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Dear Ms. Terpstra:

TENNESSEE VALLEY AUTHORITY (TVA) – CUMBERLAND FOSSIL PLANT (CUF) – NPDES PERMIT NO. TN0005789 – INITIAL REQUEST LETTER AND PERMIT MODIFICATION REQUEST

On February 11, 2026, the TVA Board directed TVA to take steps necessary to continue operating the Cumberland Fossil Plant (CUF), in compliance with all applicable laws and permitting requirements, beyond previously planned retirement timelines to maintain system reliability amid significant regional load growth and delays in new generation resources.

Therefore, TVA submits this permit modification request and initial request letter as detailed in 40 CFR § 122.62(a) and 40 CFR § 423.19(q) to: (i) outline the significant unexpected circumstances driving continued CUF operation; (ii) incorporate the 2024 Steam Electric Effluent Limitation Guidelines (ELGs) and the 2025 ELG Deadline Extensions Rule into the permit; (iii) request alternative applicability dates under 40 CFR § 423.18(d); and (iv) propose a compliance schedule and progress reporting cadence to be incorporated into the National Pollutant Discharge Elimination System (NPDES) permit for CUF.

Regulatory Background

On October 13, 2020, the United States Environmental Protection Agency (EPA) published revisions to the ELGs in 40 CFR Part 423. The revised rule, known as the “2020 Rule,” modified technology-based effluent limitations (TBELs) for flue gas desulfurization (FGD) wastewater and bottom ash transport water (BATW). In setting the 2020 effluent limitations, EPA recognized the need to provide flexibility by establishing subcategories that provide separate compliance pathways based on unit operation and asset operating plans and by allowing transfers between subcategories. The rule’s high flow subcategory for FGD wastewater applies to facilities that generate substantially larger volumes of wastewater, such as CUF. It establishes numeric effluent limits for mercury and arsenic

in high flow FGD discharges, based on chemical precipitation treatment. For BATW, the 2020 Rule requires a high-recycle recirculation system and allows up to a 10% purge, permitting facilities to discharge a portion of their BATW to maintain system balance and prevent accumulation. EPA established the 2028 Permanent Cessation of Coal Combustion (PCCC)¹ subcategory for facilities planning to cease coal combustion by December 31, 2028. Best available technology economically achievable (BAT) effluent limitations for FGD wastewater and BATW discharges in the retirement subcategory are based on surface impoundments.

On May 9, 2024, the EPA published a revision known as the “2024 Rule.” The revision updated TBELs for FGD wastewater, BATW, legacy wastewater at existing sources, and combustion residual leachate (CRL) at new and existing sources. The rule also added additional subcategories for compliance pathways, including a PCCC subcategory for units ceasing coal combustion by December 31, 2034. TBELs for FGD wastewater and BATW in the 2034 PCCC subcategory are the same as those defined in the Generally Applicable category of the 2020 Rule. The Generally Applicable category of the 2024 Rule includes a BAT standard of zero liquid discharge (ZLD) for FGD wastewater, BATW, and CRL.

Subsequently, on December 31, 2025, EPA published the final ELG Deadline Extensions Rule, which extends several compliance deadlines for waste streams affected by the 2024 ELG revisions including providing six more years (to December 31, 2031) for existing steam electric power plants to submit a Notice of Planned Participation (NOPP) in the 2034 PCCC subcategory and extending compliance deadlines for ZLD limitations for the various waste streams by five years (to December 31, 2034). This rule also updated transfer provisions to allow facilities to switch between compliance alternatives and established authority for alternative applicability dates and submission deadlines based on site-specific factors.

As discussed in the preamble of the Deadline Extensions Rule, the EPA “has observed extraordinary increases in energy demand across the U.S., decreases in energy reserves, difficulties in transmission across the electricity grid, increased energy prices, and decreased energy reliability.” Therefore, the Deadline Extensions Rule revises the existing transfer provisions at 40 CFR § 423.13(o) to allow facilities to switch between compliance alternatives and creates flexibility in 40 CFR § 423.18 for permitting authorities to provide alternative applicability dates and documentation submission dates associated with the 2020 Rule, based on site-specific factors described in an initial request letter.

On October 6, 2021, TVA submitted a NOPP indicating its intent, at the time, to participate in the 2028 retirement subcategory by ceasing coal combustion by 2028 based on load expectations outlined in the 2019 Integrated Resource Plan (IRP), pending National Environment Policy Act (NEPA) review and a TVA board decision.

