TENNESSE

Browns Ferry Nuclear Plant Subsequent License Renewal Project; Supplemental Environmental Impact Statement

AGENCY: Tennessee Valley Authority.

ACTION: Record of Decision.

SUMMARY: The Tennessee Valley Authority (TVA) has decided to adopt the Preferred Alternative identified in the Browns Ferry Nuclear Plant (BFN) Subsequent License Renewal (SLR) project Final Supplemental Environmental Impact Statement (Final SEIS). The Notice of Availability of the Final SEIS for the Browns Ferry Nuclear Plant Subsequent License Renewal project was published in the *Federal Register* on August 11, 2023. The Preferred Alternative, Alternative B – BFN Units 1, 2, and 3 Subsequent License Renewal, supports TVA's goal to continue to generate baseload power at the BFN site between 2033 and 2056, thus generating sufficient electricity to supply the Tennessee Valley with increasingly clean, reliable, and affordable electricity for the region's homes and businesses as outlined in TVA's 2019 Integrated Resource Plan (IRP).

FOR FURTHER INFORMATION CONTACT: J. Taylor Johnson, NEPA Compliance Specialist, Tennessee Valley Authority, 1101 Market Street, BR 2C-C, Chattanooga, Tennessee 37402; by telephone (423) 751-2732, or email at jtcates@tva.gov. The Final SEIS, 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 part 1318. TVA is a corporate agency and instrumentality 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 Alabama, Georgia, Kentucky, Mississippi, North Carolina, and Virginia. 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 Tennessee Valley power service area.

In March 2002 and June 2002, TVA issued a Final SEIS and a ROD for the operating license renewal of BFN. TVA submitted a License Renewal Application (LRA) to the NRC in December 2003 for a 20-year renewal of the operating licenses for each BFN unit. The environmental conclusions of the NRC Final SEIS did not differ from the TVA Final SEIS conclusions, and the NRC issued Supplement 21 regarding Browns Ferry Nuclear Plant Units 1, 2, and 3, to the Generic EIS (GEIS) for License Renewal of Nuclear Plants (NUREG-1437) in June 2005. The NRC issued operating license renewals for Units 1, 2, and 3 in May 2006, allowing continued operation of the three BFN units until 2033, 2034, and 2036, respectively.

In September 2015, TVA submitted a license amendment request (LAR) for extended power uprate (EPU) of all three units. The NRC issued a draft Environmental Assessment (EA) and Finding of No Significant Impact (FONSI) in the **Federal Register** on December 1, 2016, for public comment. On May 22, 2017, the NRC issued the Final EA and FONSI related to the EPU license amendment.

BFN's 3,900 MWe of electric generating capability provides power to the Tennessee Valley Power Service Area. The TVA service area obtains approximately 40 percent of its power from nuclear generation and BFN provides approximately half of that total. BFN's current baseload generation supports future forecasted baseload power needs, as outlined in the TVA's 2019 IRP, by helping to maintain grid stability and generating capacity for TVA's generation portfolio mix. TVA prepared the Final SEIS pursuant to NEPA to assess the environmental impacts associated with SLR for BFN Units 1, 2, and 3.

Alternatives Considered

TVA considered a wide range of options to identify feasible alternatives available to supply approximately 3,900 MWe between 2033 to 2056, and ultimately carried forward two alternatives for evaluation. The two alternatives considered by TVA in the Final SEIS are:

Alternative A – No Action. Under this alternative, TVA would not submit a SLR application to the NRC to renew the BFN operating licenses. If Alternative A were to be selected, TVA would allow the current BFN operating licenses to expire at the end of their terms, shutting down each unit no later than the current license expiration dates: December 20, 2033, for Unit 1; June 28, 2034, for Unit 2; and July 2, 2036, for Unit 3.

Unlike the Proposed Action, the No Action Alternative does not provide a practicable means of meeting future electric system needs. Therefore, unless replacement generating capacity is provided as part of the No-Action Alternative, approximately 3,900 MWe of baseload generation would no longer be available to meet TVA's electricity customers' needs, and the alternative would not satisfy the Purpose and Need for the Proposed Action. For this reason, the No-Action Alternative is defined as having two components: (1) replacing the generating capacity of BFN with alternative generating supply available during or by the end of the term of the existing BFN operating licenses, and (2) decommissioning the BFN facility. The replacement generation options considered as part of the No Action Alternative include construction of a combination of new generating capacity using energy from natural gas, solar, storage, and nuclear small modular reactors.

