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Via Submission to TVANepaComments.com, Electronic Mail, and Registered Mail

Ms. Ashley Pilakowski
NEPA Specialist
Tennessee Valley Authority
400 West Summit Hill Drive
Knoxville TN 37902
nepa@tva.com
aapilakowski@tva.gov

Re: Scoping Comments for 2021 Environmental Impact Statement on Cumberland Fossil Plant Retirement

Dear Ms. Pilakowski,

On behalf of the Center for Biological Diversity (“Center”), we submit these scoping comments on the Tennessee Valley Authority’s (“TVA”) Notice of Intent to prepare an Environmental Impact Statement (“EIS”) for the retirement of the Cumberland Fossil Plant (“Cumberland Plant”). We appreciate the opportunity to provide these comments on issues including the necessity for TVA to add a critical action alternative to the EIS: offsetting the Cumberland Plant’s electricity production with distributed energy resources (“DER”), storage, and energy efficiency improvements. Moreover, the climate emergency and growing energy inequity in the Tennessee Valley demand an expedited phasing out of fossil fuels. The EIS must therefore also fully consider retiring both Cumberland units much sooner than the proposed 2033 timeline.

We applaud TVA’s decision to retire the Cumberland Plant and encourage TVA to rapidly pursue retiring its other remaining coal plants. However, at present TVA only intends to consider three action alternatives for the Cumberland Plant’s retirement, only one of which would replace the coal plant with renewable energy. The other two alternatives prioritize Combined Cycle Combustion Turbine (“CC”) gas plants and Simple Cycle Combustion Turbine (“CT”) gas plants. Both of these energy options fail to address the most pressing issue today: the urgent need for a rapid transition away from all fossil fuels toward a renewable energy economy in order to avoid the worst impacts of climate change and address the disproportionate harm experienced by environmental justice communities from the fossil fuel economy. Given the most recent climate change science and the significant climate change harms already occurring in TVA’s territory,

TVA must consider alternatives that would have the agency do its requisite part to advance this necessary energy transition.

Moreover, earlier this year President Biden issued an Executive Order to transform the entire U.S. electricity sector to be carbon-free by 2035.¹ He emphasized the Administration’s policy “to organize and deploy the *full capacity of its agencies* to combat the climate crisis.”² As a federal agency and the country’s largest public power provider, TVA must advance carbon-free electricity on a timeline consistent with climate science and the President’s goal. The Cumberland Plant EIS must therefore fully and fairly consider alternatives providing for the rapid retirement of the Plant and its replacement with clean, renewable energy sources, including DER, storage and energy efficiency options, in order to comply with the National Environmental Policy Act (“NEPA”), 42 U.S.C. § 4321, *et seq.*

DISCUSSION

A. The Climate Emergency Demands Immediate And Substantial Reductions in Greenhouse Gas Emissions From TVA.

1. *The climate crisis on a global scale*

The U.S. federal government, and scientists globally, have determined that human-caused climate change is bringing wide-spread harms throughout the country and the world. As the U.S. government summarized in its most recent authoritative Report on the subject (the Fourth National Climate Assessment (“NCA”)), “evidence of human-caused climate change is overwhelming and continues to strengthen, [] the impacts of climate change are intensifying across the country, and [] climate-related threats to Americans’ physical, social, and economic well-being are rising.”³

¹ See President Biden Executive Order on Tackling the Climate Crisis at Home and Abroad, Sections 201 and 205(b)(i) (“Biden Order”) (Jan. 27, 2021), <https://www.whitehouse.gov/briefing-room/presidential-actions/2021/01/27/executive-order-on-tackling-the-climate-crisis-at-home-and-abroad/>.

² *Id.* (emphasis added).

