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July 15, 2021

VIA EMAIL TO:

Chevales Williams
NEPA Compliance Specialist
Tennessee Valley Authority
1101 Market Street, BRC 2C
Chattanooga, TN 37402
nepa@tva.gov

Re: Scoping Comments, TVA's Proposed Environmental Impact Statement, Kingston Fossil Plant Retirement

Dear Ms. Williams:

Southern Environmental Law Center, Appalachian Voices, Energy Alabama, Sierra Club, Southern Alliance for Clean Energy, National Parks Conservation Association, Statewide Organizing for Community eMpowerment (SOCM), and Tennessee Citizens for Wilderness Planning submit these comments on TVA's notice of intent to prepare an EIS to assess the impacts of retiring and replacing the coal-fired units at the Kingston Fossil Plant.[1]

As a federal agency, the largest public utility in the nation, and a major source of greenhouse gas emissions, TVA is well positioned to lead the national response to the climate crisis. President Biden has made achieving "a carbon pollution-free electricity sector no later than 2035" an urgent national priority and has ordered all federal agencies "to *immediately* commence work to confront the climate crisis."[2] The Kingston Fossil Plant is one of the oldest and dirtiest coal-fired power plants in the country,

[1] Notice of Intent, Environmental Impact Statement for Kingston Fossil Plant Retirement, 86 Fed. Reg. 31780 (June 15, 2021).

[2] Exec. Order No. 14008, 86 Fed. Reg. 7619, 7624 (Feb. 1, 2021); Exec. Order 13990, 86 Fed. Reg. 7037, 7037 (Jan. 25, 2021) (emphasis added).

responsible for millions of tons of greenhouse gas emissions annually. TVA must retire it.

But TVA must not replace these retired coal units with gas-fired generation and make yet another multi-decade commitment to a carbon-polluting fossil fuel. If it did, TVA—a federal agency—would derail the president's climate objectives and contribute to the climate-related harm already affecting public health, biodiversity, and economic productivity across the Southeast. Therefore, we urge the utility to use the proposed environmental analysis to:

- Evaluate existing carbon-free distributed and utility-scale technologies, *alone and in combination*, as alternatives to the Kingston Plant. These technologies include demand response, energy efficiency, distributed solar, utility-scale solar, onshore wind, and battery storage; and
- Evaluate the environmental impacts of all alternatives by: (a) quantifying greenhouse gas emissions and assessing climate harm using the Social Cost of Carbon, (b) using appropriate tools to fairly identify environmental justice populations and assessing the disproportionate harm to specific communities, and (c) considering all site-specific impacts.

Congress has instructed TVA to be a "national leader in technological innovation, low-cost power, and environmental stewardship."[3] TVA must seize this moment.

Thank you for your consideration of our comments. Please contact us if we can answer any questions.

[3] 16 U.S.C. § 831a(b)(5).

Sincerely,

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COMMENTS

I. INTRODUCTION

The climate crisis is causing immediate, devastating harms to public health, biodiversity, and economic productivity.[1] In order to stave off the worst effects of climate change, greenhouse gas emissions must reach zero as quickly as possible. Communities in the Tennessee Valley and the Southeast are especially vulnerable to climate change,[2] and low-wealth individuals and Black, indigenous, and other people of color are disproportionately harmed.[3]

In January, faced with the realities of the climate crisis, President Biden ordered the entire federal government to take decisive, bold action—including swiftly decarbonizing the electricity sector. In Executive Order 14008, *Tackling the Climate Crisis at Home and Abroad*, President Biden establishes the goals of "net-zero emissions, economy-wide, by no later than 2050" and "a carbon pollution-free electricity sector no later than 2035."[4] The president emphasized the urgency of the moment: "The United States and the world face a profound climate crisis. We have a narrow moment to pursue action at home and abroad in order to avoid the most catastrophic impacts of that crisis and to seize the opportunity that tackling climate change presents."[5] The Executive Order calls for a "government-wide approach," as

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[1] U.S. Global Change Research Program, Impacts, Risks, and Adaptation in the United States: Fourth National Climate Assessment, Volume II (Reidmiller, D.R. et al. eds), U.S. Global Change Research Program, Washington, DC (2018), https://nca2018.globalchange.gov/, at Summary Findings, at 25–32.

[2] *Id.* at 743.

[3] Kristie S. Gutierrez and Catherine E. LePrevost, *Climate Justice in Rural Southeastern United States: A Review of Climate Change Impacts and Effects on Human Health*, Int. J. Environ. Res. Public Health, 13(2): 189 (Feb. 2016).

[4] Exec. Order No. 14008, 86 Fed. Reg. 7619, 7622, 7624 (Feb. 1, 2021); *see also* Exec. Order 13990, 86 Fed. Reg. 7037, 7037 (Jan. 25, 2021) (directing federal agencies "to immediately commence work to confront the climate crisis").

[5] 86 Fed. Reg. at 7619.

the "Federal Government must drive assessment, disclosure, and mitigation of climate pollution and climate-related risks in every sector of our economy, marshaling the creativity, courage, and capital necessary to make our Nation resilient in the face of this threat."[6]

The Tennessee Valley Authority is a federal agency, the largest public utility in the nation, and a major source of greenhouse gas emissions. TVA is now considering whether to retire the Kingston Fossil Plant, in Roane County, Tennessee—a sixty-six-year-old coal-fired power plant that, in 2008, was the site of the largest industrial spill in United States history.[7] To meet the goals of Executive Order 14008, TVA *must* close this facility. Doing so will cut dangerous emissions that worsen climate change and pollute the air and water of East Tennessee. These are urgent priorities, and the utility should pursue them apace.

But TVA will fail to take the bold, decisive action required by the president if it replaces the Kingston Plant with new gas-fired generation. New gas plants are not minor additions that TVA can easily walk away from whenever it pleases. They represent major investments—often lasting more than forty years—that will generate avoidable and dangerous greenhouse gas emissions for decades to come.[8] Unchecked, TVA—a federal agency—would derail President Biden's climate objectives.