Alternative B – BFN Units 1, 2, and 3 SLR. TVA would seek renewal of operating licenses to allow for the continued operation of Units 1, 2, and 3 for an additional 20 years. License renewal does not require any new construction or modifications beyond normal maintenance and minor refurbishment. Under Alternative B, BFN would continue to produce electrical power by using boiling water reactors and steam-driven turbine generators. The cooling water needed to support BFN power generation would continue to be drawn from

Wheeler Reservoir. Once-through cooling would continue to be used, with helper cooling towers operating when river temperatures near one or more of the National Pollutant Discharge Elimination System (NPDES) permit require their use to ensure BFN complies with regulatory thermal limits. Water from the circulating water system would continue to be discharged into Wheeler Reservoir in accordance with BFN's NPDES permit. Solid Low Level Radioactive Waste (LLRW) would continue to be generated during the proposed subsequent period of extended operation. Routine releases of as low as reasonably achievable amounts of radioactive liquids and gases would also continue during the proposed subsequent period of extended operation and would continue to be controlled in accordance with all applicable permit and regulatory requirements, to ensure protection of human health and the environment.

Routine maintenance and upkeep of BFN would continue through the proposed SLR period of extended operation to ensure the safe and reliable operation of the three units and would be managed in accordance with appropriate TVA programs and procedures.

Current work force requirements, approximately 2,147 personnel, would continue during the additional years of operation.

The proposed SLR period of extended operation would require approximately 10 additional refuel cycles per unit, resulting in approximately 3,900 acres of additional land being affected by the uranium mining necessary to fuel BFN. Refueling of one third of the fuel in each unit would continue to be performed approximately every 24 months. The spent fuel would be stored in the spent fuel storage pools until they could be moved to dry cask storage on the onsite Independent Spent Fuel Storage Installation (ISFSI).

Environmentally Preferred Alternative

The SEIS includes baseline information for understanding the potential environmental and socioeconomic impacts associated with the alternatives considered by TVA. TVA considered 23 resource areas related to the human and natural environments and the impacts on

these resources associated with each alternative. The anticipated environmental impacts of the No Action and Action Alternative are described in detail in the Final SEIS.

Impacts under Alternative A would occur in association with shutdown and decommissioning of BFN, and offsite in association with construction and operation of new generation facilities. In association with shutdown and decommissioning of BFN, there would be no impacts to groundwater, floodplains and flood risk, wetlands, managed and natural areas, recreation, and visual resources. There would be minor impacts associated with BFN shutdown and decommissioning for land use; soils; surface water; air quality; greenhouse gases; socioeconomics; environmental justice; archaeological and historic resources; hazardous, solid, and low-level radioactive waste; radiological effects; uranium fuel cycle; nuclear and plant safety; and non-radiological public health and safety. Additionally, there would be minor and potentially beneficial impacts from shutdown and decommissioning of BFN for surface water, aquatic ecology, terrestrial ecology, endangered and threatened species, air quality, noise, and non-radiological public health and safety.

Implementation of Alternative A, the No Action Alternative would include the impacts of constructing up to 3,900 MWe of new generation at sites yet to be determined across the Tennessee Valley. The construction and operation of these new generation facilities would have potential impacts to most resource areas. Small to moderate impacts could occur at the selected generation sites in association with land use changes. Ground-disturbing activities during construction would result in small to moderate impacts to geology and soils. With implementation of permit requirements and best management practices, impacts to surface water would be small to large depending on plant water needs and thermal impacts. Impacts to groundwater could range from small to large depending on the nature of groundwater use and site-conditions. Small impacts to floodplains and flood risk would be anticipated as all construction would be consistent with Executive Order 11988. Impacts to wetlands could be small to large depending on site conditions and the physical location of various structures.

