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FINDING OF NO SIGNIFICANT IMPACT (FONSI)
TENNESSEE VALLEY AUTHORITY
INSTALLATION OF EMISSION CONTROL EQUIPMENT AND ASSOCIATED FACILITIES AT GALLATIN FOSSIL PLANT
SUMNER COUNTY, TENNESSEE

The Tennessee Valley Authority (TVA) proposes to install additional air emission controls and to take other actions, including constructing a dry coal combustion residue landfill, at its Gallatin Fossil Plant (GAF) in Sumner County, Tennessee. The purpose and need for the proposed actions are:

- Complying with U.S. Environmental Protection Agency’s (USEPA) new Utility Mercury and Air Toxics Standards (MATS) rule and other anticipated regulations including requirements affecting the management of coal ash and other residues from the combustion of coal,
- Complying with the 2011 Federal Facilities Compliance Agreement between USEPA and TVA and
- Achieving and maintaining a more balanced portfolio of energy resources on the TVA power system.

The MATS rule requires the application of maximum achievable control technology to reduce emissions of hazardous air pollutants from generating units such as those at GAF. The FFCA requires TVA to reduce emissions of air pollutants at GAF by installing additional emissions controls (i.e., flue gas desulfurization [FGD] and selective catalytic reduction [SCR] technology), repowering the units to use renewable biomass, or retiring them. The need to move to a more balanced portfolio was identified by TVA after completion of its most recent Integrated Resource Plan (IRP) in 2011 and associated environmental impact statement (EIS) and the proposed action aligns with the IRP planning strategy adopted by the TVA Board of Directors.

TVA has prepared an environmental assessment (EA) of the proposed actions at GAF which is incorporated by reference. The EA tiers from TVA’s 2011 IRP EIS.

Alternatives

TVA evaluated three primary alternatives in the EA, Alternative 1 - Continued Operation of GAF Units 1-4 with No Additional Controls (the No Action Alternative), Alternative 2 – Install and Operate Emission Control Equipment and CCR Disposal - Across Discharge Channel Configuration, and Alternative 3 – Install and Operate Emission Control Equipment and CCR Disposal - Close Coupled Configuration. TVA also considered other alternatives but decided not to address those in more detail in the EA because they did not achieve TVA’s identified needs or were otherwise unreasonable.

Under the No Action Alternative, TVA would not construct the proposed emission control equipment or associated facilities. TVA would continue the current operation of GAF Units 1-4 and would not implement activities to further reduce emissions to comply with applicable

environmental regulatory requirements including the MATS rule and the FFCA. This alternative would also be inconsistent with TVA's goals to provide cleaner, reliable, and affordable energy to its customers. Therefore, this alternative is not considered viable or reasonable. It does, however, provide the appropriate baseline for describing the anticipated environmental effects of the proposed action, as required by Council of Environmental Quality regulations for implementing the National Environmental Policy Act.

Under Alternative 2, TVA proposes to install and operate dry FGD systems, or scrubbers, for each of the four coal-fired units at GAF to reduce sulfur dioxide (SO₂) and mercury emissions and pulse jet fabric filters (PJFF) or baghouses to control particulate matter emissions. An activated carbon injection (ACI) would also be installed and operated as needed for additional mercury control. To reduce nitrogen oxide (NO_x) emissions, TVA would install and operate four SCR systems, one for each coal-fired unit. The SCRs would be constructed adjacent to the powerhouse. The FGD systems and an associated new stack would be constructed on the west side of the plant cooling water discharge channel and connected to the SCRs by ductwork crossing the channel. Additional facilities would include new dry coal combustion residue (CCR) landfills designed to accept dry fly ash and FGD byproduct; electrical transmission lines and switchyard modifications to provide power to the FGD systems; and new and upgraded haul roads.

The proposed site for the FGD systems is currently occupied by the Cumberland River Aquatic Center (CRAC), a hatchery originally built by TVA and currently operated by the Tennessee Wildlife Resources Agency (TWRA) for the propagation and rearing of freshwater mussels, including threatened and endangered species. If Alternative 2 is chosen, TVA has committed to providing TWRA with the long-term land rights to a new site for the CRAC facility on the east side of the discharge channel and to reconstructing the facility on that site. TVA is working with TWRA on the design of the new facility.