TVA's decision to prepare an environmental analysis for the retirement of the Kingston Plant (the Kingston EIS) comes at a critical moment when substantial reductions in greenhouse gas emissions are both necessary and

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[6] *Id.* at 7622.

[7] Notice of Intent, Environmental Impact Statement for Kingston Fossil Plant Retirement, 86 Fed. Reg. 31780 (June 15, 2021); Austyn Gaffney, *'They Deserve to Be Heard': Sick and Dying Coal Ash Cleanup Workers Fight for Their Lives*, The Guardian (Aug. 17, 2020), https://bit.ly/3xIvoHT.

[8] *E.g.*, TVA, Paradise and Colbert Combustion Turbine Plants Draft Environmental Assessment 1–2 (Feb. 2021) (describing TVA's active combustion turbine units, which range from approximately twenty years to more than forty years in age).

feasible. The utility must seize this opportunity to carefully and thoroughly consider the climate crisis in every aspect of the Kingston EIS. Specifically, TVA must:

- Evaluate existing carbon-free distributed and utility-scale technologies, *alone and in combination*, as alternatives to the Kingston Plant. These technologies include demand response, energy efficiency, distributed solar, utility-scale solar, onshore wind, and battery storage.
- Evaluate the environmental impacts of all alternatives by: (a) quantifying greenhouse gas emissions and assessing climate harm using the Social Cost of Carbon, (b) using appropriate tools to fairly identify environmental justice populations and assessing the disproportionate harm to specific communities, and (c) considering all site-specific impacts.

TVA should replace the Kingston Plant with carbon-free alternatives to align with President Biden's 2035 decarbonization mandate and to do its part to address the climate crisis, achieve environmental justice, and fulfill its statutory mission to be "a national leader in technological innovation, low-cost power, and environmental stewardship."[9] The proposed Kingston EIS offers TVA an opportunity to show the nation that it has the zeal, foresight, and ability to lead the nation's energy transition at this critical moment.

II. TVA MUST RETIRE THE KINGSTON PLANT, THE SOURCE OF DANGEROUS POLLUTION FOR OVER SIXTY YEARS.

TVA must retire the Kingston Plant, the source of pollution that has tragically harmed East Tennessee for decades. On December 22, 2008, over a billion gallons of coal ash slurry broke through a six-story dam at the Kingston Plant, covering 300 acres, including homes and waterways, in hazardous waste.[10] Roughly 900 workers spent five years of their lives

[9] 16 U.S.C. § 831a(b)(5).

[10] Austyn Gaffney, *supra* n. 7.

cleaning up TVA's mess.[11] Today, over fifty of those workers have died and more than 400 are sick because TVA's contractor misled them and failed to protect them from the hazards of toxic and radioactive coal ash.[12] The accident remains the largest industrial spill in United States history, five times larger than BP's Deepwater Horizon oil spill.[13] The Environmental Protection Agency wrote, "The TVA Kingston impoundment failure ignited a nation-wide concern over the safety of coal ash impoundments,"[14] leading the agency to issue the first nation-wide regulations governing the storage and disposal of coal ash.[15]

Over a decade after the catastrophic coal ash spill, the 66-year-old Kingston Plant remains a major source of harmful pollution. Opting for a "monitored natural recovery" of the coal ash spill, TVA left 170,000 cubic yards of contaminated material in the Emory River.[16] To this day, Kingston's on-site coal ash remains subject to a state order, requiring TVA to investigate and remedy any unacceptable risks.[17] The coal ash has contaminated groundwater with levels of pollution—including arsenic, lithium, molybdenum, and cobalt—that exceed groundwater protection standards.[18]

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[11] *Id.*

[12] Jamie Satterfield, *Another Widow Mourns as Death Toll Hits 50 Among Kingston Coal Ash Workers*, Knoxville News Sentinel (Sept. 3, 2020), https://bit.ly/3xPnyws.

[13] Gaffney, *supra* n. 7.

[14] EPA, Hazardous and Solid Waste Management System; Disposal of Coal Combustion Residuals from Electric Utilities, 80 Fed. Reg. 21301, 21313 (2015).

[15] *Id.*

[16] Austyn Gaffney, *A Legacy of Contamination*, Grist (Dec. 15, 2020), https://bit.ly/3wJaOpx.

[17] TDEC Commissioner's Order OGC15-0177 (Aug. 6, 2015).

[18] TVA, Annual Groundwater Monitoring and Corrective Action Report, Kingston Fossil Plant Sluice Trench and Area East of Sluice Trench 6–7 (July 31, 2020), available at https://bit.ly/3hHyXIT; TVA, Annual Groundwater

Kingston continuously harms aquatic life in the Emory and Clinch Rivers, where TVA discharges approximately one billion gallons of cooling water every day.[19] During a two-year study, over 400,000 fish were impinged (trapped against steel bars or vertical traveling screens) by Kingston's cooling water intake system, and most died.[20] Smaller species that are entrained (passing through the intake system) swim in water that has been warmed by, on average, 14.4° Fahrenheit before being discharged into the Clinch River.[21] Because temperature is critically important for many species, this heated discharge can wreak havoc on entrained and downstream aquatic life.[22]

With nine coal-fired boilers, the 1700 MW facility is a significant source of air pollution, including sulfur dioxide, nitrogen oxides, particulate matter of various sizes, and numerous hazardous air pollutants.[23] Kingston is the fourth largest source of air pollution in the Great Smoky Mountains National Park, where its emissions impair visibility.[24] A major source of greenhouse gas emissions since 1955, the Kingston Plant has worsened the climate crisis.

Monitoring and Corrective Action Report, Kingston Fossil Plant Stilling Pond 6–7 (July 31, 2020), available at https://bit.ly/3iib6hU.

[19] TVA, Kingston Fossil Plant NPDES Permit No. TN0005452 R-3 (2018).

[20] TVA, Kingston Fossil Plant NPDES Permit No. TN0005452 316(b) Monitoring Program: Fish Impingement at Kingston Fossil Plant During 2004 through 2006 8 (2007).

[21] TVA, Kingston Steam Plant Water Temperature Surveys 1 (Nov. 1974).

