

## **FINDING OF NO SIGNIFICANT IMPACT TENNESSEE VALLEY AUTHORITY SHAWNEE FOSSIL PLANT UNITS 1 AND 4**

In April 2011, the Tennessee Valley Authority (TVA) and the U.S. Environmental Protection Agency (USEPA) entered into a Federal Facilities Compliance Agreement to resolve a dispute over how the Clean Air Act (CAA)'s New Source Review program applied to maintenance and repair activities at TVA's coal-fired power plants. TVA also entered into a substantially similar judicial consent decree with four states and three environmental advocacy organizations. These agreements require TVA to, among other things, reduce emissions from its coal-fired power plants. At its Shawnee Fossil Plant (SHF) Units 1 and 4, TVA must decide whether to install and continuously operate selective catalytic reduction (SCR) and flue gas desulfurization (FGD) systems, repower the units to burn renewable biomass, or retire the units by December 31, 2017. TVA must inform USEPA and the other consent decree parties of its decision for Units 1 and 4 by December 31, 2014. If TVA decides to control the units or convert them to biomass, the agreements provide TVA the discretion to change the decision to retirement later.

TVA proposes to comply with the USEPA Clean Air Agreements provisions for SHF Units 1 and 4 by installing and operating SCR systems to reduce nitrogen oxide (NO<sub>x</sub>) emissions and FGD systems to reduce sulfur dioxide (SO<sub>2</sub>) emissions.

The purpose and need for the proposed action is to comply with the USEPA Clean Air Agreements by reducing NO<sub>x</sub> and SO<sub>2</sub> emissions from SHF Units 1 and 4 and achieve and maintain a balanced portfolio of generation resources. The latter is one of the primary directives from TVA's 2011 Integrated Resource Plan.

The proposed action is the subject of an environmental assessment (EA) prepared by TVA in accordance with the National Environmental Policy Act. The EA is incorporated by reference.

### **Alternatives**

The EA evaluates the No Action Alternative and two action alternatives in detail. Under the No Action Alternative (Alternative A), TVA would continue to operate SHF Units 1 and 4 without implementing measures to reduce SO<sub>2</sub> and NO<sub>x</sub> emissions to comply with the USEPA Clean Air Agreements. To stay in compliance, TVA would have to retire the units by December 31, 2017 unless the agreements are revised. The No Action Alternative would not meet the identified purpose and need and is considered unreasonable. It is included in the EA consistent with guidance from the Council on Environmental Quality and serves as the environmental baseline.

Under Alternative B, TVA would retire the two units by December 31, 2017. Under Alternative C, TVA would install and operate the SCR and FGD systems on Units 1 and 4. All of the construction activities would occur in heavily disturbed areas. The SCR systems would be installed in the location of the non-operational electrostatic precipitators which would be removed. The 250-foot tall original emission stacks for Units 1 and 4 would be demolished and the new FGD systems would be located in the area of these stacks. Additional actions include changes to the dry fly ash piping systems, extensions of on-site electrical components, construction of an ammonia receiving and storage facility, and construction of FGD reagent preparation and feed systems. The FGD systems would be dry systems using calcium

hydroxide as the reagent. Coal combustion residuals (CCRs) from Units 1 and 4, consisting of ash and scrubber residue, would be comingled and trucked to the existing onsite dry stack for disposal. SHF Units 2-3 and 5-9 would not be affected by the proposed action. TVA also considered converting the two units to biomass, but determined that alternative was too costly and infeasible.

Although controlling and continuing to operate the two units would help TVA meet a projected increase in the demand for electricity from the TVA power system, the units are not needed for reliability purposes. TVA would not need to replace the two units with new energy resources if they are retired. The general need for additional energy resources on the TVA system is evaluated in TVA's 2011 IRP and associated Environmental Impact Statement from which this EA tiers.

## **Impacts Assessment**

Based on the analyses in the EA, TVA concludes that implementation of Alternative B – Retire SHF Units 1 and 4 and Alternative C – Install and Operate SCR and FGD Systems on SHF Units 1 and 4 would not affect wetland, floodplains, geology, endangered and threatened species, vegetation and wildlife, natural areas, parks and recreation, and land use and prime farmland.

