

Document Type: EA-Administrative Record
Index Field: Finding of No Significant Impact (FONSİ)
Project Name: Paradise and Colbert Gas Plant Environmental Assessment
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FINDING OF NO SIGNIFICANT IMPACT TENNESSEE VALLEY AUTHORITY

PARADISE AND COLBERT
COMBUSTION TURBINE PLANTS

Colbert, Lauderdale, and Morgan Counties, Alabama
Hardin, Lawrence, Montgomery, Sumner, Wayne, and Wilson Counties, Tennessee; and
Muhlenberg and Todd Counties, Kentucky

Tennessee Valley Authority (TVA) completed its most recent Integrated Resource Plan (IRP) in 2019. The purpose of the IRP was to provide TVA with direction on how to best meet future electricity demand. The IRP process evaluated TVA's current energy resource portfolio and alternative future portfolios of energy resource options to meet future electrical energy needs of the TVA region while taking into account TVA's mission of serving the Tennessee Valley through energy, environmental stewardship, and economic development. As part of the IRP, TVA identified the gas fleet, including Combustion Turbine (CT) plants, as playing a critical role in providing the flexibility needed to integrate renewable energy generation and promote distributed energy resources (TVA 2019a). TVA expects to add about 10,000 MW of solar by 2035, with 2,300 MW already committed subject to environmental review. Peaking units such as CTs are valuable in meeting electricity demand for shorter periods of high demand on summer and winter peak days, and their flexibility also plays a key role in successfully integrating renewable resources, which have variable and unpredictable generation patterns.

In 2019, TVA completed a CT Modernization Study to evaluate the condition of TVA's current CT units and form recommendations for investments to ensure a reliable peaking fleet into the future. The study characterized TVA's existing frame CT fleet as one of three categories based on age and material condition – Reliable, Challenged, and Most Challenged. Economic analysis of the Challenged group indicates that refurbishment is the prudent course of action. Based on age and material condition, units in the Most Challenged group would require significantly more investment to ensure an adequate level of reliability. CT Units 1-20 located on the TVA's Allen Reservation in Memphis, Tennessee, and CT Units 1-16 located on TVA's Johnsonville Reservation in New Johnsonville, Tennessee (total of 1,400 megawatt [MW] capacity) were determined to be in the Most Challenged group and recommended for retirement and replacement.

To provide the required capacity resulting from replacement of the Johnsonville and Allen CT units, TVA is proposing to construct and operate 1,500 MW of replacement frame CTs to be split between TVA's Paradise and Colbert reservations for commercial operation no later than December 31, 2023. This replacement aligns with the 2019 IRP near-term actions to evaluate engineering end-of-life dates for aging generation units to inform long-term planning and to enhance system flexibility to integrate renewables and distributed resources. TVA is also proposing to implement needed upgrades to the natural gas pipelines and transmission lines (TL) that will support the operation of the new Paradise and Colbert CT plants.

Accordingly, TVA prepared an environmental assessment (EA) to analyze the potential natural and socioeconomic impacts associated with the potential retirement of Johnsonville and Allen CT units and the construction and operation of replacement generation. The EA is incorporated herein by reference.

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Alternatives

TVA considered various gas asset types for replacement of generation lost as a result of retiring the Allen and Johnsonville CTs. Because the replacement generation must be capable of meeting peak demand at short notice, gas-fired frame CTs were selected as the preferred generation type. At this time, renewable energy and storage cannot provide this magnitude of reliable and cost-effective energy year-round to replace the retiring CTs.

TVA evaluated two alternatives in the EA: Alternative A – No Action and Alternative B – Retirement of Allen CT Units 1-20 and Johnsonville CT Units 1-16 and Construction of CT Units at Paradise and Colbert. The impacts of the alternatives were assessed in the EA.

Under Alternative A, TVA would not retire CT Units 1-20 at Allen or CT Units 1-16 at Johnsonville. These units would continue to operate as part of the TVA generation portfolio. In order for the existing units to remain operational, additional repairs and maintenance would be necessary in the future to maintain reliability.

Under Alternative B, TVA would retire CT Units 1-20 at Allen and CT Units 1-16 at Johnsonville. However, TVA would retain a few Allen CT units (about 80 MW) for emergency regional black start purposes until a suitable alternative is in place. Although the specific units to be retained have not been identified, they would only be used for emergency purposes and would not be considered part of TVA's normal operational system. To replace the capacity lost as a result of retiring the Allen and Johnsonville CTs, TVA would construct and operate three new natural gas-fueled frame CT units (750 MW total) at Paradise and three natural gas-fueled frame CT units (750 MW total) at Colbert for a system total of 1,500 MW.

