

June 13, 2022

Via email to [nepa@tva.gov](mailto:nepa@tva.gov); and [aapilakowski@tva.gov](mailto:aapilakowski@tva.gov)

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**RE: Conservation Groups' Comments on TVA's Draft Environmental Impact Statement for the Cumberland Fossil Plant Retirement**

Dear Ms. Pilakowski,

Southern Environmental Law Center, Appalachian Mountain Advocates, Sierra Club, Center for Biological Diversity, Appalachian Voices, Energy Alabama, and Southern Alliance for Clean Energy (together, the "Conservation Groups") submit these comments on the Tennessee Valley Authority's ("TVA") Draft Environmental Impact Statement for the Cumberland Fossil Plant Retirement (the "DEIS").<sup>1</sup> These comments fully incorporate the attached technical analysis by energy experts Synapse Energy Economics, Inc. and Grid Strategies, LLC.<sup>2</sup>

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."<sup>3</sup> The Cumberland Fossil Plant is one of the largest and dirtiest coal-fired power plants in the country, responsible for millions of tons of greenhouse gas emissions annually. TVA must retire it.

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<sup>1</sup> TVA, Cumberland Fossil Plant Retirement: Draft Environmental Impact Statement (2022) [hereinafter "DEIS"], [https://tva-azr-eastus-cdn-ep-tvawcm-prd.azureedge.net/cdn-tvawcma/docs/default-source/environment/cuf-deis-report-only-20220421.pdf?sfvrsn=61161246\\_3](https://tva-azr-eastus-cdn-ep-tvawcm-prd.azureedge.net/cdn-tvawcma/docs/default-source/environment/cuf-deis-report-only-20220421.pdf?sfvrsn=61161246_3).

<sup>2</sup> Rachel Wilson et al., Synapse Energy Economics, Inc., *Clean Portfolio Replacement at Tennessee Valley Authority, Economic and Emissions Benefits for TVA Customers* (May 2022), **Attachment 1** (the "Synapse Report"); Michael Goggin, Grid Strategies, LLC, *Critique of TVA's Alternatives Analysis in the Utility's "Cumberland Fossil Plant Retirement, Draft Environmental Impact Statement"* (June 13, 2022), **Attachment 2** (the "Grid Strategies Report"). Attachments referenced in these comments are available by request from the authors and at <https://southernenvironment.sharefile.com/d-s7c673117f5904f6e980fe93aa189a113>.

<sup>3</sup> Exec. Order No. 14,008, 86 Fed. Reg. 7619, 7624 (Feb. 1, 2021); Exec. Order No. 13,990, 86 Fed. Reg. 7037, 7037 (Jan. 25, 2021) (emphasis added).

But TVA must not, as it proposes in the DEIS, replace these retired coal units with gas-fired generation and make yet another multi-decade commitment to a carbon-polluting fossil fuel. If it does, TVA—a federal agency—will derail the president's climate objectives and contribute to the climate-related harm already affecting public health, biodiversity, and economic productivity across the Southeast. As discussed in these comments, the DEIS fails to meaningfully address the true scope and impact of TVA's proposal and what it will mean for our communities across the Valley. We urge TVA to change course and select an affordable, reliable, clean energy portfolio that will better serve the ten million ratepayers across this region and our nation's climate goals.

The National Environmental Policy Act ("NEPA") exists in part to inform the public that federal agencies have considered environmental concerns in reaching major decisions.<sup>4</sup> An agency fails to meet its obligation under NEPA when it provides an environmental review so deficient as to prevent full and informed public decisionmaking.<sup>5</sup> As further described in the comments below, the DEIS is insufficient because, among other reasons:

- TVA has undermined full and informed public participation in the NEPA process by failing to disclose the information needed to assess and comment on the DEIS, by refusing to extend the comment period, by impermissibly segmenting its review of the methane gas pipeline's environmental impacts and purporting to rely on Tennessee Gas Pipeline Company's ("TGP") incomplete analysis of pipeline impacts, and by ignoring other threshold questions about the scope and framing of the DEIS's analysis, including the relationship of the proposed methane gas plant to the additional 3500 MW of new gas plants TVA has recently proposed;
- TVA's analysis of alternatives fails to consider carbon-free options, obscures the difference in greenhouse gas emissions between its alternatives, overstates the amount of solar and storage facilities needed to serve TVA's generation needs, and misstates the costs of the options the agency is considering;
- TVA ignores upstream methane emissions, camouflages decades of additional carbon emissions with its net-only greenhouse gas comparison, and baselessly applies outdated values in what purports to be a Social Cost of Carbon analysis;

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<sup>4</sup> See *Baltimore Gas & Elec. Co. v. Nat. Res. Def. Council, Inc.*, 462 U.S. 87, 97 (1983) ("NEPA has twin aims. First, it places upon an agency the obligation to consider every significant aspect of the environmental impact of a proposed action. Second, it ensures that the agency will inform the public that it has indeed considered environmental concerns in its decisionmaking process.") (citation omitted).

<sup>5</sup> *Cf. Friends of the Earth v. Haaland*, 2022 WL 254526 at \*5 (D.D.C. Jan. 27, 2022) ("[A]n agency's assessment is sufficient unless its deficiencies are significant enough to undermine informed public comment and informed decisionmaking.") (internal quotation marks omitted).

*Conservation Groups' Comments on the Cumberland Retirement DEIS*

- TVA fails to meaningfully analyze the potential for disproportionate adverse impacts on environmental justice communities by using overly broad census data, relying on unjustified assumptions about geographic scale, understating environmental harms throughout the DEIS, including cumulative harms, and ignoring the intersection of climate change impacts and environmental justice;
- TVA relies on mitigation to dismiss the project's surface water and wetlands impacts without explaining what mitigation it means to employ; leaves unanswered critical questions about Alternative A's wetlands impacts; says nothing about the dozens of sites where blasting in streams would carve out the pipeline's route; and fails entirely to evaluate alternatives that could lessen the project's impacts on streams and wetlands;
- TVA overlooks climate change impacts on wildlife affected by the project, unjustifiably relies on outdated and incomplete references to write off the project's impact on endangered species, including bats and mussels, and prematurely defers to FERC on the project's effect on sites on the National Rivers Inventory.

TVA must address the critical omissions and flawed analyses identified throughout these comments. Thank you for your consideration of our comments. Please contact us if we can answer any questions.

Sincerely,

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*Conservation Groups' Comments on the Cumberland Retirement DEIS*

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## Conservation Groups' Comments on the Cumberland Retirement DEIS

TVA must retire the Cumberland Plant, one of the dirtiest coal-fired power plants in the United States. Operational since 1973, the Cumberland Plant in Cumberland City, Tennessee, is the largest coal-fired power plant in TVA's fleet and one of the largest in the nation.<sup>6</sup> The plant burns millions of tons of coal annually and is one of the nation's largest standalone sources of greenhouse gas emissions. In 2014, it released over 13 million metric tons of greenhouse gases, ranking 14th among large greenhouse-gas emitters tracked by EPA.<sup>7</sup>

The Cumberland Plant is also one of the country's largest sources of toxic mercury and selenium pollution. The plant generates approximately one million tons of coal combustion residuals (coal ash) waste annually<sup>8</sup> and, in 2016, produced an average of 2,097 million gallons of wastewater each day.<sup>9</sup> A report published by the Environmental Integrity Project identified the facility as the worst mercury polluter and second-worst selenium polluter *among all coal plants nationwide*.<sup>10</sup> The report, based on information provided by TVA to EPA and available to the public in the Toxics Release Inventory, found that in 2015, TVA dumped 120 pounds of mercury and 6,000 pounds of selenium from the Cumberland Plant into the Cumberland River.<sup>11</sup>

Although TVA's subsequent Toxic Release Inventory reporting indicates a reduction in these discharges, TVA continued to dump 61 pounds of mercury into the river in 2019.<sup>12</sup> In 2016, the utility discharged 1,300 pounds of selenium into the river.<sup>13</sup> These polluted discharges flow downstream into cherished and protected

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<sup>6</sup> Notice of Intent to Prepare Environmental Impact Statement for Cumberland Fossil Plant Retirement, 86 Fed. Reg. 25933, 25934 (May 11, 2021); TVA, *Cumberland Fossil Plant*, <https://www.tva.gov/Energy/Our-Power-System/Coal/Cumberland-Fossil-Plant> (last visited June 1, 2022).

<sup>7</sup> Jamie Hopkins, Center for Public Integrity, *America's Super Polluters*, <https://publicintegrity.org/environment/americas-super-polluters/>.

<sup>8</sup> TVA, CUMBERLAND FOSSIL PLANT COAL COMBUSTION RESIDUALS MANAGEMENT OPERATIONS ENVIRONMENTAL IMPACT STATEMENT at Summary-1 (2018), **Attachment 3**, ("The plant consumes an average of 5.6 million tons of coal annually and produces approximately 1 million tons of CCR each year.").

<sup>9</sup> TVA, Cumberland Fossil Plant (CUF)—NPDES Permit No. TN0005789—Updated Permit Renewal Application (Aug. 1, 2016), **Attachment 4**, (reporting an average flow of 2,096.987 mgd from Outfall 2, which includes discharge from internal Outfall 001).

<sup>10</sup> ENVIRONMENTAL INTEGRITY PROJECT, TOXIC WASTEWATER FROM COAL PLANTS at 16 (2016) [hereinafter "TOXIC WASTEWATER FROM COAL PLANTS"], **Attachment 5** <https://bit.ly/3587g56>; see also Mark Hicks, *Cumberland City Plant Rated Worst Mercury Polluter*, CLARKSVILLE LEAF-CHRONICLE (Aug. 11, 2016), <https://bit.ly/3pDQJPL>.

<sup>11</sup> TOXIC WASTEWATER FROM COAL PLANTS, **Attachment 5**.

<sup>12</sup> EPA, TRI On-Site and Off-Site Reported Disposed of or Otherwise Released (In Pounds), Trend Report for Facilities in US TVA Cumberland Fossil Plant (TRI ID 37050STVCM815CU) for Mercury Compounds Chemical, US 2000-2019 (June 2021), <https://bit.ly/3pyn3U0>.

<sup>13</sup> EPA, TRI On-Site and Off-Site Reported Disposed of or Otherwise Released (In Pounds), Trend Report for Facilities in US TVA Cumberland Fossil Plant (TRI ID 37050STVCM815CU) for Selenium Compounds Chemical US 1998-2016 (June 2021), <https://bit.ly/3v2xfFy>.

recreational and wildlife areas in Tennessee, including Barkley Wildlife Management Area, Cross Creeks National Wildlife Refuge, and Land Between the Lakes National Recreation Area. Several drinking water intakes are also located downstream from the Cumberland Plant. Then, in the 2020 *Steam Electric Reconsideration Rule*, TVA sought and obtained an exemption from federal toxic wastewater standards—standards that apply to all coal plants—specifically for the Cumberland Plant.<sup>14</sup> This exemption allows the utility to avoid installing modern pollution controls and continue polluting the Cumberland River with large quantities of mercury and selenium as long as it operates.<sup>15</sup> TVA also continues to store the ash generated by burning coal in leaking, unlined pits that are contaminating groundwater directly adjacent to the Cumberland River and Wells Creek.<sup>16</sup>

It is time for TVA to end the Cumberland Plant's long history of pollution. Although Conservation Groups support TVA's proposal to retire the Cumberland plant, it is critical that doing so does not trade one dirty fossil fuel plant for another. The DEIS proposes to do just that, and along the way overlooks critical parts of the agency's analysis of the impacts associated with advancing its preferred alternative. TVA must address those deficiencies.

## **I. TVA has failed to make possible full and informed public participation in the NEPA process.**

The National Environmental Policy Act is our country's "basic national charter for protection of the environment."<sup>17</sup> Congress enacted NEPA, in part, "to promote efforts which will prevent or eliminate damage to the environment and biosphere and stimulate the health and welfare of man."<sup>18</sup> NEPA requires "all agencies of the Federal Government" to include "a detailed statement" on "major Federal actions significantly affecting the quality of the human environment."<sup>19</sup> That statement, known as an Environmental Impact Statement ("EIS"), must describe (1) "the environmental impact of the proposed action," (2) "any adverse environmental effects which cannot be avoided should the proposal be implemented," (3) "alternatives to the proposed action," (4) "the relationship between local short-term uses of man's environment and the maintenance and enhancement of long-term productivity," and

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<sup>14</sup> Steam Electric Reconsideration Rule, 85 Fed. Reg. 64650, 64675–76 (Oct. 13, 2020).

<sup>15</sup> Conservation groups filed suit to oppose the 2020 Steam Electric Reconsideration Rule. *Appalachian Voices v. EPA*, No. 20-2187 (4th Cir., Nov. 2, 2020).

<sup>16</sup> TVA, Fifth Semiannual Report on the Progress on the Progress of Remedy Selection (2022), **Attachment 6**, [https://www.tva.com/docs/default-source/ccr/cuf/surface-impoundment---stilling-pond-\(including-retention-pond\)/groundwater-monitoring/corrective-measures/257.97\(a\)\\_2022\\_5th\\_semiannual\\_progress\\_report\\_cuf\\_stilling\\_pond\\_including\\_retention\\_pond19f7f9f8-959f-4f55-b495-4729d40a0f8f.pdf?sfvrsn=d702c1cb\\_3](https://www.tva.com/docs/default-source/ccr/cuf/surface-impoundment---stilling-pond-(including-retention-pond)/groundwater-monitoring/corrective-measures/257.97(a)_2022_5th_semiannual_progress_report_cuf_stilling_pond_including_retention_pond19f7f9f8-959f-4f55-b495-4729d40a0f8f.pdf?sfvrsn=d702c1cb_3).

<sup>17</sup> 40 C.F.R. § 1500.1 (1978).

<sup>18</sup> 42 U.S.C. § 4321.

<sup>19</sup> 42 U.S.C. § 4332(C).

(5) “any irreversible and irretrievable commitments of resources which would be involved in the proposed action should it be implemented.”<sup>20</sup>

NEPA “require[s] that agencies take a ‘hard look’ at the environmental effects of their planned action.”<sup>21</sup> This obligation “ensures that the agency, in reaching its decision, will have available, and will carefully consider, detailed information concerning significant environmental impacts; it also guarantees that the relevant information will be made available to the larger audience that may also play a role in both the decisionmaking process and the implementation of that decision.”<sup>22</sup>

The Act’s centerpiece is informed public involvement. NEPA affords interested citizens an opportunity to shape an agency’s analysis of its potential decision by raising the issues they are concerned about during the scoping process, a chance to comment on the agency’s analysis of the likely impacts of the proposed action in the DEIS, and ultimately an avenue to seek judicial help enforcing the Act against an agency that shirks its NEPA responsibility.<sup>23</sup> Courts have described this process as one designed to bring “clarity and transparency” to federal decisions that affect the environment.<sup>24</sup>

When an agency fails to provide a complete analysis of the impacts of its decision, the public is unable to properly engage in the NEPA process.<sup>25</sup> The Cumberland Retirement DEIS is riddled with gaps that make it impossible for the public to fully understand the project alternatives and their impacts.<sup>26</sup> This section describes how those gaps have blocked Conservation Groups from participating in the NEPA process for this project to the full extent the Act requires.

#### **A. TVA has not given Conservation Groups the data and records needed to properly comment on the DEIS.**

On May 5, 2022, SELC contacted TVA’s NEPA officer requesting the agency disclose information that was relied upon or referenced by the DEIS, but which was not made public when the DEIS was made available for public comment.<sup>27</sup> SELC

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<sup>20</sup> *Id.*

<sup>21</sup> *Marsh v. Or. Natural Resources Council*, 490 U.S. 360, 368 (1989).

<sup>22</sup> *Robertson v. Methow Valley Citizens Council*, 490 U.S. 332, 349 (1989).

<sup>23</sup> 40 C.F.R. § 1501.7.

<sup>24</sup> “NEPA procedures emphasize clarity and transparency of process over particular substantive outcomes.” *N. Carolina Wildlife Fed’n v. N. Carolina Dep’t of Transp.*, 677 F.3d 596, 603 (4th Cir. 2012). *See also* 40 C.F.R. § 1502.14(b) (1978) (“[A]gencies shall . . . [r]igorously explore and objectively evaluate all reasonable alternative . . . .”); *Oregon Nat. Desert Ass’n v. Bureau of Land Mgmt.*, 625 F.3d 1092, 1121 n.24 (9th Cir. 2010) (“Clarity is at a premium in NEPA because the statute, as we have said, is a democratic decisionmaking tool, designed to foster excellent action by help[ing] public officials make decisions that are based on [an] understanding of environmental consequences.”) (internal quotation marks and citation omitted).

<sup>25</sup> *New Mexico ex rel. Richardson v. Bureau of Land Mgmt.*, 565 F.3d 683, 708 (10th Cir. 2009) (noting that a “public comment period is beneficial only to the extent the public has meaningful information on which to comment”).

<sup>26</sup> *Id.* § 1503.4.

<sup>27</sup> *See* Letter from Trey Bussey, SELC to Ashley Pilakowski, TVA (May 5, 2022), [Attachment 7](#).

simultaneously requested the same information under the Freedom of Information Act.<sup>28</sup> Those requests sought, among other relevant items:

- A “20-year study” that TVA relied upon in assessing its alternatives but did not include with the DEIS;
- Records supporting TVA’s assumption that replacing the generation capacity of its retiring coal plant would require double the generation capacity in solar and, on top of that, another 1700MW of battery storage;
- The data and assumptions on which TVA premised its carbon emissions comparison of proposed alternatives;
- Information explaining the “generic site analysis” TVA provided for Alternative C;
- Data and analyses explaining why TVA rejected a range of other alternatives, including in- or out-of-Valley wind;
- The load forecasts that justify TVA’s assertion of need for a methane-burning plant; and
- The “reliability analysis” TVA cited as the basis for its design of Alternative C but did not explain or include in the DEIS.<sup>29</sup>

The requested information is relevant to TVA’s selection and analysis of the alternatives’ feasibility, the agency’s decision about which alternative will be the preferred outcome, and the agency’s comparison of the specific environmental impacts of each of the alternatives. Alternatives are the heart of the NEPA process.<sup>30</sup> Without the information requested, Conservation Groups are starved of the data and assumptions needed to fully understand what the DEIS is saying about alternatives, and thus unable to properly participate in the “informed public decisionmaking process” that NEPA prescribes.<sup>31</sup>

But on May 11, 2022, TVA refused SELC’s request—releasing no new information and not responding to the specific items SELC requested.<sup>32</sup> Instead, TVA

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<sup>28</sup> Letter from Trey Bussey, SELC to TVA FOIA Officer (May 5, 2022), [Attachment 12](#).

<sup>29</sup> See Letter from Trey Bussey, SELC to Ashley Pilakowski, TVA (May 5, 2022) [Attachment 7](#). Statements elsewhere in these comments on the issues implicated by this information request are based on the limited, incomplete information that is publicly available and are not concessions that Conservation Groups have been able to participate in the NEPA process in the fully informed way required by law.

<sup>30</sup> 42 U.S.C. § 4332(E) (agencies shall “study, develop, and describe appropriate alternatives to recommended courses of action in any proposal which involves unresolved conflicts concerning alternative uses of available resources”); *Sierra Club v. U.S. Army Corps of Engr’s*, 803 F.3d 31, 37 (D.C. Cir. 2015) (“At the heart of NEPA is the procedural requirement that . . . the agencies consider alternatives that might lessen any adverse environmental impact.”); *Citizens Against Burlington, Inc. v. Busey*, 938 F.2d 190, 194 (D.C. Cir. 1991) (the discussion of alternatives forms “the heart of the EIS”) (quoting 40 C.F.R. § 1502.14 (1978)).

<sup>31</sup> *Friends of the Earth*, 2022 WL 254526 at \*5 (“[A]n agency’s assessment is sufficient unless its deficiencies are significant enough to undermine informed public comment and informed decisionmaking.”) (internal quotation marks omitted).

<sup>32</sup> Letter from Ashley Pilakowski, TVA to Trey Bussey, SELC (May 11, 2022), [Attachment 8](#).

argued generally that “information that TVA has relied on in drawing conclusions in the DEIS is provided in the text of the DEIS itself, incorporated by reference in the DEIS, or otherwise already available to the public.”<sup>33</sup> TVA further announced in its response, without acknowledging the rapidly closing comment period for the DEIS, that “should TVA discover any documents that do not fall within these categories that are responsive to your request, they will be provided to you.”<sup>34</sup>

TVA has likewise not produced any documents in response to SELC’s FOIA request. In fact, SELC has multiple FOIA requests to TVA for information relevant to this DEIS pending—one since November 2021—which have not been completed.<sup>35</sup> And the requests that SELC has sent TVA are only one of the missing pieces: SELC has also requested (but not received) relevant information from the Fish and Wildlife Service,<sup>36</sup> National Park Service,<sup>37</sup> and the Army Corps of Engineers.<sup>38</sup> Without the information sought in these requests, Conservation Groups cannot fully and properly comment on the DEIS.

**B. TVA has refused to provide Conservation Groups additional time to address the missing information, interfering with public comment on the DEIS.**

TVA has not given the public enough time to comment on the DEIS. Despite the gaps in information, long-term impact of selecting any of the alternatives, and the complex interrelationship between the Cumberland Retirement and TVA’s connected actions to build new gas throughout the system, TVA opted for the shortest allowable period of public comment. A 45-day comment period is the bare minimum required by federal law<sup>39</sup> and by TVA’s own regulations.<sup>40</sup> TVA could have given the public more time.<sup>41</sup>

On May 6, 2022, Conservation Groups submitted an extension request to TVA seeking thirty more days to comment on the DEIS.<sup>42</sup> The request described the data, records, and analysis cited in the DEIS that was not publicly available when the draft was made available for comment. That information included items in TVA’s possession as well as records in the possession of other federal agencies.<sup>43</sup> Further,

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<sup>33</sup> *Id.*

<sup>34</sup> *Id.*

<sup>35</sup> See SELC FOIA Request dated Nov. 16, 2021, [Attachment 9](#).

<sup>36</sup> See SELC FOIA Requests dated January 26, 2022 and May 5, 2022, [Attachments 11, 12](#).

<sup>37</sup> See SELC FOIA Requests dated March 3, 2022 and May 11, 2022, [Attachments 10, 13](#).

<sup>38</sup> See SELC FOIA Request dated May 11, 2022, [Attachment 18](#).

<sup>39</sup> See 40 CFR § 1506.11(d) (“[A]gencies shall allow at least 45 days for comments on draft statements.”).

<sup>40</sup> 18 C.F.R. § 1318.403(e) (“A minimum of 45 days from the date of publication of the notice of availability in the Federal Register must be provided for public comment.”).

<sup>41</sup> 18 C.F.R. § 1318.403(e) (“TVA may extend the public comment period in its discretion.”).

<sup>42</sup> See Letter from Daniel Metzger, SELC to Ashley Pilakowski, TVA (May 6, 2022), [Attachment 14](#), [hereinafter “Extension Request”].

<sup>43</sup> *Id.* at 2; see also *infra* section I.A.

the request flagged the new set of NEPA regulations promulgated by CEQ just before DEIS became available; the gaps and deferred analysis throughout TGP's Resource Reports (on which TVA purports to rely in the DEIS); the overlapping need and system-wide generation impacts analysis TVA will imminently engage in for the Kingston Fossil Plant Retirement; and the apparent (and unexplained) conflict between TVA's preferred alternative and federal policy.<sup>44</sup>

TVA's terse response inadequately justified the agency's insistence on the minimum lawful comment period.<sup>45</sup> The agency wrote that "the public was first made aware of TVA's intent to study the proposed retirement and replacement generation of the Cumberland Fossil Plant a year ago, in May 2021"<sup>46</sup>; but neither the Notice of Intent<sup>47</sup> nor the Scoping Report<sup>48</sup> that TVA published for this project explained the alternatives in detail. TVA further wrote that "[t]he duration of the comment period as well as the format for public involvement . . . [provides] TVA with the planning lead times necessary to select and proceed with an action alternative to meet its obligations to provide reliably, resilient and affordable electricity"<sup>49</sup>; but TVA has known which alternatives it would consider and taken steps to implement its preferred alternative since at least August 11, 2021, when it signed a "binding precedent agreement . . . for all of the incremental firm transportation capacity" created by the pipeline being advanced to support Alternative A.<sup>50</sup> Moreover, that precedent agreement appears to contain a service commencement schedule that TVA may well be committed to pursuing even at the expense of providing adequate time to comment on the DEIS.<sup>51</sup> Finally, TVA wrote that "any information that TVA has relied on in drawing conclusions in the DEIS is provided in the text of the DEIS itself, incorporated by reference in the DEIS, or otherwise already available to the public."<sup>52</sup> But not only does TVA's response entirely ignore the specific pieces of information Conservation Groups pointed out are not included in the DEIS, it entirely overlooks the information from *other* federal agencies that relates to TVA's project.

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<sup>44</sup> Extension Request at 1–3, **Attachment 14**.

<sup>45</sup> TVA responded to Conservation Groups' request for an extension on May 26, 2022. See Letter from Ashley Pilakowski, TVA to Daniel Metzger, SELC (May 26, 2022), **Attachment 15**, [hereinafter "Extension Denial Letter"].

<sup>46</sup> Extension Denial Letter at 1, **Attachment 15**.

<sup>47</sup> Notice of Intent to Prepare Environmental Impact Statement for Cumberland Fossil Plant Retirement, 86 Fed. Reg. 25933 (May 11, 2021).

<sup>48</sup> TVA, Cumberland Fossil Plant Retirement EIS Scoping Report (2021), [https://www.tva.com/docs/default-source/1-float/final\\_tva\\_cumberland\\_eis\\_scoping\\_report2b91b738-1fc7-4db7-8cf6-015c504730bd.pdf?sfvrsn=bd3c1ed6\\_5](https://www.tva.com/docs/default-source/1-float/final_tva_cumberland_eis_scoping_report2b91b738-1fc7-4db7-8cf6-015c504730bd.pdf?sfvrsn=bd3c1ed6_5), [hereinafter "CUF Scoping Report"].

<sup>49</sup> Extension Denial Letter at 1, **Attachment 15**.

<sup>50</sup> Tennessee Gas Pipeline Company, L.L.C., Draft Resource Report 10: Alternatives at 10-2, Dkt. No. PF-22-2-000 (Feb. 2022) [hereinafter "Draft Resource Report 10"], **Attachment 17**; see also Pipeline Precedent Agreement between Tennessee Gas Pipeline Company, L.L.C. and Tennessee Valley Authority dated August 11, 2021, [hereinafter "TGP Precedent Agreement"], **Attachment 16**.

<sup>51</sup> See TGP Precedent Agreement at 2–3, **Attachment 16**.

<sup>52</sup> Extension Denial Letter at 2, **Attachment 15**.

The thirty additional days Conservation Groups requested may not have been enough to resolve each and every data omission that TVA ignored in its response—but with the extension denied outright Conservation Groups, and other members of the public, stood no chance of finding the missing information. And even if TVA had timely responded to SELC's data requests, insisting on the shortest possible comment period left Conservation Groups with inadequate time to obtain missing data in the possession of *other* federal agencies.

**C. TVA has not explained what version of the NEPA regulations the agency is applying, but regardless its choices are limited.**

The DEIS comes at a time when NEPA's implementing regulations have rapidly been changing. But the DEIS does not explain whether or how TVA has chosen to navigate the evolving requirements. TVA must be clear about how it is applying the statute and the agency's reasons for doing so. In all events, TVA's choices are limited.

For most of NEPA's history, the Council on Environmental Quality's ("CEQ") 1978 implementing regulations (the "1978 Rules") guided agencies and the affected public on how to understand and apply the statute.<sup>53</sup> In 2020, prompted by then-President Trump's executive orders, CEQ published a proposal to overhaul the rules (the "2020 Revision").<sup>54</sup> The proposed changes would have narrowed the scope of NEPA review, eliminating long-standing requirements to evaluate indirect and cumulative impacts—regardless of how real, significant, and well-understood those effects are.<sup>55</sup> The 2020 Revision elicited over a million comments expressing stakeholders' concerns, and multiple lawsuits challenging their legality.<sup>56</sup>

Just over a year later, and while challenges to the 2020 Revision remained pending, CEQ reversed course, concluding that the 2020 Revision could have "negative repercussions for environmental protection and environmental quality," "may not reflect NEPA's statutory purposes," and "may not support science-based decision making."<sup>57</sup> To correct those errors, CEQ proposed, in a 2021 rulemaking, to return to "the language from the 1978 NEPA Regulations that was in effect for more than 40 years, subject to minor revisions for clarity."<sup>58</sup> Then, on April 20, 2022, CEQ issued a "Phase 1" final rule in which, among other things, "CEQ is generally reverting to the approach in the 1978 regulations . . . [and] intends for the Phase 1 final rule provisions to have the same meaning as the corresponding provisions in the

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<sup>53</sup> Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act, 43 Fed. Reg. 55978 (Nov. 29, 1978).

<sup>54</sup> See Update to the Regulations Implementing the Procedural Provisions of the National Environmental Policy Act, 85 Fed. Reg. 43304 (July 16, 2020) [hereinafter "2020 Revision"].

<sup>55</sup> 40 C.F.R. § 1508.1(g)(2) (2020).

<sup>56</sup> See National Environmental Policy Act Implementing Regulations Revisions, 86 Fed. Reg. 55757, 55758 (Oct. 7, 2021) [hereinafter "2021 Rulemaking"].

<sup>57</sup> See *id.* at 55759.

<sup>58</sup> *Id.* at 55760.

regulations in effect from 1978 to September 2020.”<sup>59</sup> The new rule went into effect while the comment period for the DEIS was open, on May 20, 2022.

The DEIS includes sections that discuss cumulative impacts and indirect effects—issues that are directly affected by the changing NEPA regulatory regime.<sup>60</sup> But the DEIS makes no mention at all of whether or how CEQ’s rulemakings have affected TVA’s analysis. TVA must explain what regulations it is applying to ensure the EIS complies with NEPA by putting forward “sufficient information for the general public to make an informed evaluation.”<sup>61</sup>

Regardless, TVA does not have latitude to pick and choose from among the various iterations of the NEPA regulations discussed above. Instead, TVA should apply the 1978 Rules. CEQ’s current NEPA rules—the 2020 Revision as amended by the Phase 1 rule—apply to “any NEPA process begun after September 14, 2020,” but agencies may apply the CEQ’s current NEPA rules or the 1978 Rules to “ongoing activities and environmental documents begun before September 14, 2020.”<sup>62</sup> The DEIS is inextricably intertwined with TVA’s 2019 integrated resource plan (“IRP”) and the 2019 IRP’s associated environmental impact statement, to which the DEIS tiers,<sup>63</sup> and therefore constitutes an ongoing activity and environmental review begun before September 14, 2020. If TVA wishes to produce a durable and lawful environmental impact statement here, it should start by seizing the opportunity to apply the 1978 Rules. The 2020 Revision is inconsistent with NEPA, which CEQ now recognizes,<sup>64</sup> and is subject to pending facial and as-applied challenges.<sup>65</sup> CEQ’s Phase 1 rulemaking corrected some of the problems with the 2020 Revision but certainly not all of them, and CEQ is expected to issue a notice of proposed rulemaking for a Phase 2 rule in the coming months.<sup>66</sup> Meanwhile, lawsuits challenging the 2020 Revision are working their way through the court system. Rather than face uncertainty about the validity of the 2020 Revision, the timing of Phase 2, or potential future as-applied challenges to the 2020 Revision, TVA should apply the 1978 Rules.

At a bare minimum, TVA may not apply the 2020 Revision’s cramped and unlawful definition of “effects,”<sup>67</sup> which was superseded and rendered inoperative by the Phase 1 rule.<sup>68</sup> Even if TVA attempts to characterize the DEIS and eventual final

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<sup>59</sup> National Environmental Policy Act Implementing Regulations Revisions 7 Fed. Reg. 23453, 23457 (April 20, 2022).

<sup>60</sup> See generally DEIS sections 1.6, 3.1, 3.7.

<sup>61</sup> *Sierra Club v. U.S. Army Corps of Engineers*, 701 F.2d 1011, 1029 (2d Cir. 1983).

<sup>62</sup> 40 C.F.R. § 1506.13.

<sup>63</sup> DEIS at 3 (“This EIS tiers off the 2019 IRP programmatic EIS.”).

<sup>64</sup> See 86 Fed. Reg. at 55759.

<sup>65</sup> See, e.g., *Wild Virginia v. Council on Environmental Quality*, No. 3:20-cv-00045 (W.D. Va.), *appeal taken* No. 21-1839 (4th Cir.); *The Clinch Coalition v. U.S. Forest Serv.*, 2:21-cv-00003 (W.D. Va.).

<sup>66</sup> See Office of Information and Regulatory Affairs, Unified Agenda of Regulatory and Deregulatory Actions, RIN 0331-AA07 (2021), <https://www.reginfo.gov/public/do/eAgendaViewRule?pubId=202110&RIN=0331-AA07>.

<sup>67</sup> See 85 Fed. Reg. at 43343–44.

<sup>68</sup> See 87 Fed. Reg. 23462–67.

environmental impact statement as a “NEPA process begun after September 14, 2020,” the result is still that TVA must apply “[t]he regulations of this subchapter”<sup>69</sup>—namely, CEQ’s current NEPA rules including the provisions of the Phase 1 rule.

**D. Deferring analysis of the environmental impacts from methane gas pipeline construction and operation has resulted in a DEIS that is premature, incomplete, and inadequate.**

The DEIS’s examination of the environmental effects of pipeline construction and operation associated with Alternative A is so incomplete and inadequate that it precludes meaningful analysis or comment. The excuses TVA offers for its scant analysis demonstrate that the DEIS was released prematurely. No fewer than 13 times in the DEIS, TVA asserts some variation of the following:

TGP will provide a detailed analysis of [environmental] effects, which will be part of the Environmental Report to be submitted with their certificate application that will be filed with FERC for the proposed pipeline.<sup>70</sup>

TVA’s attempt to incorporate incomplete analyses into its DEIS violates NEPA’s well-settled “rule of reason,” and impermissibly adopts unfinished, non-NEPA documents to be authored by a self-interested party.

NEPA’s “rule of reason” asks “whether an EIS’s deficiencies are significant enough to undermine informed public comment and informed decisionmaking.”<sup>71</sup> A draft environmental impact statement is supposed to “provide[] a springboard for public comment.” “An environmental analysis that occurs too early in the planning process may lack ‘meaningful information’ necessary for informed consideration.”<sup>72</sup>

Those principles remain embodied in CEQ’s NEPA regulations. Those regulations require agencies to “[i]dentify environmental effects and values in adequate detail so the decision maker can appropriately consider such effects and values alongside economic and technical analyses.”<sup>73</sup> When “a draft statement is so inadequate as to preclude meaningful analysis, the agency *shall* prepare and publish a supplemental draft of the appropriate portion.”<sup>74</sup> Supplemental draft EIS’s are required where there is “significant new . . . information relevant to environmental

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<sup>69</sup> 40 C.F.R. § 1506.13.

<sup>70</sup> DEIS at 139 (floodplains); 148 (groundwater); 167 (surface water); 174 (wetlands); 223 (vegetation); 237 (wildlife habitat); 244 (aquatic life effects); 279 (effects on protected species); 323 (transportation); 332 (utility); 361 (solid and hazardous waste effects); 402 (noise); 418 (visual).