³ U.S. Global Change Research Program, *Impacts, Risks, and Adaptation in the United States*, Fourth National Climate Assessment, Volume II (2018) at 36, *al Climate Assessment, Volume II* (2018), <https://nca2018.globalchange.gov/>; see also U.S. Global Change Research Program, *Climate Science Special Report: Fourth National Climate Assessment, Vol. I* (2017), <https://science2017.globalchange.gov/>; U.S. EPA [U.S. Environmental Protection Agency], Endangerment and Cause or Contribute Findings for Greenhouse Gases Under Section 202(a) of the Clean Air Act; Final Rule, 74 Federal Register 66496 (2009); Duffy, Philip B. et al., Strengthened Scientific Support for the Endangerment Finding for Atmospheric Greenhouse Gases, 363 Science 1 (2019) at 1.

This next decade is absolutely crucial to avoiding the most devastating impacts. The NCA makes clear that the harms of climate change are long-lived, and for that reason the steps taken *now* to combat – or to not combat – greenhouse gas (“GHG”) pollution will have implications for many decades to come.⁴ Indeed, as detailed by the Intergovernmental Panel on Climate Change (IPCC), without prompt action across all sectors, the world is headed to 2°C or more of warming in the coming decades, which will lead to catastrophic climate change impacts.⁵

The Fourth NCA also finds – with very high confidence – that the *status quo* threatens to bring the planet past tipping points that cannot be cured, and which threaten even more catastrophic impacts.⁶ The Intergovernmental Panel on Climate Change (“IPCC”) issued a very similar warning in 2014,⁷ and the evidence that the climate system is approaching these tipping points only further demonstrates the urgent need for immediate action to address these threats.⁸

2. *The climate crisis in TVA’s territory*

⁴ U.S. Global Change Research Program, *Impacts, Risks, and Adaptation in the United States, Fourth National Climate Assessment, Volume II* (2018), <https://nca2018.globalchange.gov/> at 34; *id* at 1347 (“[m]any climate change impacts and associated economic damages in the United States can be substantially reduced over the course of the 21st century through global-scale reductions in greenhouse gas emissions”).

⁵ Intergovernmental Panel on Climate Change, *Global Warming of 1.5°C, An IPCC special report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty* (2018).

⁶ U.S. Global Change Research Program, *Climate Science Special Report: Fourth National Climate Assessment, Vol. I* (2017), <https://science2017.globalchange.gov/> at 411.

⁷ Intergovernmental Panel on Climate Change, *Climate Change 2014: Synthesis Report. Contribution of Working Groups I, II and III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change* (2014) at 72-73 (“with increasing warming, some physical and ecological systems are at risk of abrupt and/or irreversible changes” and that the risk “increases as the magnitude of the warming increases.”).

⁸ Intergovernmental Panel on Climate Change, *Climate Change 2014: Synthesis Report. Contribution of Working Groups I, II and III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change* (2014) at 73-74; Lenton, Timothy M. et al., *Climate tipping points—too risky to bet against*, 575 *Nature* 592 (2019).

For example, research indicates that a critical tipping point important to the stability of the West Antarctic Ice Sheet has been crossed. U.S. Global Change Research Program, *Climate Science Special Report: Fourth National Climate Assessment, Vol. I* (2017), <https://science2017.globalchange.gov/> at 420 (“observational evidence suggests that ice dynamics already in progress have committed the planet to as much as 3.9 feet (1.2 m) worth of sea level rise from the West Antarctic Ice Sheet alone”); Steffen, Will et al., *Trajectories of the Earth System in the Anthropocene*, 115 *PNAS* 33 (2018); Lenton, Timothy M. et al., *Climate tipping points—too risky to bet against*, 575 *Nature* 592 (2019) (“the evidence from tipping points alone suggests that we are in a state of planetary emergency: both the risk and urgency of the situation are acute”).

