TENNESSEE VALLEY AUTHORITY

Kingston Fossil Plant Retirement Environmental Impact Statement

AGENCY: Tennessee Valley Authority.

ACTION: Record of Decision.

SUMMARY: Tennessee Valley Authority (TVA) has made a decision to adopt the Preferred Alternative identified in its Final Environmental Impact Statement (EIS) for the retirement of the Kingston Fossil Plant (KIF). The Notice of Availability (NOA) for the Kingston Retirement Final EIS was published in the *Federal Register* on February 23, 2024. TVA's Preferred Alternative, Alternative A, involves the retirement of KIF, decommissioning and demolition of KIF's nine coal-fired units, and the construction and operation of facilities to replace the retired generation that include a single natural gas-fired combined cycle (CC) plant, 16 dual-fuel aeroderivative combustion turbines (aero CTs) and a new switchyard (hereafter the CC/aero CT Plant), a 3 to 4 megawatt (MW) solar site, a 100 MW lithium-ion battery energy storage system (BESS), and new transmission line infrastructure. Alternative A also involves the Ridgeline Expansion Project, consisting of a new 122-mile natural gas pipeline, compressor station, and metering and regulation facilities to be constructed, owned, and operated by East Tennessee Natural Gas, LLC (ETNG). Alternative A will achieve the purpose and need to have firm, dispatchable replacement generation to meet capacity system demands, particularly peak load events, by the end of 2027 when KIF is retired. Alternative A will also facilitate the integration of additional solar and battery storage resources elsewhere on TVA's system, which is part of

TVA's overall asset planning that includes the deployment and installation of up to 10,000 MW of solar by 2035.

FOR FURTHER INFORMATION CONTACT: Brittany Kunkle, NEPA Compliance Specialist, Tennessee Valley Authority, 400 W. Summit Hill Dr, WT11B-K, Knoxville, Tennessee 37902; telephone 865-632-6470; email brkunkle@tva.gov. The Final EIS, this Record of Decision, and other project documents are available on TVA's website at https://www.tva.gov/nepa.

SUPPLEMENTARY INFORMATION:

This notice is provided in accordance with the National Environmental Policy Act (NEPA), as amended (42 U.S. Code [U.S.C.] §§ 4321 et seq.), the Council on Environmental Quality's regulations for implementing NEPA (40 Code of Federal Regulations (CFR) 1500 through 1508, as updated April 20, 2022), and TVA's NEPA procedures (18 CFR 1318). TVA is a corporate agency and instrumentality of the United States that provides electricity for 153 local power companies serving approximately 10 million people as well as directly served commercial, industrial, and government customers in the Tennessee Valley—an 80,000-square-mile region comprised of Tennessee and parts of Virginia, North Carolina, Georgia, Alabama, Mississippi, and Kentucky. TVA receives no taxpayer funding and derives virtually all its revenue from the sale of electricity. In addition to operating and investing revenues in its power system, TVA provides flood control, navigation, and land management for the Tennessee River watershed, and provides economic development and job creation assistance within the TVA Power Service Area.

Planning Basis and Assumptions

In 2019, TVA completed its Integrated Resource Plan (IRP) and associated Final EIS. The IRP identified various energy resource options that TVA may pursue to meet the energy needs of the Tennessee Valley region over a 20-year planning period. The Preferred Alternative aligns with the 2019 IRP, which guides future generation planning consistent with TVA's congressionally mandated least-cost planning principles. Following the completion of TVA's 2019 IRP and to inform long-term planning, TVA began conducting end-of-life evaluations of its operating coal-fired generating plants not already scheduled for retirement. This evaluation confirmed that TVA's aging coal fleet is among the oldest in the nation and is experiencing deterioration of material condition and performance challenges. The performance challenges are projected to increase because of the coal fleet's advancing age and the difficulty of adapting the fleet's generation within the changing generation profile that integrates increased renewables. Additionally, the continued, long-term operation of TVA's coal plants, including KIF, may increase environmental, economic, and reliability risks, and the aging infrastructure at KIF, built between 1951 and 1955, exacerbates these risks.

KIF is situated on the 2,254-acre Kingston Reservation on the Clinch and Emory rivers in Harriman, Roane County, Tennessee. As TVA continues to transition the rest of its fleet to cleaner and more flexible technologies, KIF will continually be challenged to operate reliably. In accordance with the recommendations in the 2019 IRP, TVA conducted end-of-life evaluations for its aging coal fleet and concluded that retiring TVA's entire coal fleet by 2035 would align with least-cost planning and reduce economic, reliability, and environmental risks. TVA also developed planning assumptions for the retirement of all TVA coal units by 2033 and sequencing the retirement of TVA's coal fleet and the

construction of necessary replacement generation. For the nine coal-fired units at KIF, TVA's planning identified retirement by the end of 2027 as the optimal timeframe.

The nine-unit, coal-fired plant has a summer net generating capacity of 1,298 MW, a reduction from the facility's design capacity (1,700 MW) resulting from the effects of aging equipment and long-term fuel blend changes. As TVA's generating fleet has evolved, primarily driven by additions of nuclear, gas, and renewable resources over the past 10 to 15 years, the need for KIF to operate at full capacity has decreased. This has resulted in more frequent cycling of KIF units to meet fluctuating loads. However, KIF was not designed for these types of operations, which presents reliability challenges that are difficult to anticipate and expensive to mitigate.

Further, a significant monetary investment would be required to comply with the requirements of the 2020 Effluent Limitation Guidelines (ELGs) and other environmental regulations. Continued operation of KIF beyond 2027 would create operational, and therefore reliability risks in TVA's system due to the deteriorating condition of the coal units. In addition, operation of the KIF Plant beyond 2027 is likely to result in cascading delays for the later planned retirements in TVA's phased 2035 coal fleet retirement plan and cause delay in TVA's plans to integrate more solar and storage assets onto the system. Thus, KIF was recommended for retirement by the end of 2027.