Alternative 3 is similar to Alternative 2 except that the FGD systems would be constructed adjacent to the west side of the GAF powerhouse. This alternative would require modifications to the powerhouse not required by Alternative 2 for the direct connection of the FGD systems to the SCR systems. It would also utilize the existing plant stacks and not require the construction of a new stack. The CRAC facility would not have to be relocated and would continue operations at its present location.

The need to which TVA is responding is complying with the MATS rule and the FFCA in the context of achieving a more balanced portfolio of energy resources on the TVA system. TVA's IRP and accompanying EIS assessed a range of strategies for meeting future demand for electricity from the TVA power system. This included consideration and analyses of different kinds of energy resources such as generation from nuclear, coal, and natural gas fuels, repowering with renewable biomass, renewable resources (solar and wind), and energy efficiency. TVA also considered in the IRP and associated EIS retiring various amounts of TVA's coal-fired generation. TVA determined that strategies using more balanced portfolios performed better over time and handled uncertainties better. None of the other kinds of energy resources were found to provide the area-specific power needs as economically, and with a comparable level of reliability, as would the proposed action.

TVA's preferred alternative is Alternative 2, Across Discharge Channel Configuration Action Alternative. Relative to Alternative 3, Alternative 2 was determined require a shorter construction outage, present fewer construction risks, and have a lower overall cost.

Impacts Assessment

Based on the analyses in the EA, TVA concludes that the implementation of Alternative 2 would not affect prime farmland or wild and scenic rivers. Other than support structures for the ductwork bridge crossing the discharge channel, there would be no effects on floodplains. The ductwork is considered to be a repetitive action in the 100-year floodplain and the proposed action is consistent with Executive Order 11988 on floodplain management.

The proposed action would reduce emissions of SO₂ by up to 96 percent, emissions of NO_x by 90 percent, and emissions of mercury by at least 86 percent. Emissions of hazardous air pollutants in the form of acid gases would also be greatly reduced. These emission reductions would help improve local and regional air quality. Emissions of greenhouse gases from coal combustion could be slightly reduced because the proposed action can accommodate a coal blend that includes lower carbon Illinois Basin coal.

Alternative 2 would reduce the volume of water withdrawn from and discharged to the adjacent Cumberland River by replacing the current wet fly ash handling system with a dry handling system. Leachate from the proposed dry landfills, including any potential ammonia slip on the ash, would be routed to the ash pond where it would be treated with other process waters and discharged to the Cumberland River through existing Outfall 001. This discharge would be carefully monitored and the treatment system adjusted as necessary to avoid adverse impacts to sensitive aquatic species. The quantity of metals entering the ash pond would be reduced due to the conversion to the dry ash handling and discharges to the Cumberland River would meet applicable water quality standards. Impacts to surface waters would be insignificant.

The landfills would provide sufficient on-site capacity for at least 20 years of continued plant operation and be designed to meet applicable regulatory standards. TVA conducted detailed geological investigations at the proposed North Rail Loop (NRL) landfill site and will conduct similar investigations at the proposed South Rail Loop landfill site prior to its construction, which is proposed as the NRL site nears capacity. Although karst topography occurs in the area, the NRL investigations did not reveal any karst activity or structural anomalies that would lessen the suitability of the site for landfill construction and operation. The landfill would be constructed and operated in compliance with applicable regulatory requirements. No adverse impacts to groundwater are anticipated.

The proposed action would result in the filling of 2.24 acres of wetlands. The various project components have been designed to minimize wetland impacts, and TVA has determined that there is no practicable alternative to the wetland impacts. TVA would mitigate the wetland impacts by the purchase of mitigation credits or the creation/restoration/enhancement of approximately five acres of wetlands. The resulting impacts to wetlands would be insignificant and the proposed action conforms with Executive Order 11990 on wetlands.

Alternative 2 would result in the clearing and development of about 220 acres, much of which is second growth mixed forest. The affected vegetation communities and wildlife populations are relatively common in the area and the impacts to them would be insignificant. The Indiana bat, listed as endangered under the Endangered Species Act, was detected in the proposed landfill area, which contains trees marginally suitable for its use as summer roosting habitat. The endangered pink mucket pearly mussel has been reported downstream in the Cumberland River and TWRA rears this and other endangered species in the CRAC facility. In accordance with USFWS guidelines, TVA would remove the potential bat roost trees between October 15 and March 31. TVA has determined that the proposed action would not adversely affect the

Indiana bat and would not affect any other threatened or endangered species. The USFWS concurred with this determination in a letter dated March 4, 2013.

