TENNESSEE VALLEY AUTHORITY

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Sent Via Electronic Submittal

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Dear Ms. Terpstra:

TENNESSEE VALLEY AUTHORITY (TVA) – KINGSTON FOSSIL PLANT (KIF) – NPDES PERMIT NO. TN0005452 – INITIAL REQUEST LETTER AND PERMIT APPLICATION ADDENDUM REQUEST

On February 11, 2026, the TVA Board directed TVA to take steps necessary to continue operating the Kingston Fossil Plant (KIF), 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 application addendum 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 KIF 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 KIF.

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 revised the technology basis for the Voluntary Incentives Plan (VIP) for FGD wastewater from vapor compression evaporation to chemical precipitation plus membrane filtration. Facilities opting into the VIP have until December 31, 2028, to meet the revised FGD wastewater limitations. The technology basis for the FGD Generally Applicable category under the 2020 Rule is chemical precipitation, followed by low hydraulic resident time biological reduction (LRTR). 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

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

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 KIF by requesting alternative applicability dates for the installation of a BATW recirculation system and an FGD wastewater treatment system to meet 2020 BAT and VIP requirements, respectively, by December 31, 2031. With the incorporation of the proposed 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 Kingston 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 the 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.

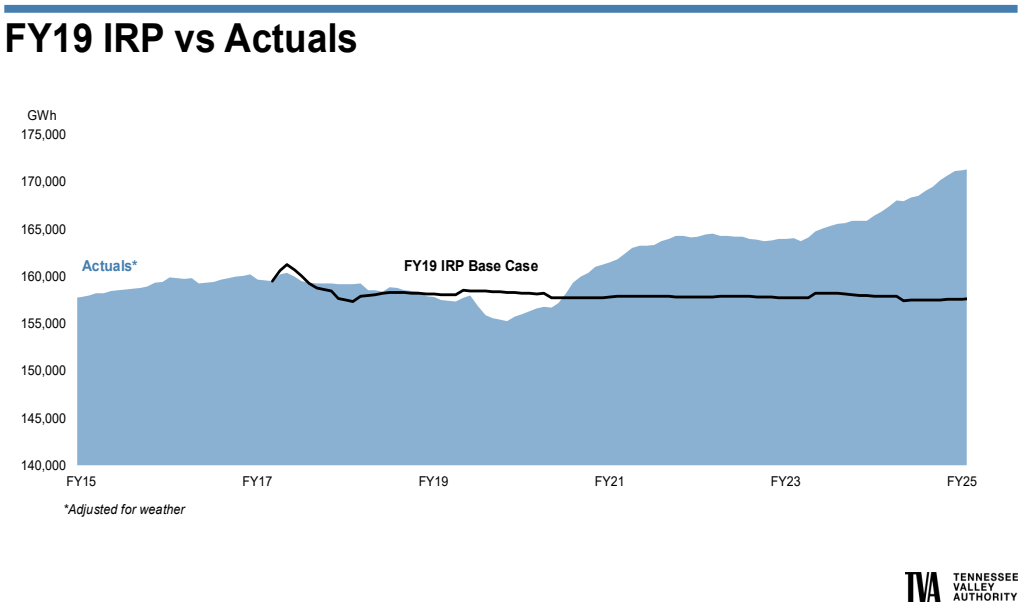

Figure 1 - FY19 IRP vs Actuals

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.

