

FINDING OF NO SIGNIFICANT IMPACT TENNESSEE VALLEY AUTHORITY

BROWNS FERRY NUCLEAR PLANT COOLING TOWERS ADDITION AND REPLACEMENTS LIMESTONE COUNTY, ALABAMA

TVA proposes to replace four original mechanical draft cooling towers (MDCTs) at Browns Ferry Nuclear Plant (BFN) with larger units and construct one additional 25- to 30-cell linear MDCT (Tower 7). Additional and more efficient cooling capacity is needed for current operation and for future extended power uprates (EPU). BFN's six MDCTs can only support 69 percent of the cooling needs from the three-unit licensed plant. During the hot summer months this lack of cooling capacity has caused significant reductions in plant power production levels (known as "derates"), resulting in increased operating costs and lost revenue. During the summer of 2010, derates to below 50-percent of power capacity were required at BFN for several days in July and for about half of August to meet National Pollutant Discharge Elimination System (NPDES) permit requirements. The new towers will help reduce the duration and frequency of plant derates at BFN.

BFN is a three-unit General Electric boiling water reactor facility with a capacity of 3,440 megawatts that began operation between 1974 and 1977. Six Ecodyne MDCTs were originally built at BFN. Towers 3 and 4 were destroyed by fire and subsequently replaced. Under the proposed action, Towers 1, 2, 5, and 6 would be rebuilt at their current locations. The new Tower 7 would be located on TVA property east of Shaw Road.

The *Final Supplemental Environmental Impact Statement for Operating License Renewal of the Browns Ferry Nuclear Plant* (hereinafter referred to as 2002 License Renewal FSEIS) assessed the impacts of the license renewal for Units 2 and 3 for an additional 20 years of operation beyond their current operating licenses and the restart, license extension, and uprate (i.e., increasing the power output) of BFN Unit 1. Extended power uprate of Units 2 and 3 with up to 120 percent of original licensed thermal power was considered in two TVA environmental assessments (EAs) (TVA 2001; TVA 2003). The 2002 License Renewal FSEIS addressed up to eight cooling towers for the plant, including replacement and new towers. In 2002, however, the proposed new tower(s) were to be sited in an area known as the "spoil pile" where excavated material from construction of BFN had been placed. Because the proposed Tower 7 is in a different location, TVA has completed an EA of the proposed action. This EA tiers from the 2002 License Renewal FSEIS and incorporates by reference information from the body of related TVA environmental reviews listed therein.

Alternatives

The potential effects of constructing and operating the proposed replacement and new cooling towers have been evaluated in the attached EA. The EA evaluates two alternatives in detail: the No Action Alternative and the Action Alternative. Under the No Action Alternative, TVA would not increase BFN cooling capacity and neither replace the four cooling towers nor construct the proposed new cooling tower. This would not meet TVA's identified need.

Under the Action Alternative, Towers 1, 2, 5, and 6 would be replaced with larger (approximately 20-cell) linear MDCTs, and one additional 25- to 30-cell linear MDCT (Tower 7) would be

constructed. Activities would include the construction of a new discharge channel, a pumping station, various pipelines, a gate structure, and overhead power lines; relocation of the Western Perimeter Ditch and Shaw Road to make room for Tower 7; relocation of underground fiber optic cable and telephone lines; and improvements to Lawngate and Browns Ferry Roads. The Action Alternative is the preferred alternative.

Impacts Assessment

Under the No Action Alternative, TVA would continue to operate BFN using the existing cooling tower system. No construction impacts would occur. TVA would continue to operate the system to meet NPDES permit limits, including derating the plant during the summer as necessary. Extensive summer derates at BFN would be costly to TVA ratepayers.

Under the Action Alternative there would be both construction and operational effects to some parts of the environment. Construction and operational effects to historic and archaeological resources, floodplains and flood risk, endangered and threatened species, visual resources, and wetlands are expected to be nonexistent or small. The Alabama State Historic Preservation Officer concurred with TVA's determination of no effects to historic properties. There would be temporary, small to moderate adverse effects on transportation during the construction of Tower 7 due to the approximately 3-mile detour of traffic onto Lawngate and Browns Ferry Roads. These effects would be mitigated by road improvement activities including paving, striping, shoulder improvements, and the installation of a caution light, turn lane and acceleration lane. When Shaw Road reopens on the new alignment, which is anticipated to occur in the summer of 2011, transportation service levels are expected to improve overall. Hydrothermal effects of cooling tower operation are expected to be insignificant and protective of aquatic species. With noise reduction measures included in the plant design, noise impacts are expected to be insignificant. Noise from cooling tower operations will be monitored and mitigated as needed.

Based on the analysis done for this EA, TVA concludes that the proposed action would not result in environmental impacts significantly different from those identified in the earlier environmental reviews.

Special Commitments and Mitigation

TVA would implement standard best management practices during construction and operation of the new cooling towers in order to reduce potential environmental impacts. TVA would also comply with the requirements of all environmental permits. To further reduce impacts, TVA would implement the following mitigation measures:

- Prior to completion of the Western Perimeter Ditch and modifications to the cooling tower system, the new designs will be evaluated and revised as necessary to ensure that these areas would convey the probably maximum precipitation (PMP) event without flooding the main plant. In addition, calculation CDQ004020040239, entitled "PMP BFN Site Drainage Analysis," will be revised to include the updated hydraulic analyses.
- TVA will work with the selected cooling tower vendor to ensure noise attenuating features, as required, such as low noise fans, lower speed fans, and sound attenuators are included in the cooling tower design. Operational noise will be verified by a qualified acoustical engineer. Noise monitoring will be conducted after the completion of each phase of the project (e.g., when new cooling towers become operational). TVA will meet the U.S. Environmental Protection Agency's (EPA) protective noise guideline of 55 dBA (A-weighted decibel) average annual equivalent sound level day/night (DNL), as measured at

the nearest residences and at exterior plant boundaries. TVA will also take measures to ensure that offsite noise increases are less than 3 decibel increase in DNL, in accord with the Federal Interagency Committee on Noise (FICON) guideline. If resulting levels were found to exceed the EPA and FICON guidelines, TVA will develop and implement additional acoustical mitigation such as modifications to fans, motors, or installation of barriers.

Conclusion and Findings

TVA has determined that the construction and operation of four replacement towers and one new cooling tower would not result in significant adverse impacts, either individually or cumulatively. Consequently, TVA concludes that implementation of this project would not be a major federal action significantly affecting the environment, subject to the identified mitigation measures. Accordingly, an EIS is not required.



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Date Signed