<sup>71</sup> *Sierra Club v. FERC*, 867 F.3d 1357, 1368 (D.C. Cir. 2017).

<sup>72</sup> *Mayo v. Reynolds*, 875 F.3d 1357, 1368 (D.C. Cir. 2017) (quoting *Scientists’ Inst. for Pub. Info., Inc. v. Atomic Energy Comm’n*, 481 F.2d 1079, 1093–94 (D.C. Cir. 1973)).

<sup>73</sup> 40 C.F.R. § 1501.2(b)(2) (2020).

<sup>74</sup> *Id.* § 1502.9(b) (emphasis added).

concerns and bearing on the proposed action or its impacts.”<sup>75</sup> And draft impact statements must be subjected to public notice and comment.<sup>76</sup>

TVA concedes that “[t]he proposed pipeline is considered a related action under TVA’s Alternative A.”<sup>77</sup> That makes the pipeline a connected action, the impacts of which must be addressed in the same impact statement as the alternatives TVA is considering for replacement generation after the retirement of the CUF.<sup>78</sup> TVA appears impermissibly to have precommitted to Alternative A<sup>79</sup> and identifies it as the preferred alternative.<sup>80</sup> But TVA’s selection of Alternative A cannot be considered the result of informed decisionmaking under NEPA without a robust analysis of the impacts of the proposed pipeline. The absence of such an analysis from the DEIS violates NEPA’s rule of reason.<sup>81</sup> Pointing to TGP’s yet-to-be-completed Environmental Report<sup>82</sup> as a statement of the environmental consequences of the construction and operation of the proposed pipeline is wholly inadequate to “provide[] a springboard for public comment.”<sup>83</sup> Because TGP’s Environmental Report remains incomplete, TVA has released its DEIS “too early in the planning process,” and the DEIS “lack[s] ‘meaningful information’ necessary for informed consideration.”<sup>84</sup>

In its DEIS, TVA seemed to suspect that to be the case, committing to “incorporate information from TGP’s Environmental Report, *if necessary*, to update the analysis, as this information becomes available.”<sup>85</sup> The extent to which such incorporation is *necessary* is *entirely*. CEQ’s NEPA regulations are clear: “If a draft statement is so inadequate as to preclude meaningful analysis, the agency *shall*

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<sup>75</sup> *Id.* § 1502.9(d)(1)(ii).

<sup>76</sup> *Id.* § 1503.1(a)(2)(v).

<sup>77</sup> DEIS at 10. The Scoping Report also states plainly that “The EIS will include discussion and review of natural gas pipeline(s) proposed as a necessary component of the new proposed CC plant under Alternative A.” CUF Scoping Report at 4.

<sup>78</sup> 40 C.F.R. § 1501.9(e)(1) (2020).

<sup>79</sup> *See infra* Section I.G.

<sup>80</sup> DEIS at 55.

<sup>81</sup> *Sierra Club v. FERC*, 867 F.3d at 1368.

<sup>82</sup> Drafts of some portions of TGP’s Environmental Report have been “pre-filed” with FERC, but those submissions do not constitute the “Environmental Report to be submitted with [TGP’s] certificate application that will be filed with FERC for the proposed pipeline” contemplated in the DEIS. DEIS at 148. Nor does TVA’s DEIS incorporate TGP’s incomplete filing by reference or otherwise. TGP’s pre-filings are by the company’s own admissions incomplete, and they omit critical components of environmental analysis. Those omissions include, *inter alia*, information on karst features in the construction area and any mitigation measures that may be available (Tennessee Gas Pipeline Company, L.L.C., Draft Resource Report 2 at 2-3, Dkt. No. PF-22-2-000 (Apr. 2022) [hereinafter “Draft Resource Report 2”], **Attachment 77**); on water wells and potable streams that may be affected (Draft Resource Report 2 at 2-3, **Attachment 77**); on the viability of alternative energy sources (Draft Resource Report 10 at 10-4, **Attachment 17**); and on “the identification and analysis of downstream GHG emissions that are reasonably foreseeable with a reasonably close causal relationship to the [pipeline]” (Tennessee Gas Pipeline Company, L.L.C., Draft Resource Report 9 at 9-9, Dkt. No. PF-22-2-000 (Apr. 2022), **Attachment 19**).

<sup>83</sup> *Robertson*, 490 U.S. at 349.

<sup>84</sup> *Mayo*, 875 F.3d at 1368 (quoting *Scientists’ Inst. for Pub. Info.*, 481 F.2d at 1093–94).

<sup>85</sup> DEIS at 23.

prepare and publish a supplemental draft of the appropriate section.”<sup>86</sup> Here, for 13 categories of environmental impacts from pipeline construction and operation, TVA deferred analysis until the completion of TGP’s Environmental Report to FERC. Accordingly, the DEIS is entirely lacking in meaningful analysis of the environmental impacts from pipeline construction and operation. TVA’s deferral precludes meaningful analysis. Those deficiencies in TVA’s NEPA review “undermine informed public comment and informed decisionmaking,” in violation of NEPA’s rule of reason.<sup>87</sup>

Moreover, through the DEIS’s reliance on TGP’s yet-to-be-completed Environmental Reports, TVA purports to satisfy *its present* obligations under NEPA by deferring to an anticipated *future* evaluation of the environmental effects of a concededly connected action *by a self-interested private party* in *non-NEPA* documents that are expected to be submitted to a *different* federal agency. TVA wanders far afield of what NEPA allows here. Although NEPA allows an agency to tier NEPA review of a specific project to certain NEPA documents generated during a programmatic review by that agency,<sup>88</sup> or to adopt the NEPA review of another federal review under limited circumstances,<sup>89</sup> in no case does it allow an agency to satisfy its present NEPA obligations by tiering, adopting, or otherwise deferring to a self-serving, yet-to-be-completed, non-NEPA document authored by an applicant for a federal license. Under NEPA,

tiering to a document that has not itself been subject to NEPA review is not permitted, for it circumvents the purposes of NEPA. ... [NEPA] requires the [action agency] to articulate, publicly and in detail, the reasons for and likely effects [of its action], and to allow public comment on that articulation.<sup>90</sup>

And adoption of another agency’s NEPA documents is permitted “only if the [adopting] agencies undertake an independent review of the” documents.<sup>91</sup> Here, TGP’s yet-to-be-completed Environmental Review has never been subjected to NEPA review, the DEIS does not articulate in detail the environmental effects of pipeline construction and operation, and TVA has never undertaken an independent review of TGP’s unfinished Environmental Review. For those reasons, and because it violates NEPA’s rule of reason and cannot provide a springboard for public comment, TVA’s issuance of the DEIS was premature.<sup>92</sup>

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<sup>86</sup> 40 C.F.R. § 1502.9(b) (2020) (emphasis added).

<sup>87</sup> *Sierra Club v. FERC*, 867 F.3d 1357, 1368 (D.C. Cir. 2017) (citing *Dep’t of Transp. v. Pub. Citizen*, 541 U.S. 752, 767 (2004)).

<sup>88</sup> 40 C.F.R. §1501.11.

<sup>89</sup> *Id.* § 1506.3.

<sup>90</sup> *Kern v. U.S. Bureau of Land Mgmt.*, 284 F.3d 1062, 1073 (9th Cir. 2002).

<sup>91</sup> *Sierra Club v. U.S. Forest Serv.*, 897 F.3d 582, 590 (4th Cir. 2018).

<sup>92</sup> *Mayo v. Reynolds*, 875 F.3d 1357, 1368 (D.C. Cir. 2017) (quoting *Scientists’ Inst. for Pub. Info., Inc. v. Atomic Energy Comm’n*, 481 F.2d 1079, 1093–94 (D.C. Cir. 1973)).

For the same reasons, TVA has impermissibly segmented its review of the environmental impacts associated with the methane gas pipeline from its review of the proposed methane gas plant. Under the connected actions doctrine, an agency cannot segment NEPA review of federal projects that are “connected, contemporaneous, closely related, and interdependent.”<sup>93</sup> “Actions are connected if they: (i) Automatically trigger other actions that may require environmental impact statements; (ii) Cannot or will not proceed unless other actions are taken previously or simultaneously; or (iii) Are interdependent parts of a larger action and depend on the larger action for their justification.”<sup>94</sup> TVA conceded in its Scoping Report that the methane gas pipeline is “a necessary component of the new proposed CC plant under Alternative A.”<sup>95</sup> TVA further acknowledges that the environmental impacts associated with the methane gas pipeline require environmental review under NEPA.<sup>96</sup> TVA cannot, as it has here, then refuse to engage in that review in a meaningful way. To do so prevents TVA from “address[ing] the true scope and impact of the activities that should be under consideration.”<sup>97</sup> And if TVA has not addressed the true scope and impact of the methane gas pipeline, neither can the public in this public comment period.

**E. Ignoring the generation and climate change impacts of the nearly simultaneous Kingston Fossil Plant Replacement results in an alternatives analysis that overlooks opportunities to address larger grid challenges.**

Selecting Alternative A would constitute one part of a massive buildout of brand-new gas-fired generation facilities across TVA’s service area. It is one of the biggest proposed methane gas buildouts in the nation. But TVA is proceeding with a constellation of separate NEPA processes despite the fact that many overlap, address similar power generation needs, and tackle materially identical issues. Right now, in addition to this project, TVA is separately conducting NEPA reviews for new methane-gas powered generation to consider the cumulative impacts of these proposals in a single review obscure facilities at Kingston<sup>98</sup> and Johnsonville.<sup>99</sup> Meanwhile, the gas companies with whom TVA partners are advancing the program through their applications to FERC for this project and for the closely related Ridgeline Expansion Project, which would fuel TVA’s new fossil fuel plant at

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<sup>93</sup> Del. Riverkeeper Network v. Fed. Energy Regul. Comm’n, 753 F.3d 1304, 1307 (D.C. Cir. 2014).

<sup>94</sup> 40 C.F.R. § 1501.9(e)(1).

<sup>95</sup> CUF Scoping Report at 4.

<sup>96</sup> *Id.*; DEIS at 22–23.

<sup>97</sup> *Del. Riverkeeper Network*, 753 F.3d at 1313.

<sup>98</sup> *Kingston Fossil Plant Retirement*, TENN. VALLEY AUTH., <https://www.tva.com/environment/environmental-stewardship/environmental-reviews/nepa-detail/kingston-fossil-plant-retirement> (last visited May 25, 2022).

<sup>99</sup> *Johnsonville Aeroderivative Combustion Turbine Project*, TENN. VALLEY AUTH., <https://www.tva.com/environment/environmental-stewardship/environmental-reviews/nepa-detail/johnsonville-aeroderivative-combustion-turbine-project> (last visited May 25, 2022).

Kingston.<sup>100</sup> All of these projects raise similar, sometimes identical, questions about the climate impacts of TVA's choices, the way federal policy is being followed (or not), and the consequences of those choices for TVA's ratepayers.

The Kingston Fossil Plant retirement is only a few months behind Cumberland in the NEPA process.<sup>101</sup> Both projects involve TVA plans to retire coal-combustion facilities and replace them with gas; both projects require new gas pipeline infrastructure to cut through rural Tennessee counties; and TVA has treated the two projects as a pair in a range of public-facing venues.<sup>102</sup> The projects raise substantially similar issues about project need, adverse impacts, and potential alternatives. The DEIS must consider the way these projects interact. "Proposals for . . . actions that will have cumulative or synergistic environmental impact upon a region . . . pending concurrently before an agency . . . must be considered together. Only through comprehensive consideration of pending proposals can the agency evaluate different courses of action." *Kleppe v. Sierra Club*, 427 U.S. 390, 410 (1976).

Similarly, TVA has ignored the cumulative impacts of its proposed gas buildout at Cumberland, at Kingston, and across its service territory. NEPA requires agencies to consider a project's cumulative impacts, which are "the effects on the environment that result from the incremental effects of the action when added to the effects of other past, present, and reasonably foreseeable actions."<sup>103</sup> Cumulative effects "can result from individually minor but collectively significant actions taking place over a period of time."<sup>104</sup> Considering these effects is essential to agencies' statutory obligation to assess the environmental impact of the proposed action and its

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<sup>100</sup> On May 6, 2022 East Tennessee Natural Gas, LLC began the FERC pre-filing process for the Ridgeline Expansion Project. See FERC Docket PF22-7-000, [https://elibrary.ferc.gov/eLibrary/filelist?accession\\_number=20220506-5074](https://elibrary.ferc.gov/eLibrary/filelist?accession_number=20220506-5074); see also *Ridgeline Expansion Project Opportunity*, ENBRIDGE, <https://www.enbridge.com/projects-and-infrastructure/projects/ridgeline-expansion-project> (last visited April 4, 2022).

<sup>101</sup> *Compare Proposed NEPA Schedule [for Cumberland Retirement]*, TENN. VALLEY AUTH., [https://tva-azr-eastus-cdn-ep-tvawcm-prd.azureedge.net/cdn-tvawcma/docs/default-source/environment/environmental-stewardship/nepa-environmental-reviews/cumberland-retirement/tva-boards05-07-21-5\\_nepa-schedule0789b0c2-d728-4156-add3-806420fefde7.pdf?sfvrsn=c5a4f3ac\\_3](https://tva-azr-eastus-cdn-ep-tvawcm-prd.azureedge.net/cdn-tvawcma/docs/default-source/environment/environmental-stewardship/nepa-environmental-reviews/cumberland-retirement/tva-boards05-07-21-5_nepa-schedule0789b0c2-d728-4156-add3-806420fefde7.pdf?sfvrsn=c5a4f3ac_3) (last visited April 4, 2022), with *Proposed NEPA Schedule [for Kingston Retirement]*, TENN. VALLEY AUTH., [https://tva-azr-eastus-cdn-ep-tvawcm-prd.azureedge.net/cdn-tvawcma/docs/default-source/environment/environmental-stewardship/nepa-environmental-reviews/kingston-retirement/tva-kingston-boards\\_061421-nepa-schedulecaef4958-fbb2-4495-b1ba-7014f0cb5ceb.pdf?sfvrsn=bedc83d5\\_3](https://tva-azr-eastus-cdn-ep-tvawcm-prd.azureedge.net/cdn-tvawcma/docs/default-source/environment/environmental-stewardship/nepa-environmental-reviews/kingston-retirement/tva-kingston-boards_061421-nepa-schedulecaef4958-fbb2-4495-b1ba-7014f0cb5ceb.pdf?sfvrsn=bedc83d5_3) (last visited April 4, 2022).

<sup>102</sup> See, e.g., TENN. VALLEY AUTH. NOV. 10, 2021 BOARD PRESENTATION at 43–48 (2021), [https://tva-azr-eastus-cdn-ep-tvawcm-prd.azureedge.net/cdn-tvawcma/docs/default-source/about-tva/board-of-directors/november-10-2021/22-4240-nov-2021-board-deck\\_fnl884febc3-fdb9-45ee-ab22-fb0672ec3f53.pdf?sfvrsn=b13500a0\\_3](https://tva-azr-eastus-cdn-ep-tvawcm-prd.azureedge.net/cdn-tvawcma/docs/default-source/about-tva/board-of-directors/november-10-2021/22-4240-nov-2021-board-deck_fnl884febc3-fdb9-45ee-ab22-fb0672ec3f53.pdf?sfvrsn=b13500a0_3); Letter from Jeffrey Lyash, TVA, to Committee on Energy and Commerce, U.S. House of Representatives (Feb. 2, 2022), [hereinafter "Lyash Letter"], **Attachment 32**, ("TVA is currently conducting environmental reviews evaluating potential retirements at the Cumberland Fossil Plant (Cumberland) and Kingston Fossil Plant (Kingston), along with evaluation of replacement generation.").

<sup>103</sup> 40 C.F.R. 1508.1(g)(3).

<sup>104</sup> *Id.*

alternatives,<sup>105</sup> as well as “the relationship between local short-term uses of man’s environment and the maintenance and enhancement of long-term productivity.”<sup>106</sup>

TVA has not adequately disclosed the cumulative effects of its Cumberland proposal. The DEIS section identifying “other actions” for purposes of cumulative impacts analysis identifies only one of the five locations of new gas plants that TVA has proposed since last year. Together, these proposals include 4,950 MW of new gas plants.<sup>107</sup> TVA has proposed combustion turbine gas units at its facilities in Johnsonville, Tennessee, Paradise, Kentucky, and Colbert, Alabama. In the same year, TVA proposed building new gas plants in Cumberland<sup>108</sup> and Kingston,<sup>109</sup> which are part of a simultaneous effort to retire and replace TVA’s coal fleet.<sup>110</sup> In a single Board action, TVA’s Board delegated authority to the CEO to “evaluate, decide upon, and complete, if necessary, the retirements of the Cumberland and Kingston plants and replacement generation projects.”<sup>111</sup>

TVA has not looked at the cumulative effects of adding decades of new greenhouse gas emissions through this massive, contemporaneous gas buildout. The “large-scale nature of environmental issues like climate change show why cumulative analysis proves vital to the overall NEPA analysis. The cumulative impacts analysis was designed precisely to determine whether ‘a small amount here, a small amount there, and still more at another point could add up to something with a much greater impact.’”<sup>112</sup> TVA must evaluate the cumulative climate and environmental impacts of its proposals to build new gas plants and their attendant infrastructure, including methane gas pipelines. Failure to consider these additional methane gas proposals in its cumulative impacts analysis renders each of TVA’s fourteen categories of environmental impact analysis presented in Section 3 of the DEIS deficient. To ignore

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<sup>105</sup> 42 U.S.C. § 4332(C)(i)–(ii).

<sup>106</sup> *Id.* § 4332(C)(iv).

<sup>107</sup> Since 2021, TVA has proposed 550 MW at its Johnsonville site, 1,450 MW at Cumberland, 1,450 MW at Kingston, and 1,500 MW combined at Paradise and Colbert.

<sup>108</sup> Notice of Intent to Prepare Environmental Impact Statement for Cumberland Fossil Plant Retirement, 86 Fed. Reg. 25933 (May 11, 2021).

<sup>109</sup> Notice of Intent to Prepare Environmental Impact Statement for Kingston Fossil Plant Retirement, 86 Fed. Reg. 31780 (June 15, 2021).

<sup>110</sup> *Tennessee Valley Authority Plans to Shut Coal Plants by 2035*, REUTERS (May 3, 2021), <https://www.reuters.com/business/energy/tennessee-valley-authority-plans-shut-coal-plants-by-2035-2021-05-03/>.

<sup>111</sup> TVA, ANNUAL REPORT PURSUANT TO SECTION 13, 15(D), OR 37 OF THE SECURITIES EXCHANGE ACT OF 1934 (Form 10-K) (Nov. 15, 2021) at 11–12, <https://www.sec.gov/ix?doc=/Archives/edgar/data/0001376986/000137698621000028/tve-20210930.htm>, **Attachment 25**.

<sup>112</sup> *WildEarth Guardians v. U.S. Bureau of Land Mgmt.*, 457 F. Supp. 3d 880, 894 (D. Mont. 2020) (citation omitted).

these cumulative impacts is also to engage in impermissible segmenting of environmental review.<sup>113</sup>

**F. The DEIS ignores the fact that TVA customers and ratepayers want clean, renewable power, not new fossil fuel generation.**

The DEIS overlooks the climate impact and renewable power priorities of TVA ratepayers, with no explanation for how the agency is helping address its largest customers' stated preference for renewable power.

**1. Nashville Electric Service**

On May 25, 2022, Nashville Electric Service's ("NES") Board of Directors ("the Board") approved a resolution emphasizing the benefits that selecting Alternative C would bring to the region and urging TVA to further evaluate its proposed solution for replacing the Cumberland Fossil Plant.<sup>114</sup> NES is one of TVA's largest customers, and by far the largest in proximity to the Cumberland Fossil Plant.<sup>115</sup> The resolution highlights the "unique opportunity for TVA to replace environmentally harmful fossil fuel with clean renewable energy."<sup>116</sup>

NES, the Board pointed out, is dependent on TVA for all the power it distributes to over 420,000 customers.<sup>117</sup> Generating only 14% of its power from renewable sources, TVA is behind other major utilities who have shifted more of their generation to renewables.<sup>118</sup> Having less renewable power to offer business in Nashville and those considering coming to Nashville puts the city at a competitive disadvantage relative to peer cities—a 2020 report studying Nashville's carbon competitiveness concluded that:

Utilities and cities within the utilities' service territories which have a higher percentage of relative carbon emission and less renewable energy will be at disadvantage for attracting companies with GHG reduction targets. Companies are also increasingly prioritizing GHG reductions and overall grid decarbonization, not just individual renewable energy

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<sup>113</sup> See *Delaware Riverkeeper Network v. FERC*, 753 F.3d 1304, 1313 (D.C. Cir. 2014) ("An agency impermissibly 'segments' NEPA review when it divides connected, cumulative, or similar federal actions into separate projects and thereby fails to address the true scope and impact of the activities that should be under consideration.").

<sup>114</sup> See RESOLUTION RECOMMENDING TVA PURSUE SOLAR AND STORAGE INVESTMENTS IN MIDDLE TENNESSEE, (May 25, 2022), [hereinafter "NES Board Resolution"], **Attachment 41**; see also Caroline Eggers, *NES board, for the first time ever, comes out against TVA fossil fuel plans*, WPLN News (May 26, 2020), <https://wpln.org/post/nes-board-for-the-first-time-ever-comes-out-against-tva-fossil-fuel-plans/>.

<sup>115</sup> NES Board Resolution at 1, **Attachment 41**.

<sup>116</sup> *Id.*

<sup>117</sup> *Id.*

<sup>118</sup> *Id.*

deals, and value working with trusted utility partners to meet these objectives.

The Nashville area is currently less attractive than its competitor cities in terms of GHG reductions from the power sector and is likely at a competitive disadvantage for attracting new businesses with GHG targets. The Nashville-area grid is falling short of its competitors by planning for fewer GHG reductions and less renewable energy than its competitor cities.

The Nashville-area grid is currently meeting the carbon objectives of many local corporations. However, it may not continue to meet these objectives if local companies were to increase their GHG targets or set additional climate-related commitments. Since corporate climate commitments have increased annually since 2011, the prospect of local companies continuing to increase their targets is highly likely.<sup>119</sup>

Knowing that TVA's decisions are now having and will continue to have an outsized effect on how NES can meet its customers' goals, the Board reiterated that NES is "severely limited in its ability to bring clean renewable energy to the region without TVA's consent."<sup>120</sup> The DEIS fails to explain how TVA's preferred alternative matches up with what the agency's constituents want. The DEIS likewise fails, in violation of TVA's obligation to consider socioeconomic impacts, to justify building a new methane-burning plant that will stymie NES's efforts to capitalize on the kind of "future technological innovations" the Board highlighted in its resolution.<sup>121</sup>

## 2. Nashville Mayor John Cooper

On June 7, 2022, Nashville Mayor John Cooper submitted comments on this DEIS reminding TVA of the City of Nashville's goal to reduce greenhouse gas emissions by 80% of 2014 levels by 2050, and urging TVA not to saddle the city with a new decades-long commitment to consuming fossil fuels:

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<sup>119</sup> DAVID GARDINER AND ASSOCIATES, NASHVILLE CARBON COMPETITIVENESS 17 (2020), **Attachment 26**.

<sup>120</sup> NES Board Resolution, **Attachment 41**.

<sup>121</sup> *Id.* at 3. The Board's resolution specifically highlights four key, unique benefits that Alternative C would allow TVA to bring to the community:

- (1) Alternative C provides clean, renewable solar energy produced in Middle Tennessee;
- (2) Alternative C. creates economic opportunities for jobs and construction dollars associated with the new proposed solar arrays;
- (3) Alternative C. provides NES with more attractive resources in its toolbox to offer clean, renewable energy that keeps it competitive with other major American cities; and
- (4) Alternative C. prevents TVA from investing in long-term assets that leave ratepayers with high stranded asset costs if future technological innovations provide more efficient clean, renewable alternatives.

Any plan that would establish a new gas pipeline or conscript Nashville into decades of carbon polluting methane is unacceptable. The City of Nashville calls on TVA to serve as a leader in addressing the existential threat of climate change. This is possible while fulfilling TVA's responsibility to provide reliable and affordable power. While the City of Nashville applauds TVA's initiative in replacing the coal powered CUF, we implore TVA to incorporate more clean energy initiatives by adopting Alternative C.<sup>122</sup>

The mayor's comments echo commitments made by other major TVA customers throughout the region. Knoxville has committed to an 80% reduction in greenhouse gas emissions from 2005 levels for the entire community by 2050.<sup>123</sup> Memphis is targeting a 71% reduction in emissions from 2016 levels by 2050.<sup>124</sup> The DEIS fails to justify how the agency can choose an expensive, polluting alternative that TVA's own ratepayers have rejected.

**G. TVA appears to have predetermined the outcome of the NEPA process by signing binding agreements for the methane gas Alternative A would use.**

On August 21, 2021, TVA executed a precedent agreement with TGP for the methane gas supply that would fuel the new plant TVA will build under Alternative A.<sup>125</sup> The agreement—to the limited extent it has been made public—does not appear to leave any option for TVA to walk away if, after finishing the NEPA process, the agency decided not to select Alternative A.<sup>126</sup> Further, the DEIS's one comment on the precedent agreement—that “[a] precedent agreement between a transporter and shipper of natural gas is a preliminary agreement to enter into a future firm has transportation agreement if certain conditions precedent are met”<sup>127</sup>—appears to be at odds with TGP's understanding of the same agreement. TGP told FERC that it had entered into a “*binding* precedent agreement . . . for all of the incremental firm

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<sup>122</sup> Letter from John Cooper, Mayor, Metropolitan Government of Nashville and Davidson County to Ashley Pilakowski, NEPA Specialist, Tennessee Valley Authority at 2–3 (June 7, 2022), **Attachment 38**.

<sup>123</sup> City of Knoxville, *Climate Change*, (last visited June 10, 2022), [https://www.knoxvilletn.gov/government/city\\_departments\\_offices/sustainability/climate\\_change](https://www.knoxvilletn.gov/government/city_departments_offices/sustainability/climate_change).

<sup>124</sup> SHELBY COUNTY, TENNESSEE, MEMPHIS AREA CLIMATE ACTION PLAN (2021), [https://shelbycountyttn.gov/DocumentCenter/View/37432/Memphis-CAP-Overview\\_Metrics\\_March-2020](https://shelbycountyttn.gov/DocumentCenter/View/37432/Memphis-CAP-Overview_Metrics_March-2020), **Attachment 49**.

<sup>125</sup> See TGP Precedent Agreement, **Attachment 16**.

<sup>126</sup> The agreement was produced in response to a FOIA request, and heavily redacted. The propriety of TVA's extensive redactions is the subject of an ongoing lawsuit. See Southern Environmental Law Center v. Tennessee Valley Authority, No. 3:22-cv-0108 (E.D. Tenn. March 24, 2022).

<sup>127</sup> DEIS at 10 n.1.

transportation capacity” created by the pipeline being advanced to support Alternative A.<sup>128</sup>

For the agency’s review to actually aid in decisionmaking—and to therefore comply with NEPA’s mandate—the review must be completed before the agency has already irreversibly committed itself to a certain outcome.<sup>129</sup> Precedent agreements, as TGP appears to confirm, often represent binding contractual commitments to purchase gas.<sup>130</sup> If TVA’s precedent agreement with TGP is a binding commitment to purchase gas, TVA may already have made an irreversible commitment to a particular outcome for its ongoing NEPA reviews, which would render those reviews the kind of “subterfuge designed to rationalize a decision already made” that violates NEPA. TVA must explain the extent to which it has already foreclosed public influence on the NEPA process’s outcome by precommitting to its preferred alternative.

## **II. TVA’s alternatives analysis violates NEPA.**

Under NEPA, a federal agency must evaluate reasonable “alternatives to the proposed action” in an EIS.<sup>131</sup> The agency must “[d]iscuss each alternative considered in detail, including the proposed action, so that reviewers may evaluate their comparative merits.”<sup>132</sup> To allow for informed comparison between alternatives, agencies must “ensure the professional integrity, including scientific integrity, of the discussions and analyses in environmental documents,” must “make use of reliable existing data and resources[,]” and must disclose “incomplete or unavailable information.”<sup>133</sup> A federal agency violates NEPA when it “presents information that is so incomplete or misleading that the decisionmaker and the public could not make an informed comparison of alternatives.”<sup>134</sup> When an agency evaluates alternatives based on economic information, it must present complete and accurate information

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<sup>128</sup> Draft Resource Report 10, **Attachment 17**; *see also* TGP Precedent Agreement, **Attachment 16**.

<sup>129</sup> *See* *Metcalf v. Daley*, 214 F.3d 1135, 1142 (9th Cir. 2000) (“[T]he comprehensive “hard look” mandated by Congress and required by [NEPA] must be timely, and it must be taken objectively and in good faith, not as an exercise in form over substance, and not as a subterfuge designed to rationalize a decision already made.”); *Burkholder v. Peters*, 58 F. App’x 94, 97 (6th Cir. 2003) (noting “clear” violation where contracts for final design work were executed before the NEPA process but declining requested injunction on separate grounds).

<sup>130</sup> *See, e.g., Allegheny Def. Project v. FERC*, 964 F.3d 1, 19 (D.C. Cir. 2020) (“Precedent agreements are long-term contracts in which gas shippers agree to buy the proposed pipeline’s transportation services.”); *Myersville Citizens for a Rural Cmty., Inc. v. FERC*, 783 F.3d 1301, 1310 (D.C. Cir. 2015) (“A precedent agreement is a long-term contract subscribing to expanded natural gas capacity”).

<sup>131</sup> 42 U.S.C. § 4332(C)(iii).

<sup>132</sup> 40 C.F.R. § 1502.14(b).

<sup>133</sup> 40 C.F.R. §§1502.21 & 23; *Robertson*, 490 U.S. at 349 (explaining the informational role of NEPA’s procedures).

<sup>134</sup> *Native Ecosystems Council v. Marten*, 883 F.3d 783, 795 (9th Cir. 2018) (cleaned up); 40 C.F.R. § 1502.14.

about both costs and benefits to facilitate comparison on an apples-to-apples basis.<sup>135</sup> TVA fails to meet these standards in the DEIS.

**A. TVA fails to consider a clean energy portfolio alternative.**

TVA arbitrarily excludes important carbon-free resources—energy efficiency, demand response, wind, and market purchases—that, in combination with the solar and battery storage resources of Alternative C, would lower costs and increase the diversity, flexibility, and reliability of TVA’s generation. Modeling results published by Synapse Energy Economics in May concluded that replacing TVA’s existing coal plants at Cumberland, Kingston, Gallatin, and Shawnee with a clean energy portfolio of solar, battery storage, wind, and energy efficiency would result in customer savings of approximately \$9.4 billion over the next twenty years when compared against a replacement portfolio focused primarily on gas resources.<sup>136</sup> Synapse’s clean energy portfolio would afford TVA immediate and steep GHG emissions reductions and achieve the same reliability as the gas portfolio.<sup>137</sup> Additionally, the clean energy portfolio lowered costs even compared against a second carbon-free portfolio comprised solely of solar and battery storage resources and required the construction of fewer new solar resources overall.<sup>138</sup> Grid Strategies expert Michael Goggin observed that “[g]iven the synergy in output profiles between wind and solar, and how flexible resources like demand response and battery storage complement variable renewable resources, a more diverse portfolio of these resources tends to offer superior economics and reliability.”<sup>139</sup> TVA must combine low-cost clean energy resources—including, at a minimum, energy efficiency, demand response, and wind energy—with the solar and battery storage resources of Alternative C as another alternative for replacement of Cumberland Unit 1 evaluated under NEPA.<sup>140</sup>

TVA’s arguments against considering other carbon-free resources are not convincing.<sup>141</sup> In particular, TVA arbitrarily rules out energy efficiency and demand response as incapable of replacing the capacity of Cumberland Unit 1 entirely on their own,<sup>142</sup> but the utility never asks the next obvious question: Could these energy

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<sup>135</sup> NRDC v. U.S. Forest Serv., 421 F.3d 797, 811–14 (9th Cir. 2005) (misleading economic information did not “allow an informed comparison of the alternatives” by the agency or the public); Hughes River Watershed Conservancy v. Glickman, 81 F.3d 437, 446–48 (4th Cir. 1996) (misleading economic assumptions “impaired fair consideration” of project’s adverse impacts); High Country Conservation Advocates v. U.S. Forest Serv., 52 F.Supp.3d 1174 (D. Colo. 2014) (invalidating EIS that quantified benefits but not costs of coal mining lease).

<sup>136</sup> Synapse Report at 23–24, [Attachment 1](#).

<sup>137</sup> *Id.* at 24.

<sup>138</sup> *Id.* at 24–25.

<sup>139</sup> Grid Strategies Report at 29, [Attachment 2](#).

<sup>140</sup> Friends of Yosemite Valley v. Kempthorne, 520 F.3d 1024, 1038 (9th Cir. 2008) (“The existence of a viable but unexamined alternative renders an environmental impact statement inadequate.”) (cleaned up).

<sup>141</sup> Grid Strategies Report at 28–31, [Attachment 2](#).

<sup>142</sup> DEIS at 43.

resources be synergistically combined with solar and batteries or other carbon-free resources to meet the utility's objectives? Contrary to TVA's position, there is no requirement that energy efficiency or demand response be enough, each on its own, to replace the entire capacity of Cumberland Unit 1, a point underscored by the utility's willingness to consider solar and battery storage in combination in Alternative C.<sup>143</sup>

TVA also excludes consideration of wind energy, arguing that low-wind speeds in the Tennessee Valley and high transmission costs for wind elsewhere justified its decision.<sup>144</sup> But advances in wind energy technology and cost-effective import options like the proposed Southern Cross transmission line between Texas and the Southeast undermine the utility's casual brush-off of this important resource.<sup>145</sup> Wind also "complement[s] solar output on both a daily and seasonal basis[.]" a value that can offset higher costs.<sup>146</sup> Michael Goggin concludes that "the total cost of wind and transmission would almost certainly be significantly less than Lazard's \$45-74/MWh levelized cost of gas combined cycle generation."<sup>147</sup> Finally, TVA fails to consider market energy purchases at all, even though this option allows utilities to increase the geographic diversity of the renewable resources it relies upon in a manner that cost-effectively minimizes weather-related disruptions.<sup>148</sup>

TVA's failure to rationally explain its decision to exclude other carbon-free resources in combination with solar and battery storage is arbitrary and violates NEPA.

### **B. TVA's comparison of the GHG emissions between its three alternatives is absurd and obscures their differences.**

TVA misleads the public and the utility's decisionmakers about the GHG emissions of its proposed alternatives. Under NEPA, a federal agency may not "obscure[] critical differences in the environmental impacts" of proposed alternatives.<sup>149</sup> TVA reports that each of the three alternatives presented in the DEIS—the two gas plant alternatives (Alternatives A and B) and the solar and battery storage alternative (Alternative C)—will have "[l]ong-term, beneficial effects" on air quality and GHG emissions.<sup>150</sup> TVA bases that conclusion on a net GHG emissions analysis for its entire system but never compares the total lifetime GHG emissions for each alternative directly. In doing so, the DEIS promotes the absurd conclusion that the three alternatives are on roughly equal footing with regard to their impact on climate change. Nothing could be further from reality. Alternative A

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<sup>143</sup> Grid Strategies Report at 28–29, [Attachment 2](#).

