

DETERMINATION OF NEPA ADEQUACY
CONTINUED OPERATIONS OF ALLEN COMBUSTION TURBINE
UNITS 19 AND 20 (SHELBY COUNTY, TENNESSEE)
TENNESSEE VALLEY AUTHORITY

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The Tennessee Valley Authority (TVA) is continuing its operation of two combustion turbine (CT) units at the Allen Combustion Turbine facility in Memphis, Tennessee. In the Paradise and Colbert Combustion Turbine Plants Final Environmental Assessment (Final EA), TVA stated that the 20 CT units at Allen would be retired from operations once TVA constructed and began operating new CT units at its Paradise and Colbert plants. TVA also stated in the Final EA that it would continue to operate a few CT units at Allen for the foreseeable future for the purpose of regional emergency black start purposes. TVA is now proposing to continue operating two CT units that are not black start capable on a limited basis to meet critical power demand and to ensure system reliability. Limited operations may occur during periods of high load demand driven by extreme temperatures; for contingency mitigation determined by system operators to be necessary for voltage stability, thermal line loading, or other such purpose; and to support critical needs of direct-served customers. TVA would also periodically perform test runs of the units to ensure maintenance and reliability. This represents a minor change in scope from the proposal addressed in the Final EA. TVA's National Environmental Policy Act (NEPA) Compliance program has prepared this memorandum to document its determination that the continued operation of Units 19 and 20 at Allen CT on a limited basis is adequately addressed by the 2021 Final EA and that additional environmental review is not necessary (40 CFR 1501.5(i) and 18 CFR 1318.101).

Background

The Final EA, completed in June 2021, addresses the construction and operation of three new natural gas-fueled frame CT units at TVA's Paradise Reservation in Drakesboro, Kentucky, and three natural gas-fueled frame CT units at TVA's Colbert Reservation in Tusculumbia, Alabama, for a system total of 1,500 megawatts (MW) to replace the capacity lost due to the proposed retirement of 20 existing CT units at Allen and 16 existing CT units at Johnsonville. In addition to the Final EA, TVA also analyzed the effects associated with the retirement and decommissioning of Allen and Johnsonville CTs in the 2019 Integrated Resource Plan Environmental Impact Statement (IRP EIS), which was incorporated by reference into the Final EA. Based on the findings in the Final EA, TVA concluded that implementing the proposed project would not be a major federal action significantly affecting the environment and issued a finding of no significant impact (FONSI).

TVA's 2019 Integrated Resource Plan (IRP) provides 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 continued need to rely upon its gas fleet, including CTs, to play a critical role in providing the flexibility needed to integrate renewable energy generation and promote distributed energy resources. The IRP target supply mix adopted by the TVA Board of Directors in August 2019 includes the addition of up to 5,200 MW of CT capacity by 2028 to meet the demand for electricity and facilitate the integration of solar onto the TVA bulk power system. TVA issued its Final EIS in June 2019 and the Record of Decision for the IRP in September 2019.

The Paradise and Colbert CT proposal was consistent with TVA's IRP and an internal review of TVA CT units. TVA completed a CT Modernization Study in 2019 to evaluate the condition of TVA's current CT units and form recommendations for investments to ensure the fleet can reliably support peaks in demand into the future. In the Study, ACT Units 1-20 located on TVA's Allen reservation and CT Units 1-16 located on TVA's Johnsonville reservation (total of 1,400 MW in capacity) were determined to be among the most challenged of TVA's CT fleet. These CT units were recommended for retirement and replacement. Following the 2021 environmental review, TVA constructed the Paradise and Colbert CT plants. Operations and power generation at the new Paradise CT facility began in late December 2023. Operations and generation began at the new Colbert CT facility in July 2023.

TVA has experienced a continued load growth and needs dispatchable generation capacity, particularly during extreme weather events, to ensure that TVA can reliably meet year-round generation, maximum capacity system demands, planning reserve margin trends, and comply with the requirement under the TVA Act that power be sold at rates as low as feasible. 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.

Proposal

The 2021 Final EA addresses the retirement of the Allen and Johnsonville CTs but includes an exception for some Allen units to continue operations. In the Final EA, TVA states it would not retire all Allen units. Rather, 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."* (Final EA, page 9). Of the 20 Allen CT units, only Units 19 and 20 are currently operable. The units, which do not have black start capabilities, are capable of generating about 120 MW of electricity in total (60 MW each). The units with black start capabilities have been retired by TVA.

As described above, TVA is planning to keep two units (Units 19 and 20) in a state of readiness since these units remain operable and TVA continues to need peaking units to meet critical power demand and to ensure system reliability. Operating Units 19 and 20 in this manner represents a change in the scope of the proposed action addressed in the Final EA because the two units are not black start units. Accordingly, NEPA Compliance has reviewed the Final EA to determine whether their continued operation differs substantially from the proposed operation of Allen CT units for regional emergency startup needs.

