



**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY**  
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Ms. Ashley Pilakowski  
NEPA Specialist  
Tennessee Valley Authority  
400 West Summit Hill Drive  
Knoxville, Tennessee 37902

Re: EPA Comments on the Final Environmental Impact Statement for the Cumberland Fossil Plant Retirement, Stewart County, Tennessee; CEQ No: 20220181

Dear Ms. Pilakowski:

The U.S. Environmental Protection Agency reviewed the referenced document in accordance with Section 309 of the Clean Air Act (CAA) and Section 102(2)(C) of the National Environmental Policy Act (NEPA). The CAA Section 309 role is unique to EPA. It requires EPA to review and comment publicly on any proposed federal action subject to NEPA's environmental impact statement requirement. In addition to our Section 309 role, EPA is a cooperating agency on this project.

The Tennessee Valley Authority (TVA) issued a Final Environmental Impact Statement (Final EIS) to evaluate the impacts of the proposed retirement and demolition of two units of the Cumberland Fossil Plant (CUF) and the addition of replacement generation to recover the generation capacity lost from the retirement of one unit. The CUF is situated on a 2,388-acre reservation of the Cumberland River in Stewart County, Tennessee (TN). The two-unit, coal-fired steam-generating plant is the largest plant in TVA's coal fleet, with a summer net generating capacity of 2,470-megawatts (MW). According to the Final EIS, the proposed action would retire the CUF plant and pursue an alternative power generation source to provide cost-effective replacement generation that would be consistent with TVA's 2019 Integrated Resource Plan (IRP) and near-term energy production goals.

TVA developed and analyzed the no-action alternative, the proposed action, and two additional alternatives. Under the No-Action Alternative, TVA would continue to maintain and operate coal-fired boilers at CUF. TVA continues to identify Alternative A as the preferred alternative which involves the retirement and demolition of the CUF, and the construction and operation of a 1,450 MW capacity combined cycle combustion turbine (CC) natural gas plant at the same site. Alternative A would also require construction of a proposed 32-mile natural gas pipeline extending through Stewart, Houston, and Dickson counties, TN. According to the Final EIS, Alternative A provides baseload power as renewable sources are deployed system-wide.

EPA acknowledges the positive impact that the retirement of the CUF will have on greenhouse gas (GHG) emissions. EPA appreciates that many of our recommendations provided in our June 30, 2022, letter pertaining to impacts to communities with environmental justice concerns, stream and wetlands protection, and flood plain avoidance were incorporated in the Final EIS. However, TVA did not accept many of EPA's recommendations related to climate change or GHG emissions reductions. These include:

- Completing a more robust evaluation of renewable power sources, including more attention on improved resiliency to all types of foreseeable grid emergencies;
- Incorporating practical mitigation options to reduce greenhouse gas (GHG) emissions;
- Quantifying upstream GHG emissions;
- Fully integrating the 2021 interim estimates from the Interagency Working Group on Social Cost of GHG;
- Reconciling TVA’s positions with national science-driven GHG reduction policy goals; and,
- Addressing the potential to lock-in large-scale fossil fuel use and production.

As discussed in our detailed comments, EPA recommends that TVA’s Record of Decision (ROD) clarify factors related to considering impacts from GHG emissions that TVA balanced in making its decision on the selected alternative. EPA also recommends that TVA incorporate practicable mitigation measures to reduce GHG emissions and associated climate impacts from the preferred alternative, including considering an “adaptive management” strategy to periodically reassess demand reduction opportunities to decrease the amount of natural gas generation required from the Cumberland electric generating units. Further, EPA recommends for all near-term and future TVA actions, such as the Kingston Coal Retirement project, TVA should factor in significant Inflation Reduction Act (IRA) incentives and consider TVA’s 2021 Strategic Intent and Guiding Principles as well as national GHG reduction goals and policies. Lastly, EPA recommends in the scheduled update to the Integrated Resource Plan (IRP) that TVA align with its 2021 Strategic Intent and Guiding Principles, national science-based GHG emissions reduction policy goals, updated cost factors, IRA incentives, and technological advances that would reduce TVA’s overall reliance on fossil fuel generating capacity to meet future demand projections.

EPA is available and eager to work with TVA to address these and other forward-looking concerns around power generation and decarbonization in the TVA system. We have provided recommendations to consider opportunities that make progress toward zero GHG emissions targets. In EPA’s view, our concerns are substantial. Nevertheless, EPA is committed to working with TVA to ensure accurate information is disclosed. We are available to work with TVA on our recommendations for this project, and future efforts to advance TVA’s decarbonization goals.