Parts of the proposed action are located within the Gallatin Steam Plant Wildlife Management Area, operated by TWRA and used for public hunting and wildlife viewing. The development of the landfill would displace these activities. The resulting impacts to recreational use of the area would not be significant as other areas offering similar public recreational opportunities are available in the surrounding area.

The construction and operation of the FGD systems, SCR systems, and associated components would not affect historic properties. The two landfill areas were sited to avoid directly impacting nearby historic properties. TVA would minimize the impacts to these properties through measures outlined in a Programmatic Agreement with the Tennessee State Historic Preservation Officer. With implementation of the terms in this agreement, impacts to historic properties would not be adverse.

Much of the project area is currently used for industrial purposes and the impacts of the proposed action on land use would be insignificant. The proposed action would alter the appearance of the area through the construction of the FGD and SCR systems, the new stack under Alternative 2, the transmission lines, and the landfill, in which the stacks would eventually reach an elevation of 135 feet above the current ground level. Given the current industrial nature of the site, including two existing tall stacks, impacts to visual resources would be insignificant. Noise generated by construction and operation of the various project components would slightly increase noise levels at nearby off-site residential areas by about 4 dB. This change in noise level is barely perceptible to the human ear. Noise levels at these receptors would not exceed applicable guidelines and noise impacts would not be significant.

The proposed action would noticeably increase traffic in the local area during the construction period. TVA would implement measures to mitigate potential traffic impacts, as required, through coordination with the state and local highway departments.

Public and Intergovernmental Review

A draft of the EA was released for public review and comment on October 17, 2012. At the request of a number of individuals and entities, TVA extended the original 30 day comment period by an additional two weeks to November 30, 2012. Subsequently, TVA agreed to accept late comments from several environmental advocacy groups until December 18; providing these groups a comment period totaling 61 days. TVA received 1,199 comment submissions, which included letters, form letters, emails, and submissions through the project website. TVA has considered all of the substantive comments it received on the draft EA and has responded to them in the final EA as appropriate. TVA consulted with the Tennessee SHPO under Section 106 of the National Historic Preservation Act concerning impacts to historic properties, and the Tennessee SHPO concurred that the proposed action would have no adverse impact on such resources. Appropriate recognized Native American tribes were consulted concerning the proposed undertaking. TVA received no objection from any of the tribes. In addition, TVA consulted with the USFWS under Section 7 of the Endangered Species Act and USFWS concurred with TVA's determinations of no effect and not likely to adversely affect in a letter dated March 4, 2013.

Mitigation

TVA would implement the routine and non-routine practices listed in EA for reducing adverse environmental effects from the construction, operation, and maintenance of the proposed facilities. The following nonroutine measures would be applied during construction and operation to reduce the potential for adverse environmental effects.

1. In order to minimize adverse effects to the endangered Indiana bat, the following measure would be implemented:
 - Removal of trees identified as potential roost habitat would only occur between October 15 and March 31. Should it be necessary to remove trees outside of this period, appropriate biological staff would conduct field surveys to ensure that the trees did not provide potential habitat for the Indiana bat indicating their possible presence and, as necessary, consult with USFWS.
2. The proposed CCR disposal facilities would be designed, constructed, and operated to avoid or mitigate impacts to natural or manmade resources.
 - Protective buffers around historic cemeteries and archeological sites potentially eligible for listing on the National Register of Historic Places (NRHP) have been identified, flagged, and noted on project plans to ensure such sites are avoided during all phases of TVA's proposed action.
 - Landfill construction within areas identified as containing karst topography, if any, would be performed in a manner to assure resource protection and facility integrity. The CCR facilities would provide storm water management facilities and rock-lined discharge channels to direct water off the landfill to perimeter channels. Water in these channels would flow to two sediment basins, which would discharge to the existing ash pond.
 - TVA would implement operational mitigations to reduce potential surface water impacts from CCR operations, such as requiring no more than 10 acres of ash be exposed at any one time during CCR landfill operations.

Conclusion and Findings

Based on the findings, TVA concludes that the proposed construction and operation of the dry FDG systems, SCR systems, coal combustion residue landfill, and associated facilities at GAF, as described under the preferred Alternative 2 in the EA, 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