDEC held a public hearing for the draft permit on November 16, 2023 to receive comments from the public. TDEC issued a revised NPDES permit on November 30, 2023. The new permit incorporates alternative compliance pathways with corresponding compliance dates for applicable ELG categories and subcategories. The permit also specifies CUF's status in the retirement subcategory of the 2020 ELGs.

2024 Revised ELG Rule

On May 9, 2024, EPA published new revisions to the Steam Electric ELGs. The 2024 revised rule modifies technology-based effluent limitations for four waste streams: FGD wastewater, BATW, combustion residual leachate (CRL), and legacy wastewater. In addition, the rule amends the subcategories for separate compliance pathways based on unit and asset operating plans.

TVA applied for an NPDES permit modification on August 6, 2024, pursuant to the 2024 revised ELGs, to incorporate revised limitations based on multiple asset operating scenarios. TVA is updating the agency's [Integrated Resource Plan](#), which evaluates long-term energy resources, electric generation, power supply, and decarbonization strategies. This process will best inform TVA decision making and asset strategy for managing TVA's coal fleet into the future. Therefore, TVA requested CUF's NPDES permit modification reflect compliance deadlines for regulated wastestreams under each available 2024 ELG category or sub-category.

Wet FGD Wastewater Treatment/Related Projects

Historical Equipment/Systems Description

The existing system for handling wet FGD (gypsum) blowdown at Cumberland Fossil (CUF) includes primary hydrocyclone(s) with underflow going to vacuum belt filters used to dewater gypsum. Dewatered gypsum is marketed for wallboard production at a Georgia Pacific facility adjacent to CUF. Onsite landfill disposal may occur if CUF's gypsum does not meet specifications for wallboard. Gypsum dewatering operations are currently performed by SynMat[®] with the effluent going to FGD wastewater treatment (WWT) then to the CUF process water basin for treatment, eventually discharging via Internal Monitoring Point 001. CUF has completed construction of a WWT facility including both fines dewatering and physical-chemical treatment for wet FGD blowdown from the SynMat[®] facility. In April 2021, the SynMat[®] facility received additional upgrades to incorporate automation with the effluent slurry tanks (ESTs) and gypsum slurry storage tank (SST). Construction of wet FGD Wastewater Treatment Facility consisted of Stage A commissioning (completed in March 2021) to dewater gypsum fines and Stage B commissioning (completed in May 2021) to manage total dissolved solids such as arsenic and mercury. In 2023, TVA executed a limited pilot study of membrane and biologic treatment systems at KIF to evaluate the efficacy of treatment technologies for FGD wastewater.

Under the 2024 ELG revised rule, the limits and applicability dates in 2028 retirement subcategory for FGD wastewater are the same as under the 2020 ELG rule. These limits are applicable upon issuance and have already been incorporated into CUF's NPDES permit.

Wet FGD and Bottom Ash Transport Water 2024 Projects Activities Update

The FGD WWT facility and BATW treatment and discharge are in operation and TVA will continue to address any warranty and O&M issues. Due to TVA's decision to Cease Coal Combustion by 2028, there was no project work completed during 2024 related to Bottom Ash Transport Water or additional FGD Wastewater Treatment.