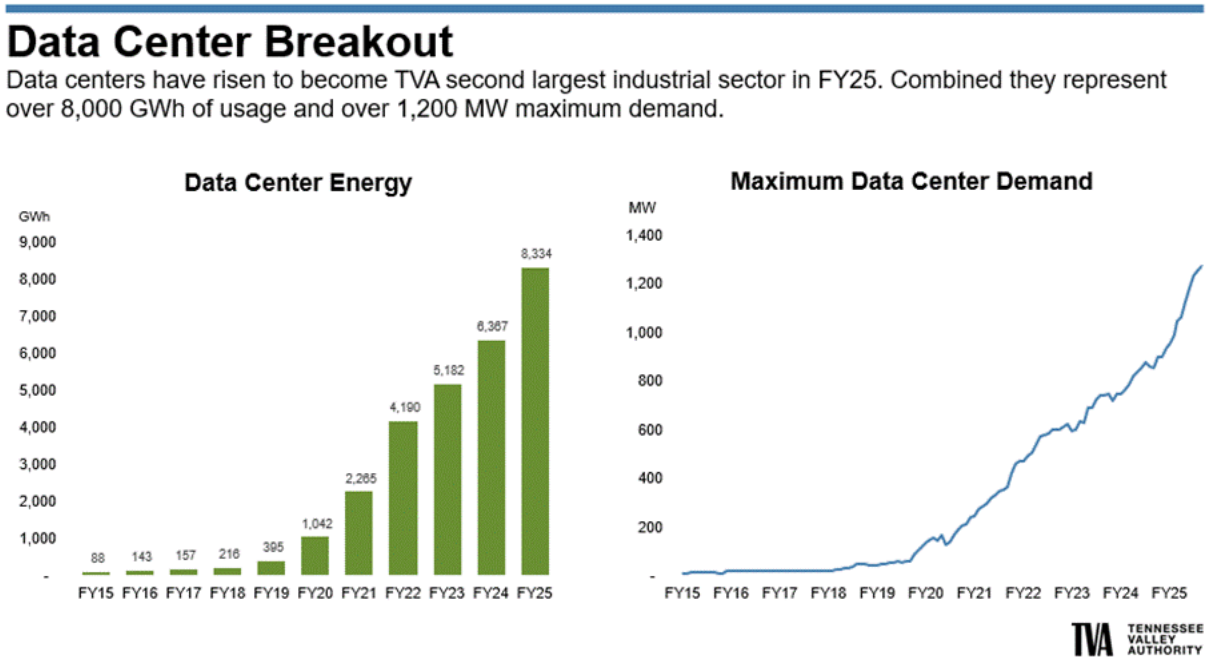

Figure 2 - Data Center Breakout

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 since 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. This has contributed to unexpected growth in demand. See Figure 3 below.

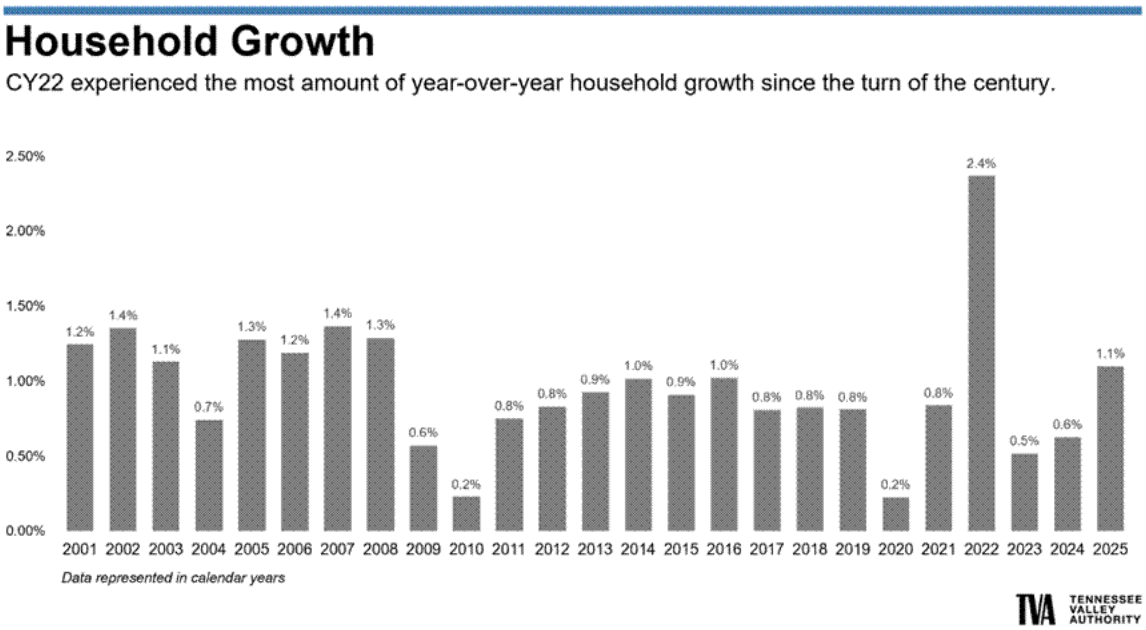

Figure 3 - Household Growth

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 Kingston is essential and warrants extended applicability dates to achieve compliance with the 2020 Rule.

