BILLING CODE 8120–08–P

TENNESSEE VALLEY AUTHORITY

Cumberland Fossil Plant Retirement Environmental Impact Statement

AGENCY: Tennessee Valley Authority.

ACTION: Record of Decision.

SUMMARY: The Tennessee Valley Authority (TVA) has made a decision to adopt the Preferred Alternative identified in the Cumberland Fossil Plant Retirement Final Environmental Impact Statement (EIS). The Notice of Availability of the Final EIS for the Cumberland Fossil Plant Retirement was published in the *Federal Register* on December 9, 2022. TVA's preferred alternative, Alternative A, involves the retirement and demolition of TVA's two-unit, coal-fired Cumberland Fossil Plant (CUF) and the construction and operation of a natural gas-fueled combined cycle (CC) plant on the CUF Reservation to replace the generation capacity of one of the two retired units. This least-cost alternative would achieve the purpose and need of the project to retire and decommission the two CUF units, one unit by the end of 2026 and the other unit by the end of 2028, and to provide replacement generation that can supply 1,450 megawatts (MW) of firm, dispatchable power by the time the first unit is retired by the end of 2026 to ensure that TVA is able to meet required year-round generation, maximum capacity system demands and planning reserve margin targets, particularly during peak load events.

FOR FURTHER INFORMATION CONTACT: Ashley Pilakowski, NEPA Project Manager, Tennessee Valley Authority, 400 West Summit Hill Drive, Knoxville, Tennessee 37902; telephone 865-632-2256; or email aapilakowski@tva.gov. The Final EIS, this

Record of Decision (ROD) and other project documents are available on TVA's website *https://www.tva.gov/nepa*.

SUPPLEMENTARY INFORMATION: This notice is provided in accordance with the Council on Environmental Quality's regulations for implementing the National Environmental Policy Act (NEPA) (40 Code of Federal Regulations (CFR) 1500 through 1508) and TVA's NEPA procedures (18 CFR 1318). TVA is a corporate agency of the United States that provides electricity for business customers and local power distributors serving 10 million people 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 revenues 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 Valley watershed and provides economic development and job creation assistance within the Service area.

In 2019, TVA completed its Integrated Resource Plan (IRP) and associated Final EIS. The IRP identified the various energy resource options that TVA intends to pursue to meet the energy needs of the Tennessee Valley region over a 20-year planning period.

Following the completion of the TVA 2019 IRP, TVA began conducting end-of-life evaluations of its operating coal-fired generating plants not already scheduled for retirement to inform long-term planning. This evaluation confirmed that the aging TVA coal fleet is among the oldest in the nation and is experiencing performance challenges as

well as deteriorating material condition. 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. The continued long-term operation of TVA's coal plants is contributing to environmental, economic, and reliability risks. CUF is the largest plant in the TVA coal fleet with a summer net generating capacity of 2,470 MW. CUF is situated on a 2,388-acre reservation on the Cumberland River in Cumberland City, Stewart County, Tennessee.

CUF was built between 1968 and 1973 and used primarily as baseload generation. As TVA's generating fleet evolved, primarily with the additions of nuclear, gas, and renewable resources over the past 10 – 15 years, there was less of a need for CUF to consistently operate at full power. This has resulted in frequent cycling of the large super-critical units or turning them on and off as needed to meet demand. The plant was not originally designed for this type of operation, which presents reliability challenges that are difficult to anticipate and expensive to mitigate. As TVA continues to transition the rest of its fleet to cleaner and more flexible technologies, CUF will continue to be challenged to reliably operate on this as-needed basis. Based on this analysis, TVA has developed planning assumptions for CUF retirement. These assumptions include retirement of both CUF units and the addition of at least 1,450 MW of firm, dispatchable generation to replace the generation capacity lost from retirement of one of the CUF units, which is in-line with the recommendations in the 2019 IRP. Replacement generation of this kind will allow TVA to replace the dependable capacity of the first unit as well as account for modest anticipated load increases. The replacement generation would need to be online prior to retirement of the first CUF unit by the end of 2026. Planning for the replacement generation for the

second retired CUF unit will be deferred to allow consideration of a broader range of replacement generation alternatives depending on system needs and the state of technology at the time replacement is needed.

TVA has prepared the Final EIS pursuant to NEPA to assess the environmental impacts associated with retiring and decommissioning the two coal-fired CUF units and constructing and operating the replacement generation for one of the retired units.