Replacement generation for KIF must provide at least 1,500 MW of firm, dispatchable power, capable of providing year-round generation and meeting peak capacity demands, as well as capacity for observed and anticipated future load growth in the Tennessee Valley. Replacement generation needs to be operational prior to the retirement of the nine KIF coal-fired units by the end of 2027. An additional consideration was the

location of KIF on the transmission system, specifically the 161-kilovolt system near the Knoxville load center, making KIF an integral part of the system's power flows and stability. The replacement generation must continue to maintain the planning reserve margins and to provide transmission system voltage support to the local area that is needed to maintain overall system stability and reliability.

As with other utilities across the nation, TVA has an active interconnection queue with close to 30,000 MW of generation currently in the queue. Over 15,000 MW of that is solar or solar and storage. While the interest in interconnecting generation is robust, a significant portion of those projects are non-viable, speculative projects that require significant transmission upgrades, or are not cost competitive. Renewable projects in the queue tend to be located in areas that are more suitable for solar, such as West Tennessee, North Alabama, and North Mississippi, not in the East Tennessee region where KIF is located. The queued projects are not capable of meeting the purpose and need to support generation in the East Tennessee region and to provide replacement capacity by the end of 2027.

TVA prepared a Final EIS pursuant to NEPA to assess the environmental impacts associated with retiring and demolishing the nine KIF coal-fired units and constructing and operating the replacement generation.

Alternatives Considered

TVA considered various resource types for replacement generation as a result of retiring the nine units at KIF, see Final EIS Section 2.1.5. To meet the stated purpose and need for the proposed action, the alternatives considered were required to be mature, proven technologies, capable of being constructed, and operating by the end of 2027. TVA

assessed in detail a No Action Alternative and two action alternatives. Under both action alternatives, the nine KIF coal-fired units would be retired, decommissioned, and demolished, and the retired generation would be replaced with at least 1,500 MW of new capacity. The Final EIS also evaluated related actions associated with the gas supply and transmission components of the respective alternatives. The alternatives considered by TVA in the Draft and Final EIS are:

No Action Alternative—Under the No Action Alternative, TVA would not retire the nine KIF coal-fired units. These units would continue to operate as part of the TVA generation portfolio. For the existing units to remain operational, additional construction, repairs, and maintenance would be necessary to maintain reliability and to comply with applicable regulatory requirements, such as the ELGs under the Clean Water Act (CWA). Under the No Action Alternative, TVA would not construct new replacement generation. The costs of implementing the No Action Alternative could require potentially significant rate increases, which would disproportionately impact low-income Environmental Justice (EJ) populations. Based on the age, material condition, upgrades required for current or future environmental compliance and investment costs required to ensure reliability of KIF, this alternative does not meet the purpose and need of TVA's proposed action.

Alternative A—TVA's Preferred Alternative is the retirement of KIF, decommissioning and demolition of the nine KIF coal-fired units, and the addition of at least 1,500 MW of replacement generation through the construction and operation of a natural gas-fueled CC plant combined with 16 dual-fueled aero CTs, a 3 to 4 MW solar site, a 100 MW BESS, and a new 161-kilovolt switchyard on the Kingston Reservation.

The CC/aero CT Plant and associated Alternative A components would occupy approximately 505 acres of the Kingston Reservation and in the East Tennessee region.

Off-site transmission upgrades needed for initiating operations of the new gas plant would be completed during construction of the CC/aero CT Plant. These upgrades would be required to support resiliency, reliability, and the electrical capacity of the off-site transmission lines. Upgrades would include uprating, reconductoring, or rebuilding transmission lines within existing right-of-way, as well as replacing terminal equipment, bus work, and/or jumpers. As described in the Final EIS Section 2.1.3.5, four transmission lines on the Eastern Transmission Corridor and one transmission line on the Western Transmission Corridor would require upgrades.

Natural gas would be supplied to the CC/aero CT Plant by ETNG's Ridgeline Expansion Project, if approved by the Federal Energy Regulatory Commission (FERC). For the Ridgeline Expansion Project, ETNG proposes to construct and operate a new natural gas pipeline primarily adjacent to ETNG's existing pipeline system's line number 3100. ETNG's Ridgeline Expansion Project would consist of the construction of approximately 122 miles of new 30-inch natural gas pipeline, a 14,600-horsepower electric motor drive compressor station, and other gas system infrastructure to connect the CC/aero CT Plant to the pipeline. The Ridgeline Expansion Project would include a permanent pipeline easement and adjacent temporary workspace which would cross portions of Trousdale, Smith, Jackson, Putnam, Overton, Fentress, Morgan, and Roane counties, Tennessee. The pipeline requires approval by FERC through the issuance of a Certificate of Public Convenience and Necessity under Section 7 of the Natural Gas Act. ETNG has submitted an application for certification of the pipeline to FERC. The Ridgeline

Expansion Project (FERC Docket No. CP23-516-000 and amended CP23-516-001) was the subject of a Notice of Intent (NOI) to prepare an EIS issued by FERC on September 22, 2023 (88 FR 65383), and was amended on December 18, 2023 (89 FR 6108). Details of the pipeline and its potential environmental impacts, provided in resource reports prepared by ETNG, were independently evaluated by TVA and are incorporated into TVA's Final EIS.

Alternative A would meet TVA's project purpose and need to provide at least 1,500 MW of firm, dispatchable power to replace the retiring nine KIF coal-fired units by the end of 2027.