Alternatives B and C would have beneficial effects on air quality. Although the reductions of emissions in criteria pollutants would be greatest under the retirement alternatives, they would be substantial under Alternative C, with SO<sub>2</sub>, NO<sub>x</sub>, and mercury emissions from Units 1 and 4 reduced by 85 to 96 percent. Alternative B would result in an approximate 22 percent reduction in direct greenhouse gas emissions. Under Alternative C, direct greenhouse gas emissions would remain relatively unchanged while indirect emissions would increase. On a TVA-system-wide basis, greenhouse gas emissions would continue to decrease as TVA retires other coal units and brings more no- and low-emissions generation online.

Alternative B would result in a sizeable reduction in the quantity of coal combustion residuals (CCRs) produced at SHF. Under Alternative C, the quantity of CCRs would increase due to the production of FGD residue. The CCRs would continue to be managed onsite in the existing dry stack, which has sufficient capacity to handle the potential increase in CCR quantities.

Impacts to surface waters during construction under Alternative C would be minimized by the use of best management practices. The retirement alternatives would result in a reduction in the volume of water withdrawals and discharges. These would remain relatively unchanged, compared to current conditions, under Alternative C. Operation of the FGD and SCR systems would increase the concentrations of some metals and ammonia on the dry stack. Changes in concentrations at the outfall would be small and concentrations would be well within water quality permit limits. Changes in concentrations of ammonia in groundwater flowing from the dry stack would also be small and would have an insignificant impact on adjacent receiving streams. Overall impacts to groundwater and surface water would be insignificant.

Due to age and other factors, SHF is considered a historic property under the National Historic Preservation Act (NHPA). It has, however, been extensively altered by modern construction. The retirement alternatives would have no effect on its status as a historic property. The removal of the two original stacks under Alternative C would have an adverse effect. In accordance with regulations implementing the NHPA, TVA is entering into a Memorandum of Agreement (MOA) with the Kentucky State Historic Preservation Office (SHPO) for the

mitigation of the adverse effect. With implementation of measures stipulated in the memorandum, the adverse effects would be mitigated in compliance with the NHPA and overall effects on historic properties would be insignificant.

The retirement alternatives would have negligible impacts on transportation, noise, and visual resources. Alternative C would result in a noticeable increase in traffic during construction; due to the capacity of area roads, the impacts would be insignificant. There would also be a small increase in noise during construction under Alternative C; the resulting off-site impacts would be insignificant. Operation of the SCR and FGD systems would have little impact on current noise levels. The most noticeable visual effect of Alternative C would be the removal of two of the original nine stacks. This would result in a minor visual impact as the industrial character of the area would remain relatively unchanged.

None of the alternatives would result in disproportionate adverse impacts to minority or low-income populations. The retirement alternatives would have a very small negative effect on local employment. Alternative C would have a noticeable positive effect on employment during construction and a very small positive effect on employment during operation.

### **Public and Intergovernmental Review**

TVA solicited comments on the scope of the EA during a three-week period in October and November, 2014. The 85 scoping comments TVA received were carefully reviewed and considered during the preparation of the EA. A draft of the EA was issued for public review and comment for a two-week period in late November and early December, 2014. TVA received almost 600 comments; most of these were form comments. TVA has carefully reviewed these comments and responded to them in the final EA as appropriate. TVA is consulting with the Kentucky SHPO under Section 106 with the NHPA and has consulted with recognized Native American tribes.

### **Mitigation**

TVA would implement routine best management practices during construction and operation of the proposed facilities under Alternative C. TVA will also monitor ammonia concentrations in the discharge outfall and take appropriate measures, such as controlling the pH or altering the retention time of water in the ash pond, to ensure the discharge does not exceed the allowable concentration for ammonia. TVA will implement the measures stipulated in the MOA with the Kentucky SHPO for mitigation of the adverse effect on historic properties.

### **Conclusion and Findings**

Based on the findings in the EA and summarized above, TVA concludes that the retirement of Shawnee Units 1 and 2 under Alternative B, as well as the construction and operation of the SCR and FGD systems on Units 1 and 2 under Alternative C, would not be a major federal action significantly affecting the quality of the environment. Accordingly, an environmental impact statement is not required.



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Date Signed