At the Paradise site, TVA would construct three new natural gas-fueled frame CTs on heavily disturbed lands located within the boundaries of the Paradise Reservation. The proposed CT plant would include three gas-fired frame CT generators with inlet evaporative cooling and three natural gas-fired dew-point gas heaters. At full buildout, the CT plant would occupy approximately 4.4 acres of the 1,089-acre Paradise CT plant project area. TVA would also construct and operate a 500-kilovolt (kV) switchyard, which would be situated on approximately 21 acres located southeast of the CT plant within the project area. The existing 500-kV TL would be re-configured to re-terminate at the proposed switchyard. Laydown and temporary use areas would also be used for vehicle and equipment parking, materials storage, laydown, and construction administration during construction of the CT plant. Given site-specific conditions at Paradise, borrow material would be needed to support construction of the switchyard. Borrow material would be obtained from an approximately 34-acre borrow site located on the reservation. TVA has analyzed the material available to determine the presence of materials suitable for borrow in this previously disturbed area. During excavation, visual inspection in the field would be undertaken to confirm the excavated material is suitable for use as fill. After all needed suitable borrow material has been removed, the area will be graded to promote positive drainage and upon completion reseeded with an appropriate native seed mixture.

To provide the additional natural gas supply to the CTs at Paradise, a new natural gas-fired reciprocating internal combustion engine driving a reciprocating natural gas compressor, would be constructed at an existing compressor station located approximately 18 miles west of the Paradise CT project area in Muhlenberg County, Kentucky. Operation of the CT plant at Paradise would also require upgrades to two existing offsite TLs.

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At the Colbert site, TVA would construct three new natural gas-fueled frame CT units on heavily disturbed lands within the boundaries of the Colbert Reservation. The overall Colbert CT plant project area consists of 390.8 acres of land that includes a portion of land outside of the reservation where a natural gas line extension required for the project would occur. To provide power to the CT plant, TVA would construct three new 161-kV TLs to connect the existing switchyard to the new CT plant. To accommodate for the maximum demand for natural gas, a 20-inch diameter underground natural gas pipeline would be constructed parallel to the existing 10-inch diameter natural gas pipeline lateral. The approximately one-mile pipeline would primarily be installed on the portion of the Colbert CT plant project area that is located on TVA-owned property; however, a portion would be built just south of the reservation to connect the new lateral tie to the main distribution pipeline. Laydown and temporary use areas would also be used for vehicle and equipment parking, materials storage, laydown, and construction administration during construction of the CT plant. Operation of the CT plant at Paradise would also require upgrades to four existing offsite TLs.

Impacts Assessment

Based on the analyses in the EA, TVA concludes that the implementation of Alternative B, would not affect prime or unique farmland, land use, geologic resources, cultural resources, solid and hazardous wastes, and public health and safety. Activities associated with construction of the CT plants at Paradise and Colbert and associated offsite TL and natural gas upgrades have the potential to result in adverse impacts to visual resources, transportation, natural areas, parks and recreation, and noise during construction activities. These impacts would be minor and temporary.

Air emissions from the proposed CT plants would comply with all applicable standards, as well as any additional requirements established by state and local regulations. The proposed operation of the CT units at Paradise and Colbert, together with the retirement of Allen and Johnsonville CTs would result in a decrease in regional air emissions by removing CT units considered most challenged from TVA's generation portfolio and replacing them with higher efficiency natural gas-fired combustion powered generating units which are subject to current regulations more stringent than those applying to the retiring CTs.

Operation of the CTs at Paradise and Colbert would result in localized emissions of greenhouse gases (GHGs) that would represent 1.1 percent of total statewide emissions at Paradise and 1.1 percent at Colbert. At a national and global level, these percentages would be even smaller (or negative) since the composite TVA proposal reviewed in the EA involves not just construction and operation of the Paradise and Colbert CTs, but also the simultaneous retirement of the older CT's at Allen and Johnsonville barring the use of a few CTs at Allen for regional black start in an emergency. Thus, TVA's composite proposal is expected to result in a net reduction since the newer CTs installed at Paradise and Colbert would operate at a higher thermal efficiency than the ones being retired at Allen and Johnsonville.

Construction activities would potentially disturb soil stability and increase erosion, resulting in temporary, minor impacts to soils. Similarly, there would be temporary, minor impacts to surface water from sedimentation and aquatic resources due to surface water runoff. These impacts would be minimized through the use of appropriate best management practices (BMPs) and adherence to state and federal permit requirements.