Alternatives Considered

TVA assessed a No Action Alternative and three action alternatives. Under all action alternatives, two CUF units would be retired and demolished. The three action alternatives assessed in the Final EIS provide at least 1,450 MW of replacement generation for one retired unit using one of the following: (1) construction and operation of a natural gas-fueled CC plant on the CUF Reservation (Alternative A); (2) construction and operation of natural gas-fueled simple cycle combustion turbine (CT) plants at two alternate locations (Alternative B); and (3) construction and operation of solar generation and energy storage facilities at alternate locations primarily in Middle Tennessee (Alternative C). 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 two CUF 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 comply with applicable regulatory requirements, such as the Effluent Limitation Guidelines under the Clean Water

Act (CWA). Under the No Action Alternative, TVA would not construct new replacement generation. Based on the age, material condition, and cost required to ensure reliability of CUF, this alternative does not meet the purpose and need of TVA's proposed action.

Alternative A – TVA's preferred alternative, Alternative A, involves retirement of CUF, demolition of the units, and construction and operation of a 1,450-MW natural gas-fueled CC plant on the CUF Reservation. The CC plant and associated 500-kilovolt (kV) switchyard and gas compression station would occupy approximately 196 acres. The 30-inch diameter gas pipeline to supply natural gas to the CC plant would be constructed and operated by Tennessee Gas Pipeline Company, L.L.C. (TGP) in a 100-foot-wide corridor adjacent to an existing TVA transmission line crossing portions of Dickson, Houston, and Stewart Counties, Tennessee.

The pipeline requires approval by the Federal Energy Regulatory Commission (FERC) through issuance of a Certificate of Public Convenience and Necessity under Section 7 of the Natural Gas Act. TGP has submitted an application for certification of the pipeline to FERC. The pipeline project, named the Cumberland Project, is FERC Docket No. CP22-493-000 and the subject of a Notice of Intent (NOI) to prepare an EIS issued by FERC on September 13, 2022. Details of the pipeline and its potential environmental impacts, provided in resource reports prepared by TGP and submitted to FERC, are incorporated into the TVA Final EIS.

Alternative B - Alternative B would provide the necessary replacement generation through the construction and operation of a 4-unit combustion turbine (CT) plant on TVA's Johnsonville reservation in New Johnsonville, Humphreys County, Tennessee, and a 3-unit CT plant on TVA's Gleason Reservation near Dresden in Weakley County, Tennessee. The

two CT plants would have a combined generating capacity of 1,530 MWs. The Johnsonville CT plant would occupy the site of a demolished coal plant and the Gleason CT plant site is relatively undisturbed. Both sites have an adequate existing natural gas supply. The Gleason CT plant would require the construction of a 40-mile, 500-kV transmission line and 500-kV substation in Weakley and Henry Counties, Tennessee.

Alternative C - Under Alternative C, the necessary replacement power would be provided by the construction and operation of 3,000 MW of solar photovoltaic generating facilities and 1,700 MW of battery energy storage facilities. Due to an average annual capacity factor of 25 percent for solar resources, in order to match the total energy output lost to the TVA system from the retirement of the first CUF unit, a higher nameplate capacity would be required for a solar resource than the 1,450 MW minimum resource requirement for a fully dispatchable resource, such as a CC or CT plant. These facilities would be located at numerous sites totaling approximately 22,000 acres for the solar facilities and 640 acres for the battery storage facilities that are primarily in Middle Tennessee. Each solar and storage facility would also require the construction of an interconnection to the TVA transmission system.

TVA identified Alternative A, the retirement of CUF and the construction and operation of a 1,450-MW natural gas-fired CC plant on the CUF reservation, as the preferred alternative in both the Draft and Final EISs. This was largely due to Alternative A best meeting the purpose and need of the proposed action, particularly its ability to provide replacement generation that can supply 1,450 MW of firm, dispatchable power by the time the first CUF unit is retired by the end of 2026. The replacement described in Alternative A aligns with the 2019 IRP near-term actions to evaluate engineering end-of-life dates for

aging generation units to inform long-term planning; enhance system flexibility to integrate renewables and distributed resources; increase reliability and resiliency; and meet near-term energy production goals. Alternative A costs approximately $1.8 billion less than Alternative C in project costs which include capital, fuel, transmission, and production costs. Financial and system analysis indicates that replacement of the first CUF unit with a CC plant is the best overall solution to provide low-cost, reliable, and cleaner energy for the TVA power system. TVA has also selected Alternative A because the proposed CC plant at CUF provides the flexibility needed to reliably integrate 10,000 MW of solar onto the system by 2035 and significantly reduces carbon emissions as compared to the No Action Alternative.

While the Alternative B replacement generation by the two CT plants could likely be constructed by the end of 2026, the planning, permitting, and construction of the associated 500-kV transmission line would be unachievable by the end of 2026. Likewise, for Alternative C, the construction of the multiple solar and storage facilities, as well as their associated transmission system interconnections, would be unachievable by the end of 2026.