Alternative B—Under this alternative, the nine KIF coal-fired units would be retired, decommissioned and demolished, and the necessary replacement power would be supplied through the construction and operation of 1,500 MW of utility-scale solar and 2,200 MW of BESS facilities. These facilities would be located at numerous sites totaling approximately 10,950 acres for the solar facilities and up to 825 acres for the BESS facilities, with portions located in East Tennessee. To maintain stability on TVA's transmission system, TVA would need to accommodate the decreased influx of generated power from KIF as well as ensure that the multiple (15+) solar generating locations can be connected without impacting the existing grid for the areas surrounding the new solar sites. In addition to on-site transmission upgrades and off-site upgrades to existing transmission lines and substations described in Alternative A, each solar and BESS facility would also require the construction of an interconnection to the TVA transmission system.

Based on TVA's experience with interconnections, approximately 5.4 years or greater are generally required to bring a solar interconnection to commercial operation. For the solar and battery resources under Alternative B, it would take approximately 8.4 years

to bring those resources online in the Knoxville area following completion of site identification and acquiring control of the site (the timeline for identification and acquisition of sites is hard to predict). This long timeframe would not allow the replacement power for KIF to be online for several years after KIF's retirement in 2027, compounding the operational, reliability, and environmental risks. A blended alternative that combines a smaller gas plant with a solar and BESS scenario to support the retirement of the KIF Plant is not a viable alternative as it would not resolve the transmission-related challenges described above nor meet the purpose and need to have firm dispatchable power by the end of 2027.

Alternative B would also require a large number of solar panels, approximately 3.8 million panels, based on the projected 10,950 acres required to generate 1,500 MW. Recent supply chain delays in securing solar panels challenge the ability to obtain the projected volume of solar panels in time to complete Alternative B by the end of 2027. While the Inflation Reduction Act incentivizes the transition of the solar supply chain to the U.S., it is projected that it will take 3 to 5 years for the domestic supply chain to mature and ease the current constraints on the solar industry. TVA's review of the 2023 Solar Energy Industries Association affirms this finding. Thus, TVA's Final EIS solar price and supply chain assumptions are valid and are informed by recent market offers, which remain elevated due to supply chain risks.

Preferred Alternative

TVA identified Alternative A as the Preferred Alternative in both the Draft and Final EISs. Alternative B would not fully meet TVA's project purpose and need because it would not provide 1,500 MW of firm, dispatchable replacement generation and could not

be constructed and operational prior to the proposed retirement and decommissioning of the nine KIF coal-fired units by the end of 2027. Alternative A is the best overall solution to provide low-cost, reliable energy to TVA's power system and could be built and made operational sooner than Alternative B, thereby reducing economic, reliability, and environmental risks. Alternative A meets the purpose and need of the proposed action, particularly its ability to provide replacement generation that can supply at least 1,500 MW of firm, dispatchable power by the end of 2027 to support the retirement and decommissioning of the KIF coal-fired units. This replacement aligns with the 2019 IRP near-term actions to evaluate engineering end-of-life dates for aging generation units to inform long-term planning and to enhance system flexibility to integrate renewables and distributed resources. Alternative A is consistent with the need set forth in the 2019 IRP to establish new capacity in TVA's region and increase reliability and flexibility, as well as meet near-term TVA energy production goals. It is also consistent with the target supply mix, reflecting the application of least-cost planning principles, adopted by TVA in its 2019 IRP. Replacement of coal-fired generation at KIF with a CC/aero CT Plant is the best overall solution to provide low-cost, reliable, and cleaner energy to TVA's power system. In addition to enabling the integration of renewables, the Preferred Alternative includes a renewable energy component that can be accommodated on the Kingston Reservation and would replace the retired generation with an energy complex that includes natural gas, 3-4 MW of solar, and 100 MW of battery storage–a first-of-its-kind complex for TVA.

TVA prefers Alternative A because the CC/aero CT Plant will provide the operational flexibility needed to support reliably integrating up to 10,000 MW of solar onto the TVA system by 2035 and will also enable the KIF coal-fired units to be retired by the

projected end-of-life estimates for those units and before significant water treatment and other investments become necessary under recent and anticipated new regulations such as the ELGs. In contrast, Alternative B would not provide firm, dispatchable power needed to maintain system reliability by 2027. The construction of multiple solar and storage facilities, as well as their associated transmission system interconnections, would not be feasible to complete by the end of 2027 based on current transmission project and construction timelines.

Summary of Environmental Effects

The anticipated environmental impacts of the No Action Alternative and the two action alternatives are described in detail in the Final EIS and summarized in Table 2.2-1, and this section summarizes the actions and impacts that would occur under the various alternatives.

No Action Alternative—The No Action Alternative would avoid the impacts of constructing and operating new generating facilities, an associated gas pipeline, and on-site transmission system connections. However, for the existing nine KIF coal-fired units to remain operational given their ongoing performance challenges, additional construction, repairs, and maintenance activities would be necessary to maintain reliability and compliance with applicable regulatory requirements. These performance challenges would result in moderate, adverse, and permanent impacts to utilities; thus, the No Action Alternative could have minor negative financial impacts on ratepayers due to the potential need for rate increases to help pay for the costs to operate and maintain the KIF's coal-fired units, which could have a greater disproportionate impact on low-income EJ populations.

KIF's continued operation would continue to produce relatively large quantities of air emissions under the existing Title V permit, including greenhouse gases (GHGs), as well as wastewater discharges and solid wastes from coal combustion. Any increases in local ambient air temperatures due to climate change could increase the temperature of raw water used to cool plant equipment thereby reducing plant efficiency and increasing the risk of the occurrence, magnitude, and frequency of exceedances of thermal discharge limits in KIF's National Pollutant Discharge Elimination System (NPDES) permit and potentially triggering additional permit requirements under CWA 316(a). The withdrawal of raw water at the KIF cooling water intake structure for non-contact cooling of plant equipment would need to continue, which results in potential adverse effects to aquatic life from entrainment and impingement mortality, and potentially triggering additional permit requirements under CWA 316(b).