Aquatic ecology impacts would range from small to large depending on site-specific conditions, species present, location of structures, and water use needs. Terrestrial ecology impacts would be small to moderate for the same reasons. Impacts to aquatic and terrestrial ecology would be mitigated through permit requirements and best management practices. Endangered and threatened species impacts would be small to large depending on the presence of such species, alterations in land use, habitat loss/fragmentation, and loss of biodiversity. Small to large impacts would be anticipated for managed and natural areas due to site development. Recreational impacts would be small to moderate depending on site location, and the associated noise, dust, viewshed, and watershed impacts. There would be temporary small impacts to air quality and greenhouse gases during construction which would be mitigated through adherence to permit requirements and application of best management practices. Small to moderate impacts to air quality and greenhouse gases would occur with operations depending on the nature of the generation source. Transportation impacts would range from small to moderate depending on the local infrastructure, existing traffic levels, and project traffic. Impacts to visual resources would range from small to moderate depending on site location. Noise impacts would range from small to moderate during construction to small during operations. New generation facilities could partially offset impacts to socioeconomics associated with shutdown of BFN if workers transfer to new sites. Impacts on housing and schools and education could range from small to large depending on site location and existing availability. Impacts to local government revenues would be small. Environmental justice impacts could range from small to moderate depending on location and the socioeconomic impacts. Impacts to archaeological and historic resources would be small to large depending on site location, presence of these features, and ability to avoid them. Mitigation would be developed as appropriate. Hazardous, solid, and low-level waste impacts would be small due to adherence to permit requirements and TVA waste management practices. Radiological effects, uranium fuel cycle impacts, and nuclear plant safety and security effects would only occur for a new nuclear generation source and would be expected to be small and

mitigated through adherence to all applicable permits and requirements. Non-radiological public health and safety impacts would range from small to moderate depending on the type of facility, equipment, and site conditions.

Implementation of Alternative B, TVA's preferred alternative, would result in no impact or small impacts to the environment for all resource areas. The renewal of the BFN licenses would allow for the proposed SLR period of extended operation of the units under the same requirements, technical specifications, and limits currently in place. Any changes to the provisions of the operating licenses (i.e., license amendments) would require appropriate environmental review and NRC approval in accordance with applicable regulations. The decommission impacts would be the same as Alternative A after the SLR period, 20 years later. No changes would be expected for the permits currently in place. The current programs, procedures, and permits would be followed; no major changes would be needed to implement this alternative. There would continue to be small impacts to surface water, wetlands, aquatic ecology; terrestrial ecology; endangered and threatened species; managed and natural areas; air quality, climate change, and greenhouse gases; noise and vibration; hazardous, solid, and low-level radioactive waste; radiological effects; uranium fuel cycle; nuclear plant safety and security; and non-radiological public health and safety. Additionally, there would be no changes to land use; geology and soils; groundwater; floodplains and flood risk; recreation; transportation; visual resources; socioeconomics; environmental justice; and archaeological and historic resources.

Alternative B – BFN Units 1, 2, and 3 SLR, would provide the Tennessee Valley Authority service area with an additional 20 years of reliable base load power while promoting TVA's aspiration for net-zero carbon emissions by 2050, make beneficial use of existing assets, and deliver power at the lowest feasible cost. Therefore, the environmentally preferred action alternative that meets the project purpose and need is Alternative B, TVA's preferred alternative.

Alternative B would meet the purpose and need of the project and would have less impact than Alternative A.

Decision

Informed by the summary of the submitted alternatives, information, and analyses in the Final SEIS, TVA certifies it has considered all the alternatives, information, analyses, and objections submitted by State, Tribal, and local governments, and public commenters for consideration in developing the SEIS. TVA has selected the preferred alternative identified in the Final PEIS, Alternative B – BFN Units 1, 2, and 3 SLR.

Public Involvement

On June 1, 2021, TVA published a Notice of Intent (NOI) in the **Federal Register** (86 FR 29351) announcing plans to prepare a SEIS to address the potential environmental effects associated with extending the operation of BFN Units 1, 2, and 3, for an additional 20 years. The NOI initiated a 30-day public scoping period, which concluded on July 1, 2021. In addition to the NOI in the Federal Register, TVA published notices regarding this effort in two local newspapers: The Decatur Daily, which serves Decatur and the Tennessee Valley in northern Alabama, and the News Courier, which serves Limestone County. TVA also issued a news release to media and posted the news release on the TVA Web site. The scoping report is included in Appendix A of the Final SEIS.