Volume II of the Fourth National Climate Assessment, *Impacts, Risks, and Adaptation in the United States*, details the impacts of the climate crisis on the Tennessee Valley as a result of increased hurricanes, extended wildfire seasons, and myriad other impacts.⁹ The Assessment explains how lower-income and marginalized communities will experience even greater impacts to their health, safety, and quality of life than others.¹⁰

In particular, the southeastern United States, a part of which is TVA's territory, has been facing and will continue to face extraordinary harms from climate change.¹¹ As the Environmental Protection Agency has detailed, climate change in the Southeast has already led to: (1) higher temperatures and greater demand for water that will strain water resources in the Southeast; (2) higher incidences of extreme weather, increased temperatures, and flooding that will likely impact human health, infrastructure, and agriculture; (3) sea level rise that is expected to contribute to increased hurricane activity and storm surge, and will increase the salinity of estuaries, coastal wetlands, tidal rivers, and swamps; and (4) coastal communities' experiencing of warmer temperatures and the impacts of sea level rise, including seawater flooding.¹² In other words, the impacts of climate change on TVA's territory and the communities that the agency serves are concrete, palpable, and are projected to be exacerbated—and will certainly do so should TVA fail to consider and pursue alternatives that rapidly reduce fossil fuel consumption.

3. *TVA must rapidly reduce its GHG emissions to address the climate emergency.*

In light of the climate crisis, the IPCC has emphasized the urgent need for “rapid and far-reaching transitions” across all sectors including electricity generation.¹³ Indeed, a critical feature of 1.5°C-consistent pathways is that the power sector must be significantly clean by 2030 and

⁹ U.S. Global Climate Change Research Program, “Impacts, Risks, and Adaptation in the United States: Fourth National Climate Assessment, Volume II: Summary Findings” (November 23, 2018), at 47.

¹⁰ *Id.* at 1.

¹¹ U.S. EPA, “Climate Impacts in the Southeast,” available at: https://19january2017snapshot.epa.gov/climate-impacts/climate-impacts-southeast_.html.

¹² *Id.*

¹³ *Id.* at 15.

achieve a “virtually full decarbonisation” around mid-century.¹⁴ For electricity in particular, the share of renewable energy must reach 60% by 2030 and 77% by 2050.¹⁵

The U.S. is the world’s largest historic emitter of greenhouse gas pollution and is currently the world’s second highest emitter on an annual and per capita basis.¹⁶ Scientific studies have estimated the remaining U.S. carbon budget consistent with the 1.5°C Paris Agreement target is approximately 25 gigatons of CO₂ equivalent (GtCO₂eq)¹⁷ to 57 GtCO₂eq on average,¹⁸ depending on the equity principles used to apportion the global budget across countries.¹⁹ As the U.S. emits more than 6 GtCO₂eq each year²⁰, the remaining U.S. carbon budget compatible with the Paris

¹⁴ Rogelj, Joeri, et al., 2018: Mitigation Pathways Compatible with 1.5°C in the Context of Sustainable Development. In: Global Warming of 1.5°C. An IPCC Special Report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty [Masson-Delmotte, V., et al. (eds.)] (2018) at 112.

¹⁵ IPCC Special Report at Summary for Policymakers, at 12.

¹⁶ LeQuéré, Corinne et al., Global carbon budget 2018, 10 Earth System Science Data 2141 (2018) at Figure 5, 2167; Global Carbon Project, Global Carbon Budget 2018 (published on 5 December 2018) https://www.globalcarbonproject.org/carbonbudget/18/files/GCP_CarbonBudget_2018.pdf at 19 (Historical cumulative fossil CO₂ emissions by country).

¹⁷ Carbon dioxide is not the only greenhouse gas with significant global warming impacts. Scientists use CO₂ equivalent to compare the various greenhouse gases’ (e.g., methane, nitrous oxide, etc.) global warming potentials by converting the amounts of these gases to that of an equivalent amount of carbon dioxide with the same global warming potential.

¹⁸ Robiou du Pont, Yann et al., Equitable mitigation to achieve the Paris Agreement goals, 7 Nature Climate Change 38 (2017), and Supplemental Tables 1 and 2. Quantities measured in GtCO₂eq include the mass emissions from CO₂ as well as the other well-mixed greenhouse gases (CO₂, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons and SF₆) converted into CO₂-equivalent values, while quantities measured in GtCO₂ refer to mass emissions of just CO₂ itself.