Alternatives Considered Environmentally Preferable

The anticipated environmental impacts of the No Action Alternative and the three action alternatives are described in the Final EIS. For Alternative A, as noted above, the description of the anticipated impacts of the associated natural gas supply pipeline are based on information provided to TVA by TGP and will also be addressed in the EIS for the Cumberland pipeline project being prepared by FERC. For Alternative B, the route of the 40-mile, 500-kV transmission line and the location of the associated substation are

unknown at this time and their potential impacts are described generally based on impact assessments of previous TVA transmission projects. Similarly, the locations of the multiple solar and battery storage facilities for Alternative C are unknown at this time and the descriptions of their impacts are also described generally based on impact assessments of similar previous TVA projects. For several environmental resources, the differences in the impacts of the three action alternatives are negligible.

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, however, continue to produce relatively large quantities of air pollutants, including greenhouse gases, from continued operation of the CUF coal-fired plant, as well as wastewater discharges and solid wastes from coal combustion.

The Alternative A and Alternative B generating plants have been sited and designed to largely avoid or minimize impacts to water resources, including streams and wetlands. The Alternative A natural gas pipeline would require trenching across several streams, resulting in short-term, localized impacts. The Alternative B transmission line would likely also cross streams and possibly wetlands, although with minimal impacts. Adverse effect to a historic house listed on the National Register of Historic Places resulting from the construction of the Alternative A CC plant would be mitigated by TVA in accordance with a Memorandum of Agreement with the Tennessee State Historic Preservation Office (SHPO). The Alternative B transmission line and Alternative C solar and storage facilities would, to the extent feasible, be sited to avoid impacts to historic properties and any unavoidable impacts would be mitigated.

All of the action alternatives would affect land use and prime farmland. The various components of Alternatives A, B, and C would have long-term effects on the land use of approximately 585 acres, 1,000 acres, and 22,500 acres, respectively. For Alternatives A and B, the effects on prime farmland would largely occur during the construction of the pipeline and transmission line and long-term effects would be minimal. Based on past experience in developing solar facilities in the TVA region, a large proportion of the 22,500 acres occupied by Alternative C facilities would be prime farmland. Aside from potential use as pasture, the solar facility sites would be unavailable for agricultural production. The sites could, however, be returned to agricultural production with little loss of soil productivity following decommissioning of the solar facilities. A portion of the approximately 640 acres occupied by storage facilities would likely be farmland, which would be converted to industrial use.

All of the Alternative A, B, and C components have been or would be sited to minimize impacts to threatened and endangered species. Most impacts to listed species would be avoided although all alternatives would likely adversely affect habitat for tree-roosting threatened and endangered bats through the clearing of forest. The clearing of forest would also result in local adverse effects to other forest-dwelling wildlife.

For the Cumberland Final EIS, TVA completed its consultation under Section 7 of the Endangered Species Act (ESA) with the U.S. Fish and Wildlife Service (USFWS) on August 26, 2022. Since conclusion of that consultation, the USFWS reclassified the northern long-eared bat (NLEB) as “endangered” under the ESA on November 30, 2022. This reclassification becomes effective on January 30, 2023. Further, on September 13, 2022, the USFWS issued a proposed rule to list the tri-colored bat as “endangered” under

the ESA. TVA will ensure that project activities are conducted in a manner consistent with any protections established for the tricolored bat, and with the up-listing of the NLEB to "endangered" that will become effective on January 30, 2023 pursuant to the ESA and its implementing regulations.

Locally adverse impacts to visual resources would likely result from all of the action alternatives. The main sources of visual impacts from Alternatives A and B would be from the cleared right-of-way for the 32-mile natural gas pipeline associated with Alternative A and the cleared right-of-way and approximate 100-foot tall transmission structures and conductors for the 40-mile transmission line associated with Alternative B. The Alternative C solar and battery storage facilities would alter the scenery at multiple locations. Overall visual impacts are likely lowest under Alternative A.

Based on currently available site-specific information, effects experienced by environmental justice populations may be amplified, specifically for adverse effects to surface water, waste, safety, noise, transportation, and visual aesthetics under Alternative A; for adverse effects to recreation, air quality, transportation, waste, noise, and visual aesthetics under Alternative B; and for adverse effects to land use, vegetation, recreation, water resources, wildlife, transportation, noise, safety, and visual aesthetics under Alternative C. However, none of the action alternatives are likely to result in significant disproportionate adverse impacts to qualifying low-income and minority environmental justice populations. All of the action alternatives would have local beneficial impacts from employment during the construction of the generating and storage facilities. For Alternative C, this construction employment would be dispersed over a much larger area than for Alternatives A and B. The retirement of CUF, however, would likely result in an overall

decline in employment by plant operators, as the replacement facilities would require fewer employees.