Retirement and Demolition of KIF—Under both action alternatives, the nine KIF coal-fired units would be retired, decommissioned, and demolished. These actions will have a minor and temporary adverse effect on the following resources: aquatic life, soils, surface water, groundwater, air quality and GHGs, natural areas, parks and recreation, land use, transportation, waste management, public health and safety, noise, and visual effects. If retirement and demolition activities must be located in floodplains, these activities would be considered temporary uses and would have no permanent impacts. EJ and socioeconomic effects may be offset by temporary employment increases during demolition activities.

The retirement and demolition of KIF will have a permanent and beneficial effect on the following resources: water, air quality and GHGs, aquatic life, public health and

safety, and visual. There will be long-term beneficial effects from: reduced cooling water withdrawals and the reduction of wastewater discharges; reduction in emissions of GHGs, which benefits both air quality and public health and safety; viewshed improvement; and the elimination of water withdrawals and heated effluent discharge, which benefits aquatic life.

Alternative A TVA Actions—TVA's actions during construction under this alternative will have a minor and temporary adverse effect on the following resources: EJ, soils, prime farmland, floodplains, air quality and GHGs, natural areas, parks and recreation, transportation, waste management, public health and safety, socioeconomics, noise, and visual. A temporary increase in employment during construction activities will also occur, which may offset impacts on EJ communities and socioeconomic resources. The decommissioning and demolition of the KIF nine-unit, coal-fired plant is expected to have beneficial effects on local air quality, climate change, and reduce future regional GHG emissions that would be positive for EJ populations as well as the general population.

TVA's actions during operation under Alternative A will have an adverse effect on the following resources: geology, soils, prime farmland, floodplains, surface waters, wetlands, vegetation, wildlife, aquatic life, natural areas, parks and recreation, land use, transportation, waste management, and visual. The U.S. Fish and Wildlife Service (FWS) concurred that TVA's actions under Alternative A may affect but are not likely to adversely affect the gray bat, Indiana bat, or northern long-eared bat. This concurrence completes TVA's obligations under Section 7 of the Endangered Species Act. TVA's Final EIS, Table 3.824 referenced preliminary Endangered Species Act (ESA) determinations made or pending consultation by ENTG for construction of the natural gas pipeline right of

way. TVA updates and incorporates by reference the assessment of impacts on threatened or endangered species, as presented in the Revised Biological Assessment for East Tennessee Natural Gas, LLC's Ridgeline Expansion Project filed March 11, 2024 (FERC Docket No. CP23-516, accession no. 20240311-5269).

TVA actions under Alternative A will have a permanent and beneficial effect on the following resources: air quality and GHGs, utilities, and public health and safety. Alternative A will advance TVA's Strategic Intent and Guiding Principles to execute a plan to 70 percent carbon reduction by 2030, develop a path to 80 percent reduction by 2035, and aspire to achieve net-zero carbon reduction by 2050, all of which supports recent federal GHG reduction policies and guidance. TVA completed a comparative analysis of GHG and Social Cost of GHG (SC-GHG) of the No Action and Action Alternatives, using methods consistent with the 2023 National Environmental Policy Act Interim Guidance on Consideration of Greenhouse Gas Emissions and Climate Change developed by the Council on Environmental Quality. On a TVA system-wide basis, the estimated total Alternative A life cycle social costs of GHG emissions in comparison to the No Action Alternative, i.e., net savings/benefit, ranges from approximately $398 million to $4.34 billion in nominal dollars. Due to disparate scientific, economic, and legal positions on SC-GHG rates and their application in determining the SC-GHG, the analysis presented in this Final EIS provides a SC-GHG range based on federal government published SC-GHG documents (e.g., Biden Administration SC-GHG rate, Trump Administration SC-GHG rate, Interagency Working Group figures, or other federal government agency policy or Executive Orders).

Although the U.S. Environmental Protection Agency (EPA) has not yet issued a final rule for New Source Performance Standards for GHG Emissions from New, Modified, and Reconstructed Fossil Fuel-fired Electric Generating Stations, TVA has incorporated a sensitivity analysis of the potential impacts of the Proposed Rule in the evaluation of the No Action and Action Alternatives presented in the Final EIS Appendix B. The construction and operation of the KIF replacement generation would be consistent with the requirements of any final rules promulgated by the EPA under Section 111 of the Clean Air Act. The Proposed Rule is discussed further in Final EIS Section 2.1.5.4. Appendix B includes a sensitivity analysis that covers estimated impacts of the Proposed Rules. The GHG Proposed Rule sensitivity analysis takes a conservative approach and does not include tax incentives for carbon capture and storage for the No Action Alternative or Alternative A. EPA's Proposed Rule does not address solar and storage facilities under Alternative B. Based on this sensitivity analysis, Alternative A is still the lowest cost alternative, even after accounting for the cost of carbon capture and storage or hydrogen co-firing that may be applicable to the CC/aero CT plant in a final rule.

To fulfill its obligations under Section 106 of the National Historic Preservation Act, TVA completed consultation with the Tennessee State Historic Preservation Officer (SHPO) and federally recognized Indian tribes regarding potential project-related effects to cultural resources from TVA's actions under Alternative A. The Tennessee SHPO agreed with TVA's findings under Section 106 and none of the consulted tribes objected. Thus, TVA's actions under Alternative A will have no effect on the only recorded National Register of Historic Places (NRHP)-eligible archaeological site within the CC/aero CT Plant site.

ETNG Actions—Under Alternative A, ETNG would construct and operate a new natural gas pipeline as part of the Ridgeline Expansion Project. ETNG's actions would have a minor and temporary adverse effect on the following resources during construction: soils, floodplains, surface waters, air quality and GHGs, vegetation, aquatic life, natural areas, parks and recreation, land use, transportation, waste management, public health and safety, socioeconomics, and noise. A temporary increase in employment during construction activities would also occur which may offset temporary adverse effects on socioeconomic resources. There are seven NRHP-eligible archaeological sites that require further evaluation prior to construction to determine if they would be adversely impacted by construction activities.