¹⁹ Robiou du Pont et al. (2017) averaged across IPCC sharing principles to estimate the U.S. carbon budget from 2010 to 2100 for a 50 percent chance of returning global average temperature rise to 1.5°C by 2100, based on a cost-optimal model. The study estimated the U.S. carbon budget consistent with a 1.5°C target at 25 GtCO₂eq by averaging across four equity principles: capability (83 GtCO₂eq), equal per capita (118 GtCO₂eq), greenhouse development rights (-69 GtCO₂eq), and equal cumulative per capita (-32 GtCO₂eq). The study estimated the U.S. budget at 57 GtCO₂eq when averaging across five sharing principles, adding the constant emissions ratio (186 GtCO₂eq) to the four above-mentioned principles. However, the constant emissions ratio, which maintains current emissions ratios, is not considered to be an equitable sharing principle because it is a grandfathering approach that “privileges today’s high-emitting countries when allocating future emission entitlements.”

²⁰ See *Inventory of U.S. Greenhouse Gas Emissions and Sinks*, <https://www.epa.gov/ghgemissions/inventory-us-greenhouse-gas-emissions-and-sinks>.

climate targets is extremely small and is rapidly being expended, highlighting the urgent need for the U.S. to transition from fossil fuels to renewable energy.

The electricity sector, in tandem with the transportation sector, is the leading source of U.S. GHG emissions, making up 25% of total emissions in 2019.²¹ TVA emitted 49.53 million short tons of CO₂ emissions and 23.49 thousand short tons of NO_x pollution in 2018 alone.²²

Under its current Integrated Resource Plan (“IRP”), TVA will not achieve decarbonization until sometime after 2100.²³ This timeline is completely unacceptable and will only further harm communities of color and other frontline communities who have been disproportionately burdened by a reliance on fossil fuels and false energy solutions like fracked gas.

Indeed, like coal, fossil gas disproportionately harms low-income communities and people of color.²⁴ In addition to driving the climate crisis via especially potent methane emissions, gas generation produces over 60 hazardous air pollutants – including volatile organic compounds, carcinogens, and endocrine disrupting chemicals.²⁵ And gas generation exposes communities within closer proximity to gas facilities to elevated ozone levels which, among other harms, can exacerbate asthma and other diseases.²⁶

Last month, TVA proposed a non-binding plan to decarbonize TVA by 2050.²⁷ Even this objective is woefully inadequate, but at bare minimum it makes no sense to build *new* fossil fuel

²¹ U.S. EPA, *Sources of Greenhouse Gas Emissions*, Greenhouse Gas Emissions (2019), <https://www.epa.gov/ghgemissions/sources-greenhouse-gas-emissions>.

²² M.J. Bradley and Associates, *Benchmarking Air Emissions of the 100 Largest Power Producers in the United States*, CO₂ Emissions and Emissions Rates – All-Source (2021), <https://www.mjbradley.com/content/emissions-benchmarking-emissions-charts>.

²³ Southern Alliance for Clean Energy, *Tracking Decarbonization in the Southeast*, Generation and CO₂ Emissions Report (2021), <https://cleanenergy.org/wp-content/uploads/Tracking-Decarbonization-in-the-Southeast-April-2021.pdf>.

²⁴ Greenpeace, *Fossil Fuel Racism: How Phasing Out Oil, Gas, and Coal Can Protect Communities* (2021), <https://www.greenpeace.org/usa/wp-content/uploads/2021/04/Fossil-Fuel-Racism.pdf>.

²⁵ *Id.* at 17.

²⁶ *Id.* at 17-18.

²⁷ Tennessee Valley Authority, *TVA Charts Path to Clean Energy Future* (2021), <https://www.tva.com/newsroom/press-releases/tva-charts-path-to-clean-energy-future>.

resources in the middle of the climate emergency. Accordingly, to address the climate crisis it is absolutely critical that TVA rapidly transition from fossil fuels, including both its remaining coal plants as well as its fossil gas resources, and that the agency not build any *new* fossil energy generation to replace the retirements of existing fossil resources.