EPA appreciates the opportunity to review the Final EIS. To discuss our recommendations further, please contact Mr. Douglas White of my staff at [white.douglas@epa.gov](mailto:white.douglas@epa.gov) or (404) 562-8586.

Sincerely,

Jeaneanne M. Gettle  
Deputy Regional Administrator

Enclosure

## Enclosure

### Detailed Comments on the Final Environmental Impact Statement (Final EIS) for the Cumberland Fossil Plant Retirement CEQ No: 20220181

In general, the alternatives analysis continues to rely on inaccurate underlying economic information. The analysis also does not fully account for the economic effects and opportunities of the Inflation Reduction Act (IRA). As a result, the analysis does not reflect a balanced economic assessment of the alternatives. In addition, mainstream forecasts predict ongoing declines in clean energy costs and expected increases in natural gas costs. As natural gas costs continue to increase, implementing renewable energy options will become more competitive in the long-term, often becoming the low-cost alternative. In fact, the IEA's Renewables 2022 Report finds that the global energy crisis is driving a sharp acceleration in installations of renewable power, with total worldwide growth capacity set to double in the next five years, and renewables set to account for over 90 percent of global electricity expansion. Yet, TVA's preferred alternative does not take into account these trends and the implications of continued fossil fuel investment for its ratepayers and the cost and public health toll of increasingly disruptive climate-driven weather extremes. Moreover, the document does not reflect the urgent need to take climate action, as reinforced by the most recent scientific reports by the Intergovernmental Panel on Climate Change, and TVA's own laudable ambition to be a national leader on decarbonization, as articulated in its May 2021 strategic plan to "[a]dapt to new technologies and changing policies, and...be willing and open to changing our plans and projects to achieve deep carbon reduction."

The Final EIS did not incorporate the following suggested improvements that EPA recommended in its June 30, 2022, comment letter on the Draft EIS:

- Integrate renewable energy, demand management, and energy efficiency alternatives that could reduce the size of the proposed Cumberland natural gas plant.
  - EPA notes the varied benefits of demand management and energy efficiency—GHG and other emissions reductions, lower electricity bills, and greater customer comfort. Demand management could also help avoid rolling blackouts like those TVA implemented recently arising in part from issues at fossil fuel-fired facilities.<sup>1</sup> In California, for example, automatic text notifications and an alert system solved a grid emergency this Summer, averting blackouts.<sup>2</sup>
- Incorporate practical mitigation measures to reduce GHG emissions and associated impacts from the preferred alternative, including, but not limited to, hydrogen and carbon capture and sequestration.
- Disclose and consider all direct and indirect project GHG emissions. Such an analysis would include upstream and pipeline emissions; assessment of GHG emissions in the context of national and state GHG reduction targets and policies; avoiding expressing project-level GHG emissions as a percentage of national or state GHG emissions; applying only the most current interim estimates of the social cost of GHG (SC-GHG); and, comparing the proposed projects' long-term generation impacts with energy use trajectories consistent with achieving science-based targets for GHG reduction.

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<sup>1</sup> <https://www.timesfreepress.com/news/2022/dec/26/weekend-electricity-outages-fallout-tva-ftp/>.

<sup>2</sup> <https://www.latimes.com/california/story/2022-09-07/a-text-asked-millions-of-californians-to-save-energy-they-listened-averting-blackouts>.

- Disclose and consider how the preferred alternative is consistent with science-driven policy goals and TVA’s aspiration to become a net-zero carbon producing utility. Of specific note:
  - Although TVA discusses the policy context of their actions and federal decarbonization objectives, the Final EIS is clear that TVA will not achieve those science-driven policy goals with the preferred alternative. The Final EIS further acknowledges that Alternative C, a combination of solar generation and battery storage, would contribute to national compliance with the Paris-agreement to a greater extent than other alternatives. TVA also does not acknowledge that the policy goals are supported by scientific findings.
  - As EPA noted in our Draft EIS comment letter, “Executive Order (EO) 14057 establishes a policy for the federal government to lead by example in order to achieve a carbon-pollution free electricity sector by 2035 and net-zero emissions economy-wide by no later than 2050.” TVA’s proposed combined cycle gas plant would potentially be online for decades. Without mitigation or abatement options, TVA’s plans will not meet federal objectives for a carbon-pollution free electricity sector by 2035.
  - TVA’s plans are likewise out of alignment with the Paris Agreement targets, under which the United States pledged to reduce net GHG emissions economy-wide by 50-52% below 2005 levels by 2030, consistent with a pathway to net-zero by 2050. The Paris Agreement targets are fortified in EO 14057, which commits federal operations to a goal of net-zero GHG emissions by 2050.
- Address whether and how the preferred alternative would lock-in large-scale fossil fuel use and production. The Final EIS does not address EPA’s comments regarding the potential for preferred alternative to lock-in large-scale fossil fuel use and production, along with the associated financial risks, when compared with energy resources with lower GHG emissions. The Final EIS does not fully disclose whether the preferred alternative could yield stranded assets due to market and policy factors that reduce demand for fossil-generated electricity.