ETNG operations would have an adverse effect on the following resources: EJ, geology, soils, prime farmland, wetlands, air quality and GHGs, vegetation, wildlife, land use, socioeconomics, and visual resources. Moderate effects would occur to soils due to placement of fill and land use due to conversion of hay/pasture, forest, and open space to industrial use. ETNG's operation actions would have a permanent and beneficial effect on utilities and public health and safety as described for Alternative A TVA actions. Effects of the natural gas pipeline on climate change would be minor. ETNG's Ridgeline Expansion Project requires approval by FERC through the issuance of a certificate of public convenience and necessity and for related authorizations under Section 7 of the Natural Gas Act. FERC will issue an EIS with its findings prior to making a decision on the Ridgeline Expansion Project.

Alternative B TVA Actions—For many environmental resources, the potential impacts of TVA's actions under Alternative A as described above are comparable to

Alternative B. Alternative B would be unlikely to affect natural areas, parks and recreation, and cultural resources. Anticipated temporary and beneficial socioeconomic effects under Alternative B include an increase to local population numbers and local employment, indirect effects to the local economy, and long-term and beneficial effects to the local tax base. Specific impacts would be evaluated through reviews for individual solar and storage facilities. Alternative B reflects an estimated $2.26 billion of SC-GHG savings relative to the No Action Alternative, approximately $417 million more savings than Alternative A. In comparison to Alternative B, Alternative A has higher estimated GHG life cycle emissions and associated estimated future social costs. However, Alternative B would not fully meet the project purpose and need to provide 1,500 MW of replacement generation by 2027. And even accounting for updated pricing as a result of the Inflation Reduction Act, Alternative B is estimated to cost approximately $1 billion more than Alternative A in project costs, which include capital, transmission, and production costs.

Similar to Alternative A, increases in flooding events and severity and extended drought conditions are not expected to have an effect on the physical infrastructure or operations under Alternative B. However, extended heat waves would reduce the efficiency of photovoltaic facilities and the amount of electricity they generate and would also reduce the efficiency of storage facilities by increasing their cooling system energy requirements.

Environmentally Preferable Alternative

While the No Action Alternative would avoid the impacts of constructing and operating new generating facilities and associated gas pipeline and transmission system connections, it would continue to produce relatively large quantities of air pollutants,

including GHGs, from the continued operation of the nine KIF coal-fired units, as well as wastewater discharges and solid wastes from coal combustion.

When comparing the environmental impacts of the two action alternatives, Alternative A would be environmentally preferable for certain resources, whereas Alternative B would be environmentally preferable for other resources. Alternative A would have fewer environmental impacts in terms of land use, prime farmland, stream and wetland conversion, visual, and soil impacts. Alternative B would have fewer environmental impacts in terms of surface water, air quality, GHGs, climate change, public health and safety, and noise impacts. For both Alternatives A and B, the intensity of impacts for certain resources are relatively similar, including for EJ communities, floodplains, geology, aquatic, wildlife, and ecological habitat loss and conversion, natural areas and parks and recreation, utilities, cultural resources, socioeconomic resources, and hazardous waste.

Thus, there are important environmental tradeoffs between Alternative A and Alternative B that TVA has considered. While Alternative A would result in lower GHG life cycle emission reductions, Alternative B would require significantly greater land use conversions in the region. No clear environmentally preferred alternative emerges from the comparison. Ultimately, however, Alternative A is the only alternative that would fully meet the project purpose and need to provide 1,500 MW of firm, dispatchable power by 2027 needed to ensure system reliability.

Public Involvement

TVA initiated a 30-day public scoping period on June 15, 2021, when it published a NOI in the *Federal Register* announcing the preparation of an EIS (85 FR 31780, June 15,

2021). TVA also announced the project and requested public input in news releases; on its website; in notices printed in relevant area newspapers and news websites; in flyers which were handed out in the general area of the plant; and in letters to federal, state, and local agencies and federally recognized Indian tribes. TVA held a live virtual public scoping meeting on June 29, 2021, and hosted a virtual meeting room with project information for the duration of the scoping period. TVA received approximately 56 scoping comments, a form letter from Sierra Club with 583 signatories, and a petition from Energy Alabama with eight signatories. These comments were carefully considered during the preparation of the EIS. The National Park Service, in its comments on the NOI for the scoping of the Kingston action, requested to be a cooperating agency in the preparation of the Final EIS. TVA granted this request. Additionally, TVA invited the EPA to be a cooperating agency, and EPA has served as a cooperating agency for this EIS.

The NOA of the Draft EIS was published in the *Federal Register* on May 19, 2023, initiating a 45-day public comment period that ended on July 3, 2023 (88 FR 32215, May 19, 2023). The availability of the Draft EIS and request for comments were announced on the TVA website; in regional and local newspapers; in a news release; in locally sent postcards; in electric bill mailers; in flyers handed out at commodity distribution and other local community events; and in letters to local, state, and federal agencies and federally recognized tribes. TVA contacted local officials and leaders, schools, and community action organizations in the KIF project area. TVA held a virtual public meeting and two in-person public meetings in Rockwood and Kingston, Tennessee during the Draft EIS comment period.

TVA received 602 comments on the Draft EIS, with one form letter containing approximately 4,350 signatures. A large portion of comments generally supported the retirement of the nine KIF coal-fired units but opposed Alternative A and preferred Alternative B; however, there was also significant support for Alternative A and the No Action Alternative. TVA carefully reviewed all substantive comments and, where appropriate, revised the text of the EIS to address the comments and issued the Final EIS. The submitted comments and TVA's responses to them are included in Appendix D to the Final EIS.