<sup>144</sup> DEIS at 43.

<sup>145</sup> Grid Strategies Report at 29–31, [Attachment 2](#).

<sup>146</sup> *Id.* at 30–31.

<sup>147</sup> *Id.* at 31.

<sup>148</sup> *Id.* at 31–32.

<sup>149</sup> *Oak Ridge Env't All. v. Perry*, 412 F.Supp.3d 786, 858 (E.D. Tenn. 2019).

<sup>150</sup> DEIS at 48–49.

and Alternative B are long-term commitments to the combustion of fossil fuels and will perpetuate the release of climate-warming gases; Alternative C will not.

At this moment of the climate crisis—a moment when the president has ordered federal agencies to work to urgently decarbonize electricity production<sup>151</sup>—TVA conceals the true emissions and true climate impacts of Alternatives A and B. As we explain in detail in these comments, TVA must compare—in an unambiguous, head-on manner—the direct and indirect lifetime emissions of each alternative and must calculate the climate cost of those emissions using the required Social Cost of Greenhouse Gases metric. As EPA explained to FERC concerning the Commission’s review of proposed gas pipelines, “[b]y using a common unit (U.S. dollars) to estimate the impacts of each of the GHGs, the [social cost of greenhouse gases] estimates can also help federal agencies compare alternatives.”<sup>152</sup> So too here.

### **C. TVA significantly overestimates the quantity of resources needed for Alternative C.**

TVA significantly overestimates the quantity of solar and battery storage resources for Alternative C. TVA concludes that replacement of the Cumberland unit will require 3,000 megawatts of solar combined with 1,700 megawatts of battery storage.<sup>153</sup> Michael Goggin’s independent analysis, which uses TVA’s publicly available data, shows that the utility’s needs are, in fact, significantly lower: 2,638 megawatts of solar (a 12% decrease from TVA’s estimate) and 234 megawatts of battery storage (an 86% decrease from TVA’s estimate).<sup>154</sup> The dramatic drop in required battery storage stems from Mr. Goggin’s calculation of the marginal capacity value of 2,638 megawatts of solar at 43.32%, or 1,143 megawatts, based on “actual TVA load and solar output data for all hours across the three most recent years,” 2019, 2020, and 2021.<sup>155</sup> In contrast, TVA’s estimate is based on the SERVVM model, which Mr. Goggin explains vastly over-estimates the Loss of Load Expectation flexibility events, known as LOLE<sub>FLEX</sub> events, that underlie the utility’s battery storage estimates.<sup>156</sup> Similarly, a hearing examiner for the New Mexico Public Regulation Commission concluded that “the LOLE<sub>FLEX</sub> metric is not recognized in the industry as a standard of reliability[.]”<sup>157</sup> The utility also appears to have exaggerated the capacity value of Alternative A’s combined-cycle plant as 1,529 megawatts and assumed a low-capacity value for solar by “unduly focusing its reliability analysis on winter periods, even though most of TVA’s peak demand and loss of load risk events

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<sup>151</sup> Exec. Order No. 14,008, 86 Fed. Reg. 7619, 7624 (Feb. 1, 2021).

<sup>152</sup> See Vicki Arroyo, EPA, Letter to Kimberly Bose, FERC (April 25, 2022), [hereinafter “Arroyo Letter”], **Attachment 20**.

<sup>153</sup> DEIS at 38.

<sup>154</sup> Grid Strategies Report at 2–6, **Attachment 2**.

<sup>155</sup> *Id.* at 4–5.

<sup>156</sup> *Id.* at 7–10.

<sup>157</sup> Pub. Serv. Co. of N.M., No. 19-00195-UT, at 30 n.62 (N.M. Pub. Regul. Comm’n June 24, 2020), **Attachment 28**.

occur in summer.”<sup>158</sup> Finally, TVA never acknowledges the unique east-west configuration of its service territory that allows it to take advantage of geographic diversity in siting solar resources to minimize the disruption caused by local weather.<sup>159</sup> These errors in TVA’s reliability analysis undermine the credibility of its claimed need for 1,700 megawatts of battery storage in Alternative C.

It hardly needs to be said that requiring 234 megawatts of battery storage instead of 1,700 megawatts will result in strikingly lower costs and a smaller footprint for Alternative C. TVA must revise its analysis accordingly.

#### **D. TVA’s economic analysis of the proposed alternatives is arbitrary.**

TVA’s financial analysis of its proposed alternatives does not allow an informed comparison because it arbitrarily inflates the cost of the solar and battery storage alternative while minimizing the cost of the gas plant alternatives.<sup>160</sup>

##### **1. TVA inflates the costs of Alternative C.**

TVA reports that the solar and battery storage alternative will cost \$2.3 billion more than its preferred alternative, the new combined-cycle gas plant.<sup>161</sup> But the utility arbitrarily inflates the cost of the solar and battery storage projects in a number of ways. First, TVA exaggerates the need for so called “extensive” transmission upgrades and ignores the operational benefits that will result from its investment in transmission to support these projects. Second, TVA fails to account for the substantial operational benefits that the addition of battery storage will provide to the TVA system as a whole. Third, TVA ignores the energy stability benefits of protecting customers from the volatility of gas prices. TVA must correct these errors in its financial analysis to ensure that the public and utility decisionmakers have a clear understanding of the costs and benefits of the proposed alternatives.<sup>162</sup>

First, TVA exaggerates the need for transmission improvements in connection with Alternative C. TVA reports that its financial analysis of Alternative C includes the cost of “extensive regional transmission upgrades.”<sup>163</sup> The utility does not break out the proposed transmission costs, so the public is left to guess what percentage of the total cost of this alternative is assigned to transmission. Alternative C would allow TVA to site solar and battery storage projects specifically for the purpose of

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<sup>158</sup> Grid Strategies Report at 7, 10–11, **Attachment 2**.

<sup>159</sup> *Id.* at 12–13.

<sup>160</sup> TVA, CUMBERLAND RETIREMENT EIS: ALTERNATIVES EVALUATION at 17 (April 2022), [https://tva-azr-eastus-cdn-ep-tvawcm-prd.azureedge.net/cdn-tvawcma/docs/default-source/environment/cuf\\_eis\\_alternativesevaluation\\_20220423-vfinal21a071b9-0fd1-4a8a-841a-8d9e74ba3ba5.pdf?sfvrsn=a7efe477\\_5](https://tva-azr-eastus-cdn-ep-tvawcm-prd.azureedge.net/cdn-tvawcma/docs/default-source/environment/cuf_eis_alternativesevaluation_20220423-vfinal21a071b9-0fd1-4a8a-841a-8d9e74ba3ba5.pdf?sfvrsn=a7efe477_5), [hereinafter “CUF Alternatives Evaluation”].

<sup>161</sup> *Id.*

<sup>162</sup> *NRDC v. U.S. Forest Serv.*, 421 F.3d at 812.

<sup>163</sup> CUF Alternatives Evaluation at 17.

*avoiding* a large investment in transmission, including co-locating projects on TVA rights-of-way adjacent to existing TVA transmission lines, but the utility never acknowledges these logical and feasible opportunities in the DEIS.<sup>164</sup> According to Michael Goggin, “[b]attery and solar resources are highly modular, so they can be strategically sized and located to avoid exceeding interconnection capacity limits and triggering large-scale transmission upgrades.”<sup>165</sup> Batteries can be located adjacent to solar installations to further reduce transmission costs and can be deployed in “load pockets” like Nashville and other dense urban areas to “avoid costly upgrades on the distribution system.”<sup>166</sup>

TVA’s proposed investment in transmission for Alternative C will also provide operational benefits to the TVA system as a whole, such as improved reliability and resilience, and will facilitate the utility’s plans to install 10,000 MW of solar by 2035. Throughout the DEIS and supporting documents, TVA touts its plans to add “10,000 MW of solar by 2035 to meet customer demands and system needs, complemented with storage[.]”<sup>167</sup> Those projects will benefit directly from any transmission upgrades required for Alternative C because they can be sited to maximize the value of the prior transmission investment. TVA must revise its transmission cost analysis to factor in siting for the solar and battery storage projects that minimizes the need for extensive transmission upgrades to the maximum extent practicable, including by locating projects on existing TVA-owned rights-of-way, and must quantify all of the benefits that the proposed investment in transmission would provide to the TVA system as a whole.

Second, TVA ignores the ancillary services that additional batteries will provide to operation of the TVA generation system as a whole. These services include: (1) flexibility, i.e., the ability of batteries to start and stop quickly and therefore mitigate the start-up costs of less flexible resources like combined-cycle plants; (2) deferred generation; and (3) production cost savings, i.e., the ability of batteries to charge while energy costs are low and discharge when energy costs are high, optimizing the efficiency of the entire system.<sup>168</sup> These battery-related benefits can be quantified, as Georgia Power did recently in its 2022 Integrated Resource Plan. That utility undertook a cost-benefit analysis for battery storage projects, concluding that batteries provide “critical grid reliability services . . . that reduce system production costs.”<sup>169</sup> When those benefits are factored in, batteries provide “net benefits to customers[.]”<sup>170</sup> TVA must quantify the “critical grid reliability” benefits that the battery component of Alternative C would provide and incorporate those benefits into its financial analysis.

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<sup>164</sup> DEIS at 41.

<sup>165</sup> Grid Strategies Report at 34, **Attachment 2**.

<sup>166</sup> *Id.* at 35.

<sup>167</sup> DEIS at 3.

<sup>168</sup> Georgia Power, Battery Storage Cost-Benefit Analysis, 2022 Integrated Resource Plan at 3–4 (Jan. 2022), **Attachment 21**.

<sup>169</sup> *Id.* at 10.

<sup>170</sup> *Id.* at 10.

Michael Goggin, in his independent analysis, observed that “batteries greatly exceed the capabilities of combined cycle generators for providing flexibility and other reliability services.”<sup>171</sup> Unlike TVA’s preferred alternative, batteries can start and stop quickly; can abruptly switch from charging to discharging; do not incur variable operation costs, like maintenance and fuel costs; do not have a minimum output level; and are immune to fuel supply curtailments.<sup>172</sup> Moreover, “batteries also offer a significant advantage over gas generators in that they can be deployed in almost any quantity and location where needed.”<sup>173</sup> Again, TVA must ensure that its financial analysis accurately reflects these important differences between gas plants and batteries.

Finally, TVA ignores the benefits Alternative C provides in freeing the utility and its customers from continued reliance on fossil fuels. Gas prices are “inherently volatile” and “subject to domestic—and increasingly, international—supply and demand factors.”<sup>174</sup> Gas prices have been high for the last year, and power utilities have dramatically under-recovered fuel costs for that period.<sup>175</sup> For example, Dominion Energy Virginia recently asked state utility regulators for recovery of a “\$1 billion gap between the utility’s expected and actual fuel costs[,]” driven by higher gas prices.<sup>176</sup> Importantly, the company paired this request with assurances that it was “taking significant action to reduce customers’ exposure to future fuel cost fluctuations” by adding solar and wind resources “which have no associated fuel costs[.]”<sup>177</sup> Similarly, EPA has cited gas-price volatility in urging FERC to consider non-gas alternatives to proposed pipelines, observing that the “[b]enefits of non-gas alternatives include not only GHG emissions reduction, but also consideration of domestic energy stability (e.g., renewables are less subject to global price fluctuations than oil and gas.)”<sup>178</sup> Industry experts expect gas prices to remain high for the foreseeable future in part because of increased demand from Europe.<sup>179</sup> TVA has also expressed support for so-called certified gas,<sup>180</sup> which typically increases fuel costs.

Like the other benefits of renewable energy discussed above, TVA can quantify this energy stability benefit. Michael Goggin observed that “[t]he fuel price hedging

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<sup>171</sup> Grid Strategies Report at 32, **Attachment 2**.

<sup>172</sup> *Id.* at 32–37.

<sup>173</sup> *Id.* at 36.

<sup>174</sup> Direct Testimony of Gregory M. Lander, *In the Matter of: Application of Duke Energy Carolinas, LLC Pursuant to N.C. Gen. Stat. § 62-133.2 and Commission Rule R8-55 Relating to Fuel and Fuel-Related Charge Adjustments for Electric Utilities*, Docket No. E-7, Sub 1263 at 8 (N.C.U.C. May 17, 2022), [hereinafter “Direct Testimony of Gregory M. Lander”], **Attachment 22**.

<sup>175</sup> *Id.* at 6–10.

<sup>176</sup> Sarah Vogelsong, *Amid global energy price spikes, Dominion customers’ bills could rise between 12 and 20 percent*, VIRGINIA MERCURY (May 10, 2022), **Attachment 23**.

<sup>177</sup> Letter from Edward Baine, Dominion Energy Virginia to Bernard Logan, Virginia State Corporation Commission, *Application of Va. Elec. & Power Co., To revise its fuel factor pursuant to Va. Code § 56-249.6*, Case No. PUR-2022-00064 (Va. S.C.C. May 5, 2022), **Attachment 24**.

<sup>178</sup> Arroyo Letter, **Attachment 20**.

<sup>179</sup> Direct Testimony of Gregory M. Lander at 10–11, **Attachment 22**.

<sup>180</sup> Lyash Letter at 9, **Attachment 32**.

value of solar generation was calculated to be \$6.60/MWh in Colorado, which is notable given that Colorado's energy mix is less reliant on gas generation than TVA's."<sup>181</sup> TVA must quantify the benefit Alternative C provides in decreasing the utility's reliance on a volatile fossil fuel like gas and incorporate this benefit into its financial analysis.

## 2. TVA arbitrarily minimizes the costs of Alternatives A and B.

TVA reports that its preferred alternative, Alternative A, is the lowest cost alternative at \$737 million less than Alternative B and \$2.3 billion less than Alternative C.<sup>182</sup> But the utility arbitrarily minimizes the costs of both gas-plant alternatives in two important ways. First, TVA fails to include the cost of mitigating the GHG emissions from these alternatives *at all*, even though President Biden has set a 2035 deadline for carbon-free electricity production, and GHG emissions are the most pernicious environmental impact of the proposed gas plants. Second, TVA fails to include the climate impact costs of the proposed gas plants—as determined by the Social Cost of Greenhouse Gas tools—in its cost estimate.

There can be no reasonable dispute that TVA's operation of a combined-cycle gas plant or smaller combustion turbine gas plants will require mitigation to eliminate GHG emissions from these facilities. The president has set a national policy of achieving carbon-free electricity production by 2035.<sup>183</sup> Further, as we explain in detail elsewhere in these comments, NEPA itself requires that the utility consider mitigation options now as part of its environmental review, even if it elects to not implement them, in order to facilitate the comparison of alternatives. TVA seems to know that it must mitigate the GHG emissions of its preferred alternative: in a 2021 analysis, it reported that “[c]oupled with carbon capture, utilization and storage, natural gas could power the Valley far into a net-zero future[.]”<sup>184</sup> and the DEIS recognizes that carbon capture “would likely be paired” with combined-cycle gas plants.<sup>185</sup> Yet the utility eschews consideration of carbon capture for Alternatives A and B in the DEIS for an arbitrary reason—because it is too expensive.<sup>186</sup>

NEPA does not allow TVA to sidestep mitigation so easily, and a fair financial comparison of alternatives requires that the utility acknowledge and incorporate these costs. TVA has this information. According to its own data from the 2019 IRP,

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<sup>181</sup> Grid Strategies Report at 40, [Attachment 2](#).

<sup>182</sup> CUF Alternatives Evaluation at 17.

<sup>183</sup> U.S. Dep't of State & U.S. Exec. Office of the President, *The Long-Term Strategy of the United States: Pathways to Net-Zero Greenhouse Gas Emissions by 2050* at 5 (Nov. 2021), [hereinafter “*Pathways to Net-Zero Greenhouse Gas Emissions by 2050*”], (“[T]he United States has set a goal of 100% clean electricity by 2035, a crucial foundation for net-zero emissions no later than 2050.”), [Attachment 31](#).

<sup>184</sup> TVA, Leadership & Innovation on a Path to Net-Zero, TVA and the Energy System of the Future at 21 (May 6, 2021), [Attachment 27](#).

<sup>185</sup> DEIS at 43.

<sup>186</sup> DEIS at 43.

the overnight capital costs of a combined-cycle gas plant with carbon capture and storage was over three times higher than a combined cycle 3x1 plant.<sup>187</sup> Experts at Greenlink Analytics reached a similar conclusion with regard to TVA's proposal to install new aeroderivative combustion turbines at Johnsonville: "[W]hen CCS technology is added, the aero-CT cost is dramatically higher."<sup>188</sup> Setting aside the other defects in TVA's financial analysis for a moment, the costs of carbon capture and storage alone could make Alternative C more cost-effective than Alternative A. TVA must disclose reasonable cost estimates for installing carbon capture and storage systems (or other mitigation) for Alternatives A and B in two variations: (1) installation now during initial construction of these facilities and (2) a retrofit installation before 2035 to comply with Executive Order 14008 and national policy. In both cases, estimates should include the potentially significant costs of transporting captured carbon to a suitable long-term storage site.<sup>189</sup> TVA must then incorporate these costs into its comparative financial analysis of alternatives.

TVA must also incorporate the climate cost of the gas plant alternatives in its financial analysis using the Social Cost of Greenhouse Gas metrics. As we explain in detail in the next section of these comments, TVA must use these required metrics to disclose the true cost of Alternatives A and B over the total life of the proposed gas plants. It then must factor these costs into its comparative financial analysis of alternatives.

### **III. The DEIS fails to fully consider the Cumberland alternatives' climate impacts, including lifecycle greenhouse gas emissions and relation to federal climate policy**

Because "[t]he harms associated with climate change are serious and well recognized,"<sup>190</sup> carefully considering a project's climate impacts is critical to NEPA review. TVA's proposal to build new fossil fuel plants conflicts with federal climate policy, and TVA fails to disclose the full climate impacts of building new methane gas plants and pipelines.

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<sup>187</sup> TVA, *Navigant Capital Costs vs TVA Final\_readonly.XLXS* (Excel Workbook), *Final TVA Parameter Values* (Worksheet) (2019), **Attachment 96**.

<sup>188</sup> MATT COX & KENNETH SERCY, GREENLINK ANALYTICS, *TVA'S DRAFT EA FOR THE JOHNSONVILLE AERODERIVATIVE COMBUSTION TURBINE PROJECT SHOULD CONSIDER CLEAN ENERGY ALTERNATIVES* at 1–2 (Feb. 8, 2022) (calculating that the addition of a carbon capture and storage system more than doubles the overnight capital costs of an aeroderivative combustion turbine), **Attachment 66**.

<sup>189</sup> See, e.g., EPA, OFFICE OF AIR & RADIATION AVAILABLE AND EMERGING TECHNOLOGIES FOR REDUCING GREENHOUSE GAS EMISSIONS FROM COMBUSTION TURBINE ELECTRIC GENERATING UNITS at 39–40 (April 21, 2022), **Attachment 62**.

<sup>190</sup> *Massachusetts v. EPA*, 549 U.S. 497, 521 (2007).

**A. Addressing climate change is a federal policy priority.**

“Climate change poses a severe threat to the nation’s security, economy, environment, and to the health of individual citizens.”<sup>191</sup> While climate change is global, not all people suffer equally. Instead, climate change disproportionately harms communities of color, as well as low-income, rural, and indigenous communities.<sup>192</sup> The Tennessee Valley and the Southeast are especially vulnerable.<sup>193</sup> For the Valley, 2018 through 2020 were the wettest years in 131 years of record keeping, and 2020 set the single-year record with rainfall 139 percent above normal.<sup>194</sup> There is broad scientific consensus that global anthropogenic greenhouse gas emissions must reach net zero within about 30 years to avoid the worst impacts of climate change.<sup>195</sup>

To address 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 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.”<sup>196</sup> Consequently, Executive Order 14008 calls for a “government-wide approach,” as 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.”<sup>197</sup> Executive Order 14008 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.”<sup>198</sup> In Executive Order 13990, President Biden reestablished the Interagency Working Group on the Social Cost of Greenhouse Gases and instructed agencies “to capture the full costs of greenhouse gas emissions as accurately as possible, including by taking global damages into account.”<sup>199</sup>

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<sup>191</sup> *Consideration of Greenhouse Gas Emissions in Natural Gas Infrastructure Project Reviews*, 178 FERC ¶ 61,108, ¶ 2 (2022), **Attachment 29**.

<sup>192</sup> Kristie S. Gutierrez & Catherine E. LePrevost, *Climate Justice in Rural Southeastern United States*, 13 Int’l J. Env’t Res. & Pub. Health 189 (2016), **Attachment 30**.

<sup>193</sup> *Id.*

<sup>194</sup> WBIR Staff, *TVA Calls 2020 the Wettest Year on Record for Tennessee Valley Authority*, WBIR (Jan. 5, 2021), <https://www.wbir.com/article/weather/tva-calls-2020-the-wettest-year-on-record-for-tennessee-valley/51-4ec11426-feb4-4304-811e-45cd50714a57>.

<sup>195</sup> Intergovernmental Panel on Climate Change, *Special Report: Global Warming of 1.5 C*, Summary for Policymakers at 12 (2018), [hereinafter “*Special Report: Global Warming of 1.5 C*”] <https://www.ipcc.ch/sr15/chapter/spm/>, **Attachment 52**.

<sup>196</sup> 86 Fed. Reg. at 7622 (Feb. 1, 2021).

<sup>197</sup> *Id.*

<sup>198</sup> *Id.*

<sup>199</sup> *Id.* at 7624.

TVA “may not simply disregard an Executive Order. To the contrary, as an agency under the direction of the executive branch, it must implement the President’s policy directives to the extent permitted by law.”<sup>200</sup> The Administration has emphasized that a “100% carbon pollution-free electricity sector” is “an important foundation” for the United States’ strategy to reach net-zero carbon emissions by 2050.<sup>201</sup> Because the new methane gas plants would *begin* operation in 2027,<sup>202</sup> resulting in greenhouse gas emissions for decades beyond the decarbonization deadlines ordered by President Biden, Alternatives A and B conflict with our national climate goals. TVA fails to reconcile or even acknowledge that conflict with federal law.

**B. TVA fails to fully assess the climate impacts of its proposals to build new methane gas plants.**

**1. TVA unreasonably ignores upstream methane emissions, which have significant climate impacts.**

TVA’s DEIS refuses to analyze upstream methane emissions, which are critical to climate change analysis for any methane gas infrastructure. TVA cites climate change as a primary justification for new gas plants, partly because—TVA argues—methane gas substantially reduces greenhouse gas emissions relative to coal.<sup>203</sup> Yet the DEIS “does not attempt to quantify GHG emissions from upstream exploration/mining, processing, or transport, i.e., GHG life cycle emissions analysis” of building and operating methane gas plants.<sup>204</sup> TVA briefly discusses upstream methane emissions—and why it refuses to analyze them—only “due to their recent attention in the media.”<sup>205</sup> TVA concludes, “upstream effects from methane leaks are extremely minor and results of a complete and consistent [life cycle emissions analysis] for each alternative would not provide value to the information presented

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<sup>200</sup> *Sherley v. Sebelius*, 689 F.3d 776, 784 (D.C. Cir. 2012). The relevant requirements of Executive Orders 14008 and 13990 apply to all executive agencies. *See* 86 Fed. Reg. 7037, 7040 (Jan. 25, 2021) (applying broadly to “agencies”); 86 Fed. Reg. 7619, 7622 (Feb. 1, 2021) (calling for “government-wide” response to climate change). TVA is an agency bound by executive orders. *See, e.g.*, *TVA v. United States*, 13 Cl. Ct. 692 (1987) (finding executive order applicable to TVA).

<sup>201</sup> *Pathways to Net-Zero Greenhouse Gas Emissions by 2050*, **Attachment 31**.

<sup>202</sup> DEIS at 199.

<sup>203</sup> *See* DEIS at 55 (“TVA has also selected Alternative A as its preferred alternative because the proposed CC plant at CUF provides the flexibility needed to reliably integrate 10GW of solar into the system by 2035 and enables the CUF coal-fired units to be retired on an accelerated schedule.” *See also* Lyash Letter at 8, **Attachment 32** (“TVA sees natural gas as an important part of its clean energy future because it serves as an enabler for coal retirements and larger amounts of renewable resources today.”); TVA, *Debunking 4 Myths About TVA’s Plans for Natural Gas*, <https://www.tva.com/newsroom/articles/debunking-4-myths-about-tva-s-plans-for-natural-gas> (“Myth 1: Natural Gas Doesn’t Align with TVA’s Net-Zero Carbon Future”), [hereinafter “TVA, Debunking 4 Myths”], **Attachment 33**.

<sup>204</sup> DEIS at 186.

<sup>205</sup> DEIS at 186.

on the alternatives and their relative comparisons regarding GHG emissions.”<sup>206</sup> This statement is contrary to the best available science, which increasingly demonstrates that upstream methane leaks can offset any climate benefit of switching from coal to gas.

Upstream methane leakage is an important, foreseeable, indirect impact of building and operating a new gas plant. Across the methane gas supply chain, from production through combustion, gas infrastructure leaks significant amounts of methane.<sup>207</sup> As a greenhouse gas, methane is more than eighty times as powerful as carbon dioxide in its first twenty years in the atmosphere.<sup>208</sup> Yet methane is shorter lived than carbon dioxide. That means “achieving significant reductions would have a rapid and significant effect on atmospheric warming potential.”<sup>209</sup> Because of its potency as a greenhouse gas, methane emissions “substantially erode the potential climate benefits of natural gas use” relative to coal.<sup>210</sup> Nearly a decade ago, scientists demonstrated that natural gas plants have net climate benefits relative to coal plants “as long as leakage in the natural gas system is less than 3.2% from well through delivery at a power plant.”<sup>211</sup> Based on the latest report from the Intergovernmental Panel on Climate Change, that figure may be closer to 2.8 or 2.9%.<sup>212</sup> In the latest, largest study yet, researchers from Stanford University estimated a system-wide methane leakage rate of 9.4%.<sup>213</sup> That figure is more than six times the EPA’s latest estimate (1.4%)<sup>214</sup> and about three times the rate at which burning methane gas has net climate benefits relative to coal.

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<sup>206</sup> DEIS at 186.

<sup>207</sup> Ramon A. Alvarez et al., *Assessment of Methane Emissions from the U.S. Oil & Gas Supply Chain*, 361 SCIENCE 186 (2018), **Attachment 34**; Dan Charles, *A Satellite Finds Massive Methane Leaks from Gas Pipelines*, NPR (Feb. 3, 2022), <https://www.npr.org/2022/02/03/1077392791/a-satellite-finds-massive-methane-leaks-from-gas-pipelines>, **Attachment 36**.

<sup>208</sup> Intergovernmental Panel on Climate Change, Fifth Assessment Report Chapter 8: Anthropogenic and Radiative Forcing tbl. 8.7 (2013), [https://www.ipcc.ch/site/assets/uploads/2018/02/WG1AR5\\_Chapter08\\_FINAL.pdf](https://www.ipcc.ch/site/assets/uploads/2018/02/WG1AR5_Chapter08_FINAL.pdf), **Attachment 35**.

<sup>209</sup> EPA, *Importance of Methane*, <https://www.epa.gov/gmi/importance-methane> (last visited June 9, 2022).

<sup>210</sup> Alvarez et al., **Attachment 34**.

<sup>211</sup> Ramon A. Alvarez et al., *Greater Focus Needed on Methane Leakage from Natural Gas Infrastructure*, 109 PNAS 6435 -6440 (April 24, 2012), **Attachment 81**.

<sup>212</sup> Maggie Astor, *Methane Leaks in New Mexico Far Exceed Current Estimates, Study Suggests*, N.Y. TIMES (March 24, 2022), <https://www.nytimes.com/2022/03/24/climate/methane-leaks-new-mexico.html>.

<sup>213</sup> Yuanlei Chen et al., *Quantifying Regional Methane Emissions in the New Mexico Permian Basin with a Comprehensive Aerial Survey*, 56 ENVTL. SCI. TECHNOLOGY 4317–23 (March 23, 2022), **Attachment 37**. A 2018 study estimated supply-chain emissions at 2.3% of gross U.S. gas production, likewise substantially higher than EPA estimates. Alvarez et al., **Attachment 34**. The 2018 Alvarez study and 2022 Chen study underscore that EPA and industry substantially underestimate system-wide emissions, “likely because existing inventory methods miss emissions released during abnormal operating conditions.” Alvarez et al. at 2, **Attachment 34**.

<sup>214</sup> *Id.*; DEIS at 186.

Contrary to TVA's baseless assertion that "upstream effects of methane leaks are extremely minor,"<sup>215</sup> methane leakage is a major problem for climate change. It is arbitrary for TVA to disclaim any need or ability to estimate upstream GHG emissions while publicly announcing it will purchase gas certified by companies that purport to quantify reductions in those same emissions.<sup>216</sup> TVA can get the information it needs to produce reasonable estimates of upstream GHG emissions, and NEPA requires it to try.

Methane leakage is a key variable in determining whether switching from coal to methane gas is good or bad for the climate, and the best available science strongly suggests that methane gas is *worse* than coal. TVA cites the gas industry's analysis of low leakage rates and promises to do better.<sup>217</sup> TVA cannot blindly trust gas companies' self-serving, profit-motivated assurances. Instead, NEPA requires agencies to "make use of reliable existing data and resources," and ensure the scientific integrity of its discussions and analysis.<sup>218</sup> TVA must take a hard look at the growing body of scientific evidence that shows that methane leakage is so high and so harmful that methane gas plants may be worse for the climate than coal plants.

**2. By discussing only the net rate of GHG emissions, TVA ignores decades of harmful greenhouse gas emissions from the proposed gas plant.**

TVA has ignored the harmful greenhouse gas emissions a new gas plant would cause. TVA proposes a new gas plant, in large part, because it says the plant will help to address climate change.<sup>219</sup> TVA perceives that building and running a new methane gas plant "would represent a small benefit to climate change as a less than significant reduction in state, national, and global GHG emissions."<sup>220</sup> It reaches this conclusion by focusing only on the relative decrease in GHG emissions of burning coal to burning gas.

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<sup>215</sup> DEIS at 186.

<sup>216</sup> See comments of TVA CEO Jeff Lyash at May 11, 2022 TVA Board Meeting 1:59:30 – 1:59:43 ("We've begun work on a pilot program that I'm pleased to announce today that looks at that upstream methane of our gas supply and we've already got in place a contract with Southwestern Energy to buy responsibly sourced gas. This is gas that's been independently certified to have reduced environmental impacts, including lower methane gas emissions."), video at [https://players.brightcove.net/605538292001/default\\_default/index.html?videoId=6305943050112](https://players.brightcove.net/605538292001/default_default/index.html?videoId=6305943050112).

<sup>217</sup> DEIS at 186.

<sup>218</sup> See 40 C.F.R. § 1502.23.

<sup>219</sup> DEIS at 55 ("TVA has also selected Alternative A as its preferred alternative because the proposed CC plant at CUF provides the flexibility needed to reliably integrate 10GW of solar into the system by 2035 and enables the CUF coal-fired units to be retired on an accelerated schedule." See also Lyash Letter at 8, **Attachment 32** ("TVA sees natural gas as an important part of its clean energy future because it serves as an enabler for coal retirements and larger amounts of renewable resources today."); TVA, Debunking 4 Myths, ("Myth 1: Natural Gas Doesn't Align with TVA's Net-Zero Carbon Future"), **Attachment 33**.

<sup>220</sup> DEIS at 200.

TVA's finding that a new fossil fuel plant in 2026 would be a "benefit to climate change" is flawed and absurd. TVA cannot brush aside the real harms of building a new fossil fuel plant by pointing to the benefits of retiring an old fossil fuel plant.<sup>221</sup> Agencies are not "excused from making emissions estimates just because the emissions in question might be partially offset by reductions elsewhere," including where some alternatives may "make it possible for utilities to retire dirtier, coal-fired plants."<sup>222</sup> An EIS must discuss effects "resulting from actions which may have both beneficial and detrimental effects, even if on balance the agency believes that the effects will be beneficial."<sup>223</sup> "In other words, when an agency thinks the good consequences of a project will outweigh the bad, the agency still needs to discuss the good with the bad."<sup>224</sup>

TVA obscures the harms of new fossil fuel infrastructure by discussing only the net rate of greenhouse gas emissions. Only once—buried in a table in a 478-page document—does TVA disclose projections of greenhouse gas emissions from the proposed gas plant: 5,567,733.1 tons per year of greenhouse gas emissions.<sup>225</sup> That figure is a fraction of the true GHG emissions because, as discussed, TVA ignores upstream methane emissions. Even so, TVA's own low-ball estimate is *55 times* greater than the level FERC would find significant under its draft GHG policy statement.<sup>226</sup> Yet TVA does not analyze what these emissions mean, much less explain how they are a "benefit to climate change."<sup>227</sup> As the Intergovernmental Panel on Climate Change emphasized, "Every [ton] of CO<sub>2</sub> emissions adds to global warming."<sup>228</sup>

Comparing the proposed gas plants' emissions to the existing coal plant's is misleading. The new gas plants would not displace a coal plant, which TVA

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<sup>221</sup> TVA also states that the proposed methane gas plant would allow it to run the rest of its coal fleet less. DEIS at 185 ("Alternative A is estimated to indirectly reduce GHG emissions from other TVA coal plants as their load factors will likely decrease due to increased efficiency of the new CUF CC plant compared to the existing CUF coal plant."). First, TVA discloses no factual data supporting this assertion. Second, this effect would only be *greater* for Alternative C because solar and storage have lower operating costs and solar has substantially greater flexibility than a combined cycle plant. Third, even if there are marginal decreases in the rate of greenhouse gas emissions, TVA ignores the harms of locking in decades of greenhouse gas emissions from building this proposed gas plant.

<sup>222</sup> *Sierra Club v. FERC*, 867 F.3d 1357, 1374–75 (D.C. Cir. 2017).

<sup>223</sup> 40 C.F.R. § 1508.1(g)(4).

<sup>224</sup> *Sierra Club v. FERC*, 867 F.3d at 1375.

<sup>225</sup> DEIS at 197.

<sup>226</sup> FERC's proposed to find presumptively significant any projects emitting 100,000 metric tons/year of CO<sub>2</sub> equivalent. FERC, Interim Greenhouse Gas Policy Statement, Docket No. PL21-3-000 (Feb. 18, 2022). TVA estimates that Alternative B would also result in at least 1.1 million metric tons/year of CO<sub>2</sub> emissions, DEIS at 225, more than 10 times FERC's threshold.

<sup>227</sup> See DEIS at 200 (Alternative A), 209 (Alternative B).

<sup>228</sup> *Special Report: Global Warming of 1.5 C* at 28, **Attachment 52**.

acknowledges it must retire.<sup>229</sup> Instead, the gas plants would displace zero-emission alternatives, like solar and storage in Alternative C, which would operate along a similar timeline as the gas plants in Alternatives A and B. To demonstrate the true climate impacts of its proposal, TVA must disclose and analyze the harmful effects of displacing emission-free alternatives.

