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Ms. Cynthia R. Wren
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VIA E-MAIL AND TVA PUBLIC COMMENTS FORM

RE: GAF Draft EA Comments

Dear Ms. Wren:

The attached comments on the Tennessee Valley Authority's "Draft Environmental Assessment – Installation of Emission Control Equipment and Associated Facilities – Gallatin Fossil Plant" are respectfully submitted on behalf of Earthjustice, Environmental Integrity Project, Sierra Club, Southern Alliance for Clean Energy, and Southern Environmental Law Center. These comments have also been uploaded directly to TVA using the online TVA Public Comments Form.

The attachments supporting our comments are voluminous and contain files that will be most useful to TVA in interactive digital format, rather than static digital or paper format. Therefore, we sent a CD containing all attachments to your attention via FedEx overnight delivery for inclusion in the public record, as you and I discussed yesterday via e-mail.

Please confirm your receipt of and ability to access the attachments on CD. Also, please let me know if you need any additional information.

Sincerely,

Nathan T. Moore
Staff Attorney

COMMENTS ON INSTALLATION OF EMISSION CONTROL EQUIPMENT AND ASSOCIATED FACILITIES GALLATIN FOSSIL PLANT

The following organizations (collectively referred to as Commenters) respectfully submit these comments on the Tennessee Valley Authority's (TVA) Draft Environmental Assessment (Draft EA) for "Installation of Emission Control Equipment and Associated Facilities" at the Gallatin Fossil Plant (Gallatin):

1. Earthjustice

Earthjustice is a non-profit public interest law organization dedicated to protecting the magnificent places, natural resources, and wildlife of this earth, and to defending the right of all people to a healthy environment.

2. Environmental Integrity Project

The Environmental Integrity Project is a nonpartisan, nonprofit organization established in March of 2002 by former EPA enforcement attorneys to advocate for more effective enforcement of environmental laws. The Environmental Integrity Project has three objectives: to provide objective analysis of how the failure to enforce or implement environmental laws increases pollution and affects the public's health; to hold federal and state agencies, and individual corporations, accountable for failing to enforce or comply with environmental laws; and to help local communities in key states obtain the protection of environmental laws.

3. Sierra Club

Sierra Club is a non-profit organization incorporated in the State of California with approximately 600,000 members nationwide. Since its founding in 1892, Sierra Club has pursued its mission to enjoy, explore, and protect the planet. Sierra Club's Tennessee Chapter, which is headquartered in Nashville, has approximately 6,555 members throughout the state, including members who are directly affected by the Gallatin plant's pollution and who will see bill impacts caused by TVA's proposed Gallatin project.

4. Southern Alliance for Clean Energy

Southern Alliance for Clean Energy is a nonprofit organization that promotes responsible energy choices that create global warming solutions and ensure clean, safe, and healthy communities throughout the Southeast.

5. Southern Environmental Law Center

The Southern Environmental Law Center (SELC) is a non-profit, regional environmental organization dedicated to protecting natural resources, preserving special places, and promoting vibrant communities throughout the Southeast. SELC works extensively on issues concerning air and water quality and energy resources in six Southeastern states, five of which include portions of the Tennessee Valley served by TVA.

I. Summary of Comments

In the Draft EA, TVA proposes to spend $1.2 billion to extend the life of the aging Gallatin plant. As a "major federal action significantly affecting the human environment," this proposed action requires preparation of an EIS. The effects of the proposed action are significant no matter what the context: they are considerable in absolute terms, when compared to retiring the plant, and when compared to continued operation of the plant as is. TVA's proposed action would have profound adverse consequences for people's health and well-being, for ratepayers' pocketbooks, and for the environment. Even if the proposed air pollution controls consistently operate to the limits of their performance capabilities, the Gallatin plant could emit up to 8 million tons of carbon dioxide (CO_2), 4,442 tons of sulfur dioxide (SO_2), 1,100 pounds of nitrogen oxides (NOx), and 39.2 pounds of toxic mercury pollution every year. And the contaminants that are scrubbed from Gallatin's air emissions would not disappear; instead, the amount of coal ash produced by Gallatin would be increased to 430,000 to 835,000 tons per year, which would be deposited into new landfills in geologically unstable areas on the Gallatin site. Additionally, the retrofits would cause the plant to increase its water withdrawals and discharges of more than a dozen toxic metals into the Cumberland River, including levels of copper and thallium that would contribute to exceedances of instream water quality values. Continued operation of the Gallatin plant would thus exert an enormous toll on human health and the environment for years to come.