Due to an unexpected increase in demand, TVA intends to take the necessary steps to continue operations at CUF by requesting alternative applicability dates for the installation of a BATW recirculation system to meet 2020 BAT by July 31, 2031. With the incorporation of the proposed

¹ The phrase 'Permanent Cessation of Coal' is synonymous with the 'retirement subcategory,' and both terms are used interchangeably throughout relevant documentation.

applicability dates into the permit, TVA also intends to transfer from the 2028 PCCC subcategory to the 2034 PCCC subcategory no later than December 31, 2028.

Significant unexpected circumstances warranting an alternative applicability date

After a decade of flat electricity demand, the TVA region is experiencing rapidly increasing demand for electricity. Accelerated electricity demand is being driven primarily by growth in data centers and population. In addition to load growth, delays in planned resource additions have increased pressure to meet demand with all available assets. Despite a variety of efforts and projects across the TVA Power Service Area (PSA), more generating capacity is needed to meet demand, prompting TVA to seek to continue operating the Cumberland coal-fired units.

Electric growth in the Tennessee Valley is significantly exceeding projections made in the base case in TVA's most recent IRP, finalized in 2019. The base case scenario in IRP represents the most likely scenario for generation planning purposes. Although the 2019 IRP also studied a high demand scenario that projected demand in the range currently being experienced, that scenario had a low probability of occurrence at that time. The 2019 IRP base case projected moderate growth in electric load. Actual results, however, have far surpassed this projection driven by the rapid emergence of data centers producing unexpected demand and unexpected population growth since the start of the pandemic. See Figure 1 below.

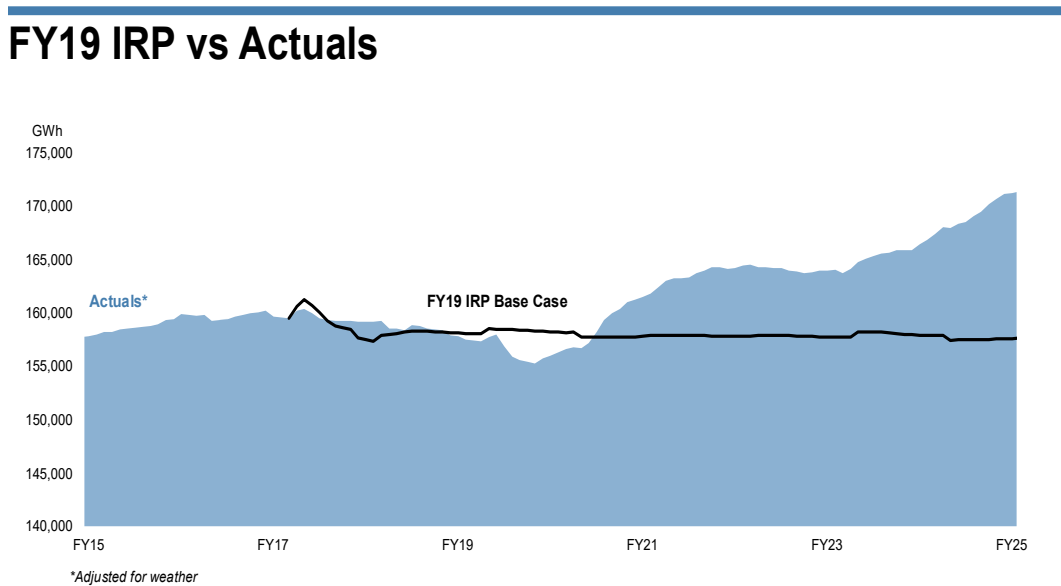


Figure 1 - FY19 IRP vs Actuals

In January 2024 and January 2025 TVA experienced record peak demands of 34,577 MW and 35,440 MW respectively. The last time TVA experienced a record level of peak demand was in 2007.

The primary driver of the unexpected increase in demand is the rapid expansion of large-scale data centers, including crypto mining operations and artificial intelligence (AI). Data centers are an innovative new industry, not present in historical data, that is driving significant growth and a structural shift in demand, which in turn causes forecasting errors and model unreliability. They are rapidly becoming TVA's largest industrial sector and are expected to continue to expand. In FY19, data centers accounted for 1,042 GWh of electric usage. By FY25, that usage has grown to 8,334 GWh, driving a six-fold increase in demand from data centers. See Figure 2 below.

Data Center Breakout

Data centers have risen to become TVA second largest industrial sector in FY25. Combined they represent over 8,000 GWh of usage and over 1,200 MW maximum demand.