EPA recommends that TVA clarifies in the Record of Decision (ROD) TVA’s considerations for choosing the selected alternative, including the following concerns EPA identified in the Final EIS:

- To support TVA’s accelerated timeline for retiring the Cumberland coal plant, the Final EIS relies on proposed Effluent Limitation Guidelines (Guidelines). However, the accelerated timeline may have unnecessarily limited the extent to which TVA incorporated renewable energy options and other practicable mitigations. The current Guidelines establish a compliance date target of 2028.
- The Final EIS did not disclose to what extent each alternative is resilient or vulnerable to outages (e.g., extreme cold weather events) in a manner that allows for comparison across alternatives, with the expectation that climate change will increase impacts that could affect risks to reliability. TVA should discuss the resilience benefits of renewables paired with energy storage and how they could strengthen the grid during emergencies.
- The Final EIS may continue to underestimate the potential costs of the combined cycle gas plant and overstate the cost of solar and storage.
- The data in the Final EIS from the Energy Information Administration (EIA) that TVA uses to show that solar and storage would be more expensive was not consistent with the EIA findings. The Final EIS compares EIA’s Levelized Cost of Energy (LCOE) for a combined cycle unit to the LCOE of solar plus battery storage. However, EIA states that LCOE comparisons are misleading as to economic competitiveness among generation options. Further, the EIA document that TVA cites suggests that Levelized Avoided Cost of Electricity (LACE) would be

a more appropriate metric for comparison.<sup>3</sup> Using LACE suggests the two technology options (combined cycle gas turbine and solar with storage) are much more competitive than the LCOE comparison suggests.

- In addition, TVA’s costing analysis does not consider the lower cost of lower-GHG technologies facilitated by the IRA or likely future GHG mitigation policies. These broad impacts will significantly affect the analysis of each alternative by changing aspects of the energy market, such as energy prices and demand and supply. IRA and future policies will also affect the projected emissions from each alternative and the underlying cost of technologies. To help TVA conduct an analysis of costs from energy sources, EPA recommends TVA review the Department of Energy’s estimates of the impacts of the IRA on clean energy and GHG emissions.<sup>4</sup> EPA recommends that TVA incorporate in the ROD how IRA tax credit guidance—some of which is already available to the public—may influence the factors considered for the selected alternative.
- The Final EIS did not directly quantify upstream GHG emissions and continues to include outdated 2019 SC-GHG estimates that have been withdrawn by executive order. Since these estimates of the SC-GHG have been revoked, including them in the EIS does not accomplish TVA’s intention to present a range of potential impacts. To convey a potential range of future impacts, EPA recommends using the full range of the 2021 IWG SC-GHG estimates in the ROD, including other discount rates and the 95th percentile. Further to these points:
  - The Final EIS asserts that there is “legal uncertainty” with the IWG’s 2021 interim SC-GHG estimates. As EPA noted in our comments on the Draft EIS, this is not the case.
  - The Final EIS retains the assertion from the Draft EIS that SC-GHG results for TVA system-wide effects are relatively close for all alternatives. However, TVA’s analysis presents results in conflict with that assertion, namely, a difference of roughly \$200 million in direct emissions impact annually between the preferred natural gas alternative and the solar alternative (Alternatives A and C) – approximately \$3 billion in Net Present Value (NPV), or 3%, over the 30-year life of the project. Furthermore, it is unclear how to compare the system-wide modeling and lifecycle modeling to fully assess GHG-related differences between the alternatives.
- The Final EIS did not quantify and report all reasonably foreseeable direct and indirect GHG emissions (*e.g.*, carbon dioxide (CO<sub>2</sub>), methane, and nitrous oxide (NO<sub>x</sub>)) attributable to the proposed action and alternatives.
- Although the Final EIS has been updated to include a Life Cycle Analysis (LCA), the results of that analysis are aggregated and do not separately present the indirect emissions. To better clarify how GHG emissions factor into the selection of the preferred alternative and improve the transparency and replicability of results, more details are needed in the ROD on the LCA and system-wide models. The LCA indirect and direct effects should be included as well as the annual impacts from the direct effects in the system-wide model over time.
- In the Draft EIS, the GHG emissions and monetized values were presented across 20 years and the NPV was calculated over that time period. The Final EIS revisions present only annual estimates for the direct GHG impacts and do not present the NPV for the system-wide analysis. This has made the analysis less transparent. Additionally, it is not clear how to reconcile the difference between the results of the LCA and the system-wide direct GHG impacts. Over 30 years (the updated Final EIS time period), the LCA suggests that Alternative C has roughly \$2 billion less in social costs than Alternative A. Conversely, by discounting the difference in