There are other, independent reasons why TVA must prepare an EIS. Proposed actions will be considered "significant" – and thus require an EIS – if they are "highly controversial" or jeopardize threatened and endangered species. Although either is sufficient, the proposed Gallatin retrofits are significant in both of these respects. Alternatively, TVA must prepare an EIS for the proposed action because Gallatin is a "major power generating facility" and the decision to be made is whether to retire or continue operating this major power generating facility with retrofits. For all of these reasons, TVA cannot issue a record of decision (ROD) without first completing the EIS process.

The Draft EA itself is flawed in three important respects, and cannot be offered as a substitute for an EIS. First, the Draft EA impermissibly segments the project by failing to consider the environmental consequences of wet-to-dry ash conversion, closing the Cumberland River Aquatic Center (CRAC), and switching to a more polluting fuel source.

Second, the Draft EA relies on an unlawful "no action" alternative. Under NEPA, "no action" means either the continuation of an agency's established plans or taking no action. In the draft EA, TVA framed its "no action" alternative in terms of operating all units at Gallatin with no additional controls. But this would be illegal and inconsistent with TVA's own established management decisions. In 2011, TVA voluntarily entered into a legally binding agreement to cease operating Gallatin unless it installed retrofits or repowered the facility with biomass. Because TVA made a conscious management-decision not to—and cannot legally—operate Gallatin as an uncontrolled coal plant after 2017, it cannot now chose continuing to operate the plant without additional controls as the baseline against which other alternatives are assessed. Therefore under either of the definitions of no action, Gallatin cannot continue to operate if TVA

takes "no action." This flaw permeates the entire Draft EA, for it means that the environmental impacts of TVA's preferred "action" alternative has been misleadingly assessed against an impermissible baseline. As a result of this systematic flaw, the Draft EA completely misrepresents and understates the true environmental impacts of the alternatives that TVA chose to analyze.

Third, the Draft EA considers an unreasonably narrow range of alternatives. In fact, the two purported alternatives that the Draft EA analyzes (other than TVA's purported no action alternative – which is illegal and therefore unreasonable) really consist of one alternative (installing the same pollution controls) in two different locations. As a result, TVA proposes to select a highly expensive and highly polluting option without even acknowledging that other, less expensive and less polluting alternatives exist, or weighing the impacts of retrofitting against less harmful alternatives. TVA cannot summarily dismiss from further consideration reasonable alternatives such as retiring the plant; replacement with energy efficiency or demand side management; replacement with natural gas; retirement of only some Gallatin units; replacement with power purchases; and alternative pollution control technology. Therefore TVA must correct the flaws in the Draft EA and prepare an EIS that considers all impacts of the project, other reasonable alternatives, and a legitimate no action alternative.

TVA cannot cure these substantial flaws in the Draft EA by tiering to its 2011 programmatic EIS. The programmatic EIS, prepared in conjunction with TVA's 2011 Integrated Resource Plan (IRP), does not provide the necessary analysis of site-specific impacts and alternatives. Even if TVA had analyzed the proposed decision in the IRP EIS, new information and changed circumstances would warrant a supplemental EIS.

The development of the Draft EA also was plagued by procedural flaws which by themselves mean the Draft EA cannot be substituted for a full EIS. First, TVA has refused to respond to several requests for documents which were submitted under the Freedom of Information Act (FOIA). TVA must provide these essential documents and provide an opportunity for additional public comment regardless of the next step that the agency chooses to take. In particular, TVA must provide these essential documents prior to the public comment period on the EIS in order to allow the public to analyze the full impacts of the proposed project.

Finally, TVA erred by executing contracts and taking steps to implement the proposed action even before finalizing the Draft EA. These contracts and actions constitute an irreversible and irretrievable commitment of resources and violate NEPA's prohibition on actions that would limit the choice of reasonable alternatives. The agency should not and cannot add other transgressions to this violation by failing to comply with the NEPA requirements described above.