Focusing solely on the net rate of CO<sub>2</sub> emissions relative to the coal plant ignores important climate impacts of investing in new fossil fuel infrastructure. Fossil fuel plants are decades-long investments. At nearly 50 years old, Cumberland is TVA's *newest* coal plant. Though TVA never discloses as much, a new multi-billion-dollar combined cycle gas plant would have a useful life of at least 30 years.<sup>230</sup> If it goes online in 2027, as TVA expects,<sup>231</sup> the new gas plant would result in greenhouse gas emissions through at least 2057. EPA has stressed the "lock-in effect" of investing in new fossil fuel infrastructure:

EPA believes it is important for NEPA documents for projects seeking [FERC] approval to consider and address the potential for projects to lock in natural gas production and use at the expense of substitute energy sources with lower social costs, and whether the project could result in stranded assets due to market factors and other policies that reduce demand for natural gas in the new project's intended market. The cost of electricity from new solar and wind power is already lower than traditional generation in some markets, and rapid cost-reducing technological change will continue as the world adopts more renewable energy.<sup>232</sup>

With "high confidence," the Intergovernmental Panel on Climate Change has warned of this same "lock-in" effect:

Reducing GHG emissions across the full energy sector requires major transitions, including a substantial reduction in overall fossil fuel use, the deployment of low-emission energy sources, switching to alternative energy carriers, and energy efficiency and conservation. The continued

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<sup>229</sup> DEIS at 1 ("The continued long-term operation of some of TVA coal plants, including the Cumberland Fossil Plant (CUF), is contributing to environmental, economic, and reliability risks. . . . [F]requent cycling of the large super-critical units, a recent change in plant operation for which the plant was not originally designed, presents reliability challenges that are difficult to anticipate and expensive to mitigate. As TVA continues to transition the rest of its fleet to cleaner and more flexible technologies, CUF will continue to be challenged to reliably operate outside of baseload operations.").

<sup>230</sup> *Average Age of US Power Plant Fleet Flat for 4th-straight Year in 2018*, S&P GLOBAL (Jan 16, 2019) <https://www.spglobal.com/marketintelligence/en/news-insights/trending/gfjgeFt8GTPYNK4WX57z9g2>. The closest TVA comes to acknowledging this is in its discussion of land use: "The Project could continue the current land's industrial use for at least 30 years." DEIS at 314.

<sup>231</sup> DEIS at 199.

<sup>232</sup> Arroyo Letter, **Attachment 20**.

installation of unabated fossil fuel infrastructure will 'lock-in' GHG emissions.<sup>233</sup>

What this decision means for broader decarbonization efforts is a critical question, yet TVA entirely ignores the "lock-in" effect of Alternatives A and B. TVA never estimates or discusses the total greenhouse gas emissions from the proposed gas plants over their decades-long useful lives. Nor does TVA discuss the climate risks of spending billions of ratepayer dollars on fossil fuel infrastructure in the 2020s, displacing emission-free sources for decades at a critical moment in the climate crisis.

### **3. TVA fails to provide meaningful context for the proposed methane gas plants' greenhouse gas emissions.**

Rather than provide misleading estimates of net emissions, TVA must discuss the proposed methane gas plants' greenhouse impacts in a meaningful context. Finding a new gas plant a "benefit to climate change," TVA emphasizes that the net rate of emissions is minimal as a percentage of national and state inventories.<sup>234</sup> EPA has objected that "[t]his approach trivializes substantial project-scale GHG emissions" and is "misleading given the nature of the climate policy challenge to reduce GHG emissions from a multitude of sources, each making relatively small individual contributions to overall GHG emissions."<sup>235</sup>

EPA advises that "NEPA documents [should] instead discuss the conflict between GHG emissions and national, state, and local GHG reduction policies and goals, and—equally important—ways to avoid or address the policy conflict, that increases over time, created by projects that otherwise expand and lock-in fossil fuel consumption."<sup>236</sup> EPA emphasized that "net GHG emissions should not be calculated solely against a 'business as usual' baseline, but also against decarbonization pathways that are necessary to meet science-based targets for GHG reductions."<sup>237</sup>

Paris Agreement signatories, including the United States, have committed to slowing global warming to well under 2°C above pre-industrial temperatures, requiring immediate, aggressive cuts to greenhouse gas emissions.<sup>238</sup> Accordingly, President Biden has set a federal goal to decarbonize the electricity sector by 2035

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<sup>233</sup> Intergovernmental Panel on Climate Change, *Climate Change 2022: Mitigation of Climate Change*, Summary for Policymakers at 36 (2022), [https://report.ipcc.ch/ar6wg3/pdf/IPCC\\_AR6\\_WGIII\\_SummaryForPolicymakers.pdf](https://report.ipcc.ch/ar6wg3/pdf/IPCC_AR6_WGIII_SummaryForPolicymakers.pdf), **Attachment 39**.

<sup>234</sup> DEIS at 200 (Alternative A), 209 (Alternative B).

<sup>235</sup> Arroyo Letter, **Attachment 20**.

<sup>236</sup> *Id.*

<sup>237</sup> *Id.*

<sup>238</sup> Paris Agreement to the United Nations Framework Convention on Climate Change art. 2 section 1(a), Dec. 12, 2015, T.I.A.S. No. 16-1104 (aiming to hold the increase in global average temperature to "well below 2°C above pre-industrial levels and pursuing efforts to limit the temperature increase to 1.5°C above pre-industrial levels, recognizing that this would significantly reduce the risks and impacts of climate change").

and to reach net-zero greenhouse gas emissions by 2050.<sup>239</sup> To demonstrate how to get there, the State Department and the Executive Office of the President recently published the *Long-Term Strategy of the United States: Pathways to Net-Zero Greenhouse Gas Emissions by 2050*, identifying a carbon-free electricity sector by 2035 as “a crucial foundation” for achieving net-zero GHG emissions economy-wide by 2050.<sup>240</sup> These goals align with what most experts say is required to avoid the worst effects of climate change.<sup>241</sup>

In addition, local governments within the TVA service territory have established their own climate goals. For example, the City of Nashville aims to reduce greenhouse gas emissions community-wide by 80%.<sup>242</sup> And Nashville Electric Service—one of TVA’s largest customers—unanimously passed a resolution against the proposed methane gas plant partly because it’s out of step with the city’s climate policy.<sup>243</sup>

TVA must provide GHG emissions estimates against these decarbonization pathways, assessing the proposed Alternatives’ climate effects in light of these goals: Will building new gas pipelines and plants in the 2020s impair President Biden’s goals to decarbonize the electric grid by 2035 and achieve net-zero emissions economy-wide by 2050? Will the increased greenhouse gas emissions jeopardize federal and international efforts to avoid the worst effects of climate change? The answer to all those questions is an unqualified, “Yes.” CEQ has instructed agencies to “discuss relevant approved federal, regional, state, tribal, or local plans, policies, or laws for greenhouse gas emission reductions or climate adaptation to make clear whether a proposed project’s greenhouse gas emissions are consistent with such plans or laws.”<sup>244</sup> Without comparing projected greenhouse gas emissions to “national emissions-control goals” like those established in Executive Order 14008 and the Paris Agreement, “it is difficult to see how [the agency] could engage in ‘informed decision making’ with respect to the greenhouse-gas effects of the proposed Project, or how ‘informed public comment’ could be possible.”<sup>245</sup>

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<sup>239</sup> Executive Order 14008, 86 Fed. Reg. 7619, 7624 (Feb. 1, 2021).

<sup>240</sup> *Pathways to Net-Zero Greenhouse Gas Emissions by 2050*, **Attachment 31**.

<sup>241</sup> Brad Plumer, *Nations Must Drop Fossil Fuels, Fast, World Energy Body Warns*, N.Y. TIMES (May 18, 2021), <https://www.nytimes.com/2021/05/18/climate/climate-change-emissions-IEA.html>.

<sup>242</sup> Metropolitan Nashville and Davidson County, TN, *A Resolution Adopting a Metropolitan Government Community-Wide Target of an 80% Reduction in Annual Greenhouse Gas Emissions from 2014 Levels by 2050*, RS2022-1358 (approved Feb. 2, 2022), [hereinafter “Nashville Climate Resolution”], **Attachment 40**.

<sup>243</sup> NES Board Resolution, **Attachment 41**. See also Caroline Eggers, *NES Board, for the First Time Ever, Comes Out Against TVA Fossil Fuel Plans*, WPLN (May 26, 2022), <https://wpln.org/post/nas-board-for-the-first-time-ever-comes-out-against-tva-fossil-fuel-plans/>.

<sup>244</sup> 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), [hereinafter “2016 CEQ Greenhouse Gas Guidance”], **Attachment 50**.

<sup>245</sup> *Sierra Club v. FERC*, 867 F.3d at 1374.

**4. TVA's Social Cost of Greenhouse Gases analysis seems calculated to *hide*, not capture, climate costs.**

**a. TVA must apply the Social Cost of Carbon in compliance with Executive Order 13990 and guidance from the Interagency Working Group on Greenhouse Gases.**

When used appropriately, the Social Cost of Carbon can help agencies fulfill President Biden's directive: "to capture the full costs of greenhouse gas emissions as accurately as possible, including by taking global damages into account."<sup>246</sup> 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."<sup>247</sup> The Social Cost of Carbon translates a one-ton increase in CO<sub>2</sub> emissions into changes in atmospheric greenhouse gas concentrations, consequent changes in temperature, and resulting economic damages.<sup>248</sup> Those harms include "changes in net agricultural productivity, human health, property damages from increased flood risk, and the value of ecosystem services."<sup>249</sup> The current values, which adjust the 2016 values for inflation, estimate that every additional ton of CO<sub>2</sub> released from anywhere on Earth will cause approximately \$51 in climate damages.<sup>250</sup> The Interagency Working Group has also published values for the Social Cost of Methane and the Social Cost of Nitrous Oxide, both consistent with the methodology underlying the Social Cost of Carbon.<sup>251</sup> The Social Cost of Methane is \$1,500 per ton<sup>252</sup>—nearly 30 times greater than the cost of carbon, accounting for methane's increased potency as a greenhouse gas. Not only will the Social Costs of Greenhouse Gases convey the *harms* of new gas pipelines and plants, but they will also allow TVA to incorporate the social *benefits* of reducing greenhouse gas emissions<sup>253</sup> for evaluating carbon-free alternatives.

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<sup>246</sup> Exec. Order No. 13,990, 86 Fed. Reg. 7037, 7040 (Jan. 25, 2021).

<sup>247</sup> Fla. Se. Connection, LLC, 162 FERC ¶ 61,233, ¶ 45 (Mar. 14, 2018).

<sup>248</sup> See Interagency Working Group on the Social Cost of Carbon, Technical Support Document at 2, 5 (Feb. 2010), available at <https://bit.ly/2TRF185>, **Attachment 42**.

<sup>249</sup> *Id.* at 2.

<sup>250</sup> INTERAGENCY WORKING GROUP ON SOCIAL COST OF GREENHOUSE GASES, TECHNICAL SUPPORT DOCUMENT: SOCIAL COST OF CARBON, METHANE, AND NITROUS OXIDE INTERIM ESTIMATES UNDER EXECUTIVE ORDER 13990 at 5 (2021) [hereinafter "IWG Technical Support Document"], <https://bit.ly/3xedCvG>, **Attachment 43**; Jean Chemnick, *Cost of Carbon Pollution Pegged at \$51 a Ton*, SCIENTIFIC AMERICAN (Mar. 1, 2021), <https://bit.ly/35cDPys>.

<sup>251</sup> IWG Technical Support Document at 2, **Attachment 43**.

<sup>252</sup> *Id.* at 5.

<sup>253</sup> *Id.* at 1.

Executive Order 13990 instructs federal agencies to use the Social Cost of Carbon,<sup>254</sup> which has been widely endorsed by economists and scientists,<sup>255</sup> as well as the Social Costs of Methane and Nitrous Oxide, which are based on the same methodology. The Social Costs of Carbon, Methane, and Nitrous Oxide are useful and appropriate here to meaningfully convey the impacts of building a new gas plants and pipelines—thereby adding decades of greenhouse gas emissions—in comparison to zero-carbon alternatives like energy efficiency, demand response, renewable energy, or battery storage.

While TVA applies the Social Cost of Carbon, it notes several baseless objections to doing so. The DEIS suggests there is widespread debate over the “economic discount rate” and whether “global effects, as opposed to only domestic, should be included.”<sup>256</sup> As discussed below,<sup>257</sup> there is broad consensus on a discount rate of 3% or less and that global effects must be included.

TVA also objects that the Social Cost of Carbon “does not measure the actual incremental effects of an individual project” and that “[t]here are no established criteria identifying the monetized SCC values considered significant for NEPA purposes.”<sup>258</sup> Those excuses are meritless.

*First*, as CEQ has acknowledged, “[c]limate change is a particularly complex challenge given its global nature and the inherent interrelationships among its sources, causation, mechanisms of action, and impacts.”<sup>259</sup> NEPA does not allow agencies to give up when facing uncertainty. Agencies must analyze and disclose “*reasonably foreseeable*” environmental effects.<sup>260</sup> The Social Cost of Carbon does exactly that, assigning to each unit of emissions a cost in terms of climate harm.<sup>261</sup> When information is incomplete or unavailable, agencies must evaluate “such impacts based upon theoretical approaches or research methods generally accepted in the scientific community.”<sup>262</sup> The Social Costs of Carbon, Methane, and Nitrous Oxide provide TVA with generally accepted approaches to fulfill their NEPA obligations and comply with President Biden’s Executive Order to “capture the full

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<sup>254</sup> 86 Fed. Reg. at 7040.

<sup>255</sup> See NAT’L ACADS. SCI., ENG’G & MED., VALUING CLIMATE DAMAGES: UPDATING ESTIMATES OF THE SOCIAL COST OF CARBON DIOXIDE, Summary at 3, 10–17 (2017), [hereinafter “2017 Updated SCC Estimates”], <https://bit.ly/3xenxBq>, **Attachment 45**; 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, Chapters, 2, 3 (2016), <https://bit.ly/3gt3AQz>, [hereinafter “2016 Phase 1 Report”], **Attachment 44**; Richard L. Revesz et al., *Best Cost Estimate of Greenhouse Gas*, 357 SCIENCE 655 (2017), **Attachment 46**.

<sup>256</sup> DEIS at 185.

<sup>257</sup> See Section III.B.4.c (discussing discount rates).

<sup>258</sup> DEIS at 186.

<sup>259</sup> 2016 CEQ Greenhouse Gas Guidance at 2, **Attachment 50**.

<sup>260</sup> 42 U.S.C. 4332(C); 40 C.F.R. § 1508.1(g)(2), (3).

<sup>261</sup> Fla. Se. Connection, LLC, 162 FERC ¶ 61,233, ¶ 48 (acknowledging that “the Social Cost of Carbon methodology does constitute a tool that can be used to estimate incremental physical climate change impacts”).

<sup>262</sup> 40 C.F.R. § 1502.21(c)(4).

costs of greenhouse gas emissions *as accurately as possible*, including by taking global damages into account.”<sup>263</sup>

*Second*, the fact that there is no numeric significance threshold for climate costs in NEPA review is true of every environmental effect. Significance is a multi-factor determination that requires agencies to use sound discretion within the bounds and purposes of NEPA.<sup>264</sup> As with local water, land, and air impacts, it remains both useful and essential to estimate the climate impacts of building new fossil fuel plants even where there is arguably some flexibility about where to set a threshold for significance.

**b. TVA has no legal basis to apply outdated values for the Social Cost of Carbon.**

TVA provides Social Cost of Carbon estimates based on both “Biden Administration” numbers and “Trump Administration” numbers, with the apparent intent to discredit the endeavor as a meaningless exercise: “As shown by the variability of results, it is difficult for the SCC metric to provide meaningful results at an absolute level . . .”<sup>265</sup> TVA does this “[d]ue to the legal uncertainty regarding SCC values.”<sup>266</sup> TVA appears to reference a district court’s baseless nationwide injunction,<sup>267</sup> swiftly overturned by the Fifth Circuit Court of Appeals.<sup>268</sup> The Supreme Court rejected pleas to intervene made by opponents of the SCC.<sup>269</sup> The result is that the Social Cost of Carbon, as determined by the Interagency Working Group, is the law of the land.

The current administration has *ordered* TVA to account for climate costs. President Biden has ordered a government-wide response to the climate crisis, instructing agencies to capture the full costs of greenhouse gas emissions. Executive Order 13990 re-established the Interagency Working group on the Social Cost of Greenhouse Gases, instructed them to publish interim Social Costs of Carbon, Methane, and Nitrous Oxide, “which agencies *shall* use when monetizing the value of changes in greenhouse gas emissions.”<sup>270</sup> The Interagency Working Group developed Social Cost of Greenhouse Gas (SC-GHG) figures based on the best available economic models, drawing from peer-reviewed scientific and economic

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<sup>263</sup> 86 Fed. Reg. at 7040 (emphasis added).

<sup>264</sup> The 1978 Rules provide that “significance” accounts for context and intensity. Intensity alone has ten factors. 40 C.F.R. § 1508.27 (1978).

<sup>265</sup> DEIS at 189.

<sup>266</sup> DEIS at 186.

<sup>267</sup> Louisiana v. Biden, No. 21-cv-01074-JDC-KK (W.D. La. Feb. 11, 2022).

<sup>268</sup> Louisiana v. Biden, No. 22-30087 (5th Cir., March 16, 2022), *cert. denied* \_\_ U.S. \_\_, No. 21A658, 2022 WL 866282 (May 26, 2022).

<sup>269</sup> Louisiana v. Biden, \_\_ U.S. \_\_, No. 21A658, 2022 WL 866282 (May 26, 2022).

<sup>270</sup> 86 Fed. Reg. at 7040.

literature. The President has ordered TVA to apply those numbers, which are widely supported by economists and scientists.<sup>271</sup>

In contrast, President Trump's administration *discouraged* consideration of climate costs, disbanding the Interagency Working Group on the Social Cost of Carbon and withdrawing their work as "no longer representative of governmental policy."<sup>272</sup> In the rare instances when individual agencies calculated climate costs during the Trump administration, the estimates were unsupported by most economists.<sup>273</sup> Not once during the Trump administration did TVA publish Social Cost of Carbon estimates. To do so now with arbitrary "Trump Administration" values would flout President Biden's mandate to "capture the full costs of greenhouse gas emissions as accurately as possible."<sup>274</sup>

**c. TVA has no factual basis to apply "Trump Administration" values for the Social Cost of Carbon.**

The key changes the Interagency Working Group made in the Social Cost of Greenhouse Gas estimates are well supported by the science, economics, and law of climate change,<sup>275</sup> fixing major flaws in the "Trump Administration" values.

TVA alleges that one point of controversy is whether to account for global damages.<sup>276</sup> There is no rational basis to fixate on domestic costs when climate change, as TVA acknowledges, is global.<sup>277</sup> A pound of greenhouse gas emitted from the U.S. contributes to climate change in the same way as a pound of greenhouse gas from Indonesia. For that reason, Executive Order 13990 expressly orders agencies to "capture the full costs of greenhouse gas emissions as accurately as possible, *by taking*

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<sup>271</sup> See 2017 Updated SCC Estimates, Summary at 3, 10–17, **Attachment 45**; 2016 Phase 1 Report, Chapters, 2, 3, <https://bit.ly/3gt3AQz>, **Attachment 44**; Revesz et al., **Attachment 46**.

<sup>272</sup> Executive Order 13783, Promoting Energy Independence and Economic Growth, 82 Fed. Reg. 16093, 16095–96 (March 31, 2017). Office of Management & Budget Circular A-4, the purported basis of Executive Order 13783, does not provide independent legal support for TVA's application of "Trump Administration" values. For example, Circular A-4 recommends that agencies include sensitivity analysis with lower discount rates (i.e., lower than the standard 3% and 7%) when a rule has important intergenerational benefits or costs. OFFICE OF MANAGEMENT AND BUDGET, CIRCULAR A-4 (Sept. 17, 2003), <https://www.whitehouse.gov/omb/information-for-agencies/circulars/>, **Attachment 47**. The Interagency Working Group crafted its interim SC-GHG in compliance with that guidance, emphasizing the intergenerational nature of climate change impacts.

<sup>273</sup> When the Obama administration estimated a social cost of carbon to be \$50 per ton, a survey found 51% of economists found that number too low, and only 9% found it too high. Brad Plumer, *Trump Put a Low Cost on Carbon Emissions. Here's Why It Matters*, N.Y. TIMES (Aug. 23, 2018), <https://www.nytimes.com/2018/08/23/climate/social-cost-carbon.html>.

<sup>274</sup> Exec. Order No. 13,990, 86 Fed. Reg. 7037, 7037 (Jan. 25, 2021).

<sup>275</sup> See *California v. Bernhardt*, 472 F. Supp. 3d 573, 612 (N.D. Cal. 2020) (vacating agency action, in part, because the agency ignored the Interagency Working Group's Social Cost of Methane, which "reflects the best science available").

<sup>276</sup> DEIS at 185.

<sup>277</sup> DEIS at 185 (identifying "GHG emissions" study area as "the global environment").

global damages into account.”<sup>278</sup> The Interagency Working Group on Greenhouse Gases explained:

The global nature of GHGs means that U.S. interests, and therefore the benefits to the U.S. population of GHG mitigation, cannot be defined solely by the climate impacts that occur within U.S. borders. . . . Climate impacts that occur outside U.S. borders can [] impact the welfare of individuals and firms that reside in the United States through their effect on international markets, trade, tourism, and other activities. Furthermore, additional spillovers can occur through pathways such as economic and political destabilization and global migration that can lead to adverse impacts on U.S. national security, public health, and humanitarian concerns. As described by the National Academies, to correctly assess the total damages to U.S. citizens and residents, one must account for these spillover effects on the United States.<sup>279</sup>

The Working Group also noted the scarcity of empirical research on estimating SC-GHG on a country-specific basis.<sup>280</sup> Conversely, the Group cited “[a] wide range of scientific and economic experts [that] have emphasized the issue of reciprocity as support for considering global damages of GHG emissions.”<sup>281</sup>

Courts have agreed, finding it reasonable to account for global damages and unreasonable to ignore them. Upholding the Department of Energy’s application of the Social Cost of Carbon, the Seventh Circuit found it reasonable for the agency to consider global costs and benefits, since “carbon released in the United States affects the climate of the entire world.”<sup>282</sup> Similarly, a federal district court found that “focusing solely on domestic effects has been soundly rejected by economists as improper and unsupported by science.”<sup>283</sup>

Likewise, there is no support for the 7% discount rate TVA uses.<sup>284</sup> Instead, there is broad consensus around discount rates of 3% or lower. Discount rates “tell us how much future benefits and costs are worth today.”<sup>285</sup> A lower rate results in more similar present and future values, while higher rates lead to greater disparities between present and future values. A discount rate of zero means we have no

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<sup>278</sup> Exec. Order No. 13,990, 86 Fed. Reg. 7037, 7037 (Jan. 25, 2021).

<sup>279</sup> IWG Technical Support Document at 15, **Attachment 43**.

<sup>280</sup> *Id.* at 15–16.

<sup>281</sup> *Id.* (citing expert reports).

<sup>282</sup> *Zero Zone, Inc. v. U.S. Dep’t of Energy*, 832 F.3d 654, 679 (7th Cir. 2016).

<sup>283</sup> *Bernhardt*, 472 F. Supp. 3d at 613 (citing 2017 National Academies of Science study on the social cost of greenhouse gases).

<sup>284</sup> INTERAGENCY WORKING GROUP ON SOCIAL COST OF CARBON, RESPONSE TO COMMENTS: SOCIAL COST OF CARBON FOR REGULATORY IMPACT ANALYSIS UNDER EXECUTIVE ORDER 12,866 at 36 (2015) (“[T]he use of 7 percent is not considered appropriate for intergenerational discounting. There is wide support for this view in the academic literature . . .”), **Attachment 48**.

<sup>285</sup> EPA, GUIDELINES FOR PREPARING ECONOMIC ANALYSIS, Chapter 6 (2010), <https://www.epa.gov/sites/default/files/2017-09/documents/ee-0568-06.pdf>.

preference between having \$1 today and \$1 in a hundred years, while a higher discount rate means we prefer \$1 today over more money in the future. The Interagency Working Group surveyed the economic literature and found that “the economics profession generally agrees that the appropriate social discount rate is below 3 percent as reflected in the recent trends in data.”<sup>286</sup> In fact, one study of over 200 economists found a “surprising degree of consensus among experts, with more than three-quarters finding the median risk-free social discount rate of 2 percent acceptable.”<sup>287</sup> While the Interagency Working Group set interim discount rates at 2.5%, 3%, and 5%, it noted that “new data and evidence strongly suggest[] that the discount rate regarded as appropriate for intergenerational analysis is lower.”<sup>288</sup> In sum, TVA’s 7% discount rate conflicts with the recommendations of the vast majority of economists.

NEPA requires agencies to “make use of reliable existing data and resources,” and ensure the scientific integrity of its discussions and analysis.<sup>289</sup> The Social Cost of Greenhouse Gas values published by the Interagency Working Group represent “theoretical approaches or research methods generally accepted in the scientific community.”<sup>290</sup> The “Trump Administration” figures TVA provides do not. TVA lacks any legal or factual support to apply “Trump Administration” values, which serve only to undermine its obligations to analyze and disclose the climate costs of its proposal to build new fossil fuel plants.

**d. TVA’s Social Cost of Greenhouse Gases analysis violates Executive Order 13990.**

By refusing to apply the Social Cost of Greenhouse Gases in accordance with the Interagency Working Group’s guidance, TVA has violated Executive Order 13990.

As discussed, President Biden re-established the Interagency Working Group on the Social Cost of Greenhouse Gases, instructed them to publish interim Social Costs of Carbon, Methane, and Nitrous Oxide, “which agencies *shall* use when monetizing the value of changes in greenhouse gas emissions.”<sup>291</sup> In February 2021, the Interagency Working Group published interim figures, with a range of four different values for each greenhouse gas.<sup>292</sup> Those include three different discount rates: 2.5%, 3%, and 5%.<sup>293</sup> The Interagency Working Group included a fourth value—a 3% discount rate with more expensive damages—to represent “higher-than-

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<sup>286</sup> *Id.* at 20.

<sup>287</sup> *Id.*

<sup>288</sup> IWG Technical Support Document at 4, [Attachment 43](#).

<sup>289</sup> *See* 40 C.F.R. § 1502.23.

<sup>290</sup> 40 C.F.R. § 1502.21(c).

<sup>291</sup> Exec. Order No. 13,990, 86 Fed. Reg. 7037, 7037 (Jan. 25, 2021) (emphasis added).

<sup>292</sup> IWG Technical Support Document at 4, [Attachment 43](#).

<sup>293</sup> *Id.*

expected economic impacts from climate change.”<sup>294</sup> The IWG explained why agencies should apply all four values:

For the purpose of capturing the uncertainties involved in analyses, the [Interagency Working Group] emphasized and emphasizes in this [Technical Support Document] the importance and value of including all four SC-GHG values. In particular, values based on *lower* discount rates are consistent with the latest scientific and economic understanding of discounting approaches relevant for intergenerational analysis . . .<sup>295</sup>

Despite this clear directive, TVA states that it applied only a 3% discount rate<sup>296</sup> and an unsupported 7% discount rate.<sup>297</sup> TVA did not apply the 2.5% discount rate, the 5% discount rate, or the high-damages fourth value. TVA also refused to apply the Interagency Working Group's Social Cost of Nitrous Oxide and Social Cost of Methane, despite a large body of evidence that upstream methane emissions are a critical problem for climate change.<sup>298</sup> TVA's refusal to apply Social Cost of Greenhouse Gas values in compliance with the Interagency Working Group's Technical Support Document violates Executive Order 13990.

**e. TVA improperly hides the true climate costs of new methane gas plants and pipelines.**

TVA's Social Cost of Greenhouse Gas analysis hides the true costs of its proposals to build new gas plants. TVA's refusal to include the Social Cost of Methane hides the true costs of its methane gas proposals. TVA states, "Social cost of Methane and Nitrous Oxide values are not presented because they are insignificant, with regard to direct combustion emissions from all alternatives, when compared to the social cost of carbon, i.e., CO<sub>2</sub>."<sup>299</sup> As discussed in Section III.B.1, TVA cannot ignore the upstream emissions that are both reasonably foreseeable and a critical factor in assessing the climate impacts of switching from coal to methane gas generation.

As with its overall climate change analysis, TVA provides offset accounting to hide the true costs of new gas plants and pipelines. Without disclosing key assumptions, TVA provides twenty-year, system-wide estimates of the Social Cost of Carbon from the different alternatives.<sup>300</sup> TVA's system-wide projections show a

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<sup>294</sup> *Id.* at 10.

<sup>295</sup> IWG Technical Support Document at 23 (emphasis added), **Attachment 43**.

<sup>296</sup> TVA states that it applies the 3% discount rate, but Table 3.7-3 states that the discount rate is "0.07." DEIS at 191. TVA must address this error and apply the 3% discount rate, as well as the three other values the Interagency Working Group has recommended.

<sup>297</sup> DEIS at 185–86.

<sup>298</sup> *See supra* Section III.B.1.

<sup>299</sup> DEIS at 203.

<sup>300</sup> DEIS at 191, 192.

roughly 30% decrease in CO<sub>2</sub> emissions by 2041: 25.2 million tons<sup>301</sup> under Alternative A, compared to 36.5 under the No Action Alternative.<sup>302</sup> But elsewhere, TVA estimates that the gas plant will emit about 5 million tons less CO<sub>2</sub> per year than the coal plant. TVA appears to credit itself with about 6 million additional tons of “system-wide” carbon reductions in Alternatives A and B that are not part of those proposals.

While unclear, those system-wide reductions may stem, in part, from replacing additional fossil fuel assets with 10,000 MW of solar.<sup>303</sup> That offset accounting is baseless and misleading. TVA has not committed to that 10,000 MW of solar,<sup>304</sup> and there is no reason to credit it to Alternative A and B—which propose only new fossil fuel generation—but not to the No Action Alternative. Because the “lock-in effect” of new fossil fuel infrastructure displaces additional carbon-free alternatives, EPA has recommended that “*no-action alternatives* evaluate non-gas alternatives to meet the public’s need for energy services that would be provided by a proposed project.”<sup>305</sup>

TVA may also attempt to claim reductions from running other coal plants less due to “increased efficiency of the new [combined cycle] plant.”<sup>306</sup> First, TVA discloses no factual data supporting this assertion. Second, even if true, this effect would only be *greater* for Alternative C because solar and storage have substantially lower operating costs and storage has far greater flexibility than a combined cycle gas plant. Yet TVA does not appear to credit Alternative C with GHG reductions from reduced operations at other coal plants. Third, even if there are marginal GHG reductions elsewhere, TVA must analyze and disclose the decades of greenhouse gas emissions that this proposed methane gas plant would lock in.

When discussing these plants—without system-wide offset accounting—TVA misleadingly focuses solely on net changes in greenhouse gas emissions. TVA discusses only the “social cost *benefit* of carbon emissions reductions” for Alternatives A and B relative to the existing coal plant.<sup>307</sup> By fixating only on the purportedly<sup>308</sup> lower rate of GHG emissions from gas relative to coal, TVA refuses to discuss the social *costs* of the decades of greenhouse gas emissions from new methane gas plants. This paints an incomplete and misleading picture of TVA’s proposal. TVA is proposing

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<sup>301</sup> In some places, TVA uses “short-tons.” See DEIS at 192. At others, it refers to “metric tons.” *Id.* at 200. Still elsewhere, it simply says “tons.” *Id.* at 209. To meaningfully disclose and analyze greenhouse gas emissions, TVA must be clear and consistent in its use of terminology and units.

<sup>302</sup> *Id.*

<sup>303</sup> DEIS at 3 (discussing “overall asset strategy” that includes [a]dding 10,000 MW of solar by 2035 to meet customer demands and system needs, complemented with storage”).

<sup>304</sup> The 10,000 MW figure falls within a wide range of projections of TVA’s 2019 Integrated Resource Plan. TVA, 2019 Integrated Resource Plan, Vol. I – Final Resource Plan, ES-3 (2019) (recommending *range* of solar additions between 3,000 and 14,000 MW by 2038), **Attachment 92**, Nowhere has TVA committed to adding 10,000 MW of solar.

<sup>305</sup> Arroyo Letter, **Attachment 20**.

<sup>306</sup> DEIS at 185.

<sup>307</sup> DEIS at 200 (emphasis added), 209–10.

<sup>308</sup> As discussed in Section III.B.1, TVA arbitrarily ignores upstream methane emissions, which may nullify any climate benefit of switching from coal to gas.

to replace a coal plant from 1973 with a methane gas plant in 2027. Net emissions are part of the story, but so too is the “potential for projects to lock in natural gas production and use at the expense of substitute energy sources with lower social costs.”<sup>309</sup> Focusing only on *net* changes in GHG emissions ignores the real costs of decades of *additional*—and completely avoidable—GHG emissions at a critical moment of the climate crisis.

NEPA requires TVA to analyze the good and the bad of *this* proposal.<sup>310</sup> Rather than hide climate costs by pointing to net reductions and dubious “system-wide” benefits, TVA must disclose the full lifecycle costs of these proposed gas plants and pipelines. That includes the full costs of greenhouse gas emissions—upstream and downstream, throughout the plants’ useful lives.<sup>311</sup>

## 5. TVA fails to meaningfully discuss climate impacts.

The DEIS fails to disclose the impacts of GHG emissions. Under NEPA, TVA must “quantify *and consider*” a project’s greenhouse gas emissions, or explain why it cannot.<sup>312</sup> “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.”<sup>313</sup> For climate change, this includes a “qualitative summary of the impacts of [greenhouse gas] emissions based on authoritative reports.”<sup>314</sup>

TVA’s brief, generic discussion of climate change impacts is inadequate. An important part of climate change forecasting is accounting for a range of “tipping points.” Each tipping point represents “a critical threshold beyond which a system reorganizes, often abruptly and/or irreversibly.”<sup>315</sup> Not only should TVA provide GHG emissions estimates against various decarbonization pathways (e.g., limiting global warming to 1.5°C, 2°C), but it should also clearly discuss what those various scenarios *mean*. That requires discussing actual effects, in the Tennessee Valley and more broadly, at various climate thresholds.<sup>316</sup>

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<sup>309</sup> Arroyo Letter, **Attachment 20**.

<sup>310</sup> 40 C.F.R. § 1508.1(g)(4) (requiring disclosure and analysis of effects “resulting from actions which may have both beneficial and detrimental effects, even if on balance the agency believes that the effects will be beneficial”).

<sup>311</sup> Without explanation, TVA provides estimates across a 20-year timeline. Elsewhere, it expects Alternative A to last at least 30 years. See DEIS at 314 (“The Project could continue the current land’s industrial use for at least 30 years.”). Thirty years is more consistent with the average useful life of a gas plant. *Average Age of US Power Plant Fleet Flat for 4th-straight Year in 2018*, S&P GLOBAL (Jan 16, 2019), <https://www.spglobal.com/marketintelligence/en/news-insights/trending/gfjqeFt8GTPYNK4WX57z9g2>.

<sup>312</sup> *Sierra Club v. FERC*, 867 F.3d at 1375.

<sup>313</sup> *Balt. Gas & Elec.*, 462 U.S. at 96 (emphasis added). See 40 C.F.R. 1502.16(a), (b) (requiring examination of effects and their significance).

<sup>314</sup> 2016 CEQ Greenhouse Gas Guidance, **Attachment 50**.

<sup>315</sup> *Special Report: Global Warming of 1.5 C* at 21 n.34, **Attachment 52**.

<sup>316</sup> See Intergovernmental Panel on Climate Change, *Climate Change 2022: Impacts, Adaptation and Vulnerability* at 16–21 (2022) (discussing impacts at various thresholds), **Attachment 51**.