[22] Federal Water Pollution Control Admin., *Temperature and Aquatic Life* iv (1967); TDEC, *2014 305(b) Report: The Status of Water Quality in Tennessee* 56 (Dec. 2014), https://bit.ly/3B7pCll.

[23] TVA, Kingston Fossil Plant—Application for Renewal of Title V Operating Permit No. 560775, 1-1, 2-6, 2-20 (October 2016) ("Application").

[24] *See* National Parks & Conservation Association, Sources of Visibility Impairing Pollution, https://bit.ly/36Fkua8 (last visited July 15, 2021).

In 2018, Kingston emitted almost four million tons of CO_2, over seven percent of TVA's total CO_2 emissions and four percent of Tennessee's.[25]

It is time for TVA to put an end to pollution from the Kingston Plant, but it must ensure that it does not replace one dirty fossil fuel with another.

III. TVA MUST EVALUATE A FULL RANGE OF CARBON-FREE ALTERNATIVES TO THE KINGSTON PLANT.

A. NEPA and a presidential mandate require TVA to evaluate carbon-free alternatives.

To comply with the National Environmental Policy Act and President Biden's Executive Orders concerning the climate crisis, the Kingston EIS must evaluate a full range of carbon-free alternatives. TVA's proposed set of three alternatives—two that would require new gas plants and only one based on carbon-free energy[26]—is far too restricted to satisfy the agency's legal requirements and meet the urgency of the climate crisis head-on.

The evaluation of all reasonable alternatives is a bedrock requirement of NEPA. The statute requires that every EIS include a "detailed statement" on "alternatives to the proposed action."[27] The Council on Environmental Quality's NEPA implementing regulations explain further that agencies must "[e]valuate reasonable alternatives to the proposed action" and [d]iscuss each alternative considered in detail."[28] Moreover, federal agencies must "study, develop, and describe appropriate alternatives" for "any proposal which involves unresolved conflicts concerning alternative uses of available

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[25] *See* TVA, Kingston Fossil Plant Emissions, https://bit.ly/3koYQif; TVA, Carbon Dioxide, https://bit.ly/3knCDRR; Table 1, State Energy-Related Carbon Dioxide Emissions by Year, Unadjusted, Energy Info. Admin., available at https://www.eia.gov/environment/emissions/state/ (Tennessee's total energy-related CO_2 output for 2018 was 94.7 million metric tons).

[26] Notice of Intent, 86 Fed. Reg. at 31781.

[27] 42 U.S.C. § 4332(C).

[28] 40 C.F.R. § 1502.14(a), (b) (2021).

resources."[29] Few environmental conflicts are more immediate than the conflict between new gas-fired power plants and the urgent need to end all greenhouse gas emissions to combat the climate crisis.

President Biden's Executive Orders make clear that carbon-free alternatives are both "reasonable" and "appropriate" for the Kingston EIS. Executive Order 13990 directs all executive departments and agencies "to *immediately* commence work to confront the climate crisis,"[30] and Executive Order 14008 makes achieving "a carbon pollution-free electricity sector no later than 2035" a national priority.[31] The president has deployed TVA and all other federal agencies as part of a "Government-wide approach that reduces climate pollution in every sector of the economy . . . and spurs well-paying union jobs and economic growth, *especially through innovation, commercialization, and deployment of clean energy technologies and infrastructure*."[32] In short, TVA must do its part to achieve dramatic reductions in greenhouse gas emissions.

A robust analysis of carbon-free alternatives is also consistent with TVA's 2019 Integrated Resource Plan (IRP). The 2019 IRP emphasizes that the utility must have flexibility: it does not select a preferred scenario for energy development, instead opting to recognize that "a variety of future scenarios are possible and each strategy has positive aspects."[33] TVA selected *all* of the 2019 IRP results for its final recommendation "to provide flexibility for how the future evolves."[34] In other words, the 2019 IRP deferred until

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[29] 42 U.S.C. § 4332(E); *Trinity Episcopal School Corp. v. Romney*, 523 F.2d 88, 93 (2d Cir. 1975) ("[W]here (as here) the objective of a major federal project can be achieved in one of two or more ways that will have differing impacts on the environment, the responsible agent is required to study, develop and describe each alternative for appropriate consideration.").

[30] 86 Fed. Reg. at 7037 (emphasis added).

[31] 86 Fed. Reg. at 7624.

[32] *Id.* at 7622 (emphasis added).

[33] TVA, 2019 Integrated Resource Plan at ES-1(2019) (the "2019 IRP").

[34] *Id*.

later analysis at the individual project stage to gauge the pace, scope, and cost of changes to the energy landscape of the Tennessee Valley and to determine the best manner and resources to address them. In the absence of a comprehensive evaluation to optimize the retirement and replacement of all coal plants at once, like through an updated IRP, the Kingston EIS is the right venue for TVA to undertake the analysis of carbon-free alternatives.

Finally, TVA is myopic in its belief that gas is a "bridging" fuel needed to bring carbon-free energy online. In a recent proceeding, TVA's sister utility, Alabama Power, sought approval for 400 MW of solar generation paired with batteries (solar/storage projects) specifically to increase reliability and flexibility in the utility's system. The company told the Commission that the utility chose battery storage because it "will serve a specific reliability function in the Company's generating fleet," would help during peak periods, and would be as effective as other projects in extreme weather events.[35] Furthermore, the proposed solar/storage systems were cost-effective: Alabama Power described them as "economically attractive" compared to other existing resources and as "the most cost-effective options in [the Company's] evaluation" that would "provide excellent value for customers." [36]

Alabama Power's expectations for the function and cost of solar/storage projects are consistent with those of other power providers in the region. In its September 2020 Investor Presentation, NextEra Energy reported an

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[35] Rebuttal Testimony of M. Brandon Looney on behalf of Alabama Power Co. at 7:3-5, *Ala. Power Co. Petition for a Certificate of Convenience and Necessity*, Docket No. 32953 (Ala. P.S.C. Jan. 27, 2020); Hr'g Tr. at 832:16–833:2, *Ala. Power Co. Petition for a Certificate of Convenience and Necessity*, Docket No. 32953 (Ala. P.S.C. Mar. 10, 2020).