II. Legal Background

The National Environmental Policy Act (NEPA, or Act) is "our basic national charter for protection of the environment."[1] Other environmental statutes focus on particular media (like air, water, or land), specific natural resources (such as wilderness areas, or endangered plants and

[1] 40 C.F.R. § 1500.1(a).

animals), or discrete activities (such as mining, introducing new chemicals, or generating, handling, or disposing of hazardous substances). In contrast, NEPA applies broadly "to promote efforts which will prevent or eliminate damage to the environment."[2]

To accomplish this expansive goal, NEPA requires that government agency decision-makers consider and weigh the environmental consequences of proposed actions "at the earliest possible time to insure that planning and decisions reflect environmental values, to avoid delays late in the process, and to head off potential conflicts."[3] "[B]y focusing the agency's attention on the environmental consequences of a proposed project, NEPA ensures that important effects will not be overlooked or underestimated only to be discovered after resources have been committed or the die otherwise cast."[4] Ultimately, NEPA "has 'twin aims. First, it places upon [a federal] 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.'"[5]

Whereas the substantive environmental protection goals of the Act provide some flexibility and responsible exercise of agency discretion, "the Act also contains very important 'procedural' provisions—provisions which are designed to see that all federal agencies do in fact exercise substantive discretion given to them."[6] NEPA's procedural protections "are not highly flexible. Indeed, they establish a strict standard of compliance."[7] "The sweeping policy goals . . . of NEPA are . . . realized through a set of 'action-forcing' procedures that require that agencies take a 'hard look at environmental consequences.'"[8]

The Environmental Impact Statement (EIS) is the centerpiece of the NEPA process, and it is the principal tool for insuring that agencies meet NEPA's substantive and procedural goals. NEPA directs agencies to provide a coordinated public process and to prepare a detailed EIS for "every recommendation or report on proposals for legislation and other major Federal actions significantly affecting the human environment."[9] The requirement to prepare an EIS fulfills two of NEPA's essential mandates. First, it "ensures that the agency, in reaching its decision, will

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[2] NEPA § 2, 42 U.S.C. § 4321.
[3] 40 C.F.R. 1501.2; s*ee* NEPA § 102, 42 U.S.C. § 4332; *see also* 40 C.F.R. § 1501.1(a).
[4] *Robertson v. Methow Valley Citizens Council*, 490 U.S. 332, 349 (1989); *see also Jones v. District of Columbia Redev. Land Agency*, 499 F.2d 502, 512 (D.C. Cir. 1974), *cert. denied*, 423 U.S. 937 (1975) ("NEPA was intended to ensure that decisions about federal actions would be made only after responsible decision-makers had fully adverted to the environmental consequences of the actions, and had decided that the public benefits flowing from the actions outweighed their environmental costs.").
[5] Pac. Rivers Council v. United States Forest Serv., 689 F.3d 1012, 1024 (9th Cir. Cal. 2012) (citing Kern v. Bureau of Land Mgmt., 284 F.3d 1062, 1066 (9th Cir. 2002) (quoting Baltimore Gas & Elec. Co. v. Natural Res. Def. Council, Inc., 462 U.S. 87, 97, 103 S. Ct. 2246, 76 L. Ed. 2d 437 (1983)) (internal quotations and citations omitted, alteration in original)).
[6] Calvert Cliffs Coord. Comm., Inc. v. Atomic Energy Comm'n, 449 F.2d 1109, 1112 (D.C. Cir. 1971), cert. denied, 404 U.S. 942 (1972).
[7] *Id*.
[8] *Pac. Rivers Council*, 689 F.3d at 1024 (citing *Robertson v. Methow Valley Citizens Council*, 490 U.S. 332, 350 (1989) (quoting *Kleppe v. Sierra Club*, 427 U.S. 390, 410 n.20, 96 S. Ct. 2718, 49 L. Ed. 2d 576 (1976))).
[9] NEPA § 102(2)(C); 42 U.S.C. § 4332(2)(C).

have available and will carefully consider detailed information concerning significant environmental impacts" before committing resources to a course of action.[10] Second, "[p]ublication of an EIS, both in draft and final form, also serves a larger informational role. It gives the public the assurance that the agency 'has indeed considered environmental concerns in its decisionmaking process,' and, perhaps more significantly, it provides a springboard for public comment."[11] Where an agency is uncertain whether an EIS is required for a proposed action, it may first develop a concise public document known as an Environmental Assessment (EA) to help resolve the question and as an aid in preparing an EIS. But the decision whether to prepare an EIS "is not committed to the agency's discretion."[12]

As explained in the comments that follow, TVA's proposed installation of emission controls and associated equipment at the Gallatin Fossil Plant is a major federal action significantly affecting the human environment. Based on NEPA's statutory directives, Council of Environmental Quality (CEQ) regulations, and TVA's own NEPA guidelines, TVA must prepare an EIS following a full public process before deciding whether to install pollution controls or to retire the Gallatin Fossil Plant. And TVA must complete this process and issue a final EIS and record of decision (ROD) before committing resources to the proposed action.