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The Paradise and Colbert CTs would be located outside the 100- or 500-year floodplains, which would be consistent with EO 11988. Portions of the construction laydown areas within the Colbert CT plant project area are located within the 100-year floodplain. As there is no practicable alternative to locating within the floodplain, the original staging and laydown footprint in this area was reduced to minimize adverse impacts. The pipeline company would also develop an evacuation plan prior to mobilization to relocate flood-damageable, loose, or valuable equipment out of the floodplain during a flood. A portion of the new natural gas pipeline in the Colbert project area would be constructed within the 100-year floodplain. Consistent with EO 11988, utilities are considered to be repetitive actions in the 100-year floodplain that should result in minor impacts. To minimize adverse impacts, the portions of the pipeline trench that would be located within the floodplain would be backfilled such that the final settled ground elevation would be no higher than pre-construction elevation.

The proposed offsite TL upgrades for the Paradise and Colbert CT plants would be located high off the ground and well above the 100-year flood elevation, which would be consistent with EO 11988. Some existing access roads are located in the 100-year floodplain and floodways. Access roads are considered a repetitive action under EO 11988 and would not adversely affect floodplain functions or values.

Therefore, based on adherence to these mitigative measures, Alternative B would have no significant impact on floodplains and their natural and beneficial values.

Wetlands within the Paradise CT plant project area have been avoided with the exception of one 0.04-acre forested wetland that occurs along an on-site TL. In terms of EO 11990, there is no practicable alternative that would avoid impacting this wetland given operational constraints associated with the proposed project.

Approximately 0.03 acre of herbaceous wetland and 0.22 acres of herbaceous/scrub shrub wetland may be impacted by the construction of access roads and/or other land-disturbing activities associated with the off-site TL upgrades. These impacts are anticipated to be temporary and limited to the construction phase. During final design of the project, potential impacts to wetlands throughout all project areas will be minimized through further avoidance (if practical) and the implementation of erosion and sediment BMPs, as well as a site-specific Storm Water Pollution Prevention Plan to reduce potential sediment-laden runoff into adjacent or downgradient wetlands. As a result of implementing these measures, impacts to wetlands would be minor. TVA will coordinate with the USACE and appropriate state agency to determine jurisdictional status of any wetlands that cannot be avoided. Unavoidable impacts to jurisdictional wetlands will not occur unless authorized by the USACE through the CWA Section 404 permitting process and/or TDEC ARAP process, Kentucky Water Quality Certification Program, or Alabama Department of Environmental Management, as applicable.

Lands used for construction-related activities and operations are previously disturbed areas that lack notable plant communities. Therefore, impacts to vegetation and wildlife would be minor.

A number of activities associated with the proposed project were addressed in TVA's programmatic consultation with the USFWS, completed in April 2018, on routine actions with potential to affect federally listed bats in accordance with ESA Section 7(a)(2). For those activities with potential to affect bats, TVA committed to implementing specific conservation measures. These activities and associated conservation measures are identified on pages 5-7

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of the TVA Bat Strategy Project Screening Form and would be reviewed/implemented as part of the proposed project. Due to the use of BMPs and application of identified conservation measures, TVA determined through the programmatic consultation that actions such as the proposed actions are not likely to impact gray bat, Indiana bat, or northern long-eared bat. Further, TVA determined in the EA that no other listed threatened or endangered species would be affected by the proposed action.

Proposed actions adhere to the National Bald Eagle Management Guidelines. Two active osprey nests were documented on the Colbert CT plant project area, and two active osprey nests were documented on the Paradise CT plant project area during field review in August 2020 and one additional nest was observed on an offsite TL structure in September 2020. If the timing of proposed actions within 660 feet of these nests cannot be modified to avoid nesting seasons, coordination with USDA Wildlife Services would be required to ensure compliance under EO 13186 (Responsibilities of Federal Agencies to Protect Migratory Birds).

Alternative B would not impact federally listed plants, designated critical habitat, or state-listed plants species or aquatic threatened and endangered species because no suitable habitat for these species occurs within the proposed project areas.

Construction and operation of the CT plants would have a small positive effect on the local economy with the short-term employment of workers during construction and would have positive economic benefits to the regional economy related to increased capital expenditures. Implementation of Alternative B would not result in disproportionate adverse impacts to minority or low-income populations.