[36] Direct Testimony of John B. Kelley on behalf of Alabama Power Co. at 19:5-7, *Ala. Power Co. Petition for a Certificate of Convenience and Necessity*, Docket No. 32953 (Ala. P.S.C. Sept. 6, 2020); Rebuttal Testimony of M. Brandon Looney on behalf of Ala. Power Co. at 4:3-5, 7:3-4, *Ala. Power Co. Petition for a Certificate of Convenience and Necessity*, Docket No. 32953 (Ala. P.S.C. Jan. 27, 2020).

expectation that solar/storage facilities would be cost-competitive with new gas post-2023/2024 without subsidies.[37] According to analysts at the Institute for Energy Economics and Financial Analysis, solar/storage projects are cost-competitive with gas now and the costs "are almost certain to decline in the years ahead."[38] NextEra itself reported to investors that "[c]ontinued declines in battery costs are expected to result" in low costs for solar/storage "even after tax credits phase down."[39] The company will invest more than $1 billion in battery storage projects in 2021.[40] As other utilities have recognized, there is no need to wait to bring renewables online: economically and technologically, carbon-free sources like solar/storage are ready now.

B. TVA must evaluate an alternative which retires, but does not replace, the Kingston Fossil Plant.

One factor identified in the 2019 IRP—changes in the "demand for electricity"[41]—raises significant questions about the need to replace the generating capacity of the Kingston Plant. In its Notice, TVA assumes that it will need to replace 1450 MW of generating capacity for the first Kingston coal units.[42] But it is far from clear that TVA must replace this retiring capacity *at all*, let alone with another 1450 MW of combined-cycle or combustion-turbine gas generation that will pollute for decades into the future. Indeed, during the recent extreme weather event in February 2021, TVA touted the fact that it was not only able to meet its own three-year high

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[37] NextEra Energy, Inc., September 2020 Investor Presentation 10 (Sept. 2020), https://bit.ly/2TcEUnH; Dennis Wamstead, Seth Feaster & David Schlissel, Institute for Energy Economics and Financial Analysis, U.S. Power Sector Outlook 2021 (Mar. 2021), https://bit.ly/3xDIdDo.

[38] IEEFA, U.S. Power Sector Outlook, *supra* n. 37, at 10-12.

[39] NextEra Energy, Inc., September 2020 Investor Presentation, *supra* n. 37, at 27.

[40] *Id.* at 28.

[41] *Id.* at ES-4.

[42] Notice of Intent, 86 Fed. Reg. at 31781.

of demand, but was also able to send excess electricity outside of the region to assist neighboring utilities who were suffering grid outages.[43] TVA also maintains a large reserve margin, one that is substantially larger than that recommended by the North American Electric Reliability Corporation to maintain reliability,[44] and expects demand "to be flat, or even declining slightly, over the next 10 years."[45]

In addition, demand for TVA power may decline further because several customers may terminate their power supply contracts with the utility. These customers include four local utilities that filed a petition with the Federal Energy Regulatory Commission for unbundled access to TVA's transmission grid.[46] These four utilities represent roughly three to four percent of TVA's overall load. TVA's largest customer, Memphis Light, Gas & Water, representing another 10 percent of TVA's load, is actively considering other power supply options.[47] TVA is of course well aware that it may serve

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[43] Dave Flessner, *Winter Weather Pushes TVA Power Demand to 3-year High for Winter Peak*, Chattanooga Times Free Press (Feb. 17, 2021), https://bit.ly/3bzZN2x; Dave Flessner, *TVA Is More Prepared for Winter Weather than Texas Utilities*, Chattanooga Times Free Press (Feb. 26, 2021), https://bit.ly/3esgvTv; Samuel Hardiman, Daniella Medina & Brittany Crocker, *Why the Power in Tennessee Stayed on While Texas, Arkansas Had Rolling Blackouts*, Tennessean (Feb. 17, 2021), https://bit.ly/3l5Rqiv ("TVA expected to hit peak demand for the week on Tuesday morning with an estimated 28,500 megawatts, but that morning it reached only about 28,141 megawatts, the company said. TVA had 36,000 megawatts of capacity in anticipation of the spike.").

[44] N. Am. Electric Reliability Corp., *2020 Long-Term Reliability Assessment* 117 (Dec. 2020), https://bit.ly/3qFPBdh.

[45] 2019 IRP 1-4.

[46] Compl. and Pet. for Order Under Federal Power Act Sections 210 and 211A Against TVA., *Athens Util. Bd. v. TVA*, Nos. EL21-40-000 & TX21-1-000 (FERC Jan. 21, 2021).

[47] Samuel Hardiman, *With Council Vote, Memphis Decides to Get Bids on Its Eectricity Supply, a Key Step to Leaving TVA*, Memphis Commercial Appeal (April 6, 2021), https://bit.ly/3w8pTl4.

fewer distribution utility customers in the future and accordingly may have significantly lower demand. Indeed, TVA has been so concerned about the defection of its distribution utility customers and the corresponding load loss that, in 2019, it made a significant change in its power supply contracts in an attempt to permanently lock in as much of its load as possible.[48]

Yet another development potentially affecting demand that TVA must evaluate is the proposed Southeast Energy Exchange Market (SEEM), currently under consideration at the Federal Energy Regulatory Commission.[49] The SEEM was not part of TVA's 2019 IRP. The Kingston EIS must analyze whether SEEM could provide an alternative to building new generation to replace Kingston Plant retirements.

These developments, and their implication that TVA has and may continue to have excess generating capacity, are specifically the types of changes in the energy landscape that TVA pledged to evaluate in its 2019 IRP.[50] They raise serious questions about whether there is even a need to replace 1450 MW of coal generation at the Kingston Plant. TVA must address an alternative that retires, but does not replace, the Kingston Plant in the Kingston EIS.

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[48] Several of the signatories to these comments have filed litigation against TVA for adopting illegal perpetual contracts in violation of the TVA Act and NEPA. Compl., *Protect Our Aquifer v. Tenn. Valley Auth.*, No. 2:20-cv-02615 (W.D. Tenn. Aug. 17, 2020).