TVA also overlooks climate impacts on its own system. TVA only briefly discusses potential effects of minor temperature increases on the operation of its proposed gas plants.<sup>317</sup> First, TVA only looks at the 1.5 C warming scenario,<sup>318</sup> which looks increasingly unlikely.<sup>319</sup> Second, TVA ignores the broader effects climate change will have on its power system. Under the “business as usual” scenario, TVA has projected “[n]ighttime, winter temperatures increasing more quickly than daytime, summer temperatures”, “[w]etter winters/springs,” and “[s]lightly lower annual peaks in [the] future, revert[ing] to summer peaking system before 2030.”<sup>320</sup> Summer peaking by 2030—just three years after the methane gas plant would go online—means solar would better align with TVA’s capacity needs. Milder, wetter winters mean lower peak demand and more energy from TVA’s existing hydroelectric fleet. These climate effects substantially change the need and usefulness of generation assets across the TVA system, and TVA must address those impacts here.

## 6. TVA fails to consider greenhouse gas mitigation.

TVA must consider mitigating GHG emissions from its proposed methane gas plants. “Implicit in NEPA’s demand that an agency prepare a detailed statement on ‘any adverse environmental effects which cannot be avoided should the proposal be implemented’ is an understanding that the EIS will discuss the extent to which adverse effects can be avoided.”<sup>321</sup> Moreover, NEPA regulations command that the discussion of environmental consequences “shall include . . . [m]eans to mitigate adverse environmental impacts.”<sup>322</sup> NEPA requires “that mitigation be discussed in sufficient detail to ensure that environmental consequences have been fairly evaluated.”<sup>323</sup> For methane gas infrastructure, EPA recently encouraged FERC to “routinely adopt all practicable GHG mitigation measures . . . given the reasonableness of such measures from a public interest and necessity standpoint.”<sup>324</sup>

Here, TVA violates NEPA by failing to include meaningful—indeed *any*—consideration of GHG mitigation in its DEIS. Under the heading “Air Quality and GHG Emissions” the draft simply states, “[TVA will] [c]omply with local ordinances or burn permits if burning of vegetative debris is required and use BMPs such as periodic watering, covering open-body trucks, and establishing a speed limit to mitigate fugitive dust.”<sup>325</sup> TVA’s limited discussion addresses only construction-related impacts on local air quality, ignoring the proposal’s greatest impacts: decades

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<sup>317</sup> DEIS at 200–01.

<sup>318</sup> DEIS at 201.

<sup>319</sup> *Special Report: Global Warming of 1.5 C* at C.1.3 (finding a “50% probability of limiting warming to 1.5° C”), **Attachment 52**.

<sup>320</sup> Brian Childers and Nathan Donahoe, TVA, Climate Change Scenario Presentation (Jan. 24, 2020), **Attachment 53**.

<sup>321</sup> *Robertson*, 490 U.S. at 351–52 (quoting 42 U.S.C. § 4332(C)(ii)).

<sup>322</sup> 40 C.F.R. § 1502.16(a)(9) (2022) (emphasis added).

<sup>323</sup> *Robertson*, 490 U.S. at 352.

<sup>324</sup> Arroyo Letter, **Attachment 20**.

<sup>325</sup> DEIS at 53.

of greenhouse gas emissions from operating the gas-fired power plants. In fact, aside from merely using the terms “GHG emissions” and “mitigation” in the same paragraph, the DEIS lacks any meaningful discussion of the subject at all.

TVA’s failure to consider GHG mitigation is especially troubling given that the proposed project runs counter to both federal and local climate goals. At the federal level, President Biden has made achieving “a carbon pollution-free electricity sector no later than 2035” an urgent national priority.<sup>326</sup> Relatedly, at the local level, the City of Nashville has made it a priority to reduce community-wide GHG emissions 80% from 2014 levels by 2050.<sup>327</sup>

Despite these GHG-reduction policies, TVA is proposing to build new fossil-fuel infrastructure with no plans to mitigate the methane gas project’s substantial GHG emissions. Worse yet, as the largest federal utility and third largest electric utility in the country,<sup>328</sup> TVA has the unique opportunity and obligation to lead the nation’s response to the climate crisis, setting a precedent for other utilities to follow. Rather than lead, TVA has proposed to undermine the Nation’s climate goals by investing in new fossil fuel plants and pipelines. Because TVA provides no plan to mitigate the decades of greenhouse gas emissions it proposes, the DEIS violates NEPA and federal climate policy.

TVA must include an emissions mitigation plan in the Final EIS to ameliorate its sore lack of a plan in the DEIS. The form mitigation may take, however, is flexible. Mitigation may include:

- (1) Avoiding the impact altogether by not taking a certain action or parts of an action.
- (2) Minimizing impacts by limiting the degree or magnitude of the action and its implementation.
- (3) Rectifying the impact by repairing, rehabilitating, or restoring the affected environment.
- (4) Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action.
- (5) Compensating for the impact by replacing or providing substitute resources or environments.<sup>329</sup>

While TVA must consider mitigation through clean-energy alternatives to new methane gas plants, it must also consider ways to mitigate the greenhouse gas impacts of any proposed plants. For example, EPA recently published a white paper on “control techniques and measures with the potential to mitigate greenhouse gas

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<sup>326</sup> Exec. Order No. 14,008, 86 Fed. Reg. 7619, 7624 (Jan. 27, 2021).

<sup>327</sup> Nashville Climate Resolution, **Attachment 40**.

<sup>328</sup> Lisa Friedman, *Largest Federal Utility Chooses Gas, Undermining Biden’s Climate Goals*, N.Y. Times (Mar. 17, 2022), <https://www.nytimes.com/2022/03/17/climate/tennessee-valley-authority-biden-climate.html>.

<sup>329</sup> 40 C.F.R. § 1508.1(s)(1)-(5).

(GHG) emissions” from methane gas plants.<sup>330</sup> To comply with NEPA, TVA must consider its options to mitigate the decades of greenhouse gas emissions it proposes.

#### IV. Environmental Justice

Under NEPA, TVA must review the potential for disproportionate adverse environmental impacts on environmental justice communities.<sup>331</sup> This review is necessary to reduce further unfair pollution burdens on low-income communities and communities of color, which are already disproportionately harmed by polluting industry and other environmental hazards.<sup>332</sup> To address this longstanding inequity, President Biden has also issued executive orders directing all federal agencies to “prioritize [] environmental justice,”<sup>333</sup> and “make achieving environmental justice part of their missions by developing programs, policies, and activities to address the disproportionately high and adverse human health, environmental, climate-related and other cumulative impacts on disadvantaged communities, as well as the accompanying economic challenges of such impacts.”<sup>334</sup> These orders build upon the foundation of Executive Order 12898, which urges federal agencies to consider environmental justice by “identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities.”<sup>335</sup>

In the DEIS, TVA failed to meaningfully analyze the potential for disproportionate adverse impacts, shirking its obligations under NEPA and the executive orders. TVA has not justified the geographic scale used for its environmental justice analysis, has improperly relied on broad census data to identify affected communities, and, by understating environmental harms across the board, has avoided even attempting to determine whether environmental justice communities were disproportionately affected in many situations. Finally, TVA has failed to incorporate environmental justice analysis into its review of climate change

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<sup>330</sup> EPA, AVAILABLE AND EMERGING TECHNOLOGIES FOR REDUCING GREENHOUSE GAS EMISSIONS FROM COMBUSTION TURBINE ELECTRIC GENERATING UNITS (2022), **Attachment 62**.

<sup>331</sup> Exec. Order No. 12,898, 59 Fed. Reg. 7629 (Feb. 16, 1994); *see also* Friends of Buckingham v. State Air Pollution Control Bd., 947 F.3d 68, 92 (4th Cir. 2020) (reminding us that “environmental justice is not merely a box to be checked”); Sierra Club v. Fed. Energy Regul. Comm’n, 867 F.3d 1357, 1368 (D.C. Cir. 2017) (“As always with NEPA, an agency is not required to select the course of action that best serves environmental justice, only to take a ‘hard look’ at environmental justice issues.”).

<sup>332</sup> *See, e.g.*, Julian Agyeman et al., *Trends and Directions in Environmental Justice: From Inequity to Everyday Life, Community, and Just Sustainabilities*, 41 ANN. REVIEW OF ENV’T AND RESOURCES 321 (2016), <https://www.annualreviews.org/doi/full/10.1146/annurev-environ-110615-090052>, **Attachment 55**; Jiawen Liu et al., *Disparities in Air Pollution Exposure in the United States by Race/Ethnicity and Income, 1990–2010*, 129(12) ENV’L HEALTH PERSPECTIVES 1270005-1 (2021), <https://ehp.niehs.nih.gov/doi/10.1289/EHP8584>, **Attachment 54**.

<sup>333</sup> Exec. Order No. 13,990, 86 Fed. Reg. 7037 (Jan. 25, 2021).

<sup>334</sup> Exec. Order No. 14,008, 86 Fed. Reg. 7619 (Feb. 1, 2021).

<sup>335</sup> Exec. Order No. 12,898, 59 Fed. Reg. 7629 (Feb. 16, 1994).

impacts, despite evidence that such impacts will fall more heavily on low-income communities and communities of color.

**A. TVA's method of determining the geographic scale of the affected environment has not been justified and could lead to overlooking potential environmental justice communities.**

In the DEIS, TVA generally identified potentially affected environmental justice populations by overlaying census block demographic information over particular zones: for the CUF, Gleason, and Johnsonville Reservations, a 10-mile radius circle around the project area; and for Alternative A, a 1-mile radius around the proposed methane gas pipeline route.<sup>336</sup> For Alternative C, TVA simply used the Middle Tennessee region of the TVA power service area and overlaid county level demographic data.<sup>337</sup>

TVA has not meaningfully justified its use of a 10-mile and 1-mile radius to determine the environmental justice study areas. In explaining the 10-mile radius, TVA stated that this distance would allow it to “assess the larger demographic context to allow for analysis of disproportionate effects on EJ populations, [] evaluate EJ effects based on the full reach of project effects on other resource areas (such as transportation), and [] analyze cumulative effects on EJ populations.”<sup>338</sup>

This explanation is insufficient. Research on environmental justice mapping indicates that, even when considering the same impact on the same population, use of different geographic units of analysis can yield drastically different results (e.g., the percentage of low-income households within 1 mile of a facility may be much higher than the percentage within 10 miles of that facility).<sup>339</sup> Altering the boundaries of the study area may therefore have dramatic implications.

For this reason, properly determining the geographic scale for analysis requires first identifying the impacts of concern, and then modeling how those impacts relate to the project area. A report on NEPA best practices from the Environmental Justice Interagency Working Groups notes that “[t]he geographic extent of the affected environment may vary *for each resource topic* analyzed in the

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<sup>336</sup> DEIS at 63.

<sup>337</sup> DEIS at 63.

<sup>338</sup> DEIS at 63.

<sup>339</sup> See, e.g., Juliana Maantay, *Mapping Environmental Injustices: Pitfalls and Potential of Geographic Information Systems in Assessing Environmental Health and Equity*, 110(2) ENVIRONMENTAL HEALTH PERSPECTIVES 161, 165 (April 2002), **Attachment 57**; Eric Sheppard et al., *GIS-based measures of environmental equity: Exploring their sensitivity and significance*, 9 JOURNAL OF EXPOSURE ANALYSIS AND ENV'T EPIDEMIOLOGY 19–28 (1999) (“In spatial analysis of environmental equity, it has now become clear that the choice of the geographic scale of the study area e.g., states, metropolitan areas, counties, municipalities and the spatial resolution of data within that study area (e.g., zip codes, census tracts, block-groups) employed, influence the results of the analysis.”), **Attachment 56**.

NEPA document.”<sup>340</sup> For example, localized air pollution is likely to impact communities relatively close to the project area, though robust analysis would also account for wind and other dispersion effects; other impacts, such as those on transportation or water quality, could reach farther, and not necessarily in a straightforward ever-expanding-circle of influence.

TVA may not just choose a geographic scale that conveniently allows for consideration of “the full reach of project effects on other resource areas” without further explanation. CEQ guidance clearly states that “agencies should identify a geographic scale for which they will obtain demographic information on the *potential impact area*.”<sup>341</sup> Whether a 1-mile or 10-mile radius (or some other shape or size) is appropriate depends on how the specific potential impact radiates from the project site—for many traditional pollutants, this may be related to contaminant fate and transport, but other impacts may best be modeled differently.<sup>342</sup>

Although it may be easiest for TVA to use the same 10-mile radius zone to look at every potential impact, this does not allow for real disproportionate impact analysis. By using a single study area for all impacts, TVA could obscure disparate impacts on environmental justice populations when those impacts are actually experienced at completely different scales. As the D.C. Circuit has made clear, “[w]hen conducting an environmental justice analysis, an agency’s delineation of the area potentially affected by the project must be ‘reasonable and adequately explained,’ [] and include ‘a rational connection between the facts found and the decision made.’”<sup>343</sup> TVA needs to justify the use of a 10-mile radius circle (or a 1-mile radius corridor for the pipeline route) for each relevant impact and perform its environmental justice analysis accordingly.<sup>344</sup>

**B. TVA must not rely on demographic information at the census block level to determine whether a particular geographic area contains potential environmental justice communities.**

After determining the affected geographic area for each particular impact, TVA must decide whether a potential environmental justice population resides in that

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<sup>340</sup> FEDERAL INTERAGENCY WORKING GROUP ON ENVIRONMENTAL JUSTICE & NEPA COMMITTEE, PROMISING PRACTICES FOR EJ METHODOLOGIES IN NEPA REVIEWS 15 (2016), [https://www.epa.gov/sites/default/files/2016-08/documents/nepa\\_promising\\_practices\\_document\\_2016.pdf](https://www.epa.gov/sites/default/files/2016-08/documents/nepa_promising_practices_document_2016.pdf) (emphasis added) [hereinafter “2016 Promising Practices for EJ Methodologies”], **Attachment 58**.

<sup>341</sup> COUNCIL ON ENVIRONMENTAL QUALITY, ENVIRONMENTAL JUSTICE GUIDANCE UNDER THE NATIONAL ENVIRONMENTAL POLICY ACT 14 (1997), [https://www.epa.gov/sites/default/files/2015-02/documents/ej\\_guidance\\_nepa\\_ceq1297.pdf](https://www.epa.gov/sites/default/files/2015-02/documents/ej_guidance_nepa_ceq1297.pdf) (emphasis added), [hereinafter “CEQ 1997 Guidance”], **Attachment 59**.

<sup>342</sup> See Maantay at 165, **Attachment 57**.

<sup>343</sup> *Vecinos para el Bienestar de la Comunidad Costera v. FERC*, 6 F.4th 1321 (D.C. Cir. 2021).

<sup>344</sup> TVA must also explain why, for each resource area, a 1-mile radius around the pipeline corridor in Alternative A and the middle Tennessee region in Alternative C are appropriate geographic scales for identifying potential EJ populations.

area. In the DEIS, TVA made this determination by relying almost entirely on demographic information from the census. TVA identified potential areas for environmental justice impacts as those census block groups or counties with “minority percentages that were 10 percentage points above the study area average or higher,” and “poverty ratios that were 20 percentage points above the study area average and/or above 50 percent.”<sup>345</sup>

Environmental justice analysis requires an understanding of the demographics of the affected population,<sup>346</sup> but census demographic information alone is not sufficient to identify environmental justice communities. Census data is not granular enough to identify some environmental justice populations. For example, the community might be highly concentrated in one part of a census block, or spread across two blocks in a way that disguises the actual demographics of an on-the-ground neighborhood.<sup>347</sup> Because “census data can only be disaggregated to certain prescribed levels (e.g., census tracts, census blocks),” “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.”<sup>348</sup>

Dickson County is itself an illustrative example. Although the county was only 4.5% African American in 2000, the landfill concentration around the predominantly African American Eno Road community has resulted in it being labeled a “poster child” for environmental racism.<sup>349</sup> Just looking at the landfill concentration and the county demographics would lead to completely overlooking the disproportionate toxic burden placed on the Eno Road community, which is why broad demographic data alone is not enough for environmental justice analysis.

CEQ guidance states that environmental justice impacts are site-specific, and “whether [an] agency action raises environmental justice issues is highly sensitive to the history or circumstances of a particular community or population.”<sup>350</sup> TVA must supplement its census data with community outreach to accurately identify

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<sup>345</sup> DEIS at 63.

<sup>346</sup> *Standing Rock Sioux Tribe v. U.S. Army Corps of Eng'rs*, 255 F. Supp. 3d 101, 136–37 (D.D.C. 2017) (citing CEQ 1997 Guidance).

<sup>347</sup> *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 1997 Guidance).

<sup>348</sup> EPA, FINAL GUIDANCE FOR INCORPORATING ENVIRONMENTAL JUSTICE CONCERNS IN EPA’S NEPA COMPLIANCE ANALYSES § 2.1.1 (April 1998), <https://bit.ly/3r7w7zj>, [hereinafter “EPA 1998 Guidance”], **Attachment 60**.

<sup>349</sup> ROBERT BULLARD ET AL., TOXIC WASTES AND RACE AT TWENTY: 1987-2007 GRASSROOTS STRUGGLES TO DISMANTLE ENVIRONMENTAL RACISM IN THE UNITED STATE 126 (2007), <http://www.ejnet.org/ej/twart-light.pdf>, **Attachment 61**.

<sup>350</sup> CEQ 1997 Guidance at 8, **Attachment 59**.

environmental justice communities.<sup>351</sup> Although TVA described reaching out to “local plant personnel and local government officials” to determine if the census data left out any environmental justice communities, this appears to have only been for the 10-mile area around the Reservations, not along the pipeline route.<sup>352</sup> Additionally, local plant personnel and local government officials may not have all the relevant information about the local community; TVA could and should also request input from other sources, such as schools.<sup>353</sup>

**C. TVA may not avoid analyzing impacts on environmental justice populations, including cumulative impacts, by characterizing impacts as minor, temporary, or likely to avoided or mitigated.**

Even where TVA has identified potential environmental justice populations, it does not perform genuine analysis.

As described throughout this comment, Alternative A has many significant environmental impacts that TVA has not accounted for in the DEIS.<sup>354</sup> One method used to arrive at this understatement is to rely on best management practices and other mitigation to downplay the potential for harm. For example, TVA states that “potential cumulative impacts associated with groundwater are expected to be minor” for Alternative A, even though there is a potential for spills and other pollution, because “the various projects would employ BMPs” to prevent those effects.<sup>355</sup> Then, after not finding environmental effects, TVA argues that disproportionate effects must be impossible: because “of the lack of significant environmental effects as described in the remaining sections of [the DEIS], no disproportionate adverse effects to EJ populations are projected as a result of the effects of [Alternative A].”<sup>356</sup>

TVA misunderstands the nature of disproportionate adverse effects. A project might be in compliance with environmental laws or safety regulations (such as by following best management practices) and still be the source of disproportionate impacts. The thresholds are not the same. For example, NEPA does not allow an agency to claim that compliance with NAAQS ensures no disparate impacts: the Fourth Circuit Court of Appeals held in *Friends of Buckingham v. State Air Pollution*

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<sup>351</sup> See EPA 1998 Guidance § 2.1.2, **Attachment 60** (noting that “[w]hile the census provides valuable information [] there are often many gaps associated with the information,” and it “may be necessary for the [] NEPA analyst to validate this information with the use of additional sources” such as “community and public outreach groups [and] community leaders”).

<sup>352</sup> DEIS at 63.

<sup>353</sup> See also 2016 Promising Practices for EJ Methodologies, 15 (“Data (including input from minority populations, low-income populations, and other interested individuals, communities, and organizations) on ecological, aesthetic, historic, cultural, economic, social, or health conditions of minority populations and low-income populations within the affected environment can provide agencies with useful insight into how the community’s conditions, characteristics, and/or location can influence the extent of the affected environment.”), **Attachment 58**.

<sup>354</sup> See *infra* Sections III, V, VI, and VII.

<sup>355</sup> DEIS at 148.

<sup>356</sup> DEIS at 88

Control Board that “blindly relying on ambient air standards is not a sufficiently searching analysis of air quality standards for an EJ community.”<sup>357</sup>

It is only when there are truly no potential impacts that an agency may forgo disproportionate impact analysis, because even smaller impacts can be unfairly burdensome to environmental justice communities.<sup>358</sup> The example above makes this clear: the risks from groundwater contamination, handwaved by TVA as “minor,” are much more significant for low-income rural communities reliant on well water in comparison to many other groups, but TVA apparently felt no need to determine whether identified environmental justice communities included significant use of well water as drinking water, or to analyze whether the risks would indeed be “minor” for that particular community.<sup>359</sup>

At times TVA claims that impacts will not be disproportionate without even making the most important comparisons. TVA assumes that environmental justice communities won't be disproportionately impacted by stream and wetland crossings related to Alternative A because such effects “would be similarly experienced” by both environmental justice communities and other population,” but does not bother to actually quantify the number of stream and wetland crossings in the acknowledged environmental justice communities.<sup>360</sup> TVA must quantify those streams and examine the nature of the affected resources, and then compare those results to the number of stream and wetland crossings and affected resources in other communities. TVA seems to assume some sort of even geographic distribution of effects, without any justification or explanation.

In other cases, TVA avoids finding disproportionate impacts by not accounting for impacts at all: in the section on air quality, TVA completely omits any discussion about the negative health impacts of ozone, even though methane emissions can cause increases in ozone.<sup>361</sup> Given the elevated cancer risks and asthma rates faced by African Americans, partly related to air toxics emissions from natural gas

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<sup>357</sup> *Friends of Buckingham*, 947 F.3d at 93. See also *Standing Rock Sioux Tribe*, 255 F. Supp. 3d at 101 (stating that the Army Corps “needed to offer more than a bare-bones conclusion that Standing Rock would not be disproportionately harmed” by the loss of hunting or fishing that could be caused by a spill).

<sup>358</sup> EPA 1998 Guidance § 3.2.2 (explaining that even harms that are not “significant” in NEPA context may disproportionately or severely harm environmental justice communities).

<sup>359</sup> See 2016 Promising Practices for EJ Methodologies at 15 (noting that agencies should consider “any unique conditions of the potentially affected minority populations and low-income populations that may be affected by the proposed action,” such as “reliance on a particular resource that may be affected by the proposed action”); see also *id.* at 34 (describing how agencies should consider particular vulnerabilities due to “unique routes of exposure, e.g. use of surface or well water in rural communities”).

<sup>360</sup> DEIS at 167, 175.

<sup>361</sup> See A. R. RAVISHANKARA ET AL., GLOBAL METHANE ASSESSMENT: BENEFITS AND COSTS OF MITIGATING METHANE EMISSIONS, UNITED NATIONS ENVIRONMENT PROGRAMME 65 (2021) <https://www.unep.org/resources/report/global-methane-assessment-benefits-and-costs-mitigating-methane-emissions> (noting health consequences for increased ozone), **Attachment 63**. See also Section III for a discussion of TVA's failure to fully account for methane emissions in the climate change context.

infrastructure, this oversight is particularly troubling.<sup>362</sup> Increased methane emissions resulting from Alternative A would also potentially affect a much larger geographic area than TVA's scale of analysis.

TVA also argues that “[w]here effects are anticipated, these effects would not be disproportionate on EJ populations since the same effects are anticipated for non-EJ populations.”<sup>363</sup> But the same environmental effects may not have the same environmental impacts in all situations. Environmental justice communities are often already over-burdened by polluting industries,<sup>364</sup> or lack the resources to address negative impacts,<sup>365</sup> and so the cumulative effects of TVA's actions could have disproportionate impacts even if the primary effects are evenly distributed.<sup>366</sup> Many communities of color and low-income communities have elevated health risks, often connected with their disproportionate exposure to polluting industries.<sup>367</sup> In those situations, any additional environmental harms have the potential to cause significant impacts *for that community* even if other communities would be less seriously affected.

Executive Order 12898 is clear that one factor in determining whether a population faces disproportionate adverse impact is whether the impacts would occur in a community “affected by cumulative or multiple adverse exposures from environmental hazards.”<sup>368</sup> TVA must evaluate the environmental effects of its alternatives on each affected population,<sup>369</sup> including an examination of existing pollution and health burdens, and not just assume that all populations react the same way to the same effects.

#### **D. TVA must include impacts from climate change in its environmental justice analysis.**

TVA's preferred alternative, the creation of a methane gas plant and pipeline, would have serious negative impacts on climate change, as articulated in Section III. TVA does not bother to consider the environmental justice implications of these climate change impacts at all. In the section of the DEIS examining air pollution and

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<sup>362</sup> LESLY FLEISCHMAN AND MARCUS FRANKLIN, FUMES ACROSS THE FENCE-LINE: THE HEALTH IMPACTS OF AIR POLLUTION FROM OIL & GAS FACILITIES ON AFRICAN AMERICAN COMMUNITIES, NAACP AND CATF 4 (2017), [https://cdn.catf.us/wp-content/uploads/2017/11/21094509/CATF\\_Pub\\_FumesAcrossTheFenceLine.pdf](https://cdn.catf.us/wp-content/uploads/2017/11/21094509/CATF_Pub_FumesAcrossTheFenceLine.pdf), **Attachment 64**.

<sup>363</sup> DEIS at 88.

<sup>364</sup> See, e.g., Julian Agyeman et al., **Attachment 55**.

<sup>365</sup> See Ryan E. Emanuel et al., *Natural Gas Gathering and Transmission Pipelines and Social Vulnerability in the United States*, 5 GEOHEALTH (2021) <https://agupubs.onlinelibrary.wiley.com/doi/10.1029/2021GH000442>, **Attachment 65**.

<sup>366</sup> The only time TVA addresses the potential for cumulative impacts in the environmental justice section of the DEIS is when it attempts to justify using a 10-mile radius for the study area, and TVA never explains how creating a zone of this size would help to analyze cumulative impacts. DEIS 63.

<sup>367</sup> See, e.g., FLEISCHMAN & FRANKLIN, **Attachment 64**.

<sup>368</sup> Exec. Order No. 12898, 59 Fed. Reg. 7629 (Feb. 16, 1994).

<sup>369</sup> See *Friends of Buckingham*, 947 F.3d at 87.

greenhouse gases, TVA only analyzes environmental justice in the context of localized air pollution.<sup>370</sup> This is not enough to comply with the requirements of NEPA. TVA must look at *all* the consequences of its alternatives, and that includes an analysis of whether the climate change effects caused by greenhouse gas emissions will disproportionately burden low-income communities and communities of color.

Were TVA to do this analysis, it would likely find that environmental justice communities *are* disproportionately affected by climate change.<sup>371</sup> Low-income communities and communities of color are more likely to be adversely affected by impacts like sea level rise, flooding, drought, and severe hot and cold weather, in part because they tend to lack resources to mitigate impacts, and already face cumulative pollution burdens.<sup>372</sup> On a global scale, the inequity is even more extreme, and as explained in Section III, TVA must account for global effects when considering climate change under NEPA.<sup>373</sup> TVA must include climate justice in its NEPA analysis in order to fully examine the impacts of its decision on environmental justice communities.<sup>374</sup>

TVA should also analyze the environmental justice impacts of solar energy in its analysis of Alternative C. TVA notes that farmland may be converted in the siting of solar farms, but simply states, without explanation, that these are “not expected to have “disproportionate effects on EJ populations.”<sup>375</sup> The siting of solar projects may affect environmental justice populations in negative ways, such as farmland conversion, but also in positive ways, such as increased economic opportunities. TVA should commit to the NAACP’s Equitable Solar Policy Principles to ensure that future solar energy development is inclusive of environmental justice communities.<sup>376</sup>

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<sup>370</sup> DEIS at 206.

<sup>371</sup> Gutierrez & LePrevost, **Attachment 30**.

<sup>372</sup> RACHEL MORELLO-FROSCH ET AL., THE CLIMATE GAP: INEQUALITIES IN HOW CLIMATE CHANGE HURTS AMERICANS & HOW TO CLOSE THE GAP (2009), <https://perma.cc/9Z25-6UTR>, **Attachment 67**; Susan Cutter, *The Geography of Social Vulnerability: Race, Class, and Catastrophe*, in UNDERSTANDING KATRINA: PERSPECTIVES FROM THE SOCIAL SCIENCES, ITEMS (2006), <https://perma.cc/H9BU-DCZS>, **Attachment 68**.

<sup>373</sup> See, e.g., J.E. Birkman et al., *2022: Poverty, Livelihoods and Sustainable Development*, Climate Change 2022: Impacts, Adaptation, and Vulnerability, Working Group II to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change 8-4, [https://www.ipcc.ch/report/ar6/wg2/downloads/report/IPCC\\_AR6\\_WGII\\_FinalDraft\\_Chapter08.pdf](https://www.ipcc.ch/report/ar6/wg2/downloads/report/IPCC_AR6_WGII_FinalDraft_Chapter08.pdf), **Attachment 69**.

<sup>374</sup> TVA must also comply with the government-wide directives by the President “to combat the climate crisis” with an approach that “delivers environmental justice,” Exec. Order No. 14008, 86 Fed. Reg. 7619, 7622 (Feb. 1, 2021), and to “accurately determine the social benefits of reducing greenhouse gas emissions” when making decisions, which includes an adequate accounting of environmental justice. Exec. Order No. 13990, 86 Fed. Reg. 7037, 7040 (Jan. 25, 2021).

<sup>375</sup> DEIS at 92.

<sup>376</sup> NAACP, *Solar Energy Initiative: Equitable Solar Policy Principles* (2021), <https://naacp.org/resources/equitable-solar-policy-principles>, **Attachment 70**.

**E. TVA must acknowledge the risk of a pipeline explosion.**

The DEIS says nothing about the risk of an explosion during construction or operation of the pipeline required by Alternative A. But data from the Pipeline and Hazardous Materials Safety Administration (“PHMSA”) show that serious incidents—ones involving a fatality or injury requiring overnight hospitalization—occur every year.<sup>377</sup> Dozens of serious events have occurred throughout the country in the past decade, and in 1992 a gas pipeline explosion just outside of Nashville exploded, shooting flames 200 feet into the air.<sup>378</sup> TVA must disclose and address the safety issues associated with the pipeline, examine the potential for those issues to have disproportionate adverse impacts on environmental justice populations, and must consider how selecting an alternative that does not require a new gas pipeline could mitigate those dangers.

**V. The DEIS fails to adequately evaluate environmental impacts on water resources.**

The DEIS’s evaluation of the environmental impacts of Alternative A on water resources is unlawful and inadequate for the following reasons.

**A. The DEIS impermissibly relies on mitigation to avoid a finding of significant cumulative impacts on surface water and wetlands from construction and operation of the CC plant and pipeline, without describing that mitigation.**

The DEIS is impermissibly light on details about potential impacts to Surface Water and Wetlands, rendering it premature. But its analysis is deficient for additional reasons, including its reliance on undeveloped mitigation measures to make findings of no significant cumulative impacts to surface water and wetlands from construction and operation of the CC Plant and Pipeline.

The currently effective NEPA regulations define “effects” and “impacts” to include “[c]umulative effects.”<sup>379</sup> When an agency finds that an alternative will have no significant impact—including cumulatively—on the basis of mitigation, it “shall state any enforceable mitigation requirements or commitments that will be undertaken to avoid significant impacts.”<sup>380</sup> “[M]itigation measures must be developed to a reasonable degree,” and “[a] perfunctory description or mere listing of

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<sup>377</sup> PHMSA, *Serious Incident Rate and Cause* (last visited June 10, 2022), [https://portal.phmsa.dot.gov/PDMPublicReport/?url=https://portal.phmsa.dot.gov/analytics/saw.dll?Portalpages&PortalPath=%2Fshared%2FPDM%20Public%20Website%2F\\_portal%2FGT%20Performance%20Measures&Page=Serious%20Incident%20Rate%20and%20Cause](https://portal.phmsa.dot.gov/PDMPublicReport/?url=https://portal.phmsa.dot.gov/analytics/saw.dll?Portalpages&PortalPath=%2Fshared%2FPDM%20Public%20Website%2F_portal%2FGT%20Performance%20Measures&Page=Serious%20Incident%20Rate%20and%20Cause)

<sup>378</sup> Associated Press, *Five Hurt in Tennessee Explosion*, N.Y. TIMES (March 16, 1992), <https://www.nytimes.com/1992/03/16/us/five-hurt-in-tennessee-explosion.html>.

<sup>379</sup> 40 C.F.R. §1508.1(g)(3).

<sup>380</sup> *Id.* §1501.6(c).

mitigation measures, without supporting analytical data, is insufficient to support a finding of no significant impact.”<sup>381</sup>

Without further description of the effects, the DEIS concludes that:

- “[c]umulative effects to [surface water and wetlands] may occur with the proximity of [coal combustion residuals] management activities as [reasonably foreseeable future activities] in the CUF Reservation,” but “[w]ith the use of *proper BMPs, CWA Section 404 and 401 permitting, and compliance with all federal, state, and local regulations and guidelines, cumulative [surface water and wetland] effects are expected to be minor[.]*”<sup>382</sup> and
- “[c]umulative effects to [surface water and wetlands] may occur [with the] proximity of past/present and [reasonably foreseeable future actions] [near] the pipeline,” but such “[c]umulative effects to [surface waters and wetlands] would be minimized and mitigated through proper siting of these facilities, *the use of BMPs, and adherence to mitigation requirements in the applicable CWA Section 404 and 401 permits[.]*”<sup>383</sup>

Not only is the DEIS’s evaluation of cumulative effects on surface water and wetlands from the CC plant and Pipeline inadequate for failing to describe the cumulative effects or identify the other actions that would cause those effects, it also impermissibly provides only a “perfunctory description or mere listing of mitigation measures, without supporting analytical data.”<sup>384</sup> It does not identify the BMPs that would be employed, nor can it know what terms and conditions might be applied through CWA Section 404 or 401 because those authorizations have not even been applied for yet, let alone drafted.

Although the DEIS does not identify it as a mitigation measure, TGP’s Draft Resource Report 2 identified FERC’s *Wetland and Waterbody Construction and Mitigation Procedures* as a source of measures—including BMPs—that it will use to mitigate the effects of its activities on surface water and wetlands.<sup>385</sup> By not providing supporting analytical data regarding FERC’s procedures—let alone citing it, the DEIS falls short of legal requirements. In its NEPA review, TVA must take a hard look at the environmental effects of using those procedures.

A 2015 journal article authored by a Fish and Wildlife Service biologist examined FERC’s *Wetland and Waterbody Construction and Mitigation Procedures* document and concluded that its national scope and general nature

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<sup>381</sup> Nat’l Parks & Conservation Ass’n v. Babbitt, 241 F.3d 722, 734 (9th Cir. 2001) (cleaned up).

<sup>382</sup> DEIS at 167, 174 (emphasis added).

<sup>383</sup> *Id.* (emphasis added).

<sup>384</sup> Nat’l Parks & Conservation Ass’n, 241 F.3d at 734.

<sup>385</sup> Draft Resource Report 2 at 2-10 to 2-12, 2-15 to 2-17, 2-22 to 2-26, **Attachment 77**.