Permit Application Addendum Request

Pursuant to 40 CFR § 122.62(a)(3), TVA requests that KIF'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.

Category	Waste stream	Limits[2]	Proposed Applicability Date
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 Judgement (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

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

	FGD Wastewater	Arsenic (18, 8 µg/L); Mercury (103, 34 ng/L); Selenium (70, 29 µg/L); Nitrate/Nitrite as N (4, 3 mg/L)	See requested alternative applicability date in Table 4 for FGD compliance with VIP limits
	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
Voluntary Incentives Plan (VIP)	FGD Wastewater	Arsenic (5, N/A µg/L); Mercury (23, 10 ng/L); Selenium (10, N/A µg/L); Nitrate/Nitrite (2.0, 1.2 mg/L); Bromide (0.2, N/A mg/L); TDS (306, 149 mg/L)	See requested alternative applicability date in Table 4

Table 1 - Updated ELG applicability date summary

Category	Activity	Deadline
Voluntary Incentives Plan (VIP)	Notice of Planned Participation (NOPP) and transfer to VIP category for FGD wastewater	December 31, 2028 (Requested)
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

KIF 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 from the recirculation system that discharges to the Polishing Basin to help maintain water quantity and quality within the closed loop system. 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 discharge to NPDES permitted Outfall 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 submitted a NOPP for the retirement subcategory for FGD discharges. TVA is now requesting an extension of the NOPP submission and compliance deadlines for the VIP option under 40 CFR § 423.18. TVA requests the compliance schedule listed in Table 4. This extension would allow TVA to implement the VIP option for compliance later than the original deadline specified in the 2020 Rule, which requires compliance by December 31, 2028. EPA explicitly retained the VIP option in the 2024 Rule, and TVA intends to transition to the VIP option for FGD-related ELG compliance going forward.

The VIP system is planned to include equalization tanks, pumps, piping, membrane filtration, solids dewatering, and potentially thermal evaporation for brine management. Currently, the FGD waste stream is pumped to the FGD process water basin, where it commingles prior to discharging to Internal Monitoring Point 01A. Under the VIP subcategory, limits would apply upstream at Internal Monitoring Point 009.

Compliance status schedule and requested extended deadline dates

The compliance schedules outlined below in Table 3 and 4 have been derived based on TVA's experience implementing similar projects across the valley as well as industry benchmarking for implementation of similar technologies and includes contingencies for design discovery, supply chain constraints and delays, outage limitations driven by electricity demand, weather impacts, startup and commissioning complexities, and an initial operations and system optimization period. The Initial Certification Statement, pursuant to 423.19(e), for the BATW recirculation system will be developed in parallel with design and construction and submitted prior to initiating sampling and reporting for the BPJ process.

Task	Finish
Project Initiation	4/1/2026
Design and Engineering	3/30/2028
Procurement, Supply, & Delivery	9/30/2028
Construction	12/31/2029
Startup and Commissioning	6/30/2030
Initial Operation and System Optimization	12/31/2030
BPJ Sampling and Reporting Period	12/31/2031
Compliance Milestone*	12/31/2031

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

Table 3 – Engineering milestone chart for BATW Recirculation

Task	Finish
Project Initiation	
Design, Engineering & Technology Pilots	12/31/2027
Procurement, Supply, & Delivery	12/31/2028
Construction	5/31/2030
Startup and Commissioning	12/31/2030
Initial Operation and System Optimization	12/31/2031
Compliance Milestone*	12/31/2031

*"Compliance Date" assuming the end of Initial Operation Period

Table 4 –Engineering milestone chart for FGD VIP Treatment

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 to raise 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. In order for TVA to proceed in the engineering process to continue operations at KIF 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 and FGD 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 is submitted, KIF 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