[49] Revisions to Joint Open Access Transmission Tariff to Implement Non-Firm Energy Exchange Transmission Service, *Duke Energy Carolinas, LLC and Duke Energy Progress, LLC*, FERC Docket No. ER21-1115-000, (Feb. 12, 2021).

[50] 2019 IRP ES-3.

C. TVA must evaluate the use of carbon-free technologies, *alone and in combination*, as alternatives to the Kingston Plant.

TVA must expand its proposed alternatives analysis beyond a single carbon-free option to include all carbon-free technologies *alone and in combination*. First, TVA cannot lawfully ignore energy efficiency and demand response technologies in its analysis. The TVA Act requires the utility to consider energy efficiency and "to treat demand and supply resources on a consistent and integrated basis."[51] TVA knows how cost-effective these resources are. In its own sensitivity analysis in the 2019 IRP, when artificial caps are removed, the planning model picks energy efficiency and demand response instead of new gas generation.[52] Specifically, the sensitivity analysis revealed that 1900 MW of energy efficiency and demand response displaces the need for new gas-fired combustion turbines like the plants proposed in TVA's Alternative B.[53] The 2019 IRP also identifies demand response as a technology with the potential to provide the same reliability and flexibility as gas plants generally.[54] Second, TVA must evaluate carbon-free technologies in reasonable combinations as replacements for the Kingston Plant.

Specifically, in addition to proposed Alternative C, utility-scale solar and battery storage, the Kingston EIS must include these distinct alternatives:

- Distributed solar;
- Onshore wind;
- Demand response and energy efficiency;

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[51] 16 U.S.C. § 831m-1(2).

[52] TVA, 2019 IRP Working Group Presentation 52-57 (May 13, 2019).

[53] *Id.* at 55.

[54] 2019 IRP ES-1 ("Gas, storage and demand response additions provide reliability and/or flexibility.").

- Solar (distributed and utility-scale), onshore wind, energy efficiency, demand response, and battery storage; and
- Purchased carbon-free power.

Lagging in each of these carbon-free resources,[55] TVA has tremendous room for growth. President Biden has ordered TVA to do its part to address the climate crisis, and the utility's alternatives analysis in the Kingston EIS must reflect the urgency of the moment. In short, the Kingston EIS should be dominated by the review of carbon-free options, and the methods and assumptions TVA uses to evaluate them, rather than the gas options proposed in TVA's Notice.

Further, TVA has committed to electrifying the transportation sector, with a goal to put 200,000 electric vehicles on the road by 2028,[56] and that figure is likely to expand exponentially from there. It is critical that TVA invest in low-cost, energy-saving resources like energy efficiency and demand response to make space for electric vehicles without increasing greenhouse gas emissions. Building gas-fired power generation would waste the carbon gains of electric transportation, trading one fossil fuel for another.

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[55] Solar and wind provide only three percent of TVA generation. TVA, Our Power System, https://www.tva.com/energy/our-power-system (last visited June 10, 2021). TVA's energy efficiency savings in 2019 were less than three percent of the U.S. average in 2019. Southern Alliance for Clean Energy, *Energy Efficiency in the Southeast* (Jan. 26, 2021), https://bit.ly/3gcFMBC. TVA's demand response programming could increase dramatically. In 2017, demand response provided peak savings of about three percent of the proposed summer peak. Price signals with enabling technology have the ability to function as automated demand response programming and provide median peak demand savings up to 35 percent. U.S. Dep't of Energy, *Final Report on Customer Acceptance, Retention, and Response to Time-Based Rates from the Consumer Behavior Studies* viii (Nov. 2016), https://bit.ly/3zl6xuX; *see also* Ahmad Faruqui, et al., *Time-Varying and Dynamic Rate Design*, Regulatory Assistance Project 31-31 (2012), https://bit.ly/3iy3eee.

[56] TVA, *Electric Vehicles*, https://bit.ly/3kiBmLU (last visited July 15, 2021).

Finally, even if replacing the Kingston Plant with carbon-free alternatives were inconsistent with the 2019 IRP—which it is not—the IRP is a broad planning document and "does not dictate a specific series of actions . . . at particular plants."[57] The IRP "sets nothing in stone about the particular amount, or even the particular range" of a given generation source across TVA's system, much less at specific facilities.[58] TVA must now evaluate a full range of carbon-free alternatives, alone or in combination, for meeting the purported capacity need created by the retirement of the Kingston Plant.

IV. TVA MUST FULLY ASSESS THE IMPACTS OF THE PROPOSED ACTION AND ALL ALTERNATIVES ON THE ENVIRONMENT.

A. TVA must quantify greenhouse gas emissions and disclose the climate impacts of new gas plants.

Because "[t]he harms associated with climate change are serious and well recognized,"[59] carefully considering a project's climate impacts is critical to any NEPA review—particularly when the project may involve combusting

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[57] *Ky. Coal Ass'n, Inc. v. Tenn. Valley Auth.*, 804 F.3d 799, 803 (6th Cir. 2015) (quoting from TVA's 2011 IRP and holding that TVA acted reasonably when exceeding the IRP's range of projected coal retirements).

[58] *Id.* While significantly increasing distributed energy resources (DER) is consistent with the 2019 IRP, TVA must revisit its analysis of such an increase. The 2019 IRP's use of a "total resource cost" metric disproportionately inflates TVA's costs of DER by adding third-party costs. That analysis—which uniquely penalizes carbon-free sources without accounting for their climate benefits—is inconsistent with Executive Order 13990's requirement that agencies "accurately determine the social benefits of reducing greenhouse gas emissions when conducting cost-benefit analyses of regulatory and other actions." 86 Fed. Reg. at 7040.

[59] *Massachusetts v. EPA*, 549 U.S. 497, 521 (2007).

gas in power plants,[60] thereby emitting CO_2 and other greenhouse gases that drive climate change. In Alternatives A and B, TVA proposes to build new gas plants.[61] These plants will burn fossil fuels for decades, jeopardizing the dwindling opportunity to ward off the worst effects of climate change. The Kingston EIS must provide an accurate quantification of the greenhouse gas emissions of any proposed gas plants using the Social Cost of Carbon and discuss their environmental effects.