The NOA for the Final EIS was published in the *Federal Register* on February 23, 2024 (89 FR 13717). Following publication of the Final EIS, and therefore outside of the comment period, TVA staff and the Board of Directors received several hundred comment submissions, many of which were submitted through form letters, primarily from individuals in support of the retirement of KIF and a renewable replacement generation. These comments were addressed by TVA in Section 2.1.5 of the Final EIS, which considered a renewable generation option to replace the generation from the nine retiring KIF units.

Following the publication of the NOA for the Final EIS, and therefore outside of the comment period for the EIS, TVA received additional public comments in March 2024, including a comment letter from the EPA. The comments raised in the letters post-dating the Final EIS largely reiterated earlier comments on the Draft EIS and did not raise new issues of relevance that were not already addressed by TVA in the Final EIS or Appendix D of the Final EIS.

On March 25, 2024, EPA submitted comments in accordance with section 309 of the Clean Air Act and section 102(2)(C) of NEPA. EPA is also a cooperating agency on this project. Many of these comments were raised during EPA's cooperating agency review of the Draft EIS and the Final EIS. TVA responded as discussed in Appendix L of the Final EIS. TVA gave further consideration to EPA's section 309 letter and TVA's responses are included in the administrative record.

Decision

TVA certifies, in accordance with 40 CFR 1505.2(b), that the agency has considered all of the alternatives, information, analyses, material in the record determined to be relevant, and comments submitted by Federal, State, Tribal and local governments and public commenters for consideration in developing the Final EIS.

TVA has decided to implement the Preferred Alternative identified in the Final EIS: Alternative A, to retire, decommission, and demolish the nine KIF coal-fired units, and to install at least 1,500 MW of replacement generation capacity through the construction and operation of a natural gas-fired combined cycle plant, 16 dual-fired aero-derivative CTs, a 3 to 4 MW solar site, and a 100 MW BESS at the Kingston Reservation. This alternative best achieves TVA's purpose and need to retire the nine KIF units and to replace the generation from those retired units with firm, dispatchable power by the end of 2027 to maintain system reliability.

Mitigation Measures

TVA will employ standard practices and routine measures and other project-specific measures to avoid, minimize, and mitigate adverse impacts from implementation of Alternative A. Certain minimization and mitigation measures were provided by the

Tennessee Department of Environment and Conservation (TDEC) as recommendations regarding demolition materials in lieu of open burning, such as beneficial reuse or transport to a recycling facility or landfill; general permitting; and best management practice (BMP) guidance regarding cultural, air, and water resources.

TVA will implement minimization and mitigation measures that have been developed with consideration of BMPs, permit requirements, TDEC recommendations, and adherence to erosion and sediment control plans. TVA will utilize standard BMPs to minimize erosion during construction, operation, and maintenance activities. These BMPs are described in *A Guide for Environmental Protection and BMPs for TVA Construction and Maintenance Activities – Revision 4* and the *Tennessee Erosion and Sediment Control Handbook*. Additionally, TVA will incorporate, as appropriate, environmentally beneficial features, such as pollinator habitat, at the Kingston Reservation in the future.

ETNG has identified numerous mitigation measures for the construction and operation of the 122-mile natural gas pipeline, which include many of the standard practices to comply with environmental laws and regulations, including, but not limited to, FERC's Regulations Implementing the National Environmental Policy Act (18 CFR Part 380)–Transportation of Natural Gas and Other Gas by Pipeline: Minimum Federal Safety Standards, the FERC Plan and the FERC Procedures or under FERC-approved deviations, FERC Guidance for Horizontal Directional Drill Monitoring, Inadvertent Return Response, and Contingency Plans (49 CFR Part 192).

In association with Alternative A, TVA would employ standard practices and specific routine measures to avoid and minimize effects to resources. During development of the Final EIS, TVA has adopted all practicable means to avoid or minimize

environmental harm from Alternative A and commits to implementing the following minimization and mitigation measures and commitments listed in the Final EIS Section 2.3 in relation to potentially affected resources:

- Soils
    - Install silt fence along the perimeter of areas cleared of vegetation.
    - Implement other soil stabilization and vegetation management measures to reduce the potential for soil erosion during site operations.
    - Try to balance cut-and-fill quantities to alleviate the transportation of soils offsite during construction.
- Water Resources
    - TVA will continue to implement KIF Ash Pond Dredge Cell Restoration Project Phase III that includes restoration of the natural resources affected by the 2008 Ash Spill.
    - TVA will develop a project specific stormwater pollution prevention plan, as required under the General Permit for Stormwater Discharges Associated with Construction Activities, prior to beginning construction or demolition.
    - Perennial, intermittent, and ephemeral streams and wetlands that could be affected by the construction would be protected by implementing standard BMPs as identified in the project stormwater pollution prevention plan, TVA's BMP manual, and the Tennessee Erosion and Sediment Control Handbook. Direct, permanent effects to streams and wetlands would be permitted and mitigated under the CWA Section 404 permit and TDEC Aquatic Resources Alteration Permit/ CWA Section 401. In particular, TVA

will purchase mitigation credits within the Clinch, Emory, and Tennessee River watersheds, as appropriate and to the extent such credits are available within these watersheds. Should mitigation credits not be available within the primary or applicable secondary watersheds, TVA will pursue mitigation through in-lieu fee credit purchases or through permittee-responsible mitigation.

- Comply with the terms and water quality standards, as identified in the individual NPDES permit, for industrial wastewater discharge(s) by ensuring any process water discharge meets applicable effluent limits and water quality standards.
- Use TVA BMP procedures for controlling soil erosion and sediment control, such as the use of buffer zones surrounding perennial and intermittent streams and wetlands (impaired or high-quality designated water features may require larger buffer zones) and install erosion control silt fences and sediment traps.
- Implement other routine BMPs as necessary, including:
    - non-mechanical tree removal within stream and wetland buffers;
    - placement of silt fence and sediment traps along buffer edges;
    - selective herbicide treatment to restrict application near receiving water and groundwater features;
    - proper vehicle maintenance to reduce the potential for adverse effects to groundwater; and

        - use of wetland mats for temporary crossing, dry season work across wetlands, and no soil rutting of 12 inches or more in wetlands.

