

SUMMARY

PURPOSE OF AND NEED FOR ACTION

Demand for electricity in the Tennessee Valley Authority (TVA) power service area has grown at the average rate of 2.4 percent per year for the past 15 years. Although this high level of load growth is expected to slow somewhat, TVA anticipates having to add additional baseload capacity to its system in the next decade to meet growing demand for power. At the same time, TVA is interested in reducing fossil-fuel emissions and lowering the delivered cost of power. The proposal under consideration by TVA is to meet the need for additional baseload capacity on the TVA system and maximize the use of existing assets by completing and operating Watts Bar Nuclear Plant (WBN) Unit 2. The unit would be completed as originally designed, alongside its sister unit, WBN Unit 1, which has been operating since 1996. Producing tritium for the U.S. Department of Energy (DOE) at WBN Unit 2 is not part of this proposed action.

This final supplemental environmental impact statement (FSEIS) will inform decision makers and the public about the potential for environmental impacts associated with a decision to complete and operate WBN Unit 2. It updates the analysis of potential environmental impacts resulting from construction, operation, and maintenance of WBN Unit 2 as a supplement to the original 1972 final environmental statement (FES) titled *Final Environmental Statement, Watts Bar Nuclear Plant Units 1 and 2* (hereafter referred to as 1972 FES) and subsequent WBN-related environmental reviews. It also updates the need for power analysis.

In addition to this environmental review, a detailed, scoping, estimating, and planning (DSEP) study is underway. TVA will use information from the DSEP and the FSEIS to make an informed decision about whether to complete construction of and to operate WBN Unit 2.

NEED FOR POWER

The need for power analysis presented in Chapter 1 shows how completion of WBN Unit 2 would help TVA meet expected demands for increased baseload power, improve the diversity of resources serving its customers, reduce the risks inherent with any particular kind of resource, provide added flexibility to reduce fossil plant emissions, and potentially lower the cost of power to TVA's customers. TVA prepares a range of forecasts of future power demands on its system. Some of those forecasts show a need for additional baseload capacity as early as 2010.

ALTERNATIVES INCLUDING THE PROPOSED ACTION

In the 1972 FES for Watts Bar Units 1 and 2, TVA considered a number of alternatives to constructing and operating WBN, including the No Action Alternative. TVA is proposing to complete WBN Unit 2 as originally designed except for modifications consistent with those made to Unit 1. Consistent with the Council on Environmental Quality's National Environmental Policy Act (NEPA) regulations [§1502.4(D)], this document also tiers off of *Energy Vision 2020 – An Integrated Resource Management Plan and Final Programmatic Environmental Impact Statement* (TVA 1995a), the *Final Environmental Impact Statement for the Production of Tritium in a Commercial Light Water Reactor* (DOE 1999), and the *Reservoir Operations Study Final Programmatic Environmental Impact Statement* (TVA 2004a) and incorporates by reference the balance of the environmental record pertinent to

WBN. As such, this FSEIS identifies no new alternatives to those already addressed in those documents.

**CHANGES IN THE AFFECTED ENVIRONMENT AND ENVIRONMENTAL
CONSEQUENCES**

The environmental consequences of constructing and operating WBN were addressed comprehensively in the 1972 FES for WBN 1 and 2. Subsequent environmental reviews updated that analysis, as described in Section 1.3 of this FSEIS. By 1996 when the construction of Unit 1 was complete, most of the construction effects had already occurred. Unit 2 would use structures that already exist and most of the work required to complete Unit 2 would occur inside of those buildings. All disturbances proposed for the construction of new support facilities would be within the current plant footprint. TVA would use standard construction best management practices (BMPs) to control minor construction impacts to air and water from dust, sedimentation, and noise.

The reviews by TVA (1993a) and the U.S. Nuclear Regulatory Commission (NRC) (1995a) hereafter referred to as the 1995 NRC FES, updated existing environmental information at that time. Some modifications to plant design and operations have occurred since that time. This document summarizes the environmental effects assessed in past WBN-related environmental reviews and assesses the potential for new or additional effects that could result from the completion and operation of Unit 2. Table S-1 summarizes the potential for additional direct, indirect, and cumulative environmental effects.

Table S-1. Summary of Direct, Indirect, and Cumulative Environmental Effects From Completion of WBN Unit 2

Resource	Potential Environmental Effects
Surface Water Quality	Insignificant hydrothermal effects on near-field and far-field temperatures and on the operation of the supplemental condenser cooling water (SCCW), given compliance with National Pollutant Discharge System (NPDES) permit limits. Insignificant effects from raw water chemical treatment. Water intake would increase by 33 percent over present conditions but still would be within the original design basis of the plant for two-unit operation. A corresponding increase of essential raw cooling water and raw cooling water chemical additives of 33 percent would occur. Towerbrom treatment for Condensing Cooling Water (CCW) would increase 100 percent. These increases are not expected to affect compliance with existing NPDES effluent limitations that protect aquatic resources.
Groundwater Quality	No impacts expected.