1. TVA must accurately quantify the greenhouse gas emissions of any proposed gas plants using the Social Cost of Carbon.

There is no action that contributes more significantly to climate change than building major fossil-fuel infrastructure like a new gas-fired power plant. TVA must accurately quantify and consider the greenhouse gas emissions associated with any gas plants proposed to replace the Kingston Plant. Associated emissions must account for burning gas and leaking methane, whether onsite or upstream.[62] TVA should quantify those impacts using the Social Cost of Carbon. Developed in 2010 and updated in 2016, the Social Cost of Carbon is a scientifically derived metric to "provide a consistent approach for agencies to quantify [climate change] damage in dollars."[63] The Social Cost of Carbon translates a one-ton increase in CO_2 emissions into changes in atmospheric greenhouse gas concentrations, consequent changes in temperature, and resulting economic damages.[64] Those harms include

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[60] *See Sierra Club v. FERC*, 867 F.3d 1357, 1374 (D.C. Cir. 2017) (holding that FERC must analyze the climate change effects for a project whose purpose is to burn gas in power plants).

[61] Notice of Intent, 86 Fed. Reg. at 31781.

[62] Benjamin Storrow, Methane Leaks Erase Some of the Climate Benefits of Natural Gas, Scientific American (May 5, 2020), https://bit.ly/3ixdumX.

[63] *Fla. Se. Connection, LLC*, 162 FERC ¶ 61,233, at P 45 (Mar. 14, 2018).

[64] *See* Interagency Working Group on the Social Cost of Carbon, *Technical Support Document* at 2, 5 (Feb. 2010), available at https://bit.ly/2TRF185.

"changes in net agricultural productivity, human health, property damages from increased flood risk, and the value of ecosystem services."[65] The current values, which adjust the 2016 values for inflation, estimate that every additional ton of CO_2 released from anywhere on Earth will cause an approximately $51 in climate damages.[66] Not only will the Social Cost of Carbon convey the harms of new gas plants, but it allows TVA "to incorporate the social benefits of reducing carbon dioxide (CO_2) emissions"[67] for evaluating carbon-free alternatives.

Executive Order 13990 instructed federal agencies to use the Social Cost of Carbon,[68] which has been widely endorsed by economists and scientists.[69] The Social Cost of Carbon is useful and appropriate here to meaningfully convey the impacts of building new gas plants—and thereby adding decades of greenhouse gas emissions—in comparison to carbon-free alternatives like energy efficiency, demand response, renewable energy, or battery storage.

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[65] *Id.* at 2.

[66] Interagency Working Group on Social Cost of Greenhouse Gases, Technical Support Document: Social Cost of Carbon, Methan, and Nitrous Oxide Interim Estimates under Executive Order 13990 at 5 (2021), https://bit.ly/3xedCvG; Jean Chemnick, *Cost of Carbon Pollution Pegged at $51 a Ton*, Scientific American (Mar. 1, 2021), https://bit.ly/35cDPys.

[67] Interagency Working Group on the Social Cost of Carbon, *Technical Support Document*, *supra* n. 64, at 1.

[68] 86 Fed. Reg. at 7040.

[69] *See* Nat'l Acads. Sci., Eng'g & Med., *Valuing Climate Damages: Updating Estimates of the Social Cost of Carbon Dioxide* 3, 10–17 (2017), https://bit.ly/3xenxBq; Nat'l Acads. Sci., Eng'g & Med., *Assessment of Approaches to Updating the Social Cost of Carbon: Phase 1 Report on a Near-Term Update* 1 (2016), https://bit.ly/3gt3AQz; Richard L. Revesz et al., *Best Cost Estimate of Greenhouse Gas*, 357 Science 655 (2017).

2. TVA must disclose the climate impacts of building new gas plants to replace the Kingston Plant.

Under NEPA, TVA must "quantify *and consider*" a project's downstream greenhouse gas emissions, or explain why it cannot.[70] "The key requirement of NEPA . . . is that the agency consider and disclose the *actual environmental effects* in a manner that . . . brings those effects to bear on decisions to take particular actions that significantly affect the environment."[71] Therefore, in the context of greenhouse gas emissions, NEPA review must "include a discussion of the 'significance' of this indirect effect . . . as well as 'the incremental impact of the action.'"[72]

For the Kingston EIS, TVA should include a "qualitative summary discussion of the impacts of [greenhouse gas] emissions based on authoritative reports."[73] Those effects include "more frequent and intense heat waves, longer fire seasons and more severe wildfires, degraded air quality, more heavy downpours and flooding, increased drought, greater sea-level rise, more intense storms, harm to water resources, harm to agriculture, ocean acidification, and harm to wildlife and ecosystems."[74]

These impacts are not theoretical, and burning fossil fuels is the problem, not the answer. Historically cold weather swept across the United States in February 2021,[75] devastating many Texans who were left without

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[70] *Sierra Club v. FERC*, 867 F.3d at 1375 (emphasis added).

[71] *Balt. Gas & Elec. Co. v. NRDC*, 462 U.S. 87, 96 (1983) (emphasis added). *See* 40 C.F.R. § 1502.16(a), (b) (2021) (requiring examination of effects and their significance).

[72] *Sierra Club v. FERC*, 867 F.3d at 1374.

[73] Council On Environmental Quality, Final Guidance for Federal Departments and Agencies on Consideration of Greenhouse Gas Emissions and the Effects of Climate Change in National Environmental Policy Act Reviews 10 (Aug. 1, 2016).

[74] *Id.* at 9.