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<sup>3</sup> [Levelized Costs of New Generation Resources in the Annual Energy Outlook 2022 \(eia.gov\)](https://www.eia.gov/analysis/studies/levelized-cost-of-new-generation-resources/)

<sup>4</sup> [https://www.energy.gov/sites/default/files/2022-08/8.18%20InflationReductionAct\\_Factsheet\\_Final.pdf](https://www.energy.gov/sites/default/files/2022-08/8.18%20InflationReductionAct_Factsheet_Final.pdf);  
<https://www.energy.gov/policy/methodological-appendix>.

annual values from the direct effects of the system model (Table 3.7-4) over 30 years, EPA finds that Alternative C has roughly \$3 billion more in net benefit (of only direct CO<sub>2</sub> effects) than Alternative A.

EPA recommends committing in the ROD to an “adaptive management” strategy to periodically reassess demand reduction opportunities and the availability of renewable energy sources to decrease the quantity of natural gas generated power required from the Cumberland electric generating units.

- Guidance and increased resources from IRA and other authorities are being released on a frequent basis and may provide opportunities to implement renewable energy and energy efficiency options sooner than estimated in the Final EIS.
- The strategy should also include incorporating options to integrate hydrogen and carbon sequestration into the plant over time to mitigate GHG emissions.

EPA recommends and looks forward to future collaborations with TVA. For immediate future actions, such as the Kingston Coal Retirement project, TVA should incorporate IRA opportunities and consider TVA’s 2021 Strategic Intent and Guiding Principles and national GHG reduction goals and policies. TVA should also engage Department of Energy’s National Renewable Energy Laboratory (NREL) for advice and recommendations on that project to advance timelines and opportunities for implementing a more robust portfolio of renewable energy.

Along with TVA’s scheduled IRP update, EPA recommends that TVA align the IRP with its 2021 Strategic Intent and Guiding Principles, national science-based policy goals, updated cost factors, and technological advances that would reduce their overall reliance on fossil fuel generating capacity to meet future demand projections. EPA also recommends that TVA’s updated IRP reflect the impact of recent legislation, such as the IRA, on demand projections and renewable energy opportunities.

- As mentioned above, because the IRA provides increased opportunities and contains resources relevant to future energy consumption patterns and forecasts, it should be considered in the TVA system-wide approach to managing its resources.
- TVA should consider updated resources such as the Treasury Department’s Final Rule on Section 45Q Credit Regulations, that provide clarity on how to use the Section 45Q credit for qualified carbon oxide sequestration.<sup>5</sup>
- Also of note, the White House’s recently published Guidebook on the Inflation Reduction Act names TVA as an eligible recipient of direct pay credits under twelve headings, including the Clean Electricity Production Tax Credit, the Production Tax Credit for Electricity from Renewables, and the credit for Carbon Oxide Sequestration, among other sections with potentially significant impacts to TVA’s costing analysis.<sup>6</sup>
- EPA recommends TVA also engage NREL for advice and recommendations to advance timelines and opportunities for implementing a more robust portfolio of renewable energy in the updated system-wide approach.

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<sup>5</sup> <https://www.irs.gov/pub/irs-drop/td-9944.pdf>.

<sup>6</sup> <https://www.whitehouse.gov/wp-content/uploads/2022/12/Inflation-Reduction-Act-Guidebook.pdf>.