Table S-1 (continued)

Resource	Potential Environmental Effects
Aquatic Ecology	Since no construction activities would occur within 500 feet of the reservoir, all construction activities would be subject to appropriate BMPs to ensure that there are no impacts to surface water, intake flows would stay within the original design basis for operation of the two-units in closed cycle mode, and discharge changes would remain within existing NPDES limits. Any impacts to aquatic ecology, plankton, or aquatic communities in the vicinity of WBN would be insignificant.
Terrestrial Ecology	Impacts on existing plant and animal communities within or adjacent to the disturbed area footprint would be insignificant. Some minor disturbance of communities may occur during construction. No new infestations of exotic invasive plant species are expected.
Threatened and Endangered Species	<p>All construction work would be conducted using BMPs, no additional discharge-related impacts would occur, and intake flows would not be increased over the original design basis for two-unit operation. There would be no effect on state-listed or federally listed aquatic animals or their habitats.</p> <p>No impacts to threatened or endangered terrestrial plant or animal species are expected. No occurrences of state-listed or federally listed plant species are known on, or adjacent to WBN. No impacts to bald eagles or gray bats are expected.</p>
Wetlands	No impacts to wetlands are expected. No disturbance is planned that would affect the one forested wetland adjacent to the project footprint.
Natural Areas	No impacts would occur to the five natural areas within 5 miles of WBN, including the Chickamauga State Mussel Sanctuary.
Cultural Resources (Archaeological and Historical)	Because new ground disturbance would be minimal and only minimal new construction is planned, historic resources on and adjacent to the site and archaeological resources within the area of potential effect would not be adversely affected.
Socioeconomics, Environmental Justice and Land Use	Some impacts to population, including low income and minority groups due to influx of workers; most impacts would be widespread and minor. A noticeable increase in demand for housing and mobile housing locations would occur during peak construction. Some impacts are expected to schools. Minor impacts are expected on land use. Beneficial effects on employment and income, and local governments' revenues during construction.
Floodplains and Flood Risk	No anticipated adverse flood-related impacts.
Seismic Effects	No adverse seismic effects anticipated.

Table S-1 (continued)

Resource	Potential Environmental Effects
Climatology and Meteorology	A slight change in local meteorology could affect wind dispersion values. Effects expected to be insignificant.
Nuclear Plant Safety and Security	The risks of a beyond-design-basis accident from operation of WBN are small. Increased risk from Unit 2 operation would be extremely low. Risk of and potential impacts from a terrorist attack on WBN are not expected to increase significantly due to completion of WBN Unit 2. Because WBN is an existing, operating nuclear facility, the risks and potential consequences of a terrorist attack already exist, and safeguards have already been taken to protect against such risks.
Radiological Effects	Anticipated effects unchanged since 1995; insignificant.
Radiological Waste	Anticipated effects unchanged since 1995; insignificant.
Spent Fuel Transportation and Storage	Insignificant effects anticipated from the transport or storage of spent fuel.

The cumulative effects of constructing and operating Units 1 and 2 were considered in the 1972 FES and the 1995 NRC FES which TVA adopted. Potential cumulative effects to surface water and aquatic ecology from operating both units in the future would be addressed and controlled by monitoring requirements and NPDES permit limits. Previous reviews also considered the potential for cumulative effects to air from Watts Bar Fossil Plant, which had not operated since 1983 and has since been retired. Cumulative effects are also considered in many of the documents incorporated by reference and/or tiered from for this supplement. Most notably, cumulative effects of transportation and storage of spent fuel were addressed in the DOE 1999 final environmental impact statement; cumulative effects of transportation of radioactive materials were addressed in NRC's *Environmental Survey of Transportation of Radioactive Materials to and from Nuclear Power Plants, Supplement 1* (NUREG-75/038, NRC 1975); and cumulative effects of hydrothermal and water supply were addressed in TVA 2004a.

IDENTIFICATION OF MITIGATION MEASURES

Mitigation of potential or actual environmental impacts includes avoiding, minimizing, rectifying, reducing, or compensating for the impacts. Mitigation measures have been identified in the 1972 FES and subsequent NEPA documents. Those measures are still in effect. This supplemental document identifies mitigation measures to address impacts beyond what were discussed in those earlier reviews. TVA will identify specific mitigations and commitments selected for implementation in the Record of Decision (ROD) for this project.

TVA has identified the following measures that could be implemented during construction or operation of WBN Unit 2 to address those potential impacts.

TVA would designate certain counties as impacted by the construction process. This would make them eligible for a supplemental allocation from TVA's annual tax equivalent payment under Tennessee law. These funds could be used by counties to address impacts on county services.

As part of the DSEP, TVA is conducting a labor study of the potential construction workforce. TVA would provide information from this study to officials in the impacted counties. This information could help with local planning to accommodate the anticipated temporary population growth.