[75] Oliver Milman, *Heating Arctic May Be to Blame for Snowstorms in Texas, Scientists Argue*, The Guardian (Feb. 17, 2021), https://bit.ly/3vij9kC.

power due in large part to failing gas facilities.[76] The same historic weather deprived many TVA-area residents of clean, reliable water for days, as freezing temperatures wreaked havoc on the water infrastructure of Memphis Light, Gas & Water, TVA's largest customer.[77] For TVA, the past three years have been the wettest years in 131 years of record keeping, and 2020 set the single-year record with rainfall 139 percent above normal.[78] These climate impacts should be top of mind for TVA, given its mission to manage the Tennessee River watershed and control flooding in the Valley. A robust discussion of actual and worsening climate effects like these is essential for NEPA review of TVA's generation decisions.

Considering reasonable alternatives, disclosing their greenhouse gas emissions, and discussing their environmental impacts, including through the Social Cost of Carbon, will ensure that TVA and the public have the information necessary to make a reasoned decision.

B. TVA must use appropriate tools to fairly identify environmental justice populations and must assess the disproportionate harm to specific communities.

People of color and low-wealth communities often bear a disproportionate burden of the pollution caused by power plants, compressor stations, and other industrial facilities.[79] Confronting this legacy is a priority

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[76] Erin Douglas, *Texas Largely Relies on Natural Gas for Power. It Wasn't Ready for the Extreme Cold*, Texas Tribune (Feb. 16, 2021), https://bit.ly/3rWZgxD.

[77] Samuel Hardiman, *Why Was Memphis' Water Infrastructure in Such Bad Shape? Politics Didn't Help*, Memphis Commercial Appeal (Feb. 22, 2021), https://bit.ly/30FynCa.

[78] *TVA Calls 2020 the Wettest Year on Record for Tennessee Valley Authority*, WBIR (Jan. 5, 2021), https://bit.ly/3tg5xo5.

[79] *Friends of Buckingham v. State Air Pollution Control Bd.*, 947 F.3d 68, 87 (4th Cir. 2020) (quoting Nicky Sheats, *Achieving Emissions Reductions for Environmental Justice Communities Through Climate Change Mitigation Policy*, 41 Wm. & Mary Envtl. L. & Pol'y Rev. 377, 382 (2017) ("There is

of the federal government.[80] In January, President Biden declared that the federal government "must deliver environmental justice in communities all across America" and that federal agencies "shall make achieving environmental justice part of their missions."[81] NEPA review is an important opportunity for agencies to implement these environmental justice goals, and it is critical that TVA do this analysis in the Kingston EIS. In doing so, TVA must be mindful to use appropriate tools to fairly identify environmental justice populations and must assess the disproportionate harm to specific communities.

"The purpose of an environmental justice analysis is to determine whether a project will have a disproportionately adverse effect on minority and low-income populations."[82] Broadly speaking, this requires two steps. First, an agency must correctly identify the environmental justice communities in the vicinity of the proposed action.[83] But it should be circumspect when relying solely on desktop demographic tools like EPA's EJSCREEN and census data. The analysis provided by these tools can often

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evidence that a disproportionate number of environmental hazards, polluting facilities, and other unwanted land uses are located in communities of color and low-income communities.")).

[80] 86 Fed. Reg. at 7629 ("To secure an equitable economic future, the United States must ensure that environmental and economic justice are key considerations in how we govern.").

[81] *Id.* at 7622, 7629.

[82] *Friends of Buckingham*, 947 F.3d at 87 (quoting *Mid States Coal. for Progress v. Surface Transp. Bd.*, 345 F.3d 520, 541 (8th Cir. 2003)).

[83] *Standing Rock Sioux Tribe v. U.S. Army Corps of Eng'rs*, 255 F.Supp.3d 101, 136-37 (D.D.C. 2017) (citing Council on Environmental Quality, Environmental Justice Guidance Under the National Environmental Policy Act (Dec. 10, 1997)); *Friends of Buckingham*, 947 F.3d at 88 ("The minority EJ community designation is important because, if Union Hill is considered a minority EJ community, then information about African American populations having a greater prevalence of asthma and other health issues is an important consideration." (internal quotation marks and brackets omitted)).

be too coarse to detect the presence of environmental justice communities concentrated in a small area.[84] As EPA itself has cautioned, "[t]he fact that census data can only be disaggregated to certain prescribed levels (*e.g.,* census tracts, census blocks) suggests that pockets of minority or low-income communities, including those that may be experiencing disproportionately high and adverse effects, may be missed in a traditional census tract-based analysis."[85] Outreach in potentially impacted areas to identify people of color and low-wealth communities is critical.[86] EPA recommends supplementing census data with local demographic data and research,[87] and specifically notes that EPA staff does not use EJSCREEN "[a]s a means to identify or label an area as an 'EJ community'" or "[a]s a basis for agency decision-making or making a determination regarding the existence or absence of EJ concerns."[88]

Second, once the agency has identified environmental justice communities, it must assess the disproportionate impacts of the project on the people in those specific communities. In the air quality context, the Fourth Circuit Court of Appeals held in *Friends of Buckingham v. State Air Pollution Control Board* that "blindly relying on ambient air standards is not a sufficiently searching analysis of air quality standards for an EJ

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[84] *Friends of Buckingham*, 947 F.3d at 88-89; *cf. Standing Rock Sioux Tribe*, 255 F.Supp.3d at 137 ("the 'unit of geographic analysis' for the environmental-justice assessment should 'be chosen so as not to artificially dilute or inflate the affected minority population.'") (quoting CEQ, Environmental Justice Guidance, *supra*, at 26).

[85] EPA, Final Guidance for Incorporating Environmental Justice Concerns in EPA's NEPA Compliance Analyses § 2.1.1 (April 1998), *available at* https://bit.ly/3r7w7zj.

[86] CEQ, Environmental Justice Guidance, *supra* n. 83, 4, 9-13.

[87] *See* Federal Interagency Working Group on Environmental Justice, Promising Practices for EJ Methodologies in NEPA Reviews 21 (Mar. 2016), *available at* https://bit.ly/306MZdi.