- Biological Resources
    - Revegetate with native and/or noninvasive vegetation consistent with Invasive Species Executive Order 13112, including species that attract pollinators, to reintroduce habitat, reduce erosion, and limit the spread of invasive species.
    - In areas requiring chemical treatment, only EPA-registered and TVA-approved herbicides would be used in accordance with label directions designed, in part, to restrict applications near sinkholes and caves and near receiving waters to prevent unacceptable aquatic effects. TVA would apply for coverage under TDEC's NPDES General Permit for Application of Pesticides prior to use of herbicides in aquatic environments.
    - Follow FWS recommendations regarding biological resources and pollinator species:
        - Use of downward and inward facing lighting to limit attracting wildlife, particularly migratory birds and bats;
        - Instruct construction personnel on wildlife resource protection measures, including applicable federal and state laws such as those that prohibit animal disturbance, collection, or removal, the importance of protecting wildlife resources, and avoiding unnecessary vegetation removal; and

        - Perform surveys of buildings prior to demolition to ensure they have not been colonized by bats or migratory birds. If bats are found, including those listed as threatened or endangered species, these buildings would not be demolished until one of two mitigation actions occurs: 1) bats are transitioned out of the buildings, or 2) consultation with FWS is completed (if federally listed species are observed). If active nests of migratory birds are present and demolition activities must occur within the nesting season, TVA would coordinate with FWS or the United Stated Department of Agriculture Wildlife Services, whichever is appropriate based on the species' federal status, to determine best options for carrying out demolition activities.
    - Should actions near nesting osprey rise to levels above normal routine disturbance typically encountered on the Kingston Reservation, U.S. Department of Agriculture Wildlife Services will be contacted to ensure compliance under federal law.
    - As practicable, TVA will endeavor to remove trees on the Kingston Reservation between November 15 and March 31 when listed bat species are not expected to be roosting in trees and when most migratory bird species of conservation concern are not nesting in the region. Likewise, TVA will endeavor, as practicable, to remove trees for the offsite transmission system upgrade activities between November 15 and March 31

for tree clearing activities occurring within 0.5 miles of known bat hibernacula.

  - For those activities with potential to affect listed bats, TVA will commit to implementing specific conservation measures approved by FWS through TVA's updated programmatic consultation (May 2023) to ensure effects would not be significant. Relevant conservation measures that will be implemented as part of the approved project are listed in the bat strategy form provided in Appendix F to the Final EIS.
  - TVA will endeavor to sell any marketable timber generated from onsite clearing activities. Non-marketable timber may be cut and left in place in specified, non-wetland areas as a windrow BMP or may be chipped and used as sediment barriers or mulch.

- Cultural Resources
  - Keep access routes and construction activities outside of the 30-meter buffers surrounding any archaeological sites listed in eligible, or potentially eligible for listing, in the NRHP.
  - When access routes must be placed within such buffers, avoid modifications and use wetland mats and light-duty equipment when practicable.
  - Locate new structures and buildings at least one-half mile from, and out of view of, any NRHP-listed or eligible historic architectural structures, when practicable. When avoidance is not practical, mitigation will be performed in consultation with the SHPO.

    - Maintain vegetative screening (at least 100 feet in width) to prevent clear views from any NRHP-listed or -eligible above-ground resources, or from the Green-Mahoney Cemetery to the new facilities.

- Waste Management
    - Develop and implement a variety of plans and programs to ensure safe handling, storage, and use of hazardous materials.
- Public and Occupational Health and Safety
    - Implement BMPs for site safety management to minimize potential risks to workers.
- Transportation
    - Implement staggered work shifts during daylight hours and utilize a flag person during the heavy commute periods to manage construction traffic flow near the project site(s), if needed.
    - To mitigate the potential for effects to public safety, TVA will restrict or close roads in the vicinity should blasting be used to demolish the stack. No barge or boat traffic would be allowed in the area during the stack blasting activities.
    - TVA will work with the demolition contractor to create a detailed site-specific plan for any public road closures that will be distributed to affected parties, including emergency personnel.
- Noise
    - Minimize construction activities during overnight hours, where possible,

and ensure that heavy equipment, machinery, and vehicles utilized at the project site meet all federal, state, and local noise requirements.

- Visual
    - Use downward- and inward-facing lighting.
- Air Quality and GHG Emissions
    - Comply with local ordinances or burn permits if burning of vegetative debris is required and use BMPs, such as periodic watering, covering open-body trucks, and establishing a speed limit to mitigate fugitive dust.
    - Remove ash from the facilities for deconstruction and demolition, prior to removal of that facility, and implement dust control measures during demolition to prevent the spread of dust, dirt, and debris to minimize potential fugitive dust mobilization associated with explosive demolition. Dust control methods may include covering waste or debris piles, using covered containers to haul waste and debris, or wet suppression techniques. Wet suppression may include wetting of equipment and demolition areas and wetting unpaved vehicle access routes during hauling, which can reduce fugitive dust emissions from roadways and unpaved areas.
    - Maintain engines and equipment in good working order.
    - Comply with TDEC Air Pollution Control Rule 1200-3-8, which requires reasonable precautions to prevent particulate matter from becoming airborne. If necessary, emissions from open demolition areas and paved/unpaved roads could be mitigated by spraying water on the work areas and roadways to reduce fugitive dust emissions.