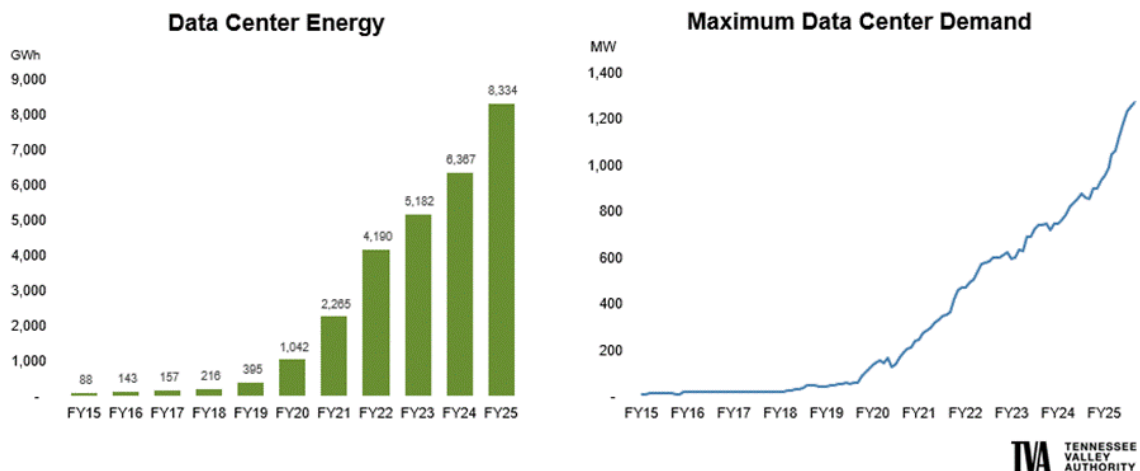


Figure 2 - Data Center Breakout

Data centers represent a new-to-the-world innovation spurring unforeseen growth, both economic and electric, and have created an entirely new industry which is rapidly becoming the largest energy consuming industrial segment. Data centers have very high electrical demand; each site can add hundreds of MW of load. Data centers have caused extraordinary growth beyond historical norms. This change in load growth trends constitutes a statistical structural break, significantly altering electric growth model parameters and boosting forecast projections.

In addition, unexpected population growth from the start of the pandemic represents a significant portion of system growth. The TVA region became a hotspot for increased inward migration following the COVID-19 pandemic and many regions across TVA's service territory saw population and household growth. A comparison of U.S. Census Bureau (USCB) population statistics for the counties in TVA's PSA to population statistics for all U.S. counties combined for the period from July 1, 2021, through July 1, 2024, shows that the population of TVA's PSA grew to over an estimated

10.9 million people and had a 1.1 percent average annual growth rate, which was 1.4 times the U.S. population growth rate. The rate of population growth in TVA's PSA increased by more than 1 percent in each of the three years, whereas the forecasted national growth rate for these same three years was under 1 percent each year. Household growth in the PSA in calendar year 2022 was significantly higher than the growth rate TVA experienced at any time since the turn of the century. See Figure 3 below. This has contributed to unexpected growth in demand.

Household Growth

CY22 experienced the most amount of year-over-year household growth since the turn of the century.

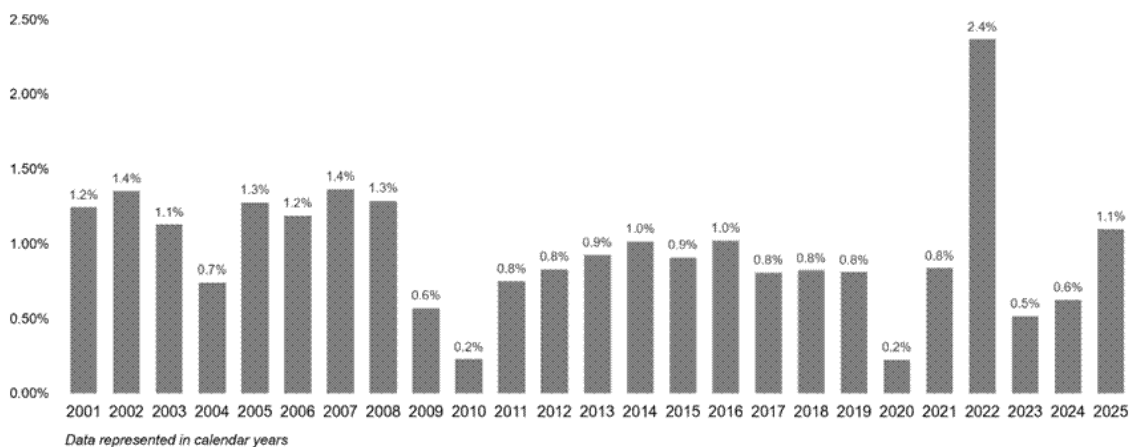


Figure 3 - Household Growth

Current forecasts reflect a continued substantial upward revision in demand compared to the 2019 IRP base case, driven by these structural changes in demand. To meet this unexpected increase in demand, TVA has undertaken the following activities:

- Investing in the existing natural gas fleet and in additional gas capacity
- Implementing new demand-side programs
- Exploring new nuclear opportunities and pursuing license extensions for the existing nuclear fleet
- Maintaining reliability with past investments in coal-fired units
- Securing market capacity and related on-and off-system resources.