**does not provide sufficient detailed and specific information at a regional level to adequately protect aquatic ecosystems with numerous species in complex geographic and ecologic settings.**

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While the FERC Procedures do address some predictable pipeline impacts, especially during construction, the guidance does not address the longer term stream response potential, which is highly dependent on characteristics of the stream system rather than the pipeline. Therefore, depending upon the crossing locations, stream and catchment characteristics, timing, extent of activities, and application of Best Management Practices (BMPs—construction conservation measures intended to reduce impacts to the environment), impacts to aquatic species will vary but may include simplification of habitat, loss of aquatic species passage, removal of spawning gravel, increased sediment and turbidity, loss of side channels, disconnection from the floodplain, or change in hyporheic flow patterns (Reid *et al.*, 2002b). These impacts may occur at the project site or may propagate upstream, downstream, or laterally into the floodplain.<sup>386</sup>

Given the generality of the *Wetland and Waterbody Construction and Mitigation Procedures*, TVA must take a hard look at the characteristics of each of the specific streams at issue to identify additional protective measures necessary beyond those prescribed in the general procedures.

For the foregoing reasons, the DEIS does not comply with the applicable regulations.<sup>387</sup> Those information defects must be remedied.

## **B. The DEIS's evaluation of effects on groundwater resources is deficient.**

### **1. The DEIS ignores the potential for interruption of groundwater flow from construction and operation of the pipeline.**

Pipeline construction can “cut off the hydraulic connection between the surface water and the groundwater,” “block[ing] the subsurface flows aside.”<sup>388</sup> Stated otherwise, “[c]hanges in hyporheic flow patterns” are among the effects of pipeline construction.<sup>389</sup> That is because trenching activities associated with pipeline

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<sup>386</sup> J. M. Castro et al., *Risk-Based Approach to Designing and Reviewing Pipeline Stream Crossings to Minimize Impacts to Aquatic Habitats and Species*, 31 RIVER RSCH. & APPLICATIONS 769 (2015) <https://elibrary.ferc.gov/eLibrary/filedownload?fileid=020d961d-66e2-5005-8110-c31fafc91712>, **Attachment 71**.

<sup>387</sup> 40 C.F.R. §§1508.1(g)(3); 1501.6(c); Nat'l Parks & Conservation Ass'n, 241 F.3d at 734.

<sup>388</sup> Yu et al., *Effects of Pipeline Construction on Wetland Ecosystems: Russia-China Oil Pipeline Project (Mohe-Daqing Section)*, 39 AMBIO 447, 447–48 (2010), **Attachment 72**.

<sup>389</sup> J. M. Castro et al. at 769, **Attachment 71**.

construction increase the permeability of soil and rock alongside the pipeline, causing backfilled trenches to intercept groundwater flows into and then along them.

The DEIS is silent about the potential effects of pipeline construction and operation on groundwater flow.<sup>390</sup> As discussed elsewhere in these comments, the DEIS points to TGP's forthcoming Environmental Report and says it is expected "to provide a detailed analysis of groundwater effects."<sup>391</sup> But TGP's Draft Resource Report 2 on water resources is also silent on the effects of pipeline construction and operation on groundwater flow.<sup>392</sup> As a result, effects of pipeline construction and operation on groundwater flow remain completely unexamined at this time.

That omission is particularly problematic given the widescale blasting TGP intends to use. TGP admits in Draft Resource Report 2 that "blasting likely will be required at approximately 27% of the waterbody crossings within the Project area."<sup>393</sup> That figure does not include blasting that may be required where shallow bedrock or other consolidated material is encountered in upland construction.

As FERC has recognized, pipeline construction "[b]lasting has the potential to impact groundwater quality through a short-term increase in turbidity at nearby wells and/or springs. Additionally, blasting may impact groundwater quantity by altering the discharge to springs in blasting areas. Vibrations caused by blasting also have the potential to locally affect bedrock fractures within the bedrock aquifer, which could temporarily result in diminished well yields and increased turbidity."<sup>394</sup>

Despite those recognized potential impacts from blasting on groundwater quality and quantity, the DEIS is silent about groundwater impacts from blasting. That deficiency must be remedied, and a corrected DEIS publicly noticed for comment.

## **2. The DEIS ignores potential groundwater effects of pipeline construction and operation on drinking water, particularly for environmental justice communities.**

The DEIS's discussion of environmental justice considerations of the groundwater effects from implementation of Alternative A entirely ignores the effects on groundwater quantity and quality on environmental justice communities along the pipeline route, focusing instead on the "distance" of such communities "from the TVA-owned reservation."<sup>395</sup> But, as discussed above, pipeline construction and operation can affect groundwater quality and quantity. And even TGP's Draft

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<sup>390</sup> DEIS at 148.

<sup>391</sup> *Id.*

<sup>392</sup> Draft Resource Report 2 at 2-2 to 2-7, **Attachment 77**.

<sup>393</sup> *Id.* at 2-6.

<sup>394</sup> Fed. Energy Regul. Comm'n, Mountain Valley Project and Equitrans Expansion Project: Final Environmental Impact Statement at 4-113 to 4-114 (June 2017), [https://www.ferc.gov/sites/default/files/2020-05/Final-Environmental-Impact-Statement\\_1.pdf](https://www.ferc.gov/sites/default/files/2020-05/Final-Environmental-Impact-Statement_1.pdf). [hereinafter "MVP FEIS"], **Attachment 73**.

<sup>395</sup> DEIS at 149.

Resource Report 2 acknowledges that the Mississippian Aquifer underlying the pipeline corridor “is used as a source of drinking water for 35 municipal water systems in Tennessee and supplies a majority of the drinking water for rural domestic and non-community use throughout the Highland Rim (USGS 1986).”<sup>396</sup>

Despite the widespread reliance on groundwater for domestic water supplies in the area affected by pipeline construction and operation, neither the DEIS nor TGP’s Draft Resource Report identifies groundwater users along the pipeline corridor. Indeed, TGP’s Draft Resource Report 2 states that the company still has not confirmed whether state or local wellhead protection areas exist along the pipeline corridor and has yet to identify water supply wells or springs within 150 feet of the pipeline Project Area.<sup>397</sup>

The omission of an evaluation of the effects of pipeline construction and operation on domestic water supplies violates NEPA’s requirement to take a hard look at the environmental impacts of federal actions. And, given the Biden Administration’s emphasis on ensuring the federal government gives due consideration to the impacts of federal projects on environmental justice communities, that omission is even more striking. Accordingly, TVA must take a hard look at potential drinking water impacts—particularly those that would burden environmental justice communities along the pipeline route—in a corrected DEIS.

### **3. The DEIS does not sufficiently evaluate the effects of construction in karst on groundwater.**

The DEIS does not evaluate the effects on groundwater of construction and operation of either the CC Plant or the Pipeline in karst terrain. The DEIS acknowledges the presence of karst terrain on the CUF Reservation.<sup>398</sup> The DEIS further recognizes that “[k]arst terrain could affect portions of the pipeline[.]”<sup>399</sup> TGP acknowledges that further assessment of karst in the Pipeline corridor and “potential impacts to groundwater resources” is necessary.<sup>400</sup>

The best the DEIS can muster in addressing groundwater impacts from Alternative A activities in karst terrain is suggest that “karst terrain[] would be avoided.”<sup>401</sup> But given the absence of examination of karst features at the CC Plant site, that declaration is premature. Moreover, TGP seems fairly committed to its proposed pipeline route, making complete avoidance unlikely.

As FERC has recognized, “[b]lasting in areas of karst topography can create fractures in the rock, potentially changing groundwater flow, creating the potential for groundwater contamination, and temporarily affecting yield and increasing

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<sup>396</sup> Draft Resource Report 2 at 2-2., [Attachment 77](#).

<sup>397</sup> Draft Resource Report 2 at 2-3 to 2-4, [Attachment 77](#).

<sup>398</sup> DEIS at 143.

<sup>399</sup> *Id.* at 122.

<sup>400</sup> Draft Resource Report 2 at 2-3 to 2-3, [Attachment 77](#).

<sup>401</sup> DEIS at 45, tbl. 2.2-1.

turbidity in nearby water wells and/or springs.”<sup>402</sup> FERC has also recognized that karst features in the path of a pipeline “present a hazard to the pipeline both pre- and post-construction due to cave or sinkhole collapse, and can also provide direct conduits from the ground surface to the groundwater, increasing the potential for groundwater contamination.”<sup>403</sup> Once contaminants reach a karst flow network, they can “travel long distances over relatively short period . . . where they may emerge at a spring that in some cases may serve as a water supply contaminated by a source that may be miles or tens of miles away.”<sup>404</sup> As a result, once karst terrain is identified in the pipeline corridor, dye-tracing tests must be conducted and the DEIS updated accordingly. As it stands, the DEIS’s failure to analyze *any* potential impacts to groundwater from construction and operation of Alternative A activities in karst terrain violates NEPA.

**C. The DEIS demonstrates that there are practicable alternatives to Alternative A’s potential to affect hundreds of acres of floodplains.**

The DEIS makes clear that Alternative A has the potential to significantly impact floodplains within the proposed project area and that practicable alternatives exist to avoid these impacts. Specifically, the DEIS acknowledges that “[t]he proposed CC Plant construction site includes 102.8 acres of 100-year floodplains” and “the pipeline corridor would cross 100-year floodplains in several places, with the potential to affect up to 102 acres within the 100-year floodplain.”<sup>405</sup> Despite Alternative A potentially affecting over 200 acres of floodplains, the DEIS asserts that no cumulative effects to floodplains will occur.<sup>406</sup>

TVA acknowledges in the DEIS that it reviews activities affecting floodplains pursuant to Executive Order 11988, Floodplain Management. This Executive Order “requires that agencies avoid the 100-year floodplain unless there is no practicable alternative.”<sup>407</sup> Specifically, Executive Order 11988, as amended by Executive Order 13690, requires that agencies “avoid, to the extent possible, the long- and short-term adverse impacts associated with the occupancy and modification of floodplains and to avoid direct or indirect support of floodplain development wherever there is a

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<sup>402</sup> Fed. Energy Regul. Comm’n, Mountain Valley Project and Equitrans Expansion Project: Draft Environmental Impact Statement at 4-39 (September 2016) <https://www.ferc.gov/sites/default/files/2020-05/DEISMVP.pdf>, **Attachment 74**.

<sup>403</sup> Federal Energy Regul. Comm’n, Atlantic Coast Pipeline and Supply Header Project: Draft Environmental Impact Statement Vol. I at 4-7 (December 2016), **Attachment 75**; *see also id.* at 4-83 (“[D]evelopment of karst features along the ground surface increases the susceptibility of underlying aquifers to contamination sources (e.g., soil, stormwater, chemical spills, or other contaminants) originating at the ground surface.”).

<sup>404</sup> Chris Groves, Ph.D., *Karst Landscapes and Aquifers of the Central Appalachian Mountains and Implications for the Proposed Mountain Valley Pipeline* at 11 (December 2016), **Attachment 76**.

<sup>405</sup> DEIS at 139.

<sup>406</sup> DEIS as 139.

<sup>407</sup> DEIS at 129.

practicable alternative.”<sup>408</sup> TVA’s own NEPA regulations require the agency to undertake a similar review. Specifically, where the agency action is determined to affect floodplains and requires an EIS—as is the case here—TVA must evaluate:

- (1) The effect of the proposed action on natural and beneficial floodplain and wetland values; and
- (2) Alternatives to the proposed action that would eliminate or minimize such effects.<sup>409</sup>

Further, TVA “must determine if there is no practicable alternative to siting in a floodplain.”<sup>410</sup>

To avoid impacts to the 100-year floodplain under Alternative A, TVA makes several overtures. First, the Agency states that structures and facilities will be constructed and sited “where practicable” outside of the floodplain boundaries.<sup>411</sup> For those activities which will inevitably occur within the floodplain, the DEIS states that standard BMPs will be utilized, certain materials will be relocated outside of the floodplain should flooding occur, and that fill material from the pipeline construction would be disposed of outside the floodplain boundaries.<sup>412</sup> The DEIS also states that TGP will submit an Environmental Report to FERC analyzing the pipeline’s potential floodplain effects and that based on this analysis, TVA’s NEPA review will be supplemented if necessary.<sup>413</sup>

The DEIS’ review of practicable alternatives to Alternative A’s impact on floodplains is therefore siloed to considering those alternatives which would still execute construction and operation of a methane gas plant and pipeline. However, Conservation Groups note that other alternatives analyzed in the DEIS—specifically Alternative C—are practicable and have the potential to eliminate or minimize effects to floodplains. When analyzing Alternative C, the DEIS states that specific sites “have not yet been determined for evaluation” of siting solar and storage facilities but that these structures “would be sited in a manner to avoid floodplains to the extent feasible.”<sup>414</sup> Therefore, it is entirely possible that implementation of Alternative C would have little to no impact on floodplains. And even utilizing TVA’s own calculations in the DEIS regarding typical effects solar facilities have on floodplains, the agency estimates that Alternative C may result in 60 acres of floodplain effects.<sup>415</sup>

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<sup>408</sup> 80 Fed. Reg. 6425 (Feb. 4, 2015). In the DEIS, TVA notes that Exec. Order No. 13690 was reinstated in May 2021 and that implementation of this Order is “still in development at the national level” and “depending on the results of these inter-agency efforts, TVA may update” its floodplain implementing plan in subsequent NEPA analysis. DEIS at 130.

<sup>409</sup> 18 C.F.R. § 1318.602(b).

<sup>410</sup> 18 C.F.R. § 1318.602(c).

<sup>411</sup> DEIS at 139.

<sup>412</sup> *Id.*

<sup>413</sup> *Id.*

<sup>414</sup> DEIS at 141.

<sup>415</sup> *Id.*

This is far less than the 200 acres of floodplain effects potentially implicated in Alternative A, and therefore represents an alternative TVA can undertake to minimize its impacts on these valuable natural resources. In accordance with Executive Orders 11988 and 13690, TVA should avoid to the extent practicable its impact on valuable floodplains and select and implement its Alternative C.

TVA's analysis of Alternative A's potential to impact the natural and beneficial floodplain values is also lacking. Pursuant to NEPA and TVA's implementing regulations, the agency is required to take a "hard look" at how Alternative A's proposal to potentially affect over two hundred acres of floodplains would impact their natural ecosystem services and values.<sup>416</sup> Yet TVA merely states that impacts would be temporary and mitigated so that "no significant long term effects" to the floodplains' natural and beneficial values would occur.<sup>417</sup> This summary analysis fails to fulfill the more searching analysis required by TVA's NEPA regulations, which state that the agency must analyze all effects which a proposed action may have on floodplain values, not only "long term" and "significant" ones. It stretches the imagination that activities potentially implicating two hundred plus acres of floodplains will not affect their natural ecosystem values at all; therefore, the DEIS must undertake this analysis.

**D. The DEIS's evaluation of the effects on wetlands from implementation of Alternative A is insufficient.**

The DEIS's evaluation of impacts from the construction and operation of Alternative A activities is legally deficient.

With regard to the CC Plant, the DEIS acknowledges that wetlands occur on 10% of the CUF Reservation, performing a variety of important functions including flood storage, stormwater impediment, toxic absorption, and sediment retention."<sup>418</sup> And the DEIS acknowledges that, because the relevant reach of Wells Creek is impaired for *E. coli* because of sanitary sewer overflows, "the majority of wetlands within the CUF study area likely provide water quality improvement services to this impaired reach of Wells Creek."<sup>419</sup>

At the site of the proposed CC Plant, there are 29.4 wetland complexes in six complexes.<sup>420</sup> Nearly all of those wetlands—29.08 acres—are ranked as Moderate Quality, based on the Tennessee Rapid Assessment Method evaluation of their functional capacity.<sup>421</sup> "Moderate quality wetlands are considered healthy water resources of value. Disturbance to hydrology, substrate and/or vegetation may be

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<sup>416</sup> 18 C.F.R. § 1318.602(b)(1).

<sup>417</sup> DEIS at 139.

<sup>418</sup> DEIS at 171.

<sup>419</sup> *Id.* at 151; *see also id.* at 171 ("Because the associated reach of Wells Creek has been identified as impaired, the importance of wetland functions and values in the Wells Creek watershed is amplified.").

<sup>420</sup> *Id.* at 172.

<sup>421</sup> *Id.*

present to a degree at which valuable functional capacity is sustained.”<sup>422</sup> Over 3 acres of the wetlands at the CC Plant site are Forested.<sup>423</sup>

Despite the acknowledged existence of nearly 30 acres of healthy, well-functioning wetlands providing important ecosystem services, the DEIS fails to describe the effects of CC Plant construction and operation on wetlands. The DEIS states, without further elaboration: “Approximately 29.4 acres of wetlands are within the proposed plant site and may be directly or indirectly effected [sic] by construction of the plant. During the design of the plant, TVA would avoid and minimize effects to wetlands as practicable.”<sup>424</sup> TVA falls woefully short of the “hard look” required by NEPA.

TVA’s abbreviated analysis begs multiple questions, including:

- How many acres of wetlands would be filled to construct the CC Plant?
- What wetland functions would be lost as a result of CC Plant construction?
- What wetlands types would be lost as a result of CC Plant construction?
- Would wetlands be converted from one type to another as a result of CC Plant construction?

Moreover, it is unclear whether TVA has even determined where on the CC Plant site the various structures required for the plant will be located. But construction location alternatives should have been evaluated and presented in the DEIS generally, particularly because of the “direct and indirect” wetland effects predicted by TVA. TVA acknowledges that a CWA Section 404 permit will be necessary for wetland impacts.<sup>425</sup> As discussed further elsewhere in these comments, the Section 404(b)(1) Guidelines prohibit the Corps from issuing a permit for the discharge of dredged and/or fill material unless it makes a factual determination that the proposed discharge is the least environmentally damaging practicable alternative.<sup>426</sup> And, for projects like the CC Plant that are not water dependent, alternatives to discharges into special aquatic sites—which include, among other things, wetlands—“are presumed to be available unless clearly demonstrated otherwise.”<sup>427</sup> Where that presumption applies, “the Corps may not issue a § 404 permit unless the applicant, ‘with independent verification by the [Corps], ... provide[s] detailed, clear and convincing information *proving*’ that an alternative with less adverse impact is ‘impracticable.’”<sup>428</sup> “[T]he burden is on the Applicant ...

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<sup>422</sup> *Id.* at 171.

<sup>423</sup> *Id.* at 172.

<sup>424</sup> *Id.* at 174.

<sup>425</sup> DEIS at 174.

<sup>426</sup> 40 C.F.R. § 230.10(a).

<sup>427</sup> *Id.* § 230.10(a)(2).

<sup>428</sup> *Greater Yellowstone Coal. v. Flowers*, 359 F.3d 1257, 1269 (10th Cir. 2004) (quoting *Utahns for Better Transp. v. U.S. Dep’t of Transp.*, 305 F.3d 1152, 1187 (10th Cir. 2002)) (modifications and emphasis in *Greater Yellowstone Coal.*).

with independent verification by the [Corps] to provide detailed, clear and convincing information *proving* impracticability.”<sup>429</sup> Here, that burden falls on TVA.

The Corps will have to take a “hard look at [TVA’s] proposals to determine whether the presumption of practicable alternatives has been overcome.”<sup>430</sup> The Corps’ regulations explain that, although “the analysis of alternative for NEPA environmental documents, including supplemental Corps NEPA documents, will in most cases provide the information for the evaluation of alternatives under [the Section 404(b)(1)] Guidelines,” “[o]n occasion, these NEPA documents ... may not have considered the alternatives in sufficient detail to respond to the requirements of these Guidelines,” such that it is “necessary to supplement these NEPA documents with this additional information.”<sup>431</sup> Because TVA’s DEIS does not present an alternatives analysis justifying direct impacts to wetlands, TVA should be under no illusion that the Corps will simply be able to adopt TVA’s NEPA documents. If TVA insists on foregoing an evaluation of alternatives to CC Plant construction that avoid impacts to wetlands, the result will be delays in its project to allow the Corps to finish the NEPA job that TVA started. Although TVA states that avoidance and minimization of wetlands will be evaluated during the design of the plant, the time to engage in avoidance and minimization is *before* a DEIS is put out for comment. This is yet another example of the impermissible prematurity of TVA’s DEIS.

With regard to the effects of Pipeline construction and operation on wetlands, the DEIS cannot fully evaluate those effects because field surveys are incomplete. The DEIS characterizes the affected environment based only on a desktop review, and then defers to the yet-to-be-completed TGP Environmental Report.<sup>432</sup> TGP’s April 2022 Draft Resource Report 2 notes that field wetland surveys have been completed only on “construction workspaces where landowner access has been granted as of February 11, 2022.”<sup>433</sup> TGP does not quantify how many field surveys remain incomplete. TGP has thus far only identified six wetlands impacted by pipeline construction and operation,<sup>434</sup> but TVA’s desktop analysis identified twice that many.<sup>435</sup> Until field surveys are completed, it is premature for TVA to attempt to evaluate wetland impacts from pipeline construction and operation.

The DEIS observes that “[i]f vegetation clearing and maintenance is necessary for the pipeline easement, conversion of wetlands from forested to herbaceous *may* occur,” but provides no evaluation of the significance of the effects of such conversion beyond observing that conversion *may* occur.<sup>436</sup> But TGP’s Draft Environmental

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<sup>429</sup> *Utahns for Better Transp.*, 305 F.3d at 1186 (emphasis original).

<sup>430</sup> *Hillsdale Envtl. Loss Prevention, Inc. v. U.S. Army Corps of Eng’rs*, 702 F.3d 1156, 1168 (10th Cir. 2012).

<sup>431</sup> 40 C.F.R. § 230.10(a)(4).

<sup>432</sup> DEIS at 172–73.

<sup>433</sup> Draft Resource Report 2 at 2-19, **Attachment 77**.

<sup>434</sup> *Id.* at 2-21, tbl. 2.4-1.

<sup>435</sup> DEIS at 172.

<sup>436</sup> *Id.* at 174 (emphasis added).

Report establishes that such conversion *will* occur.<sup>437</sup> Thus, TVA's DEIS must evaluate the impacts of such conversion.

Finally, the DEIS attempts to downplay the adverse environmental impacts of wetland crossings by stating that "horizontal directional drilling may be used to avoid wetland effects."<sup>438</sup> That statement is flatly contradicted by TGP's Draft Resource Report 2, which states that TGP will use either "standard wetland construction" or "conventional wetland construction" methods to build its pipeline through wetlands—both of which involve open-cut trenches.<sup>439</sup> Because TVA's DEIS relies on erroneous information to draw conclusions about the impacts of pipeline construction on wetlands, it is deficient under NEPA.

**E. The DEIS lacks evaluation of significant effects on surface water.**

**1. The DEIS does not acknowledge—let alone evaluate—the widespread use of in-stream blasting for construction of the pipeline.**

As discussed above, TGP has stated that it intends to blast through 27% of its 131 waterbody crossings for the pipeline—or approximately 35 crossings.<sup>440</sup> As FERC has recognized elsewhere,

[i]n-stream blasting [for pipeline surface water crossings] has the potential to injure or kill aquatic organisms, displace organisms during blast-hole drilling operations, and temporarily increase stream turbidity. Additionally, shock waves created by blasting may pose a threat to aquatic organisms. Chemical by-products from the blasting materials could also be released and could potentially contaminate the water.<sup>441</sup>

The pipeline stream-crossing literature recognizes those potential effects as well, because "blasting can adversely alter stream habitat" and

[s]hock waves from blasting in or near a stream can kill or injure fish. Pressures of 4,050 psi killed northern pike where dynamite explosives were used. Charges of several pounds or more killed fish 200 to 400 feet

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<sup>437</sup> Draft Resource Report 2 at 2-24, **Attachment 77**.

<sup>438</sup> *Id.* at 174.

<sup>439</sup> *Id.* 2-22.

<sup>440</sup> *Id.* at 2-6, 2-8, & app. 2.B.

<sup>441</sup> MVP FEIS at 4-140, **Attachment 73**.

away; fifty pound charges killed fish up to 1,000 feet away (Bell 1973, Wright 1982).<sup>442</sup>

Despite the well-recognized—and essentially self-evident—adverse effects of in-stream blasting, TVA's DEIS is egregiously *silent* on them. Nowhere in the DEIS does TVA address in-stream blasting.<sup>443</sup> Courts in the Sixth Circuit “will insist that the agency has, in fact, adequately studied the issue and taken a hard look at the environmental consequences of its [proposed action].”<sup>444</sup> Here, TVA has taken *no* look at the environmental consequences of the harmful practice of in-stream blasting.

The DEIS's lack of acknowledgement of in-stream blasting and its consequences provides a concrete example of why, as discussed throughout these comments, the DEIS is entirely premature, incomplete and inadequate. By releasing the DEIS before TGP disclosed its intent to conduct in-stream blasting at approximately 35 locations, TVA violated NEPA's “rule of reason” because the DEIS's “deficiencies are significant enough to undermine informed public comment and informed decisionmaking.”<sup>445</sup>

## **2. The DEIS does not evaluate the environmental consequences of proposed pipeline stream-crossing methods.**

The DEIS is devoid of meaningful analysis of the environmental consequences of pipeline stream crossing, only acknowledging the potential for direct and indirect effects and then stating that,

[d]uring the construction of the pipeline, surface water effects *may* occur from trenching the pipeline. Horizontal directional drilling (HDD) may be used under some surface waters to minimize effects. Erosion and sediment control BMPs would be deployed and USACE and TDEC permits would be obtained, where required. TGP will provide a detailed analysis of surface water effects in the Environmental Report to be submitted with their certificate application that will be filed with the FERC for the proposed pipeline.<sup>446</sup>

Yet again, TVA has failed to take the hard look required by NEPA.<sup>447</sup> In this instance, TVA overlooked potentially significant impacts.

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<sup>442</sup> Russ F. Penkal & Glenn R. Phillips, *Construction and Operation of Oil and Gas Pipelines*, 9 FISHERIES 6, 6–7 (1984), **Attachment 78**.

<sup>443</sup> DEIS at 150–70.

<sup>444</sup> *Save Our Cumberland Mountains v. Kempthorne*, 453 F.3d 339, 339 (6th Cir. 2006) (cleaned up).

<sup>445</sup> *Sierra Club*, 867 F.3d at 1368.

<sup>446</sup> DEIS at 167 (emphasis added).

<sup>447</sup> *Save Our Cumberland Mountains*, 453 F.3d at 339.

In Draft Resource Report 2, TGP identifies 131 stream crossings.<sup>448</sup> TGP will employ horizontal directional drilling (“HDD”) at only three crossings.<sup>449</sup> TGP intends to use wet, open-cut crossings for the balance; it “is not proposing any dry crossings for the Project.”<sup>450</sup>

As discussed below, each of those stream crossing methods has environmental impacts. And open-cut crossings, whether wet or dry, cause significant adverse environmental impacts. By ignoring such impacts in the DEIS, TVA has violated NEPA.

**a. Horizontal directional drilling under streams raises the potential for environmental impacts from frac-outs not addressed in the DEIS.**

TGP intends to use HDD at three crossings (Jones Creek, Yellow Creek, and Wells Creek).<sup>451</sup> Although HDD avoids direct impacts to waterbodies and streambeds by going *under* an aquatic resource, instead of *through* it, the technique’s use of large quantities of drilling muds presents the risk of inadvertent returns. Indeed, TGP acknowledges the risk of “inadvertent release of drilling fluids to the surface along the pipeline alignment during drilling operations” through hydraulically induced fractures.<sup>452</sup> Such releases can have severe impacts on water quality and aquatic life, by smothering streambeds and wetlands with drilling mud.<sup>453</sup>

TVA’s DEIS does not even acknowledge the risk of inadvertent return, let alone examine the environmental impacts of such a release. But it must do so under NEPA.

Because two of the three streams at which TGP intends to use HDD—Jones Creek and Yellow Creek—are streams on the National River Inventory created by the Wild and Scenic Rivers Act,<sup>454</sup> TVA must evaluate the consequences of an inadvertent return in the context of the environmental and other values of those sensitive resources. Should such an event occur in Jones Creek or Yellow Creek, it could jeopardize any eventual designation of the affected stream as a Wild and Scenic River because of its effects on water quality and stream aesthetics.<sup>455</sup>

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<sup>448</sup> Draft Resource Report 2 at 2-6 & app. 2.B, **Attachment 77**.

<sup>449</sup> *Id.* at 2-15.

<sup>450</sup> *Id.* at 2-12 to 2-13.

<sup>451</sup> *Id.* at 2-15.

<sup>452</sup> *Id.* at 2-16.

<sup>453</sup> *See, e.g.*, Rover Pipeline, LLC and Energy Transfer Partners, L.P., 177 FERC ¶ 61,182 (Dec. 16, 2021) (FERC enforcement action proposing \$40,000,000 penalty against pipeline developer for Natural Gas Act violations related to spill of 2 million gallons of drilling fluid during inadvertent return in Stark County, Ohio).

<sup>454</sup> Draft Resource Report 2 at 2-15, **Attachment 77**; DEIS at 287.

<sup>455</sup> NPS, *Consultation Instructions* (last updated Nov. 16, 2021), <https://www.nps.gov/subjects/rivers/consultation-instructions.htm>.

**b. Wet open-cut crossings are environmentally devastating.**

It is hard to envision a more damaging stream-crossing construction method than a wet open-cut crossing. Yet, TGP intends to use that method for 128 of its 131 stream crossings. The wet open-cut technique “does not use any method to divert the stream around the work area. The utility line is installed and backfilled while the river/stream continues to run through the site.”<sup>456</sup> As one state regulatory agency has concluded, “this type of crossing produces some *very negative impacts*. These include *severe pollution* from greatly increased total suspended sediment (TSS) concentrations, changes in channel morphology, and localized destruction of aquatic ecosystems.”<sup>457</sup> And the Corps has argued *against* the use of wet open cut crossings in court filings, admitting “that downstream sedimentation can be *100 times greater* during wet open-cut construction than during” construction using other methods.<sup>458</sup>

Moreover, an industry consulting firm’s white paper has also recognized the significant detrimental effects of wet open-cut crossings, concluding that

[w]hile faster and cheaper, this methodology increases the potential for detrimental impacts to the aquatic environment. This is particularly true in larger rivers where flow rates are higher (even in low flow conditions) and, due to the length of the crossing, where the process takes longer. During construction the stream is flowing through the work site, which exposes the unconsolidated soil material below the stream bed and *creates a significant increase in turbidity*. In addition, because the instream trench remains exposed to the erosive force of flowing water during a “wet” open-cut crossing, downstream turbidity increases remain more or less constant for the duration of the crossing construction.<sup>459</sup>

The same consultants also concluded that wet crossings (1) increase the potential for the introduction of contaminants (such as fuel or hydraulic fluid) into streams from operating equipment in or over flowing water and (2) render streambed restoration “much more difficult.”<sup>460</sup>

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<sup>456</sup> W. Va. Dep’t of Env’tl. Prot., *Erosion and Sediment Control Best Management Practice Manual* 3.21-7 (2006, rev. Aug. 29, 2016) [https://dep.wv.gov/WWE/Programs/stormwater/csw/Documents/E%20and%20S\\_BMP\\_2006.pdf](https://dep.wv.gov/WWE/Programs/stormwater/csw/Documents/E%20and%20S_BMP_2006.pdf) [hereinafter “WVDEP BMP Manual”], **Attachment 79**.

<sup>457</sup> *Id.* (emphasis added).

<sup>458</sup> Brief for the Fed. Respondents, *Sierra Club v. U.S. Army Corps of Eng’rs*, No. 18-1173(L), ECF #90 at 18 (4th Cir. Aug. 16, 2018), **Attachment 80**.

<sup>459</sup> Michael S. Rolband & Frank R. Graziano, *Mountain Valley Pipeline Crossings of the Gauley, Greenbrier, Elk, and Meadow Rivers: Assessment of “Wet” vs “Dry” Open-cut Methods of Pipeline Installation 2* (2018), **Attachment 82**. One of the authors of that report is now the Director of the Virginia Department of Environmental Quality.

<sup>460</sup> *Id.*

Usually, wet crossings are reserved for use during winter construction and in climates where streams freeze to their beds because of the greater sediment loads generated by wet crossings compared to dry crossings.<sup>461</sup> The literature notes that “increases in the embeddedness of the streambed, changes in streambed, changes in streambed composition and channel morphology have been consistently documented downstream of open-cut pipeline crossings.”<sup>462</sup> The duration of such impacts is measured in years.<sup>463</sup>

Because of the severe consequence of excavating streambeds in flowing water, the Tennessee Department of Environment and Conservation's *Erosion & Sediment Control Handbook* provides that “[n]o excavation equipment should ever be operated in flowing waters” when constructing a stream diversion.<sup>464</sup> And those consequences also led the Tennessee Department of Environment and Conservation (“TDEC”) to include a general condition in its General Aquatic Resource Alteration Permit for Utility Line Crossings allows wet crossing only in the rare circumstances where “working in the dry will likely cause additional degradation.”<sup>465</sup> Even then, agency review and approval are required.<sup>466</sup>

Despite the severe impacts to aquatic life and habitat from wet crossings, TGP's intends to employ the technique at all of its crossings but three. Nonetheless, the DEIS is silent about wet crossings and their impacts. TVA must remedy that deficiency, produce a supplemental DEIS, and release it for public notice and comment before proceeding.

The supplemental DEIS must quantify the turbidity and sedimentation that will result from each of TGP's 128 proposed wet, open-cut crossings. During FERC's environmental review of the still-unfinished Mountain Valley Pipeline, FERC required just such an analysis from the applicant:

Mountain Valley performed a quantitative modeling assessment for each of the three previously proposed wet open-cut crossings to quantify the amount of turbidity and sediment that would be expected

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<sup>461</sup> Lévesque and Dubé, *Review of the Effects of In-stream Pipeline Crossing Construction on Aquatic Ecosystems and Examination of Canadian Methodologies for Impact Assessment*, 132 ENVTL. MONITORING & ASSESSMENT 395, 396 (2007) <https://elibrary.ferc.gov/eLibrary/filedownload?fileid=020d9623-66e2-5005-8110-c31fafc91712>, **Attachment 83**.

<sup>462</sup> Scott M. Reid & Paul G. Anderson, *Effects of Sediment Released During Open-Cut Pipeline Water Crossings*, 24 CANADIAN WATER RES. J. 135, 243 (1999), **Attachment 84**.

<sup>463</sup> *Id.*

<sup>464</sup> TENN. DEPT. OF ENVT. & CONSERVATION, TENNESSEE EROSION & SEDIMENT CONTROL HANDBOOK: A STORMWATER PLANNING & DESIGN MANUAL FOR CONSTRUCTION ACTIVITIES 289 (4th ed. Aug. 2012) **Attachment 85**.

<sup>465</sup> Tenn, Dept. of Envtl. and Conservation, General Aquatic Resource Alteration Permit for Utility Line Crossings General Condition 15 (Jan. 6, 2021), **Attachment 86**. TGP's pipeline is not eligible for coverage under that general permit because it will require blasting for stream crossings and exceeds the five-crossing limit for the general permit. *Id.*, Special Conditions 2.b & 6. Accordingly, TGP will have to obtain a general Aquatic Resource Alteration Permit from TDEC. *Id.* at 1.

<sup>466</sup> *Id.*, General Condition 15.

downstream of the crossings. Results of the assessment estimate that monthly sediment loads would increase by 49 to 81 percent, 15 to 26 percent, and 19 to 52 percent for the Elk River, Gauley River, and Greenbrier River, respectively.<sup>467</sup>

Based on those significant increases in sediment loads, the applicant abandoned its plans for wet open-cut crossings. Similar modeling is warranted here for TGP's proposed wet open-cut crossings.