- Comply with the EPA mobile source regulations in 40 CFR Part 85 for on-road engines and 40 CFR Part 1039 for non-road engines, requiring a maximum sulfur content in diesel fuel of 15 ppm.
- Implement inherent (e.g., good combustion design and practice) and/or post-combustion (e.g., selective catalytic reduction, oxidation catalysts) emissions controls for each emissions unit, which will mitigate nitrogen oxides, sulfur dioxide, particulate matter 10 and 2.5, carbon monoxide, and volatile organic compounds.
- Meet 40 CFR Part 60, Subpart KKKK (NO_X and SO_2), and Subpart TTTT (GHGs), requirements for combustion turbines/electric generating units, including emissions monitoring and/or performance testing requirements, fuel and fuel sulfur monitoring requirements, and maintenance, recordkeeping, and reporting requirements. All combustion turbine exhaust stacks will be equipped with continuous emissions monitoring systems.
- Utilize efficient operation and maintenance techniques and leak detection to minimize sulfur hexafluoride emissions associated with transmission construction and upgrades.
- Monitor local air quality and meteorological conditions during construction and demolition activities, using AIRNOW or other applicable data source as appropriate. The U.S. Air Quality Index will be used to monitor local air quality conditions to inform decisions to reduce, or change the timing of, construction/demolition activities.

- Blasting/Explosives

- TVA will work to minimize one-time emissions of fugitive dust from facilities expected to produce large volumes (such as demolition of the stack) by working with the demolition contractor on a site-specific plan. The plan may use mitigation methods that include the treatment of fall zones, misting, and application of tackifier inside the stacks, or cleaning and removal of ash and other materials. The fall zones may have berms to reduce the lateral extent of the dust cloud. Also, a hardened berm near the base of the stack could act as a backstop to prevent rock and debris spreading from the base of the stacks during demolition.
- Some blasting may be required during the site preparation due to shallow rock. If blasting is required, the blasting contractor will complete a survey, develop a blast plan, and review with KIF as well as other TVA groups or projects who may have ongoing and unrelated projects in the area (i.e. Dam Safety and Civil Projects) to coordinate the limits of the vibration monitors/sensors for KIF generating units or other sensitive features. After obtaining site specific data provided by the blasting contractor, and if deemed necessary during development of the demolition plan, TVA would work with a documentation services company to prepare a vibration model simulating the effects of discharge of the explosives or vibrations due to the stack hitting the ground. If indicated by the results, imported fill, dirt binder, and geofabric could be used for mitigation of noise and vibration.
- During the construction planning process, TVA will determine mitigation measures to minimize potential effects to on-site power transmission

equipment from vibrations caused by explosive demolition of the stacks. Use of such mitigation measures would address any power disruptions.

- Explosives will be managed under the direction of a licensed blaster, 24-hour security will be provided to monitor the explosives, and detailed security plans will be developed and provided to area emergency response agencies as part of measures that will be taken to mitigate potential effects on the safety of personnel and the public. TVA will comply with all federal and state regulations applying to blasting and blast vibration limits regarding structures and underground utilities.

- Floodplains
  - Construction of new transmission lines will adhere to the TVA subclass review criteria for transmission lines located in floodplains.
  - KIF decommissioning and deconstruction debris will be disposed of outside 100- and 500-year floodplains.
  - For any access roads within 100-year floodplains but not floodways, the roads will be constructed such that flood elevations would not increase more than one foot.
  - For any roads within 100-year floodways, and to prevent an obstruction in the floodway, (1) any fill, gravel, or other modifications in the floodway that extend above the pre-construction road grade will be removed after completion of the project; (2) this excess material will be spoiled outside of the published floodway; and (3) the area will be returned to its pre-construction condition.

- Any switchyard(s) located in the floodplain will be located a minimum of one foot above the 100-year flood elevation at that location for a regular action, or a minimum of the 500-year flood elevation for a critical action, as well as be consistent with local floodplain regulations.
- The flood-damageable components of the solar panels, as well as other flood-damageable structures and facilities sited in floodplains, will be located at least one foot above the 100-year flood elevation at that location and will otherwise be consistent with local floodplain regulations.
- Outside the Kingston Reservation, in construction laydown areas, flood-damageable equipment or materials located within the 100-year floodplain will be relocated outside the floodplain during a flood.
- On the Kingston Reservation, in construction laydown areas, flood-damageable equipment or materials located within the 100-year floodplain will be relocated by the equipment owner to an area above elevation 750 during a flood.

- ETNG would implement the following mitigation measures to mitigate the impacts of construction and operation of the pipeline:
  - ETNG would follow the Karst Hazards Mitigation Guidance Plan submitted to FERC on July 18, 2023, with ETNG's Certificate application, which provides practical solutions to address typical karst features, hydrotechnical hazards, and steep slopes, where site-specific mitigation plans are deemed unnecessary.

- ETNG would conduct pipeline blasting during daylight hours, as feasible, and will not begin until occupants of nearby buildings, stores, residences, places of business and farms have been notified.
- ETNG will install the natural gas pipeline lateral through trenching or directional drilling, and any excess fill resulting from this would be disposed of outside 100-year floodplains.

TVA has incorporated non-routine mitigation measures into Alternative A such as solar and battery storage facilities and hydrogen fuel blending capabilities. Once constructed and operational, the renewable components will include the 3 to 4 MW solar facility and 100 MW lithium-ion BESS at the Kingston Reservation. Alternative A will be designed to be initially capable of blending 5 percent hydrogen at the time of construction, but would be capable of burning at least 30 percent hydrogen by volume with modification to the balance of the plant once a reliable hydrogen source is identified. If a reliable source of hydrogen is identified in the future, TVA would conduct additional analyses of supply routes, costs, storage requirements, or other needs to facilitate incorporation of hydrogen fuel and to determine the site-specific impacts associated with any future mitigation that is planned. These non-routine mitigation measures have been incorporated into Alternative A to plan for future regulatory requirements and operating conditions, which may necessitate the need for future mitigation efforts.

Authority: 40 CFR 1505.2.

Dated: April 2, 2024

Jeff Lyash,

President & Chief Executive Officer, Tennessee Valley Authority.