All of the action alternatives would result in large decreases in emissions of air pollutants, including greenhouse gases (GHGs, ethane, nitrous oxide), compared to the No Action Alternative. Specifically, with respect to GHGs, TVA's primary analysis for GHG impacts is based on the use of "proxy emissions." This proxy analysis shows similar GHG impacts for all action alternatives. Despite uncertainties surrounding the use of Social Cost of GHGs (SC-GHG), TVA conducted a life cycle analysis using the SC-GHGs as a secondary analysis that could be given appropriate and due weight by the decision-maker. Under such a secondary GHG analysis, Alternative C generates, compared to the No Action Alternative, the most cost savings (approximately $4.8 billion), followed by Alternative A (approximately $4.4 billion), then followed by Alternative B (approximately $3.9 billion). In sum, all action alternatives would have a long-term beneficial impact to air quality and climate compared to the No Action alternative, with Alternative C resulting in the largest decrease of air emissions. Alternatives A and B facilitate future integration of solar on the grid, thereby advancing TVA's path towards reducing carbon emissions by about 80 percent by 2035. The difference in impacts to most other environmental and socioeconomic resources amongst all action alternatives is small, with the exception of impacts to land use and prime farmland that are potentially the greatest under Alternative C.

TVA notes that the 2019 IRP (Chapter 5) accounts for the resiliency of TVA's power system, detailing the annual outage rate assumptions for all selectable resources including CC, CT, solar and battery (Alternatives considered in the Final EIS). For plans

between IRPs, TVA regularly updates outage rates based on actual performance, and current planning assumptions remain largely consistent with those discussed in the IRP. Appendix D of the 2019 IRP explains how the reserve margin study approach and analysis captures uncertainty that arises due to weather, load forecast error, and plant outages. The decision evaluated in the Cumberland EIS falls within the parameters of the broader, comprehensive asset strategy established by the 2019 IRP, which considers the resiliency of TVA's entire power system. Similarly, the IRP's evaluation of risk and the required planning reserve constraints appropriate to account for risk are inherently part of the broader asset strategy with which this decision evaluation and analysis is aligned.

Public Involvement

TVA initiated a 30-day public scoping period on May 11, 2021, when it published the NOI in the *Federal Register* (86 FR 25933) announcing the preparation of an EIS for the retirement of CUF and construction and operation of facilities to replace part of the retired generating capacity. TVA also announced the proposal and requested comments on the proposal in news releases; on its website; in notices in CUF-area newspapers; and in letters to federal, state, and local agencies and federally recognized Indian tribes. TVA held a live virtual public scoping meeting on May 27, 2021, and hosted a virtual meeting room with project information for the duration of the scoping period. TVA received approximately 830 scoping comments, the majority of which were through a form letter campaign. These comments were carefully considered during the preparation of the EIS.

The Notice of Availability (NOA) of the Draft EIS was published by the U.S. Environmental Protection Agency (USEPA) in the *Federal Register* on April 29, 2022 (87 FR 25485), initiating a 45-day public comment period that ended on June 13, 2022. The

availability of the Draft EIS and request for comments was also announced on the TVA website; in regional and local newspapers; in a news release; 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 CUF area. TVA held a virtual public meeting and in-person public meetings in Cumberland City and Erin, Tennessee, during the Draft EIS comment period.

TVA received approximately 770 individual comments and 930 signatures on the Draft EIS, many of which were submitted through form letter campaigns. Most commentors generally supported the retirement of the CUF Plant but opposed Alternative A, Alternative B, or both. TVA carefully reviewed all of the substantive comments that it received and, where appropriate, revised the text of the EIS to address the comments. The submitted comments and TVA's responses to them are included in an appendix to the Final EIS. The USEPA, in its comments on the Draft EIS, requested to be a cooperating agency in the preparation of the Final EIS. TVA granted this request. After considering and responding to comments on the Draft EIS, TVA issued the Final EIS. The NOA for the Final EIS was published in the *Federal Register* on December 9, 2022 (87 FR 75625). 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 January 2023, including a comment letter from the USEPA. The USEPA reviewed the document in accordance with Section 309 of the Clean Air Act (CAA) and Section 102(2)(C) of NEPA. USEPA is also a cooperating agency on this project. The comments raised by the USEPA reiterated the agency's 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 O of the Final EIS, with

the exception of the resiliency of the considered Alternatives with respect to grid emergencies, which is addressed in the above section on "Alternatives Considered Environmentally Preferable."