**c. Dry open-cut crossings cause long-lasting, significant impacts on water quality and aquatic life.**

Although TGP states in Draft Resource Report 2 that it “is not proposing any dry crossings for the project,” it also acknowledges that any number of regulatory agencies might require it to use that technique.<sup>468</sup> Consequently, TVA should have taken a hard look at the environmental impacts to water quality and aquatic life from proposed *dry* open-cut crossings as well. The duration of adverse environmental effects from dry open-cut crossings are measured in years—not days.<sup>469</sup>

The industry refrain that dry open-cut crossings do not have significant impacts is not accurate. A Fish and Wildlife Service biologist once grew so frustrated by that refrain that she felt it necessary to develop her own literature review to push back.<sup>470</sup> The following is her summary of the literature:

Pipeline stream crossings can affect fish habitat; food availability; and fish behavior, health, reproduction and survival. The most immediate effect of instream construction is the creation of short term pulses of highly turbid water and total suspended sediments (TSS) downstream of construction (Levesque & Dube 2007, pp. 399-400). Although these pulses are usually of relatively short duration and there is typically a rapid return to background conditions after activities cease, **instream construction has been shown to have considerable effects on stream substrates and benthic invert[ebtrate] communities that persist after construction has been completed** (Levesque & Dube 2007, p. 396-397). Commonly documented effects include substrate compaction and silt deposition within the direct impact area and

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<sup>467</sup> MVP FEIS at 4-139, **Attachment 73**.

<sup>468</sup> Draft Resource Report 2 at 2-13, **Attachment 77**.

<sup>469</sup> See, e.g., U.S. Fish & Wildlife Serv., Mountain Valley Pipeline, LLC; Revised Biological Opinion 96 (Sept. 4, 2020) <https://elibrary.ferc.gov/eLibrary/filedownload?fileid=0209d766-66e2-5005-8110-c31fafc91712>, **Attachment 87** (assuming sedimentation effects on benthic invertebrates would persist for up to four years).

<sup>470</sup> Email from Barbara Douglas, Sr. Endangered Species Biologist, W. Va. Field Office, U.S. Fish & Wildlife Serv., to Cindy Shulz, U.S. Fish & Wildlife Serv. (Dec. 11, 2019, 11:44 AM), <https://elibrary.ferc.gov/eLibrary/filedownload?fileid=020d9621-66e2-5005-8110-c31fafc91712>, **Attachment 88**.

downstream that fills interstitial spaces in gravel substrates and reduces water flow through the substrate, this increases substrate embeddedness and reduces habitat quality (Levesque & Dube 2007, pp. 396-397; Penkal & Phillips 2011, pp. 6-7; Reid & Anderson 1999, p. 243). Construction also directly alters stream channels, beds, and banks resulting in changes in cover, channel morphology, and sediment transport dynamics. Streambank alterations can lead to increased water velocities, stream degradation, and migrations in stream channel. Removal of vegetation from the banks can change temperature regimes, and increase sediment and nutrient loads (Penkal & Phillips 2011, pp. 6-7).

These instream changes not only directly affect the suitability of fish habitat, they also affect the availability and quality of fish forage altering the composition and reducing the density of benthic invertebrate communities within and downstream of the construction area (Levesque & Dube 2007, pp. 396-399; Penkal & Phillips 2011, pp. 6-7; Reid & Anderson 1999, pp. 235, 244). **Various studies have documented adverse effects to the benthic community that have been apparent for between six months and four years post-construction** (Levesque & Dube 2007, pp. 399-400; Reid & Anderson 1999, pp. 235, 244). Stream crossings have also been shown to affect fish physiology, survival, growth, and reproductive success (Levesque & Dube 2007, p. 399). Studies have found decreased abundance of fish downstream of crossings, as well as signs of physiological stress such as increased oxygen consumption and loss of equilibrium in remaining fish downstream of crossings (Levesque & Dube 2007, pp. 399-401; Reid & Anderson 1999, pp. 244-245). Increased sediment deposition and substrate compaction from pipeline crossings can degrade spawning habitat, result in the production of fewer and smaller fish eggs, impair egg and larvae development, limit food availability for young-of-year fish, and increase stress and reduce disease resistance of fish, (Levesque & Dube 2007, pp. 401-402; Reid & Anderson 1999, pp. 244- 245).

The duration and severity of these effects depends on factors such as the duration of disturbance, the length of stream segment directly impacted by construction, and whether there were repeated disturbances (Yount & Niemi 1999, p. 557). Most studies documented recovery of the affected stream reach within one to three years after construction (Reid & Anderson 1999, p. 247; Yount & Niemi 1999, pp. 557-558, 562). **However caution should be used when interpreting results of short-term studies. Yount & Niemi (1999, p. 558) cite an example of one study that made a preliminary determination of stream recovery within one year, but when the site was re-examined six years later, fish biomass, fish populations, macroinvertebrate**

**densities, and species composition were still changing. It was suspected that shifts in sediment and nutrient inputs to the site as a result of construction in and around the stream contributed to the long-term lack of recovery. In another study, alterations in channel morphology, such as increased channel width and reduced water depth, were evident two to four years post-construction at sites that lacked an intact forest canopy (Reid & Anderson 1999, p. 243). There is also the potential for cumulative effects. While a single crossing may have only short-term or minor effects, multiple crossings or multiple sources of disturbance and sedimentation in a watershed can have cumulative effects on fish survival and reproduction that exceed the recovery capacity of the river, resulting in permanent detrimental effects (Levesque & Dube 2007, pp. 406-407). Whether or how quickly a stream population recovers depends on factors such as the life history characteristics of the species, and the availability of unaffected populations upstream and downstream as a source of organisms for recolonization (Yount & Niemi 1999, p. 547).**<sup>471</sup>

And yet another FWS scientist (J.M. Castro) similarly concluded that there are significant and long-term effects from dry open-cut pipeline crossings in 2015, stating, “Based on past experience at pipeline crossings, the potential for both short and long-term negative impacts on aquatic habitat and species is substantial.”<sup>472</sup> Such impacts

include both short-term, construction related impacts, such as increased turbidity, direct modification of aquatic habitat, and the potential for hydrocarbons to enter the stream through equipment failures and spills (Reid and Anderson, 1999; Reid *et al.*, 2002a, 2002b), and long-term impacts that are more directly associated with the stream’s response potential, such as channel incision and lateral migration (Thorne *et al.*, 2014).<sup>473</sup>

These FWS scientists’ conclusions are well-supported by the scientific literature. A seminal article on the effects of dry-ditch, open-cut crossings reaches similar conclusions. Lévesque and Dubé, in their 2007 *Review of the Effects of In-Stream Pipeline Crossing Construction on Aquatic Ecosystems and Examination of Canadian Methodologies for Impact Assessment*, found the following:

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<sup>471</sup> *Id.* (emphasis added).

<sup>472</sup> J. M. Castro et al. at 767, [Attachment 71](#).

<sup>473</sup> *Id.*

- “Pipeline crossing construction is shown to not only compromise the integrity of the physical and chemical nature of fish habitat, but also to affect biological habitat (e.g., benthic invertebrates and invertebrate drift), and fish behavior and physiology. Indicators of effect include: water quality (total suspended solids TSS), physical habitat (substrate particle size, channel morphology), benthic invertebrate community structure and drift (abundance, species composition, diversity, standing crop), and fish behavior and physiology (hierarchy, feeding, respiration rate, loss of equilibrium, blood hematocrit and leukocrit levels, heart rate and stroke volume).”<sup>474</sup>
- “Construction activities alter river and stream channel beds and banks, directly and indirectly affecting fish and fish habitat.”<sup>475</sup>
- “[Dry-ditch, open-cut methods] may impact watercourse ecosystems both during, and for potentially some time after, construction. All in-stream construction activities, particularly trench excavation and pipeline installation and backfill, result in disturbance of channel bed and banks, and have the potential to alter suspended sediment concentration and sedimentation.”<sup>476</sup>
- “[A]ny in-stream construction activity has the potential to impact aquatic ecosystems through alteration of stream and river bed and banks and, therefore, may result in direct effects such as physical alteration of channel morphology and habitat, and indirect effects such as alteration of water quality and sediment dynamics, on aquatic ecosystems (e.g., Alberta Environment 2001; Alberta Transportation and Utilities 2000).”<sup>477</sup>
- Even with dry-ditch, open-cut methods, “[m]ean TSS concentrations increased by between 4 and 100 mg l<sup>-1</sup> above background. Installation of dams and flumes for water diversion generated TSS concentrations on average less than 76 mg l<sup>-1</sup> greater than background over periods of 2 to 16.5 h (with one crossing experiencing an increase of 520 mg l<sup>-1</sup> for 3 h). Removal of dams and flumes resulted in TSS increases of between 1 and 703 mg l<sup>-1</sup> downstream of construction over periods of 20 min to 6.5 hrs. Other stages of construction were associated with average TSS increases of less than 8 mg l<sup>-1</sup>, with the exception of accidental leaks from construction infrastructure (e.g., 820 mg l<sup>-1</sup> over 5.5 h). Plumes of highly turbid water were observed downstream of construction. . . .”<sup>478</sup>

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<sup>474</sup> Lévesque and Dubé, Attachment 83.

<sup>475</sup> *Id.*

<sup>476</sup> *Id.* at 396.

<sup>477</sup> *Id.*

<sup>478</sup> *Id.* at 398.

- “Armitage and Gunn (1996) noted that pipeline crossing construction in a stream in England resulted in a shift in invertebrate species due to an increased proportion of silt in stream substrates. This effect persisted for 4 years until a high magnitude flow event scoured the stream channel bed, promoting re-establishment of pre-construction invertebrate species. Tsui and McCart (1981) found that crossing construction of Archibald Creek, British Columbia, caused short-term increases in silt and sand accumulations and decreases in invertebrate standing crop and diversity, which lasted 1 to 2 years.”<sup>479</sup> and
- “The potential for cumulative effects associated with pipeline crossing construction should be taken into consideration in assessing the impacts of these activities on rivers and streams. Construction of a single crossing on a stream or river, or within a watershed, may not have significant effects on fish and fish habitat in that system. **Construction of multiple crossings on a stream or river, or within a watershed, however, has the potential for cumulative effects on that system. In such cases, the capacity of the system to recover from impact may be exceeded, and the detrimental effects of crossing construction permanent. The same may be said for the frequency of crossing construction within a given system; rivers and streams will have limited capacities to recover from multiple impacts. As well, recurrent stresses on fish, such as those that originate from elevated suspended sediment concentrations, may have cumulative effects on fish health, survival and reproduction. The long-term effects of such impacts are not well known at this time (Reid et al. 2003).**<sup>480</sup>

Following their own reviews of the literature, Hansen and Betcher (2021) and Silvis (2021) concur that the effects of dry-ditch, open-cut crossings are substantial and long-term. Hansen and Betcher (2021) recognize that data on those effects are “sparse” in the literature, but that the available data in the literature does substantiate long-term effects.<sup>481</sup> And Silvis (2021) describes those effects this way:

Immediate environmental impacts associated with dry-ditch open-cut methods include death of all fish and benthic macroinvertebrates within the work area and increased turbidity and suspended sediment loads

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<sup>479</sup> *Id.* at 399.

<sup>480</sup> *Id.* at 406–07 (emphasis added).

<sup>481</sup> EVAN HANSEN AND MEGHAN BETCHER, SEDIMENT GENERATION AND IMPACTS FROM DRY-DITCH OPEN-CUT STREAM CROSSINGS SUCH AS THOSE PROPOSED FOR THE MOUNTAIN VALLEY PIPELINE 6 (May 26, 2021) <https://elibrary.ferc.gov/eLibrary/filedownload?fileid=020D9613-66E2-5005-8110-C31FAFC91712>, **Attachment 89**. That “paucity of current, data-driven documentation of the long-term impacts” requires that, for permitting purposes, an evaluation “at each individual stream [is required] due to stream-specific factors that influence the duration of stream channel and aquatic life impacts.” *Id.* at 2.

when the diversion is installed, for the duration of the disturbance, as well as when flow is returned to the disturbed channel bed . . . . There are long-term increases in sedimentation due to stream bank and upland disturbances until vegetation can be re-established . . . . Increased turbidity and high suspended sediment loads can cause long-term impacts to invertebrate communities downstream of the disturbance, including by reducing invertebrate biomass, growth rates, and species diversity and increasing invertebrate mortality. Increased suspended and deposited sediment causes negative impacts in fish populations as well. These impacts can include smothering of fish eggs, changes in stream bed characteristics which can reduce reproductive success, reduction of juvenile survival rates, reduction of food sources, as well as reduction in in-stream dissolved oxygen which causes respiratory distress.<sup>482</sup>

Based on her “experience in stream restoration, hydrology, stream geomorphology, and erosion and sediment control,” Silvis concludes that “there are significant permanent impacts associated with trenched methods of stream and wetland crossings.”<sup>483</sup>

Any dry, open-cut crossings employed in pipeline construction by TGP will have significant adverse impacts on water quality and aquatic life. TVA must examine those impacts in a supplemental DEIS.

**F. Because of the numerous Alternative A activities that will require a Clean Water Act Section 404 permit, the DEIS must address additional alternatives and impacts.**

**1. The pipeline will require an individual Section 404 permit for its proposed crossings; it is ineligible for authorization under NWP 12.**

As a threshold matter, TVA must recognize that the proposed pipeline will require an individual permit under Section 404 of the Clean Water Act<sup>484</sup> from the United States Army Corps of Engineers (“Corps”). That fact has ramifications for the scope of TVA’s NEPA analysis, and TVA must take steps to ensure that the

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<sup>482</sup> Starr Silvis, M.S., P.E., *Review of Mountain Valley Pipeline, LLC’s Application for an Individual Section 404 Permit from the U.S. Army Corps of Engineers* 3 (May 27, 2021) <https://elibrary.ferc.gov/eLibrary/filedownload?fileid=020E52CE-66E2-5005-8110-C31FAFC91712>, **Attachment 90**.

<sup>483</sup> *Id.* at 2.

<sup>484</sup> 33 U.S.C. § 1344.

environmental review for the project will be sufficient to meet the Corps' NEPA obligations.

Construction of wet, open-cut stream crossings like those proposed by TGP entail the discharge of fill material into the waters of the United States, requiring a permit under Section 404 of the Clean Water Act ("CWA") from the Corps.<sup>485</sup> The Corps can issue general—or "nationwide"—Section 404 permits for activities that have minimal individual or cumulative adverse environmental effects.<sup>486</sup> If a nationwide permit is unavailable, then the discharge-proponent must seek and obtain an individual Section 404 permit from the Corps.<sup>487</sup>

Historically, natural gas pipelines have tried to avail themselves of Nationwide Permit ("NWP") 12—the Corps' nationwide permit for linear utility lines. On September 15, 2020, the Corps published a proposed rule in the Federal Register to reissue NWP 12.<sup>488</sup> The Corps published a rule finalizing the renewal of NWP 12 on January 13, 2021 for "Oil or Natural Gas Pipeline Activities."<sup>489</sup>

The proposed pipeline is ineligible for and not authorized by NWP 12 for at least five reasons. *First*, for the reasons alleged by the plaintiffs in *Center for Biological Diversity v. Spellmon*, Civ. No. 4:21-cv-00047-BMM, ECF #1 (D. Mont. May 3, 2021), the Corps' January 13, 2021 reissuance of NWP was unlawful and invalid. Accordingly, TGP cannot construct its waterbody crossings under the color of NWP 12.

*Second*, even if it were otherwise lawful, a recently-announced review of NWP 12 by the Corps raises sufficient uncertainty about the future viability of the permit such that TGP should not plan to rely on it. On March 28, 2022, the Corps published a notice in the Federal Register announcing a formal review of NWP 12.<sup>490</sup> As part of that review, the Corps has solicited stakeholder input on, among other things, whether it should modify or revoke NWP 12 pursuant to 33 C.F.R. § 330.5, and whether such modifications should include additional triggers for individual permit review.<sup>491</sup> The public comment aspect of the NWP 12 review closed on May 27, 2022, making it very likely that the Corps will act on its review before construction of TGP's proposed pipeline begins. Because there is a significant chance that the NWP 12 review will result in the revocation of NWP 12 or restrictions on its use that would affect TGP's proposed pipeline, it would not be prudent for TGP or TVA to rely on

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<sup>485</sup> *Id.* § 1344.

<sup>486</sup> *Id.* § 1344(e).

<sup>487</sup> *Id.* § 1344(a).

<sup>488</sup> 85 Fed. Reg. 57298 (Sept. 15, 2020).

<sup>489</sup> 86 Fed. Reg. 2744 (Jan. 13, 2021).

<sup>490</sup> 87 Fed. Reg. 17281 (Mar. 28, 2022).

<sup>491</sup> *Id.* at 17283.

NWP 12 for the construction of the waterbody crossings associated with the proposed project.<sup>492</sup>

*Third*, the Pipeline will require an individual permit because it is part of the larger project described in Alternative A of the DEIS—the retirement and demolition of CUF and the construction and operation of a CC Plant on the CUF Reservation—and the construction of the CC Plant will require an individual CWA Section 404 permit. Army Corps regulations prohibit the use of a nationwide permit when any other part of the larger project requires an individual permit.<sup>493</sup> Specifically, the regulation provides:

Subject to the following qualifications, portions of a larger project may proceed under the authority of the NWPs while the [district engineer] evaluates an individual permit application for other portions of the same project, *but only if the portions of the project qualifying for NWP authorization would have independent utility and are able to function or meet their purpose independent of the total project.* When the functioning or usefulness of a portion of the total project qualifying for an NWP is dependent on the remainder of the project, such that its construction and use would not be fully justified even if the Corps were to deny the individual permit, the NWP does not apply and all portions of the project must be evaluated as part of the individual permit process.<sup>494</sup>

Note 2 to NWP 12 makes clear that “[o]il or natural gas pipeline activities must comply with 33 CFR 330.6(d).”<sup>495</sup> The CC Plant and the pipeline are indisputably two aspects of a single larger project. TVA itself admits that “[t]he construction and operation of a new CC plant on the CUF Reservation would *require* construction of approximately 32miles [sic] of a new single, 30-inch-diameter natural gas pipeline lateral.”<sup>496</sup> And TGP’s Draft Resource Report 1 identifies only the proposed TVA CC Plant as an end-user of gas from the pipeline and describes providing firm natural gas transportation capacity to TVA as the sole purpose of the pipeline.<sup>497</sup> Without question, the functionality or usefulness of the pipeline is dependent on the CC Plant and vice-versa. Because, as TVA concedes, a CWA Section 404 permit is required for

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<sup>492</sup> For an example of the consequences of a FERC-regulated pipeline imprudently attempting to use NWP 12 when it should have sought an individual permit from the outset, FERC need look no further than the still-unfinished Mountain Valley Pipeline. *See* *Sierra Club v. U.S. Army Corps of Eng’rs*, 909 F.3d 635, 655 (4th Cir 2018) (observing that “an individual permit will likely be necessary” for the Mountain Valley Pipeline); *Sierra Club v. U.S. Army Corps of Eng’rs*, 981 F.3d 251, 255 (4th Cir. 2020) (in challenge to second effort by Mountain Valley Pipeline to use NWP 12, Court noted that it had observed two years prior that a nationwide permit would likely be necessary).

<sup>493</sup> 33 C.F.R. § 330.6(d); *see also* *Sierra Club v. Army Corps*, 909 F.3d at 285.

<sup>494</sup> 33 C.F.R. § 330.6(d) (emphasis added).

<sup>495</sup> 86 Fed. Reg. 2744, 2681 (Jan. 13, 2021).

<sup>496</sup> DEIS at 22.

<sup>497</sup> Tennessee Gas Pipeline Company, L.L.C., Draft Resource Report 1: General Project Description at 1-2, Dkt. No. PF-22-2-000 (Apr. 2022), **Attachment 91**.

the CC Plant,<sup>498</sup> and because there is no nationwide permit available to the CC Plant, every Section 404 discharge involved in the construction and operation of both the CC Plant and the pipeline must proceed through the individual permit process.

*Fourth*, TGP's crossings are ineligible for authorization under NWP 12. As discussed elsewhere in these comments, the methods that TGP proposes to use—including open-cut trenching—will have significant adverse impacts on water quality and aquatic life. Indeed, as explained throughout these comments, the project as a whole will have such effects. Consequently, both (1) the project's waterbody crossings and (2) the project as a whole will have more than minimal individual and cumulative adverse effects on the environment, exceeding the statutory standard for the use of a nationwide permit.<sup>499</sup>

*Fifth*, TGP's planned use of wet crossings makes it ineligible for NWP 12 because the project cannot satisfy the permit's terms and conditions. As discussed below, it is very difficult, if not impossible, to restore a streambed to its pre-construction elevation while the stream is flowing.<sup>500</sup> But NWP 12 includes a requirement that, “[a]fter construction, . . . affected areas [must be] returned to pre-construction elevations.”<sup>501</sup> If an activity cannot satisfy *all* of NWP 12's terms and conditions, it cannot proceed under that permit.<sup>502</sup> Moreover, if even one of a pipeline's stream crossings is ineligible for NWP 12, then they all are.<sup>503</sup>

As a result of the unavailability of NWP 12, TGP will have to seek an individual Section 404 permit from the Corps. Consequently, TVA must ensure that its NEPA review of the project is sufficient to satisfy the Corps' NEPA obligations. As discussed elsewhere in these comments, that will entail conducting an alternatives analysis “thorough enough to use for both the public interest review and the 404(b)(1) [G]uidelines.”<sup>504</sup> And the Section 404(b)(1) Guidelines require the identification of the least environmentally damaging alternative *on a crossing-by-crossing basis*.<sup>505</sup> Accordingly, TVA should have taken a hard look at *each* of TGP's proposed crossings.

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<sup>498</sup> DEIS at v, 51, 174.

<sup>499</sup> 33 U.S.C. § 1344(e).

<sup>500</sup> Rolband & Graziano at 2, **Attachment 82**.

<sup>501</sup> 86 Fed. Reg. 2744, 2860 (Jan. 13, 2021).

<sup>502</sup> *Sierra Club v. Army Corps*, 909 F.3d at 649–50 (interpreting 33 C.F.R. § 330.1(c)).

<sup>503</sup> *Sierra Club v. Army Corps*, 981 F.3d at 264 (interpreting 33 C.F.R. §330.6(d)).

<sup>504</sup> 33 C.F.R. pt. 325 app. B(9)(b)(5)(a).

<sup>505</sup> 40 C.F.R. § 230.10(a). Section 404 authorizes the Corps to issue permits for discharges at “specified disposal sites,” and requires the Corps to specify—and therefore evaluate—“*each* such disposal site” through the application of the 404(b)(1) Guidelines. 33 U.S.C. § 1344(a)–(b) (emphasis added); *see also* *Wild Bainbridge v. Mainlander Servs. Corp.*, 544 F. Supp. 2d 1159, 1163 (W.D. Wash. 2008) (“*Each* disposal site for which the Corps issues an individual permit must be specified in accordance with guidelines developed by the Administrator of the Environmental Protection Agency in conjunction with the Corps.” (emphasis added)).

In failing to do so, TVA violated NEPA and jeopardized the Corps' ability to adopt its NEPA documents.<sup>506</sup>

**2. The DEIS should have evaluated alternatives to avoid and minimize the environmental effects from discharges of dredged and/or fill material to identify the least environmentally damaging practicable alternative.**

Where a federal action requires a CWA Section 404 permit, there is a relationship between NEPA's alternatives analysis and the substantive requirement of the Section 404(b)(1) Guidelines that condition the issuance of a Section 404 permit on the identification and implementation of the least environmentally damaging practicable alternative. The Corps' regulations explain that, although "the analysis of alternatives required for NEPA environmental documents, including supplemental Corps NEPA documents, will in most cases provide the information for the evaluation of alternatives under [the Section 404(b)(1)] Guidelines," and "[o]n occasion, these NEPA documents . . . may not have considered the alternatives in sufficient detail to respond to the requirements of these Guidelines," such that it is "necessary to supplement these NEPA documents with this additional information."<sup>507</sup> Here, TVA's DEIS does not consider alternatives to the discharges of dredged and/or fill material associated with Alternative A. Accordingly, the DEIS does not satisfy the NEPA obligations of either TVA or the Corps.

**a. The DEIS is silent on alternatives to avoid and minimize stream and wetland effects from CC plant construction and operation.**

TVA concedes that a CWA Section 404 permit is required for the CC Plant.<sup>508</sup> Section II, *supra*, discusses the alternatives analysis that the DEIS must include for the discharges to wetlands from construction and operation of the CC Plant. Similarly, the DEIS must examine practicable alternatives to the "re-routing or piping" of surface waters during construction of the CC Plant.<sup>509</sup> The DEIS recognizes that the effects of such re-routing or piping of surface waters "would include loss of instream habitat, increased erosion and siltation and alteration of stream banks and stream bottoms by heavy equipment."<sup>510</sup> Although the DEIS does not appear to expressly acknowledge that a Section 404 permit is required for activities related to CC Plant construction that will cause such effects, the described effects sound very

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<sup>506</sup> See, e.g., *Cowpasture River Pres. Ass'n v. Forest Serv.*, 911 F.3d 150, 170–73 (4th Cir. 2018), *rev'd and remanded on others grounds sub nom.* *U.S. Forest Serv. v. Cowpasture River Pres. Ass'n*, 140 S. Ct. 1837 (2020); *Sierra Club v. U.S. Forest Serv.*, 897 F.3d 582, 594–96 (4th Cir. 2018).

<sup>507</sup> 40 C.F.R. § 230.10(a)(4).

<sup>508</sup> DEIS at v, 51, 174.

<sup>509</sup> DEIS at 166.

<sup>510</sup> *Id.*

much like the discharge of dredged and/or fill material. Accordingly, identification of the least environmental damaging practicable alternative for those surface water impacts is required.

- b. The DEIS is silent on alternatives to avoid and minimize stream and wetland effects from upgrades to barge facilities.**

The DEIS acknowledges that a CWA Section 404 permit will be required for discharges to the Cumberland River associated with upgrades to barge facilities and necessary stream alterations related to Alternative A.<sup>511</sup> Here again, no alternatives are considered, making it impossible to determine whether the discharges associated with barge facility upgrades and stream alterations are the least environmentally damaging practicable alternatives. As a result, the DEIS is insufficient to satisfy either the NEPA obligations of either TVA or the Army Corps.

- c. TVA should have evaluated the location and construction method proposed for each individual crossing.**

As discussed elsewhere in these comments, NEPA requires a robust alternatives analysis, and—where Section 404 discharges are at issue—that analysis should include sufficient information to inform the determination of the least environmentally damaging practicable alternative.<sup>512</sup> Here, that requires a review of available alternatives to TGP's proposed waterbody crossings, but TVA has not completed such a review.

Two types of alternatives to TGP's proposed crossings must be evaluated: (1) routing alternatives that would relocate proposed crossings to less-sensitive stream reaches or wetlands<sup>513</sup> and construction-method alternatives that would avoid discharges into aquatic resources entirely.<sup>514</sup>

- i. NEPA and the Section 404(b)(1) guidelines require an evaluation of route alignment alternatives for each crossing.**

In its alternatives analysis, TVA should have scrutinized TGP's proposed route and examined whether routing alternatives would allow the pipeline to avoid certain resources, including by crossing waterbodies at locations that would have fewer impacts. TVA is obligated to evaluate routing alternatives that would avoid stream reaches and wetlands with sensitive plant and animal species (such as the rabbitsfoot

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<sup>511</sup> DEIS at 166.

<sup>512</sup> 42 U.S.C. § 4332(C)(iii); 40 C.F.R. § 230.10(a)(4).

<sup>513</sup> *Cf.* 40 C.F.R. § 230.10(a)(1)(ii).

<sup>514</sup> *Cf. id.* § 230.10(a)(1)(i).

and tan riffleshell mussels), special aquatic sites (like wetlands and riffle-and-pool complexes),<sup>515</sup> and other sensitive resources. And it must do so on a crossing-by-crossing basis. That is, it must look at each crossing and determine whether alignment changes would allow TGP to avoid a waterbody crossing entirely or the use of a crossing location that with fewer environmental impacts. The DEIS does not include such evaluations. As a result, it is insufficient to satisfy the NEPA obligations of either TVA or the Army Corps.

**ii. NEPA and the Section 404(b)(1) guidelines require an evaluation of the feasibility of less destructive trenchless-crossing methods.**

TGP has proposed to use HDD—a trenchless crossing method—at three locations but intends to use the wet, open-cut method at the vast majority of its crossings.<sup>516</sup> In the DEIS, TVA should have engaged in an alternatives analysis to determine the impacts of each type of stream crossing and the feasibility of less-destructive methods.

“[T]renchless methods are the least destructive approach for pipeline crossings of waterbodies absent site specific conditions.”<sup>517</sup> Although TGP has stated that it intends to use a trenchless method—HDD—at three crossings (Jones Creek, Yellow Creek, and Wells Creek),<sup>518</sup> TVA’s DEIS should have considered whether *other* trenchless methods are feasible and less-destructive and whether a trenchless method is feasible at additional locations on a crossing-by-crossing basis.

Although HDD avoids direct impacts to waterbodies and streambeds by going *under* an aquatic resource, instead of *through* it, the technique’s use of large quantities of drilling muds presents the risk of inadvertent returns. Indeed, TGP acknowledges the risk of “inadvertent release of drilling fluids to the surface along the pipeline alignment during drilling operations” through hydraulically induced fractures.<sup>519</sup> Such releases can have severe impacts on water quality and aquatic life, by smothering streambeds and wetlands with drilling mud.<sup>520</sup>

But there are other available trenchless methods that at least reduce the use of drilling fluids, and thereby reduce the risk of inadvertent return. TVA should have evaluated the use of such techniques. Four such techniques are (1) conventional boring, (2) guided conventional boring, (3) microtunneling, and (4) Direct Pipe®.

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<sup>515</sup> See *id.* §§ 230.41 & 230.45.

<sup>516</sup> Draft Resource Report 2 at 2-12 to 2-13, 2-15, **Attachment 77**.

<sup>517</sup> Silvis at 1, **Attachment 90**; WVDEP BMP Manual at 3.21-2, **Attachment 79**.

<sup>518</sup> Draft Resource Report 2 at 2-15, **Attachment 77**.

<sup>519</sup> *Id.* at 2-16.

<sup>520</sup> See, e.g., Rover Pipeline, LLC and Energy Transfer Partners, L.P., 177 FERC ¶ 61,182 (Dec. 16, 2021) (FERC enforcement action proposing \$40,000,000 penalty against pipeline developer for Natural Gas Act violations related to spill of 2 million gallons of drilling fluid during inadvertent return in Stark County, Ohio). FERC must take a hard look at the potential environmental impacts of an inadvertent return at HDD crossings proposed by the Project, including the National River Inventory streams discussed below.

TVA's NEPA review must consider those methods as alternatives to both HDD and wet, open-cut waterbody crossings.

- Conventional boring uses an auger to bore a tunnel under a resource to and from bore bits on either side of the resource.<sup>521</sup> FERC identifies conventional boring as an alternative to HDD.<sup>522</sup> On this project, TGP intends to use conventional boring to cross eight public roads but does not identify any waterbodies that it intends to cross using the method.<sup>523</sup> But conventional boring is frequently used to construct pipeline waterbody crossings, and TGP has previously used the method for that purpose.<sup>524</sup>
- Guided conventional boring is a variation of the conventional boring technique that uses pilot tubes to guide the auger.<sup>525</sup> Like conventional boring, this method is used in waterbody crossings for natural gas pipelines.<sup>526</sup>
- Microtunneling allows pipe jacking with accurate guidance, remote operation, and continuous support of the bore hole.<sup>527</sup> The technique has been used to construct natural gas pipeline crossings beneath valuable aquatic resources such as streams protected by the Wild and Scenic Rivers Act.<sup>528</sup>
- Direct Pipe® “is a hybrid technique combining aspects of microtunneling and HDD.”<sup>529</sup> But, unlike HDD, in this technique, “the borehole is never only mud supported.”<sup>530</sup> This method has been used to construct natural gas pipelines under waterbodies inhabited by species protected under the ESA.<sup>531</sup>

As part of the alternatives analysis in its DEIS, TVA should have evaluated the feasibility of using each of those methods on a crossing-by-crossing basis. It must now cure that omission.

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<sup>521</sup> See, e.g., Draft Resource Report 1 at 1-34 to 1-35, **Attachment 91**.

<sup>522</sup> FED. ENERGY REGUL. COMM'N, OFFICE OF ENERGY PROJECT, GUIDANCE FOR HORIZONTAL DIRECTIONAL DRILL MONITORING, INADVERTENT RETURN RESPONSE AND CONTINGENCY PLANS 13 (Oct. 2019), <https://www.ferc.gov/sites/default/files/2020-04/guidance-natural-gas.pdf>, **Attachment 93**.

<sup>523</sup> Draft Resource Report 1 at 1-35, **Attachment 91**.

<sup>524</sup> See e.g., Tennessee Gas Pipeline Co., LLC, 156 FERC ¶ 61156, ¶ 111 (Sept. 6, 2016).

<sup>525</sup> Raymond L. Sterling, *Developments & Research Directions in Pipe Jacking and Microtunneling*, UNDERGROUND SPACE (BEIJING) VOLUME 5 at 4 (2020), **Attachment 94**.

<sup>526</sup> WILLIAMS FIELD SERVS. CO., LLC ET AL., APPLICATION FOR A CERTIFICATE OF ENVIRONMENTAL COMPATIBILITY AND PUBLIC NEED TO CONSTRUCT AN APPROXIMATELY 9.5-MILE NATURAL GAS GATHERING LINE (Dec. 2, 2013), **Attachment 95**.

<sup>527</sup> Sterling at 2, **Attachment 94**.

<sup>528</sup> See, e.g., Rockies Express Pipeline LLC, 123 FERC ¶61234, ¶ 131 (May 30, 2008).

<sup>529</sup> Sterling at 5, **Attachment 94**.

<sup>530</sup> *Id.*

<sup>531</sup> Transcontinental Gas Pipe Line Company, LLC, 141 FERC ¶ 61091, ¶¶ 53, 57 (Nov. 2, 2012).

**VI. The DEIS analysis of potential impacts to listed species is incomplete and inadequate.**

TVA has failed to “take a hard look” at the potential impacts its preferred alternative will have on species and habitat in the project area.<sup>532</sup> TVA’s analysis of potential impacts to listed species in the DEIS impermissibly relies on missing information and insufficient data gathering. Moreover, the Agency’s discussion omits analysis of the project’s foreseeable effects. The DEIS must therefore be supplemented to adhere to the requirements of NEPA and ensure that the proposed alternative does not run afoul of the take prohibitions of the ESA.

**A. The DEIS does not provide necessary information or analysis on its potential to impact listed bat species.**

**1. TVA’s analysis of the impact TGP’s pipeline will have on listed bat species under Alternative A is insufficient and incomplete.**

In the DEIS, TVA largely relies on nebulous and unidentified mitigation measures it asserts TGP may undertake during construction and operation of its proposed pipeline under Alternative A to state that endangered and threatened species will not suffer cumulative effects.<sup>533</sup> However, TGP’s efforts to affirmatively identify listed bat species which may be affected by its proposed pipeline have been inadequate. Further, its analysis of potential effects is inconsistent with the surveying efforts it did undertake. Moreover, the company appears to exclude from its analysis bat species which are proposed for federal listing or which should be considered given their documented presence in counties along the proposed pipeline’s path. Because TGP has failed to adequately gather information and analyze the effect its proposed pipeline could have on listed bat species, TVA cannot rely on its efforts or identified mitigation measures to conclude that the pipeline would not result in cumulative impacts to listed bats.