TVA also created a virtual meeting room that remained available for the duration of the NEPA analysis. The virtual meeting room can be accessed through TVA's website (https://www.tva.com/environment/environmental-stewardship/environmental-reviews/nepa-detail/browns-ferry-nuclear-plant-subsequent-license-renewal). The virtual scoping meeting room contains information on the NEPA process and the proposed action, as well as links to TVA and NRC websites related to the project.

On February 10, 2023, the Draft SEIS was released for public review and comment in a Notice of Availability (NOA) in the **Federal Register** (88 FR 8843). The availability of the

Draft SEIS and request for comments was announced in newspapers that serve the Limestone County area, and the Draft SEIS was posted on TVA's website. TVA's agency involvement included notification of the availability of the Draft SEIS to local, state, and federal agencies and federally recognized tribes. Comments were accepted through March 27, 2023, via TVA's website, mail, and e-mail.

TVA received two comment letters from members of the public via TVA's website and one comment letter from the U.S. Environmental Protection Agency (EPA). TVA carefully reviewed all the comments. Comments raised during the comment period are summarized by topic along with TVA's responses to each comment in Appendix B of the Final SEIS. A copy of each of the comments are included at the end of the appendix.

The NOA for the Final SEIS was published in the **Federal Register** (88 FR 54612) on August 11, 2023. Following the publication of the NOA for the Final SEIS, and therefore outside of the comment period for the EIS, TVA received an additional public comment in September 2023, from the EPA. The EPA reviewed the document in accordance with section 309 of the Clean Air Act (CAA) and section 102(2)(C) of NEPA. The comments raised by the EPA reiterated the agency's earlier comments on the Draft SEIS, recognized TVA's efforts that were revised in the Final SEIS, and did not raise new issues of relevance that were not already addressed by TVA in the Final SEIS or Appendix B of the Final EIS. TVA recognizes EPA's additional recommendations. TVA plans to stay up to date on best practices for heightened engagement with communities with environmental justice concerns to ensure that all communities, including those with environmental justice concerns, are meaningfully engaged throughout the NEPA process. As appropriate, TVA incorporates Environmental Justice into its environmental reviews, including the BFN SLR Final SEIS.

Mitigation Measures

Because BFN would continue operating within all applicable federal, state, and local regulations, and because no new construction or modifications to the facility is anticipated or

planned during the proposed subsequent period of extended operations, no new mitigation measures would be required beyond those already implemented as a result of initial construction and operations. Should any construction or modification be anticipated or planned, TVA would follow all appropriate permitting requirements and environmental reviews would be pursued prior to deciding to pursue those projects. Best Management Practices would be implemented including those described in A Guide for Environmental Protection and Best Management Practices for Tennessee Valley Authority (TVA 2017b), stormwater pollution and Spill Prevention, Control, and Countermeasure (SPCC) plan, and other permit conditions

- BFN also has an Integrated Pollution Prevention Plan that addresses storage, secondary containment, and inspections of fuel, hazardous materials, and chemicals like biocides. Attachment 5 of the plan provides an inventory of all tanks, pumps, transformers, and other containers where these materials are used or stored, including the type of secondary containment for each. The secondary containment limits the potential for minor chemical spills to occur outside of containment areas.
- The discharge of chemicals to surface water would be regulated by the conditions set forth in the NPDES permit.
- Dredged material would be disposed of on land lying and being outside the 500-year floodplain in an onsite spoils area and above the 500-year flood elevation.
- Water-use and water-dependent structures and facilities would be located within 100-year floodplains, and flood-damageable equipment and facilities would be located at a minimum outside 100-year floodplains, and Critical Actions would be located at a minimum outside 500-year floodplains.
- All handling and disposal of non-radioactive and radioactive wastes would be in accordance with applicable rules, regulations and requirements of local, state, and federal laws.

Timothy Rausch,

Executive Vice President and Chief Nuclear Officer,

Tennessee Valley Authority.

[FR Doc. 2024-00817 Filed: 1/16/2024 8:45 am; Publication Date: 1/17/2024]