Despite these efforts, more generating capacity is needed to meet demand. It is not feasible for TVA to build replacement generation capacity quickly enough to meet the unexpected increase in demand. Moreover, relying on market purchases to address this shortfall poses significant risks. Consequently, continued operation of Cumberland is essential and warrants extended applicability dates to achieve compliance with the 2020 Rule.

Permit modification request

Pursuant to 40 CFR § 122.62(a)(3), TVA requests that CUF's NPDES permit incorporate all compliance pathways, extended deadlines, and transfer capabilities under each applicable 2024 ELG category or subcategory, as outlined in Tables 1 and 2 below. TVA further requests inclusion of the "no later than" dates for the categories described in the ELGs and documented below to ensure adequate time for planning, capital allocation, design, procurement, and implementation of treatment systems. In addition, TVA seeks deferred deadlines for limits established through Best Professional Judgment (BPJ) to ensure adequate time for implementing required technologies if those determinations differ from current permit limits. Incorporating all compliance pathways into the permit is essential to maintain operational flexibility, address site-specific conditions, and mitigate risks associated with evolving energy demands and regulatory requirements, while ensuring timely and cost-effective compliance.

<u>Category</u>	<u>Waste stream</u>	<u>Limits²</u>	<u>Proposed Applicability Date</u>
2024 Generally Applicable	Bottom Ash Transport Water (BATW)	Zero Liquid Discharge	December 31, 2034
	Flue Gas Desulfurization (FGD) Wastewater		
	Combustion Residual Leachate (CRL)		
	Unmanaged CRL	Arsenic (11, 8 µg/L); Mercury (788, 356 ng/L)	December 31, 2029
	Legacy Wastewater	Best Professional Judgment (BPJ)	Deferred deadlines contingent on BPJ determination
2034 PCCC	BATW	Zero Liquid Discharge with a purge allowance (high-recycle); BATW purge not to exceed a maximum of 10% of the system wetted volume; BPJ limitations for BATW purge water	See requested alternative applicability date in Table 3
	FGD Wastewater (High flow subcategory)	Arsenic (11, 8 µg/L);	In compliance

² Limits are expressed as (maximum for any 1 day, average of daily values for 30 consecutive days shall not exceed)

		Mercury (788, 356 ng/L)	
	CRL	pre-retirement: BPJ	Deferred deadlines contingent on BPJ determination
		post-retirement: Arsenic (11, 8 µg/L); Mercury (788, 356 ng/L)	April 30, 2035
	Unmanaged CRL	Arsenic (11, 8 µg/L); Mercury (788, 356 ng/L)	December 31, 2029
Legacy Wastewater	BPJ	Deferred deadlines contingent on BPJ determination	

Table 1 - Updated ELG applicability date summary

<u>Category</u>	<u>Activity</u>	<u>Deadline</u>
2034 PCCC	NOPP	December 31, 2031
2024 Generally Applicable and 2034 PCCC	Transfer between categories	December 31, 2034

Table 2 - Updated ELG documentation submission summary

CUF currently submits annual progress reports on milestones related to the 2028 PCCC by January 31 each year. TVA requests that this schedule be maintained for the annual progress reports required for installing the necessary equipment to comply with the ELGs.

Requested alternative applicability deadlines

BATW system description

TVA proposes to construct a BATW Recirculation System to comply with the 2020 Rule by the dates established in Table 3. The BATW system will include recirculation tanks, recirculation pumps, a power distribution center, and associated piping to create a closed loop system that manages the discharge from the Bottom Ash Dewatering Facility (BADW). The BATW Recirculation System will return discharge flows from the existing clarifiers back to the plant, where the water will be reused to sluice ash from the plant to the BADW. In accordance with the 2020 Rule and the purge allowance, the system will also include a blowdown line that directs water to the Process Water Basin to help maintain water quantity and quality within the closed loop. As experienced at other coal facilities, the full 10% purge allowance is crucial to maintain system operation and manage scaling. The bottom ash purge water will ultimately be discharged to NPDES-permitted Internal Monitoring Point 001, which currently has established limits for total suspended solids consistent with the limits in the 2020 Rule’s Generally Applicable category for BATW.