As an initial matter, Conservation Groups incorporate by reference our objections contained in Scoping Comments submitted to FERC regarding the proposed construction and operation of TGP’s pipeline and its potential to impact listed species.<sup>534</sup> This includes but is not limited to our concerns regarding the statement of concurrence which FWS appears to have issued to TGP regarding the proposed pipeline’s potential to impact several listed species, including bat species. As discussed in detail in those comments and explained more fully below, any concurrence issued by FWS to the company’s proposed Not Likely to Adversely Affect (NLAA) determination for listed bat species would be arbitrary and based on

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<sup>532</sup> *Robertson*, 490 U.S. at 350 (internal quotations omitted).

<sup>533</sup> DEIS at 279.

<sup>534</sup> Conservation Groups’ Scoping Comments to Federal Energy Regulatory Commission on the Cumberland Project at 28–31, [hereinafter “FERC Scoping Comments”], **Attachment 106**.

insufficient surveying and incomplete analysis. Further, TGP's proposed minimization and mitigation efforts are inadequate.

To begin, TGP has engaged in insufficient and minimal surveying efforts to identify listed bat species that could be affected by its proposed pipeline. The company's efforts are memorialized in a draft Resource Report 3 and associated appendices submitted by TGP to FERC.<sup>535</sup> Draft Resource Report 3 documents that the company decided not to utilize tracking systems which would have greatly assisted in the identification of listed-bat roosting locations and maternity colonies that could potentially be affected by the proposed pipeline. Instead, TGP commissioned a bat mist survey that provided only minimal information about listed bat species in the area. The surveying, which took place over a period of two nights, involved utilizing mist nets to catch and record bats along the proposed pipeline route.<sup>536</sup> Data collected included the individual's species, weight, and measurements.<sup>537</sup> Bats were then released near the point of capture. No radio telemetry tracking was conducted as part of the survey.<sup>538</sup>

By attaching telemetric devices to female bats caught in mist nets, TGP could have continued to gather data from individual bats after their release, tracked their subsequent locations, and identified roost trees and maternity colonies in the area. Yet TGP chose not to do so. Rather, TGP commissioned a bat study which only identified characteristics of individuals and forwent utilizing common surveying practices which would have gathered valuable information on bat colonies in the area.

Obtaining information on local roost trees and snags as well as maternity colonies would have been invaluable to aid in more definitively determining how the proposed pipeline would affect local bat populations and what mitigation measures should be implemented. Species such as the northern long eared bat exhibit high site fidelity to their summer roosting locations,<sup>539</sup> and several bats can use the same roost trees simultaneously, making their preservation potentially valuable to multiple species.<sup>540</sup> Apart from the importance of identifying roost trees and snags to prevent their removal, this exercise would also have been invaluable to help identify mitigation measures for construction activities that should be implemented around still-standing trees and snags utilized by listed bats. Loud noises such as those at

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<sup>535</sup> Tennessee Gas Pipeline Company, L.L.C., Draft Resource Report 3 at 3-18 Dkt. No. PF-22-2-000 (Apr. 2022) [hereinafter "Draft Resource Report 3"], **Attachment 99**; Appendices 3.A, 3.B, **Attachments 97, 98**.

<sup>536</sup> TGP Appendix 3.B at 2, **Attachment 98**.

<sup>537</sup> *Id.*

<sup>538</sup> *Id.* at 3.

<sup>539</sup> U.S. Fish and Wildlife Service, *Special Status Assessment Report for the Northern long-eared bat (Myotis septentrionalis)* 68 (Mar. 22, 2022), **Attachment 100**.

<sup>540</sup> See, e.g., Detlev Kelm et al., *Mixed-species groups in bats: non-random roost associations and roost selection in neotropical understory bats*, 18 FRONTIERS IN ZOOLOGY 53 (2021), **Attachment 101**.

construction sites can cause females to abandon pups in roost trees.<sup>541</sup> And because many bat species exhibit low reproductive output, it is crucially important to protect the integrity of maternity roosting locations as part of the larger effort to stop the dramatic population declines in listed bat species.

Every roost tree removed from a bat colony's range affects its health. Colonies move through various roost trees throughout a season in an apparent effort to control parasites, avoid predators, or seek particular roosts based on varying weather conditions.<sup>542</sup> By removing available roosting sites or making them so unpalatable as to be abandoned, colonies may be forced back to other trees sooner than normal. This can have deleterious effects, such as forcing multiple colonies together and causing conflict or impeding a colonies' ability to control parasites. Because TGP chose to undertake only minimal surveying effort, construction and operation of its proposed pipeline could result in the felling of important trees and snags thereby leading to these negative impacts on local bat populations. Chosen ignorance neither minimizes these impacts nor fulfills the requirements of NEPA.

Just as TGP made inadequate efforts to identify local maternity colonies and summer roosting trees and snags for listed bat species, so too did it fail to comprehensively look for hibernacula within the proposed pipeline area. Specifically, TGP failed to contact the Tennessee Cave Survey<sup>543</sup> and county coordinators for Stewart, Houston, and Dickson counties to identify whether any known hibernacula could be affected by the proposed pipeline construction and operation. These resources typically contain the most up-to-date information regarding known cave locations within a county.

The measures that TGP did take to identify hibernacula were insufficient. In its draft Resource Report 3, TGP states that it reviewed TVA's Regional Natural Heritage Database and spoke with landowners to identify caves within 0.5 miles of the proposed project.<sup>544</sup> However, natural heritage databases are normally out of date for a variety of reasons. For example, cavers oftentimes feel disincentivized from revealing cave locations with sensitive resources to the government out of fear that mandated closures may occur to protected vulnerable resources. And many landowners may not realize that they have a cave on their property or may not volunteer information based on a different understanding of what qualifies as a cave. Moreover, TGP's efforts to identify caves "within 0.5 miles of the Project" is an arbitrary distance.<sup>545</sup> It is unclear why this distance was chosen, especially given that

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<sup>541</sup> CALIFORNIA DEPARTMENT OF TRANSPORTATION DIVISION OF ENVIRONMENTAL ANALYSIS, TECHNICAL GUIDANCE FOR ASSESSMENT AND MITIGATION OF THE EFFECTS OF TRAFFIC NOISE AND ROAD CONSTRUCTION NOISE ON BATS 62–63 (2016), <http://iene.se/wp-content/uploads/Effects-of-Traffic-Noise-and-Road-Construction-Noise-on-Bats.pdf>, **Attachment 102**.

<sup>542</sup> DANIEL TAYLOR ET AL., FOREST MANAGEMENT AND BATS, WHITE-NOSE SYNDROME RESPONSE TEAM, 4 (2020), <https://www.fs.fed.us/r6/sfpnw/issssp/documents2021/cpt-ma-bats-forest-management-and-bats-2021-04.pdf>, **Attachment 103**.

<sup>543</sup> See *Tennessee Cave Survey*, <http://www.subworks.com/tcs/> (last visited June 7, 2022).

<sup>544</sup> Draft Resource Report 3, **Attachment 99**.

<sup>545</sup> *Id.* at 3-18.

in the DEIS, TVA notes a known northern long eared bat hibernacula within five miles and a gray bat hibernacula within eight miles of the CUF Reservation.<sup>546</sup>

Conservation Groups additionally note that while TVA incorporated in its DEIS analysis the effect its preferred alternative will have on tricolored bats, TGP did not include such discussion in its draft Resource Report 3. As TVA observed, in addition to being a candidate for federal listing, the tricolored bat is a state-threatened species and has previously been captured in mist net surveys on the CUF Reservation. For these reasons, TVA stated that the Agency was incorporating analysis of effects to the tricolored bat in its environmental review.<sup>547</sup> TGP likewise caught several individuals of the species in its own mist netting survey, but despite this, TGP forewent analysis of the effect its proposed pipeline could have on local tricolor bat populations in its draft Resource Report 3. This omission is arbitrary in light of the tricolored bat's listed status and TVA's inclusion of tricolored bats in its own analysis. TGP should analyze the effects its proposed pipeline will have on tricolored bats as part of its FERC filing process, and TVA should not rely on the company's analysis in its own DEIS until this inclusion occurs.

Additionally, there are discrepancies between TGP's statements within its draft Resource Report 3 and the results of its commissioned bat mist net survey report that taint the company's project impact analysis. For instance, the bat mist net survey clearly states that five species of bat were captured during the bat survey efforts including the big brown bat, evening bat, eastern red bat, tricolored bat, and gray bat.<sup>548</sup> As previously noted, the tricolored bat is a state-threatened species and proposed for federal listing, while the gray bat is a federal endangered species. Yet in its draft Resource Report 3, TGP states that, although five separate species were captured in its surveying efforts, "[n]one of the federally or state-listed bat species were identified during the survey."<sup>549</sup> Later in its analysis of construction and operation impacts on listed species, TGP again states that "[b]ased on the bat survey, caves were not identified near the Project area and no federal or state-listed bat species were identified during the survey. Thus, construction activities are not expected to result in a permanent loss of habitat for [sic] this species."<sup>550</sup> Such an analysis is clearly erroneous as it is based on nonexistent facts.

Indeed, construction of TGP's proposed pipeline most likely will result in impacts to listed bat species. Conservation Groups incorporate by reference the concerns outlined in our Scoping Comments submitted to FERC regarding the effects installation and operation of the pipeline may have on listed bat species.<sup>551</sup> These include but are not limited to permanent loss of habitat for the Indiana bat, northern long eared bat, and tricolored bat—all of which were either captured in the mist net survey or have been recorded as occurring in counties along the pipeline's proposed

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<sup>546</sup> DEIS at 265.

<sup>547</sup> DEIS at 265.

<sup>548</sup> Appendix 3.B at 2, **Attachment 98**.

<sup>549</sup> Draft Resource Report 3 at 3-18, **Attachment 99**.

<sup>550</sup> Draft Resource Report 3 at 3-19, **Attachment 99**.

<sup>551</sup> FERC Scoping Comments at 28-31, **Attachment 106**.

right-of-way—due to TGP's proposal to clear 694 acres of forestland in order to construct its pipeline.<sup>552</sup> All three of these species rely on forested areas for roosting and foraging purposes, and all could be affected by the loss of suitable roosting trees and snags as well as the large-scale forest fragmentation which would result from the proposed pipeline.

Forest fragmentation and loss of suitable habitat are real threats to listed bat species. For instance, loss of suitable habitat conditions for northern long eared bats—even as low as the loss of 17 percent of roosts—can lead to colony fragmentation, which in turn causes greater individual energy expenditure due to longer flight times between foraging habitats and reduced thermoregulation from smaller colony sizes.<sup>553</sup> This can lead to reduced pregnancy success, pup survival, and adult survival.<sup>554</sup> Northern long eared bat populations are currently being decimated by White Nose Syndrome, and additional stressors imposed by habitat loss and fragmentation only compound the threats faced by this species.

TGP's current analysis of impacts to listed bat species in its draft Resource Report 3 is arbitrary, and TVA cannot rely on it to assert that this connected action will not result in cumulative impact to these species. For these same reasons, TVA additionally cannot rely on any of the company's proposed impact minimization and mitigation measures for protected species as they do not appear to take into account the listed bat species known to occur in the area.

It is arbitrary and premature for TVA to opine that TGP's construction and operation of its proposed pipeline will not result in cumulative effects to listed bat species. TGP has undertaken an insufficient bat surveying effort, confused the results of that survey in its impacts analysis, and provided no data on high priority trees and snags which should be conserved or for which mitigation measures should be implemented. Despite this, TVA assumes that any conservation measures resulting from a potential consultation with FWS and state agencies will ensure that the proposed action will result in no significant effects to listed species. This stance is more wishful than factual and fails to acknowledge the multiple deficiencies with TGP's inquiry into and analysis of its proposed pipeline's potential to harm listed bat species.

**2. TVA must include a completed bat strategy form in or appended to the final EIS so that the public may review the agency's proposed mitigation measures.**

Numerous bat species are known to occur, have suitable roosting or foraging habitat, or have been documented in the counties containing the CUF Reservation and TGP's proposed pipeline route. This includes the federally listed gray bat, Indiana bat, and northern long-eared bat, as well as the state-threatened tricolored

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<sup>552</sup> See DEIS at 279.

<sup>553</sup> U.S. Fish and Wildlife Service, *Special Status Assessment Report for the Northern long-eared bat (Myotis septentrionalis)* 154 (Mar. 22, 2022), [Attachment 100](#).

<sup>554</sup> *Id.* at 153–4 (Mar. 22, 2022).

bat, which is currently a candidate for federal listing.<sup>555</sup> Despite the abundance of listed-bat species which may be affected by TVA's preferred alternative and connected action, the Agency has failed to detail the conservation and mitigation measures it plans to take in order to protect these species in or appended to its DEIS. Pursuant to NEPA's mandate that environmental impact statements include discussion of appropriate mitigation measures, TVA must include this information in a final EIS for public review.

In the DEIS, TVA notes that the CUF Reservation contains both foraging and summer roosting habitat for bats, including fields and forested areas containing trees and snags.<sup>556</sup> The DEIS specifically identifies summer roosting habitat on the CUF Reservation for the Indiana bat, northern long eared bat, and tricolored bat, as well as foraging habitat for those three species and the gray bat.<sup>557</sup> The DEIS further notes that there are records of all four species in Stewart County, and that a known hibernaculum of northern long eared bats is within five miles of the CUF Reservation.<sup>558</sup> To mitigate its proposed action's effects on summer roosting activities, TVA states that tree removal will occur between November 15 and March 31 when bats are not expected to be utilizing trees and snags as roost sites.<sup>559</sup>

TVA also notes that the agency previously undertook programmatic consultation with FWS in accordance with ESA Section 7(a)(2) to evaluate the effect which several routine actions undertaken by the agency could have on listed bat species. TVA asserts that this consultation covers certain activities implicated in TVA's preferred action at the CUF Reservation such as the construction and maintenance of transmission lines as well as the removal of trees. TVA relies on this completed consultation to state that cumulative effects to endangered and threatened species from its preferred alternative are "not anticipated" so long as certain conservation and mitigation measures are implemented.<sup>560</sup> These measures were agreed to by TVA and FWS as part of the programmatic consultation, and TVA states that the measures applicable to this proposed activity are listed in a "bat strategy form" which will be reviewed and implemented as the project progresses.<sup>561</sup>

However, TVA has failed to include, discuss, or append a completed bat strategy form to the DEIS to allow the public to review the conservation and mitigation measures it believes are applicable to its preferred alternative.<sup>562</sup> Without this information, the public cannot evaluate the comprehensiveness of TVA's

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<sup>555</sup> DEIS at 265.

<sup>556</sup> DEIS at 279.

<sup>557</sup> DEIS at 265–66.

<sup>558</sup> *Id.*

<sup>559</sup> DEIS at 279.

<sup>560</sup> *Id.*

<sup>561</sup> *Id.*

<sup>562</sup> On June 3, 2022—well into the public comment period on the DEIS—TVA responded to a FOIA request from SELC providing its bat strategy form for its proposed actions at the CUF facility. Community Groups maintain that this form should be made generally available to the public as an appendix to the DEIS.

proposed conservation and mitigation measures or their effectiveness at mitigating project impacts to potential roosting locations and foraging habitats of listed bat species. This information is important as TVA acknowledges that tree removal could potentially affect bat foraging and roosting sites. This could be particularly detrimental to species such as the northern long-eared bat, which has a known hibernaculum within five miles of the CUF Reservation.

TVA must include a completed bat strategy form or discussion of applicable and relevant conservation and mitigation measures in the DEIS. NEPA's implementing regulations make clear that the statute's dual prerogatives are to require that agencies comprehensively consider the environmental consequences of major federal actions as well as inform the public of their decision-making process.<sup>563</sup> Part of that analysis involves discussion of appropriate mitigation measures which should be undertaken to mitigate adverse environmental impacts. In particular, NEPA regulations require that agency statements in EISs be "supported by evidence that the agency has made the necessary environmental analyses,"<sup>564</sup> and that alternatives considered "include appropriate mitigation measures."<sup>565</sup> While TVA's acknowledgement of a bat strategy form may signal that the Agency has addressed the first aim of NEPA—consideration of the environmental consequences of its proposed action—it fails to fulfill NEPA's second requirement that this information be available for public review. TVA must therefore supplement its environmental analysis with this information.<sup>566</sup>

**B. The DEIS' reliance on outdated mussel surveys to forego a meaningful impact analysis is insufficient.**

In the DEIS, TVA identifies the primary aquatic environments related to the CUF Reservation as the Cumberland River, Wells Creek, and Scott Branch.<sup>567</sup> The agency notes that "[d]ue to [Wells Creek and Scott Branch's] proximity and connection to the Cumberland River, species composition is expected to be similar to that described" for the river.<sup>568</sup> The DEIS further identifies two mussel species which may be affected by the construction and operation of its preferred alternative, including the Pink mucket and the Rabbitsfoot.<sup>569</sup> However, the agency summarily concludes that neither species occurs within the vicinity of the CUF Reservation

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<sup>563</sup> See 40 CFR § 1502.1; see also *Balt. Gas & Elec.*, 462 U.S. at 97 (describing the "twin aims" of NEPA as obliging agencies "to consider every significant aspect of the environmental impact of a proposed action" and "inform the public that it has indeed considered environmental concerns in its decisionmaking process." (internal citations omitted)).

<sup>564</sup> 40 CFR § 1502.1.

<sup>565</sup> *Id.* at § 1502.14. See also 40 CFR § 1502.16 (stating that the environmental consequences section of an EIS should include discussion on the "means to mitigate adverse environmental impacts" if not already addressed in the alternatives analysis).

<sup>566</sup> See *infra* Section V.A.

<sup>567</sup> DEIS at 239.

<sup>568</sup> DEIS at 240.

<sup>569</sup> DEIS at 253.

because the species were not recorded in a 2011 mussel survey of the thermally-affected area of the Cumberland River and they “have not been collected in the area in decades.”<sup>570</sup> This review is inadequate given the limited nature of the survey, its undertaking over ten years ago, and the status of these species as endangered and threatened, respectively. TVA must therefore perform an up-to-date mussel survey of all identified affected waterways to ascertain whether listed mussels are present.

TVA’s current analysis of its preferred alternative’s effects on mussels leaves much to be desired. First, TVA provides no explanation for why a survey which was limited in scope to “thermally-affected areas” of the Cumberland River is sufficient to determine whether listed mussels occur or would be affected by its preferred alternative in all waterways within the CUF vicinity. While those areas have historically been affected by TVA’s coal operation on the CUF Reservation, other areas could be affected by the demolition and construction activities outlined in the DEIS and the construction activities described in Alternative A. The agency fails to explain why these areas are a representative sample of all mussels which could be affected by the proposed action.

Further, TVA inadequately justifies its reliance on a survey undertaken ten years ago to support a conclusion that no listed mussel species currently exist in the area. TVA’s assertion that the Pink mucket and the Rabbitsfoot “have not been collected in the area in decades” provides little assurance that the species do not currently populate affected waterways, as the DEIS does not acknowledge or discuss whether the Agency has in fact undertaken any more recent mussel surveys in the area in the intervening years. And even though these mussel species were not collected in a surveying effort over a decade ago, there are records of these mussels existing in the area. Given their listed status, TVA should assume that they could be present but in numbers so small that they may have evaded infrequent sampling efforts. TVA should therefore engage in updated sampling efforts to determine whether any current populations exist in the project area.

Because TVA assumes that the Rabbitsfoot and the Pink mucket do not occur within the CUF vicinity, the Agency forgoes analyzing the effect that the construction and operation of its preferred alternative could have on these mussel species, including effects such as sedimentation. This review is inadequate, and TVA must undertake a current and comprehensive survey of mussel habitat for listed inhabitants which could be affected by the proposed action. If found, TVA must then analyze the effect this proposed action could have on these species, and further action, including consultation with the FWS, may be warranted.

### **C. The DEIS’ surveying efforts and analysis of impacts to birds and reptiles is incomplete.**

TVA’s evaluation of Alternative A’s potential to impact listed birds and reptiles is insufficient. In the DEIS, TVA identifies that Bewick’s wrens, Henslow’s sparrows,

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<sup>570</sup> DEIS at 267.

and the western pygmy rattlesnake could be “directly impacted” by its proposed action in Alternative A if immobile creatures—for example, juveniles or eggs—are present at the time of vegetation removal.<sup>571</sup> Yet even though the agency admits that “targeted surveys for these particular species did not occur,” it goes on to opine that the proposed action is “not expected” to affect them given lack of recordings at this site and the existence of similar nearby habitat.<sup>572</sup> This stance once again ignores the listed status of these creatures—indicating that they may exist in such low numbers as to evade casual observance—and fails to address whether individuals may effectively move to nearby habitat during certain periods of their life cycle and at certain stages of TVA’s proposed action.

Instead of this superficial review, TVA should commit to undertaking targeted surveys for these species prior to disturbance or clearing of habitat. This is necessary given that these species may be unable to relocate to nearby similar habitat when vegetation removal occurs. Take, for example, Henslow’s sparrow. This species occupies breeding habitat in Tennessee from mid-April until late October, and multiple birds have been documented in Stewart County. Henslow’s sparrows build their nests at the base of grass tufts or in low vegetation; therefore, vegetation removal during its summer breeding time could affect breeding birds, their eggs, or their young.

TVA asserts that its proposed alternative is not expected to affect populations of these species, however, because of “the abundance of similarly suitable habitat in the adjacent areas.”<sup>573</sup> Yet birds which have already selected nesting sites and are raising their young when clearing activities commence may be unable to take advantage of nearby similar habitat. Therefore, targeted surveys should be undertaken to ensure that these species are not present prior to disturbing or clearing fields. The same should occur for the western pygmy rattlesnake, which is presumed to breed in the spring with young born in the late summer.<sup>574</sup>

In the DEIS, TVA also states broadly that its decision to engage in seasonal tree removal “would avoid direct effects to some nesting migratory songbirds of conservation concern and other birds of conservation concern” and so summarily concludes that “significant effects are not anticipated.”<sup>575</sup> However, TVA leaves entirely unanalyzed the effect that seasonal tree removal could have on those remaining migratory birds and other birds of conservation concern or deemed in need of management which have been identified as occurring or having habitat on the CUF

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<sup>571</sup> DEIS at 279.

<sup>572</sup> *Id.*

<sup>573</sup> *Id.*

<sup>574</sup> TWRA, *Pygmy Rattlesnake* (last visited June 8, 2022), <https://www.tn.gov/twra/wildlife/reptiles/snakes/pygmy-rattlesnake.html>; DEIS at 266.

<sup>575</sup> DEIS at 279 (emphasis added).

Reservation.<sup>576</sup> The DEIS also foregoes analyzing how the removal of several hundred acres of trees for the TGP's proposed pipeline may affect migratory birds and their habitats. This truncated analysis is insufficient, and the Agency must fully address the potential its proposed project has to affect all potentially impacted species.

**D. The DEIS fails to analyze broader impacts that Alternative A will have on habitat and species within the project area.**

**1. The DEIS fails to evaluate Alternative A's contribution to climate change and the attendant effects on species.**

In addition to the specific impacts TVA's preferred alternative will have on affected species, the Agency's plans to construct and operate a methane gas plant with an associated pipeline will also result in widespread, foreseeable impacts which have the capacity to impact every species in the area, albeit in different ways. Analysis of these impacts is currently missing altogether from the DEIS. In particular, the DEIS currently includes no analysis of the contribution its proposed alternative will have on climate change and its concomitant effects on listed species. Because this analysis is inadequate and incomplete, it must be supplemented.

As currently drafted, TVA's DEIS analysis focuses almost exclusively on the effects the proposed action will have on the CUF Reservation and surrounding environment due to the retirement and demolition of currently-existing coal-fired units and their planned replacement in Alternative A with a methane gas plant and associated pipeline. This analysis omits needed discussion regarding the foreseeable impacts *operating* a methane gas plant and pipeline will have on terrestrial and freshwater biology due to the leaking and/or combustion of gas and its addition to the atmosphere. TVA's DEIS fails to adequately analyze these foreseeable impacts; therefore, the assessment is incomplete.

Increased greenhouse gas emissions associated with TVA's preferred alternative will exacerbate global climate change, leading to loss of sea ice, sea level rise, extreme weather events, ocean acidification, and the loss of habitat and species. The DEIS fails to disclose and discuss the specific impacts TVA's preferred alternative will cause to protected species and their habitats and which result from climate change. These impacts include but are not limited to changes in local precipitation patterns, increased severity of storms, droughts, and other weather events, and impacts to habitat ranges.

In the DEIS, TVA must analyze the impact that climate change will have on the local ecosystems and species. Take, for instance, local migratory bird populations. Migratory bird population declines from climate change-driven threats are of particular concern. Research has indicated that birds will be significantly affected by

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<sup>576</sup> This list is extensive, and includes birds such as the cliff swallow, double-crested cormorant, osprey, cerulean warbler, golden eagle, Swainson's warbler, Kentucky warbler, prairie warbler, wood thrush, red-headed woodpecker, bald eagle, blue-winged warbler, bald eagle bobolink, rusty blackbird, eastern whippoor-will, grasshopper sparrow, prothonotary warbler, and field sparrow. DEIS at 260-63.

the changing climate.<sup>577</sup> Scientists have found that approximately 64 percent of North American bird species are moderately or highly vulnerable to climate change.<sup>578</sup> And the Southeast is expected to lose communities of breeding bird populations due to warming temperatures.<sup>579</sup> The DEIS should analyze the impact that the proposed Project will have not only on the nesting, feeding, and migration practices of these birds within the CUF Reservation, but also the impacts which climate change will wrought upon the species' ability to survive and flourish writ large within their traditional habitat areas.

Similarly, climate change and its effects are of increasing concern for bat species. Climate change may affect bats at critical stages of their life cycle by increasing mortality from extreme temperature and weather patterns, changing hibernation patterns, introducing new and increased disease, and decreasing prey abundance.<sup>580</sup> FWS has identified climate change as a growing threat to bats, including the northern long eared bat, and asserted that "overall negative impacts" from a changing climate on the species are anticipated.<sup>581</sup> TVA must therefore undertake analysis of the effects climate change will have on other affected bat species as well.

In sum, the DEIS fails to address or analyze how Alternative A's contribution to climate change will affect species within the project area. For some listed species, these effects could be particularly severe, and the dearth of analysis in the DEIS is therefore particularly noteworthy.

## **2. The DEIS' analysis of Alternative A's contribution to forest fragmentation and its effects on species is insufficient and incomplete.**

The DEIS does not include a detailed analysis of forest fragmentation impacts which would occur under Alternative A. Rather, it acknowledges that construction of TGP's pipeline will require clearing 694 forested acres but foregoes any analysis by asserting that detailed review of resulting effects to listed species "are being conducted by TGP as part of their future FERC filings."<sup>582</sup> Conservation Groups incorporate by reference the concerns outlined in the FERC Scoping Comments

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<sup>577</sup> See, e.g., U.S. Forest Service, *Effects of Climate Change on Terrestrial Birds of North America* (2013), <https://www.fs.usda.gov/ccrc/topics/effects-climate-change-terrestrial-birds-north-america#:~:text=Research%20on%20birds%20has%20shown,use%20more%20energy%20for%20thermoregulation>.

<sup>578</sup> See CHAD B. WILSEY ET AL., NAT'L AUDOBON SOC'Y, SURVIVAL BY DEGREES: 389 BIRD SPECIES ON THE BRINK 10 (2019), <https://nas-national-prod.s3.amazonaws.com/climatereport-2019-english-lowres.pdf>, **Attachment 104**.

<sup>579</sup> See *id.* at 12.

<sup>580</sup> See, e.g., Gareth Jones et al., *Carpe noctem: The importance of bats as bioindicators*, ENDANGERED SPECIES RSCH. (July 9, 2009), **Attachment 105**.

<sup>581</sup> U.S. Fish and Wildlife Service, *Special Status Assessment Report for the Northern long-eared bat (*Myotis septentrionalis*)* 41 (Mar. 22, 2022), **Attachment 100**.

<sup>582</sup> DEIS at 279.

regarding the pipeline's potential to contribute to habitat fragmentation due to the loss of hundreds of forested acres and its attendant negative impacts as related to listed species.<sup>583</sup> Conservation Groups also note that it is not enough for the DEIS to merely point to other, non-NEPA documents and processes to assert that sufficient environmental impact analysis is being undertaken.<sup>584</sup> The DEIS itself must include an analysis of the impact forest fragmentation will have on listed species, and because it currently lacks any such meaningful analysis, the DEIS is incomplete.

**3. The DEIS' analysis of Alternative A's impacts to waterways and its effects on species is also insufficient and incomplete.**

The DEIS additionally fails to include a detailed analysis of environmental impacts TGP's pipeline construction and operation could have on listed species due to the pipeline's multiple stream crossings. This includes both effects to aquatic habitat itself as well as effects on other species. While aquatic species may be particularly affected by factors such as sedimentation, bats and birds which feed and breed along waterways may additionally be adversely impacted by construction activities, noise, and pollution of food and water sources. Conservation Groups incorporate by reference the concerns outlined in the FERC Scoping Comments regarding the pipeline's potential to affect local waterways and species who rely on them.<sup>585</sup> Rather than analyze these potential impacts, the DEIS again punts analysis of these effects to future filings which TGP will submit to FERC.<sup>586</sup> Again, it is inappropriate to rely on tangential, non-NEPA documents to assert that a sufficient impact analysis is being undertaken. Instead, the DEIS must analyze the effect that multiple stream crossing may have on aquatic habitat, including but not limited to sedimentation, pollution, habitat fragmentation, and noise pollution.

**VII. The DEIS's analysis of the project's impacts on public lands is unsupported and premature.**

The DEIS notes that TGP's proposed pipeline is currently routed to cross two Nationwide Rivers Inventory ("NRI") waterbodies: Yellow Creek and Jones Creek.<sup>587</sup> TVA asserts that any impacts to these creeks due to the construction of the pipeline

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<sup>583</sup> FERC Scoping Comments at 36–37, [Attachment 106](#).

<sup>584</sup> *Supra* Section I.D.

<sup>585</sup> FERC Scoping Comments at 36–39, [Attachment 106](#).

<sup>586</sup> *See e.g.*, DEIS at 167 ("TGP will provide a detailed analysis of surface water effects in the Environmental Report to be submitted with their certificate application that will be filed with the FERC for the proposed pipeline."); DEIS at 269 ("Most of [natural gas pipeline lateral corridor areas] have the potential to provide quality habitat for wildlife, including some protected or rare species primarily associated with . . . streams and wetlands . . . TGP is conducting field surveys of the proposed pipeline as part of the Environmental Report to be submitted with their certificate application to the FERC for the proposed pipeline.").

<sup>587</sup> DEIS at 287.

would be “minor” as the pipelines would “likely” be directionally-drilled beneath the waterways.<sup>588</sup> TVA further states that “[n]o direct, long-term effects to . . . other resources would occur within a five-mile radius.”<sup>589</sup> TVA’s conclusions are both unsupported and premature.

First, TVA’s belief that TGP’s installation process to place its pipeline under Yellow and Jones Creeks through directional drilling would cause only “minor” impacts to NRI waterbodies ignores the risk that horizontal-directional drilling (“HDD”) poses to waterways. As outlined above and in our Scoping Comments to FERC regarding the proposed pipeline, which Conservation Groups incorporate by reference here, HDD requires the use of large quantities of drilling muds and can cause inadvertent returns which can have severe impacts on water quality and aquatic life.<sup>590</sup> Further, TVA’s finding is premature because—as acknowledged in the DEIS—TGP has not committed to utilizing HDD to cross these waterbodies. Further, it is unclear whether FERC has finished consulting with NPS about the effect these crossings could have on Yellow and Jones Creek.<sup>591</sup>

When a permitting agency reviews projects affecting NRI waterbodies, they must “take care to avoid or mitigate adverse effects” to those waters.<sup>592</sup> As part of that process, the permitting agency must determine whether a proposed action could have an adverse effect on the natural, cultural, or recreational values of an NRI waterway such that it would foreclose the option of classifying these areas as wild, scenic, or recreational rivers in the future.<sup>593</sup> In our Scoping Comments, Conservation Groups have alerted FERC that the pipeline construction process as currently envisioned could jeopardize the potential future listing of Jones Creek and Yellow Creek as Wild and Scenic Rivers due to environmental and aesthetic degradation of

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<sup>588</sup> DEIS at 294.

<sup>589</sup> *Id.*

<sup>590</sup> FERC Scoping Comments at 46–47, **Attachment 106**.

<sup>591</sup> Conservation Groups note that an April 2022 pre-filing monthly activity report submitted by TGP to FERC states that the company “received clearance” from NPS “concurring with a determination of no impacts” to Yellow Creek and Jones Creek. See Tennessee Gas Pipeline Company, LLC, *Pre-Filing Monthly Activity Report (for the month of April 2022)*, Docket No. PF22-2-000, 1 (2022), **Attachment 107**. On May 11, 2022, Conservation Groups submitted a FOIA to NPS requesting all records related to this alleged concurrence determination. See SELC FOIA Request dated May 11, 2022, **Attachment 13**. That request is still outstanding; therefore, the details and extent of this determination are unclear. However, Conservation Groups note that it is the role of the federal permitting agency—in this case, FERC—to evaluate a proposed action’s effect on NRI rivers and to ensure that impacts to these waterways are avoided or mitigated. Therefore, any communication between TGP and NPS regarding Jones Creek and Yellow Creek would not absolve FERC of its own obligation to consult with NPS to evaluate and avoid or mitigate actions which could affect NRI rivers and streams. See U.S. DOI, *Consultation Instructions* (last updated Nov. 16, 2021), <https://www.nps.gov/subjects/rivers/consultation-instructions.htm>.

<sup>592</sup> See President Jimmy Carter, *Executive Memorandum 1* (Aug. 2, 1979), <https://www.nps.gov/subjects/rivers/upload/Presidential-Memorandum-for-Heads-of-Departments-and-Agencies-508-2.pdf>, **Attachment 108**.

<sup>593</sup> See U.S. DOI, *Consultation Instructions* (last updated Nov. 16, 2021), <https://www.nps.gov/subjects/rivers/consultation-instructions.htm>.

the areas.<sup>594</sup> As FERC undertakes its NRI analysis and consultation, it may require mitigation or avoidance measures from TGP that would change the proposed pipeline's route or impact on these waterbodies. Because TGP's plans to cross these waterbodies may substantially change, it is premature for TVA to analyze these impacts or assert that TGP's actions would only cause minor affects to NRI rivers. TVA should therefore wait to undertake this analysis until after FERC's consultation process is completed.

## **VIII. Conclusion**

For the foregoing reasons, we urge TVA to address the insufficiencies and omissions in the DEIS for the Cumberland Project to meet the agency's "obligation to consider every significant aspect of the environmental impact of a proposed action," and to "inform the public that it has indeed considered environmental concerns in its decisionmaking process."<sup>595</sup>

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<sup>594</sup> FERC Scoping Comments at 58–59, **Attachment 106**.

<sup>595</sup> *Balt. Gas & Elec.*, 462 U.S. at 97.