B. TVA’s Existing Alternatives For The Cumberland Plant Retirement Fail To Achieve The Rapid Greenhouse Gas Reductions That Are Critical To Addressing The Climate Crisis, And The EIS Must Fully Address The GHG Impacts Of All Reasonable Alternatives.

Given the climate crisis and the important role TVA plays as the nation’s largest power provider, with massive GHG emissions, the Cumberland EIS must center the replacement of the Cumberland Plant with non-fossil fuel resources, including renewable energy and energy efficiency. At the moment, two of the three project alternatives consider CC and CT gas plants that would contribute to, instead of reduce, TVA’s already alarming GHG emissions through 2038. With increased reliance on gas as a replacement for coal, TVA *would still generate more than 34 million tons of CO₂ each year in 2038.*²⁸ This current emphasis on further gas expansion is simply unacceptable from the standpoint of what climate science demands.

In addition, while TVA currently intends to consider one alternative prioritizing solar and storage facilities, the EIS must also consider at least one additional project alternative that would maximize development of DER and storage and energy efficiency to provide the electricity lost from closing the Cumberland Plant.

1. TVA must consider renewable energy alternatives aligned with a “path to zero emissions.”

The purpose of NEPA is to identify reasonable alternatives to an agency’s proposed action, and then expose and discuss the multitude of public health, environmental, socio-economic, wildlife, and other impacts of those alternatives. However, regardless of the ultimate decisions made, NEPA does not permit an agency to refuse to even *consider* reasonable alternatives.²⁹ Accordingly, here TVA may not rely on contract terms or simple economic considerations to refuse to consider alternative scenarios for its power mix in the coming decades, including DER and storage alternatives.

²⁸ TVA 2019 Environmental Impact Statement, Final EIS at 5-27.

²⁹ See, e.g., *Nat'l Wildlife Fed'n v. Nat'l Marine Fisheries Serv.*, 235 F. Supp. 2d 1143, 1154 (W.D. Wash. 2002) (“An agency may not reject a reasonable alternative because it is not within the jurisdiction of the lead agency”).

This is particularly true given that TVA acknowledges that its statutory mandate under the TVA Act requires that it be a “leader in technology innovation, low-cost power and environmental stewardship.”³⁰ TVA therefore should be looking for opportunities to invest in the renewable energy technologies that will help reduce electricity prices and make those technologies even more cost-competitive in the coming years.

Recent research demonstrates that replacing fossil fuel resources with DER, storage, and energy efficiency could provide significant financial benefits. One analysis in particular modeled the cost-effectiveness and impact of DERs and other clean energy resources on the electricity system. Under the examined scenarios, significant investment in DER would result in cumulative system-wide savings of \$301 billion by 2050 compared to a business-as-usual energy system.³¹ The same study showed that a clean electricity standard reducing emissions by 95 percent from 1990 levels by mid-century could save \$473 billion.³²

In addition to cost savings, DERs bring several additional benefits including grid management, demand response, and transmission benefits.³³ TVA has expressed concern that alternatives prioritizing renewables like solar as replacements to Cumberland are incapable of addressing peak demand. But as the Vibrant Clean Energy report demonstrates, DER can actually minimize peak demand by about 17 percent and also effectively shift demand to meet variable supply rather than forcing supply to meet demand.³⁴

Additionally, distributed solar generation can provide benefits to communities and ecosystems including reduced water use, reduced land use, and even improved wildlife habitat, which are critically important to TVA’s customers.³⁵

Thus, TVA must consider a full range of renewable energy alternatives, including an alternative that largely or completely relies on DER, storage and energy efficiency, and then must

³⁰ See Final 2019 TVA IRP at 5-1

³¹ Clack et al., *Technical Report: Why Local Solar For All Costs Less- A New Roadmap for the Lowest Cost Grid*, Vibrant Clean Energy (2020), https://www.vibrantcleanenergy.com/wp-content/uploads/2020/12/WhyDERs_TR_Final.pdf

³² *Id.* at 3.