[88] EPA, How Does EPA Use EJSCREEN?, https://bit.ly/3wDhzJH (last visited July 15, 2021).

community."[89] The Fourth Circuit had good reason to dismiss the notion that mere compliance with NAAQS means there will be no disproportionate adverse health risks. Whether a facility would allow an area to comply with air quality standards is distinct from whether it would have a disproportionately high and adverse effect on environmental justice populations. Otherwise, consideration of disproportionate harm would be required only for facilities that would contribute to a violation of such air quality standards—and thus could not lawfully be built.[90] Instead, the agency must examine the impacts of the pollutants from the proposed facility with an analysis "tailored to [the] specific EJ community."[91] Some air pollutants, like fine particulates, have harmful effects even when air quality standards are not violated.[92] TVA violates NEPA when it falls back on compliance with Clean Air Act permits limits as its sole justification for a "not significant" finding.

TVA must heed these guidelines in conducting its environmental justice analysis for the Kingston EIS.

C. TVA must perform site-specific analyses for all proposed generation facilities.

TVA must perform site-specific analyses to determine proposed generation facilities' potential impacts on each community. Under Alternative B, TVA would construct combustion-turbine gas plants "at

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[89] *Friends of Buckingham*, 947 F.3d at 93.

[90] EPA, Final Guidance for Incorporating Environmental Justice Concerns in EPA's NEPA Compliance Analysis, *supra* n. 85, at § 3.2.2 (explaining that even harms that are not "significant" in NEPA context may disproportionately or severely harm environmental justice communities).

[91] *Friends of Buckingham*, 947 F.3d at 90-92.

[92] *Id.* at 92 ("[E]ven when NAAQS are not violated as to this particulate matter, the record reflects that exposure to PM2.5 will increase the risk of asthma, heart attacks, and death."); *Am. Trucking Ass'ns v. EPA*, 283 F.3d 355, 360 (D.C. Cir. 2002) (recognizing the "lack of a threshold concentration below which [particulate matter and ozone] are known to be harmless").

alternate locations."[93] Under Alternative C, TVA would construct and operate solar and storage facilities "at alternate locations."[94] TVA's scoping notice does not indicate where these "alternate locations" might be or how the agency will analyze impacts to those communities.

NEPA requires TVA to consider the full scope of site-specific impacts for its decision to build new generation. Agencies must "[d]iscuss each alternative considered in detail," disclosing and analyzing the reasonably foreseeable effects of proposed actions.[95] To the extent the agency proposes to "tier" its analysis from a broader programmatic EIS to subsequent NEPA review that is narrower in scope, such tiering should not allow the agency to obscure the extent of site-specific environmental impacts or to artificially narrow the alternatives available during site-specific analysis.[96] NEPA "emphasizes the importance of coherent and comprehensive up-front environmental analysis to ensure informed decision making to the end that 'the agency will not act on incomplete information, only to regret its decision after it is too late to correct.'"[97]

To fully inform itself and the public before making its decision, TVA must consider the site-specific impacts of the proposed renewable and gas facilities, including any related infrastructure, such as transmission lines, compressor stations, and gas pipelines. It is impossible to meaningfully

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[93] Notice of Intent, 86 Fed. Reg. at 31781.

[94] *Id.*

[95] 40 C.F.R. § 1502.14, 1508.1(g).

[96] *California v. Block*, 690 F.2d 753, 761 (9th Cir. 1982) ("The critical inquiry in considering the adequacy of an EIS prepared for a large scale, multi-step project is not whether the project's site-specific impact should be evaluated in detail, but when such detailed evaluation should occur."); *id.* at 763 ("[T]he promise of site-specific EIS's [sic] in the future is meaningless if later analysis cannot consider wilderness preservation as an alternative to development.").

[97] *Blue Mountains Biodiversity Project v. Blackwood*, 161 F.3d 1208, 1216 (9th Cir. 1998) (quoting *Marsh v. Or. Nat. Res. Council*, 490 U.S. 360, 371 1989)).

analyze local pollution and land use in the abstract, and TVA cannot analyze environmental justice impacts at all without considering the unique histories and burdens of real communities. NEPA's "twin aims" require TVA to consider "*every* significant aspect of the environmental impact of a proposed action" [98] and to "inform the public" that it has fully considered those impacts during the decision-making process.[99] To comply with NEPA, TVA must disclose and consider site-specific impacts before selecting or ruling out an alternative in the Kingston EIS.

D. TVA must consider impacts to the region's protected lands and waterways.

TVA must disclose and analyze potential adverse impacts to the protected lands and waterways near the Kingston Plant. East Tennessee is home to some of the country's most beautiful forests, parks, and rivers. The Great Smoky Mountains National Park is one of the most visited national parks, world-renowned for its biodiversity and breathtaking views. The Kingston Plant's air emissions impair visibility in many of the region's pristine Class I areas, primarily in the Great Smoky Mountains National Park, where Kingston has been the fourth-largest source of regional haze.[100] TVA must disclose and analyze the air quality impacts of the proposed Kingston retirement, as well as any replacement infrastructure, on the public lands of East Tennessee and regional Class I areas, including the Great Smoky Mountains National Park.

TVA must also ensure that any potential infrastructure projects, such as pipelines or transmission lines, do not impair the nearby Obed Wild and Scenic River. Designated a "wild river area," the Obed's shorelines are

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[98] *Baltimore Gas & Elec. Co.,* 462 U.S. at 97 (quoting *Vermont Yankee Nuclear Power Corp. v. NRDC*, 435 U.S. 519, 553 (1978)) (emphasis added).

[99] *Id.* (citing *Weinberger v. Catholic Action of Haw.*, 454 U.S. 139, 143 (1981)).

[100] *See* National Parks & Conservation Association, Sources of Visibility Impairing Pollution, *supra* n. 24.

"essentially primitive" and its "waters unpolluted."[101] The Wild and Scenic Rivers Act requires that the Obed remain essentially primitive and unpolluted.[102] Therefore, TVA must disclose, analyze, and prevent any harms to the Obed Wild and Scenic River.

CONCLUSION

For these reasons, we urge TVA to prepare a draft EIS for the retirement of the Kingston Fossil Plant that embraces President Biden's 2035 decarbonization mandate and TVA's critical role in addressing the climate crisis.

[101] *See* 16 U.S.C. § 1273(b)(3).

[102] *See id.* § 1281(a).