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FINDING OF NO SIGNIFICANT IMPACT

TENNESSEE VALLEY AUTHORITY

JOHNSONVILLE COGENERATION PLANT
HUMPHREYS COUNTY, TENNESSEE

The Tennessee Valley Authority (TVA) is proposing to construct and operate a heat recovery steam generator (HRSG) integrated into an existing combustion turbine (CT) at its Johnsonville Fossil Plant (JOF) in Humphreys County, Tennessee. TVA currently provides steam produced at JOF to an external strategic customer (herein referred to as "the steam customer"), located adjacent to the plant. The existing contract to provide steam will be extended to December 2017 when the remaining four coal-fired units at JOF are retired. TVA is evaluating actions to continue to provide steam to the steam customer following the retirement of all of the coal-fired units at JOF.

The purpose of the project is to replace the steam produced by the coal-fired facility at JOF for the steam customer with steam supplied by an existing CT unit located in the northeast corner of the 85.4-ac JOF project site. The proposed action is to add a HRSG onto an existing CT unit (Unit 20) at JOF, which would include duct firing to provide the required steam flow. The project is needed to allow TVA to continue to provide steam to the steam customer following retirement of the coal-fired units at JOF.

Alternatives

TVA evaluated two primary alternatives in the EA: Alternative A - No Action; and Alternative B – Supply Steam to the Steam Customer from a Cogeneration Plant. TVA carefully considered a range of options for layout and configuration of the proposed project on TVA properties. It was determined that the proposed location would provide important benefits by using existing, previously constructed assets and previously disturbed lands. Therefore, the proposed location minimizes environmental impacts and enhances engineering feasibility/constructability.

Under the No Action Alternative, TVA would continue to operate in its current configuration until the scheduled retirement of coal-fired units at JOF by December 31, 2017. Following closure of the fossil plant, TVA would no longer supply steam to the steam customer. No construction or demolition activities would be undertaken by TVA as part of this alternative. TVA assumes that under the No Action Alternative, the steam customer would install the necessary equipment to provide their own steam and the installed equipment and operational characteristics are expected to be similar to those described for Alternative B. However, the steam customer has no existing fuel source and would therefore have to construct a new natural gas pipeline to supply gas for auxiliary boilers. The new pipeline could be up to 30 mi long, which is the distance to the nearest existing third party interstate gas pipeline. Water supply to the customer's steam generator could be supplied by a variety of options including the use of potable water, use of groundwater, construction of a new surface water intake on the Tennessee River, or purchase of water from TVA. It is assumed that construction of the auxiliary boilers at the steam customer's facility would not be as readily integrated into the existing infrastructure of the steam customer's operational facility as compared to Alternative B. Increased engineering effort and complexity would likely be required to modify infrastructure (pipelines, utility lines, roadways), and other site components to accommodate the new infrastructure for the steam supply. Therefore, it is expected that this alternative would require

greater construction effort, greater environmental impacts, and higher costs for the steam customer as compared to Alternative B.

Under Alternative B, TVA would continue to supply steam to the steam customer from a cogeneration plant. The steam would be produced by constructing a HRSG on the existing CT Unit 20 at JOF and all major equipment would be placed on TVA property. The HRSG would include duct firing to provide the required steam flow with two auxiliary boilers averaging 300 kilopounds per hour each available as backup. Demineralization or reverse osmosis would be required to remove minerals from the water used by the HRSG and auxiliary boilers. TVA may use the existing demineralization plant at the facility or build a new one closer to CT Unit 20. Additionally, to supply the water needed for the HRSG, the project could use the existing cooling water and fire suppression intake structures. Three water line routes have been proposed for design flexibility. Water from the existing demineralization plant would be conveyed to the proposed HRSG site as well as to an existing storage tank located within the project area. An additional water line would be installed near the north end of the harbor emergency fire suppression intake. The water line would extend to a new demineralization plant that would be built within the area proposed for plant construction. Steam would be delivered to the steam customer using the existing steam transmission line. All discharges would go to the existing coal yard runoff pond.