³³ Armstrong et. al., *Techno–Ecological Synergies of Solar Energy for Global Sustainability*, 2 *Nature Sustainability* 560 (July 2019).

³⁴ Vibrant Clean Energy Technical Report (2020) at 48.

³⁵ *Techno-Ecological Synergies of Solar energy for Global Sustainability* (2019) at 563.

compare the environmental impacts of such alternatives with the other options—including not only the cost of potential early retirement of fossil fuel resources and expansion of gas, but also the social cost of carbon associated with keeping them running for many years to come.

In short, to meet its purpose of providing safe, clean, reliable, and affordable electricity to all its customers, TVA must consider alternatives that focus on DER, storage, and energy efficiency as replacements for the Cumberland Plant. Moreover, TVA must also consider an alternative that includes advancing the timeline for Cumberland’s complete retirement to earlier than 2033, which would significantly reduce TVA’s GHG emissions.

Instead of investing in risky alternatives, TVA should lead the way in investing in climate-friendly and just energy solutions, like distributed solar generation. Renewable energy and energy efficiency alternatives are proven technologies that not only make financial sense, and can lower power bills for TVA customers, but will advance TVA’s path to decarbonization.

2. *TVA must meaningfully assess the impacts of greenhouse gas emissions by comparing impacts between the existing alternatives and one or more alternatives that chart a path to zero emissions.*

In other environmental reviews, TVA has refused to meaningfully consider its contributions to GHG emissions on the grounds that they are small relative to global emissions.³⁶ This approach violates NEPA.

It is well-established that NEPA requires a robust consideration of the impacts of a project’s GHG emissions in terms of its relationship to climate change. Thus, although some “speculation is . . . implicit in NEPA,” agencies may not “shirk their responsibilities under NEPA by labeling any and all discussion of future environmental effects as crystal ball inquiry.”³⁷

Thus, TVA must add the necessary alternative(s) discussed above that will advance its rapid transition to zero emissions, all the while considering—and informing the public about—the likely environmental outcomes under the different alternatives. In particular, under two of the currently considered alternatives, which propose gas replacements, TVA will continue to be one of the largest contributors to the GHG that are fueling climate change, and thus will continue to be responsible for the devastating impacts that are certain to come in the country and around the world as we continue to increase the concentrations of GHGs in the atmosphere.

³⁶ TVA 2019 Environmental Impact Statement, Final EIS at 5-28.

³⁷ *N. Plains Res. Council, Inc. v. Surface Transp. Bd.*, 668 F.3d 1067, 1079 (9th Cir. 2011) (citation omitted).

Alternatively, under a renewable energy alternative that maximizes DER, storage, and energy efficiency, as well as an expedited retirement timeline, TVA would not only commit its requisite part in phasing out fossil fuels and lowering GHG emissions, but also in addressing environmental justice concerns associated with a reliance on false solutions like fossil gas.

* * *

The urgency of the climate and energy crises demand that large utilities, especially TVA, step up and meet the moment. It is now on power providers to not only rapidly phase out their fossil fuel fleets but to replace that energy with genuinely renewable sources. With the Cumberland Plant retirement, TVA has an opportunity to be a model this country needs for what a just and truly renewable energy transition should look like. TVA can and should lay the groundwork for the very technological solutions that other utilities can deploy to meet the President Biden's decarbonization goal.

We look forward to commenting on a Draft EIS for the Cumberland Plant that fully addresses these concerns. In the meantime, please contact us should there be any further information we can provide.

Sincerely yours,

CENTER FOR BIOLOGICAL DIVERSITY

/s/ Gaby Sarri-Tobar

Gaby Sarri-Tobar
Energy Justice Campaigner
1411 K Street NW, Suite 1300
Washington, DC 20005
gsarritobar@biologicaldiversity.org
(202) 594-7271

/s/ Howard Crystal

Howard Crystal
Energy Justice Program Legal Director
1411 K Street NW, Suite 1300
Washington, DC 20005
hcrystal@biologicaldiversity.org
(202) 809-6926