FGD system description

Under the 2020 Rule, TVA installed an FGD wastewater treatment system to comply with the high flow subcategory. The 2024 Rule, along with the 2025 Deadline Extensions Rule, allow for continued compliance with the limits in the 2020 Rule until December 31, 2034. Since CUF follows the high flow subcategory, no additional action is requested for FGD flows at this site.

The current FGD wastewater treatment system includes equalization, pH adjustment, chemical addition and mixing, clarification, media filtration, and solids dewatering, as well as associated pumps and piping required for conveyance. Currently, the FGD waste stream is pumped to the process water basin and comingles prior to discharging to NPDES-permitted Internal Monitoring Point 001. The high flow subcategory limits mercury and arsenic in FGD wastewater, which would apply upstream at Internal Monitoring Point 009.

Compliance Status Schedule

The compliance schedule in Table 3 has been derived based on TVA’s experience implementing similar projects across the valley and includes contingencies for design discovery, supply chain delays, outage limitations driven by electricity demand, weather impacts, startup and commissioning complexities, and an initial operations and system optimization period prior to the BPJ process. The Initial Certification Statement, pursuant to 423.19(e), will be developed in parallel with design and construction and submitted prior to initiating sampling and reporting for BPJ.

Task	Finish
Project Initiation	4/1/2026
Design and Engineering	1/31/2028
Procurement, Supply, & Delivery	8/31/2028
Construction	7/31/2029
Startup and Commissioning	1/31/2030
Initial Operation and System Optimization	7/31/2030
BPJ Sampling and Reporting Period	7/31/2031
Compliance Milestone*	7/31/2031

*"Compliance Date" at the end of the BPJ process

Table 3 – Engineering milestone chart for BATW Recirculation

Compliance with EPA § 316(b) Regulations

In accordance with Part 1.5.2 of the facility NPDES permit and 40 CFR § 122.21(r)(6), TVA submitted its chosen method of compliance with the impingement mortality standard to TDEC on May 31, 2024, opting for Alternative 6 under § 125.94(c) by reducing intake flow through the planned retirement of one unit by 2026 and the remaining unit by 2028, consistent with CUF’s coal retirement schedule published in the Federal Register on January 20, 2023.

TVA recognizes that the need to extend operations will affect CUF's selected impingement compliance method. Since the level and duration of extended operation remain uncertain at this point. Both of which are factors critical to evaluating alternatives under § 125.94(c). CUF respectfully requests that, at TDEC's discretion, the obligation to update and resubmit the information required under 40 CFR § 122.21(r)(6) be deferred until the first modification to the previously approved compliance alternative. Specifically, the retirement of Unit 2 by December 31, 2026. This request is made to ensure that CUF has sufficient time to compile the necessary data and conduct a thorough review of alternatives to identify the option that best minimizes adverse environmental impacts associated with impingement under the specific operational circumstances.

Conclusion

TVA appreciates TDEC's consideration of this request and acknowledges the importance of aligning compliance schedules with both regulatory requirements and practical implementation timelines. In establishing applicable compliance, the permitting authority should consider several key factors:

1. Time to expeditiously plan (including raising capital), design, procure, and install equipment of very complex systems to comply with the ELGs.
2. Changes being made or planned at the plant required by the Clean Air Act and the Solid Waste Disposal Act/Resource Conservation and Recovery Act.
3. Supply-chain constraints for key components necessary for the new wastewater treatment technologies.
4. Other factors as necessary.

TVA understands that the proposed schedule of compliance is to be incorporated into the permit and acknowledges that permit modifications can require extended processing time. For TVA to proceed in the engineering process to continue operations at CUF for reliability needs, TVA requests written confirmation from TDEC that this letter meets the requirements of 40 CFR § 423.18(d) warranting alternative applicability dates for BATW compliance based on the ELG Deadline Extensions Rule. Provisional alternative applicability dates are provided above with the understanding that final dates will be incorporated into the NPDES permit during the permit modification process. Until such time as the permit can be modified to include the 2024 compliance pathways and alternative applicability dates, and a NOPP for the 2034 PCCC subcategory is submitted, CUF will remain in the 2028 retirement subcategory.

If you have any questions or need additional information, please contact Britta Lees by email at bplees@tva.gov.

Sincerely,



Susan Jacks

Senior Manager

Water Permits, Compliance, and Monitoring