TVA's preferred alternative is Alternative B (Supply Steam to the Steam Customer from a Cogeneration Plant) because the addition of the cogeneration plant would allow TVA to continue to provide steam to the steam customer after the retirement of the coal-fired units at JOF (the Purpose and Need for this proposed action). It would also allow TVA to provide approximately 85 megawatts of baseload electricity to the TVA system with the same process that provides steam to the steam customer. This cogeneration strategy utilizes low emissions equipment and enhances TVA long-term integrated resource planning.

Impacts Assessment

Based on the analyses in the EA, TVA concludes that the implementation of Alternative B would not affect land use, wetlands, floodplains, geology, threatened and endangered species, cultural resources, environmental justice, or natural areas, parks, and recreation. Lands expected to be used for construction-related activities and operations are already used for heavy industrial use and no changes in land use would occur with this alternative. There would be minor and mostly temporary impacts to wildlife, vegetation, groundwater, noise, local transportation networks and the visual landscape. Alternative B would result in minor impacts to soils with prime farmland characteristics, but the proposed site and laydown areas are already developed for industrial use, and effects to prime farmland would be insignificant on a regional scale.

CO_2 emissions from the installation of an HRSG on the exhaust of existing CT Unit 20 would have a very minor impact on local and regional emissions of CO_2 and any associated effect on global warming or climate change would be negligible. Moreover, cumulatively, net emissions of CO_2 from the JOF facility would substantially decrease as a result of the retirement of the coal-fired units. Construction activities associated with Alternative B would result in fugitive air pollutant emissions, however air quality impacts would be minor and temporary.

TVA would continue to withdraw water from the Tennessee River (Kentucky Reservoir) from either the existing clean water intake system of JOF or from the intake associated with the fire suppression system at the north end of the harbor. Appropriate BMPs would be implemented during construction, operation, and maintenance of the proposed plant to minimize runoff to receiving waters. Since the volume of water required is low (approximately 1 million gallons per day), no measurable impacts to aquatic ecology are anticipated.

No threatened or endangered species, or cultural resources would be affected by construction or operation of the cogeneration plant. Additionally, this project would avoid wetlands the 100-year floodplain of the Tennessee River and therefore is consistent with Executive Order 11988, Floodplain Management, and Executive Order 11990, Wetland Protection.

During construction, there would be notable short-term increases in employment an associated payrolls, the purchases of materials and supplies, and procurement of additional services. During the operations phase, up to ten additional workers would be required to support long-term maintenance of auxiliary boilers and the HRSG, resulting in beneficial direct and indirect economic impacts. Implementing Alternative B would not cause low-income or minority populations to be disproportionately affected by adverse environmental impacts.

Minor beneficial, cumulative impacts to air quality and water quality are anticipated and no cumulative impacts are anticipated to terrestrial ecology because the surrounding industrial area has been previously disturbed.

Public and Intergovernmental Review

A draft of the EA was released for public review and a 30-day comment on April 20, 2015. The availability of the Draft EA was announced in the News Democrat, the newspaper that serves Humphreys County, Tennessee. Copies of the Draft EA were made available in the Humphreys County Public Library in Waverly, Tennessee. The Draft EA was also posted on TVA's website. TVA received one comment on the draft EA and a response is included in the final EA as appropriate. TVA consulted with the Tennessee SHPO under Section 106 of the National Historic Preservation Act concerning potential impacts to historic properties, and the SHPO concurred on February 23, 2015 that no historic properties would be affected by the proposed undertaking. Appropriate federally recognized Native American tribes were consulted concerning the proposed undertaking.

Mitigation

No mitigation measures will be necessary to reduce potential adverse environmental impacts to below significant levels. TVA would implement routine best management practices (BMPs) listed in the EA for avoiding or reducing minor adverse environmental effects from the construction, operation, and maintenance of the proposed cogeneration plant.

Conclusion and Findings

Based on the findings in the EA, TVA concludes that implementing Alternative B - Supply Steam to the Steam Customer from a Cogeneration Plant, would not be a major federal action significantly affecting the environment. Accordingly, an environmental impact statement is not required.

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Date