Public and Intergovernmental Review

The Draft EA was released for a 30-day public comment period on February 1, 2021 and was posted on TVA's website (<http://tva.com/nepa>). This public review period was later extended 10 days until March 13, 2021 in response to a request from several organizations. To solicit public input, the availability of the Draft EA was announced in newspapers that served both the Paradise and Colbert CT plant project areas and areas where associated offsite transmission line upgrades would occur. A news release was issued to the media. TVA circulated the draft EA to local, state, and federal agencies and federally recognized tribes. TVA received comments from the U.S. Environmental Protection Agency, Kentucky Department of Environmental Protection, Tennessee Department of Environment and Conservation, Sierra Club, and eight members of the public. Comments from Sierra Club included 441 signatures, 177 of which are accompanied by additional personal messages. A comment letter was submitted by Southern Environmental Law Center in conjunction with Appalachian Voices, Energy Alabama, GASP, Shoals Environmental Alliance, Sierra Club, and Southern Alliance for Clean Energy and included twenty-three attachments. The most frequently mentioned comments related to climate impacts, environmental justice, analysis of alternatives, and cumulative impacts. TVA has considered all substantive comments it received on the draft EA and has responded to them in the Final EA as appropriate. A full list of the comments received and TVA's responses can be found in Appendix A of the Final EA.

Pursuant to Section 106 of the National Historic Preservation Act (NHPA), TVA has completed consultation with the Alabama, Kentucky, and Tennessee State Historic Preservation Officers (SHPOs) and with federally recognized Indian tribes. The SHPOs have concurred with TVA's findings for the portions of the project in their respective states that the undertaking will result in

no effects to historic properties. None of the consulted Indian tribes objected to the undertaking or identified resources of concern. Accordingly, the requirements of Section 106 of the National Historic Preservation Act have been met.

Mitigation and Commitments

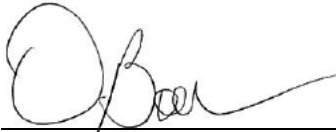
TVA would implement operating permit requirements and the routine BMPs described in the EA to avoid or reduce minor adverse environmental effects associated with the construction and operational activities. In addition, mitigation measures designed to avoid, minimize, or compensate for adverse impacts associated with the proposed activities include:

- TVA would establish a 50-foot buffer around the stream located within a laydown and warehouse area at Paradise and avoid any ground disturbing actions within the buffer to avoid direct impacts to the stream.
- New TL construction would adhere to the TVA subclass review criteria for TL location in floodplains.
- Any road improvements proposed in floodplains but not floodways would be constructed in such a manner that upstream flood elevations would not be increased by more than 1.0 foot.
- During construction, the commercial natural gas provider at Colbert would develop an evacuation plan prior to mobilization to relocate flood-damageable, loose, or valuable equipment out of the floodplain during a flood.
- To prevent obstruction in the floodway due to construction or modification of the access roads to TL 6057 Structures 7-10 in the Green River floodway; TL 5823 Structure 94 in the Bulls Creek floodway; and TL 5670 Structures 137 and 140 in the Clark Spring Branch Tributary floodway: (1) any fill, gravel or other modifications in the floodway that extend above the pre-construction road grade would be removed after completion of the project; (2) this excess material would be spoiled outside of the published floodway; and (3) the area would be returned to its pre-construction condition.
- At Colbert, the portions of the natural gas pipeline trench that would be located within the floodplain would be backfilled such that the final settled ground elevation would be no higher than the pre-construction ground elevation.
- The conservation measures required for this project are identified on pages 5-7 of the TVA Bat Strategy Project Screening Form and they will be implemented as part of the proposed project. Project activities are within the bounds of impacts analyzed in TVA's Bat Strategy Programmatic Section 7 ESA consultation in accordance with ESA Section 7(a)(2). For those activities with potential to affect bats, TVA committed to implementing specific conservation measures.
- If the timing of proposed actions within 660 feet of the two osprey nests at Colbert, two osprey nests at Paradise, and one on TL 5676 cannot be modified to avoid nesting seasons, coordination with the USDA Wildlife Services would be required to ensure compliance under the EO 13186 [Responsibilities of Federal Agencies to Protect Migratory Birds].
- TVA is performing analysis to determine the presence of materials suitable for borrow at the identified borrow site on the Paradise Reservation. Visual inspection in the field would be undertaken to confirm the excavated material is suitable for use as fill. After all needed suitable borrow material has been removed, the area will be graded to promote positive drainage and upon completion reseeded with an appropriate native seed mixture.

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Conclusion and Findings

Based on the findings in the EA, TVA concludes that implementing Retirement of Allen CT Units 1-20 and Johnsonville CT Units 1-16 and Construction of CT Units at Paradise and Colbert, would not be a major federal action significantly affecting the environment. Accordingly, an environmental impact statement is not required.



Dawn Booker, Manager
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Federally Mandated Environmental
Compliance
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07/06/2021

Date Signed