In the past, Units 19 and 20 have typically been operated during extreme weather when power demands are the highest and obtaining additional generation is most critical to support the system. TVA anticipates that the units, which may be operated on fuel oil or natural gas, would be operated infrequently due to their age, relative inefficiency, and generation costs. On occasion TVA has operated the units to support start-up processes of direct-serve customers to restore critical equipment. In the past 10 years, TVA has operated Unit 19 about 10 hours annually and Unit 20 about 20 hours annually (these figures reflect the combined natural gas and fuel oil generation hours). In the past five years, these units were operated even less on average. TVA planners estimate that the two units would likely be operated a similar number of hours in the future as they have in the past. Future operation of the units would be limited and would occur primarily when additional peaking generation resources are critically needed by TVA.

Discussion

TVA NEPA Compliance has evaluated the Paradise and Colbert Combustion Turbine Final EA to determine whether the proposed change in scope (i.e., operating Units 19 and 20 in the future on a limited basis rather than other Allen black start units) is substantial and requires additional environmental review, consistent with NEPA-implementing regulations issued by the Council on Environmental Quality (40 CFR 1501.5(i)) and with TVA NEPA regulations (18 CFR 1318.101(d)).

The operations of Units 19 and 20 would be similar in nature to the proposal analyzed in the Final EA. Under Alternative B, TVA analyzed retiring the 20 Allen CT units, except for “a few” Allen CT units for emergency regional needs. The Final EA addresses the continued operation of a few units at Allen CT for regional emergency startup needs. Continuing to operate the two units on a limited basis for the purposes described above does not differ substantially from operating Allen CT units for regional emergency startup needs. In both instances, units would be used primarily to meet extraordinary demand or address special circumstances and when alternative generation sources are least available.

The analysis of alternatives in the Final EA provides a spectrum of potential effects associated with operation of the ACT units, with analysis on their continued operation and on their retirement (with the aforementioned exception). The continued operations of units at Allen CT site on a limited basis were actions analyzed in the Final EA under Alternative A, the No Action alternative. Under Alternative A, TVA analyzed continuing to operate all 20 Allen CT units rather than retiring the units. Under Alternative B, the proposed action, as noted above, TVA disclosed that Allen CT units would be retired except for a few Allen CT units that would be retained for emergency regional black start purposes. Operating Units 19 and 20 on a limited basis is a minor, non-substantial change to what was analyzed in the Final EA and in relation to the entire proposal analyzed under Alternative B.

In the Final EA, TVA stated that retiring the 20 units at ACT would have beneficial environmental effects, most notably reductions in air emissions and climate impacts. The 2019 IRP EIS programmatically evaluated future power generation decisions and found that implementing the plan would result in an overall reduction in annual greenhouse gas emissions. Based on the Final EA, TVA concluded that its proposal, which included continued operation of a few Allen CTs, would not result in any significant adverse effects. The basis for this conclusion

was largely attributed to the proposed replacement of the older CT units with newer, more efficient gas generation units, resulting in a decrease in overall system emissions. The continued operation of Units 19 and 20 at Allen represents a minor decrease in the beneficial effects attributable to the project. Such impacts, however, were assumed to occur on a limited basis in the Final EA, with the proposed operation of a few Allen CT units to address emergency regional startup needs.

As noted above, in its review TVA did not identify any significant environmental effects that would result from the proposal. Since the completion of the Final EA, TVA has not identified any substantial new circumstances or information about the significance of adverse effects that bear on the previous analysis and the determination whether significant effects would occur. As noted above, the need for dispatchable power generation options has increased since completion of the Final EA. While higher than expected demand is a new circumstance, it does not bear on the previous analysis because TVA anticipates operating the two units in a manner consistent with the proposal of the Final EA (i.e., on a limited basis). Further, TVA planners do not anticipate operating the two units in a manner that differs substantially from its previous operation of the two units.

Conclusion

Consistent with 40 CFR 1501.5(i), TVA reviewed the Paradise and Colbert Combustion Turbine Final EA and associated FONSI, published by TVA in June 2021, to determine whether the current proposal is substantially the same as alternatives considered in the Final EA and whether substantial new circumstances or information about the significance of adverse effects exist that bear on the previous analysis in the Final EA. TVA found that the continued operation of two units at Allen CT is adequately addressed in the Final EA.

TVA affirmed that the operation of the two units on a limited basis is adequately addressed in the Final EA. The Final EA includes an adequate analysis of the potential impacts associated with continued operation of the two units on a limited basis at TVA's Allen CT site. There have been no substantial changes to the proposed action analyzed in the Final EA, and there are no substantial new circumstances or information about the significance of adverse effects that bear on the analysis in the Final EA. Based on this review, I conclude that the requirements for evaluating (40 CFR 1501.5(i)) and documenting (18 CFR 1318.101) this determination have been met and additional supplemental NEPA documentation is unnecessary.



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Date