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 objections submitted by 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 and demolish the two CUF coal units and construct a new natural gas-fueled, 1,450-MW CC plant at the CUF reservation. This alternative best achieves TVA's purpose and need to retire the two CUF units and to replace the generation from one of the retired units by the end of 2026.

Mitigation Measures

TVA would employ standard practices and routine measures and other project-specific measures to avoid, minimize, and mitigate adverse impacts from implementation of Alternative A. TVA would also implement minimization and mitigation measures based on best management practices (BMP), permit requirements, and adherence to erosion and sediment control plans. TVA would 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.

For those activities with potential to affect listed bats, TVA would commit to implement specific conservation measures previously approved by USFWS through TVA's programmatic consultation to ensure effects would not be significant. Relevant conservation measures that would be implemented as part of the approved project are listed in the bat strategy form (Appendix L of the FEIS) and include a commitment to remove trees 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.

TVA has committed to ensuring that the design of the Alternative A CC plant would enable and accommodate potential future modifications for carbon capture and the combustion of hydrogen as a replacement or supplemental fuel for natural gas, as and when these technologies mature to scale. The proposed CC plant would be designed to be 5 percent hydrogen capable at commissioning by adding balance of plant (BOP) equipment that includes areas for future hydrogen storage, appropriately sized piping, and a blending station during the original construction. TVA would also purchase a combustion turbine capable of burning at least 30 percent hydrogen, by volume, with modifications to the BOP once a hydrogen source is available. TVA would only consider burning hydrogen as a part of test burns or normal operations when it is commercially available at an acceptable chemical content that would reduce carbon emissions and be price-competitive in the market at that time.

It is important to note that once a viable option for future mitigation projects is identified, TVA would conduct additional analyses to determine proposed pipeline routes, costs, storage requirements, or other needs with hydrogen fuel incorporation. TVA would

analyze the site-specific impacts associated with any future mitigation that is planned as additional details become available.

Non-routine mitigation measures associated with cultural resources, specifically the historic Henry Hollister House, include adherence to the project specific MOA that has been executed for the Cumberland Retirement project. These mitigation measures include:

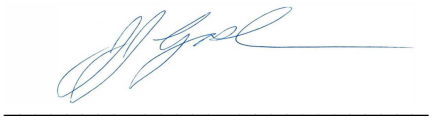
- Installation of a Tennessee Historical Marker
    - TVA will submit a proposal for a historical marker through the Tennessee Historical Commission's (THC's) Historical Markers Program; work with THC staff regarding eligibility of the proposed marker for the program and regarding the marker's location and text; and install the marker, at TVA's expense, in an appropriate location, accessible by the public, near the Hollister House. The historical marker will present a brief narrative of the history and historic significance of the Hollister House.
- Vegetative Screening
    - TVA will plant trees to screen views to the new facilities from the Hollister House.
    - TVA will create the vegetative screening using various tree species, including native species, and including both deciduous and evergreen species.
    - TVA will plant the vegetative screening on the south and east sides of the Hollister House, on TVA property.

    - TVA will maintain the vegetative screening for so long as TVA owns and operates the new CC plant, so that it may provide the visual screen in perpetuity.
- Study of Graveyard Hill Cemetery
    - TVA will complete a search for documents related to the Graveyard Hill Cemetery and the persons who may be buried there.
    - The archival study will endeavor to include (but will not necessarily be limited to) the following sources: birth and death certificates, marriage certificates, deeds, census data, records of sales in the slave trade, and obituaries.
    - TVA will also complete a delineation of the cemetery using one or more remote sensing methods and shall attempt to identify the boundaries of the cemetery and anomalies that could correspond to graves.
    - TVA will prepare a report of the investigations and submit them to SHPO for review and comment and provide a final report that addresses any comments received from SHPO/THC.
- Updating the Hollister House National Register of Historic Places NRHP Registration Form
    - TVA will update the Hollister House NRHP Registration Form, which was completed in 1987, with new information detailed in three historic architectural assessments performed between 2012 and 2022.
    - The new information will include details of the history of the property and the associated cemeteries (Brunson/Hollister Cemetery and Graveyard Hill

Cemetery), additional historic photographs, and information on the property's current condition, and the inclusion of any additional resources that TVA and SHPO agree in consultation are contributing resources to the Hollister House.

- TVA will provide the updated form to the THC for review, and upon approval, to the NPS.

Dated: January 10, 2023



Jeff Lyash

President & Chief Executive Officer

Tennessee Valley Authority