III. TVA Must Provide the Public with Essential Information That Is Missing from the Draft EA as Part of the NEPA Process.

The NEPA process rests upon informed public discussion. "[P]ublic scrutiny [is] essential to implementing NEPA,"[13] and agencies "shall to the fullest extent possible . . . [e]ncourage and facilitate public involvement."[14] NEPA "insure[s] that environmental information is available to public officials and citizens before decisions are made and before actions are taken" so that "public officials make decisions that are based on understanding of environmental consequences."[15] TVA recognizes in its rules that the NEPA process must "encourage public participation."[16] Without such full disclosure, the public cannot scrutinize the agency's plans, and so important environmental risks, and reasonable alternatives which may avoid them, may go unremarked before a project begins, in violation of NEPA. As then-Judge Breyer explained, "the risk implied by a violation of NEPA is that real environmental harm will occur through inadequate foresight and deliberation."[17] "The difficulty of stopping a

[10] *Robertson*, 490 U.S. at 349.
[11] *Id.*; *see also Citizens for a Better Henderson v. Hodel*, 768 F.2d 1051, 1056 (9th Cir. 1982) (the "form, content and preparation [of the EIS] foster both informed decision-making and informed public participation"); 40 C.F.R. § 1502.1 (purpose of EIS is to "provide full and fair discussion of significant environmental impacts and . . . [to] inform the decisionmakers and the public of the reasonable alternatives which would avoid or minimize adverse impacts . . .").
[12] *Found. for N. Am. Wild Sheep v. Dep't of Agric.*, 681 F.2d 1172, 1177, n. 24 (9th Cir. 1982).
[13] 40 C.F.R. § 1500.1(b).
[14] *Id.* at § 1500.2 (emphasis added); *see also id.* § 1501.4.
[15] 40 C.F.R. § 1500.1(b), (c) (emphasis added).
[16] TVA Instruction IX § 5.8.15.
[17] *Sierra Club v. Marsh*, 872 F.2d 497, 504 (1st Cir. 1989).

bureaucratic steam roller, once started"[18] warrants careful review, and full public participation at the outset.

The purpose of NEPA is fundamentally undermined when inadequate information is provided to the public. This, unfortunately, is the case here. Because TVA has not responded to several Freedom of Information Act (FOIA),[19] requests from commenter Sierra Club, or otherwise disclosed important information, these comments, and hence the NEPA process, are necessarily incomplete. This flaw alone renders TVA's NEPA process inadequate. TVA must therefore ensure that crucial information, including but not limited to the following, is available to the public at the outset of the EIS process or before TVA prepares a revised Draft EA:

- Engineering and technical information on the pollution controls that TVA proposes, how those controls will be integrated into Gallatin's existing system, the range of performance that might be expected from such controls, and the content of wastes these systems may produce.

- Design documents and other reports showing how TVA's proposed ash and scrubber waste landfills will be built, whether they will maintain structural integrity in the karstic wetlands in which TVA intends to site them, the adequacy of the leak detection and prevention systems for those landfills, and related waste management questions (including, for instance, the current level and type of groundwater contamination associated with the ash ponds that the project will allow to continue to operate).

- Underlying studies, reports, contracts, and communications documenting other control technologies which TVA may have considered and rejected, and contracts, permit applications, and other documents related to the project TVA proposes – documents which will help show the options TVA has considered, why it rejected some of them, and the degree to which it has committed to others.

- Reliability studies, energy efficiency and natural gas pricing reports, and other documents (whether specific to Gallatin or not) that would help assess whether alternatives to operating Gallatin as a coal-fired facility are viable.

TVA has averred in FOIA judicial proceedings that it possesses as many as 10 bankers' boxes of documents on this project. Those documents, including the documents listed above, would doubtless have better informed these comments and allowed us to more fully enter into this important debate. TVA must now provide this information so that the same error is not repeated during the EIS process. We submit these comments without waiving any objection to TVA's ongoing violations of FOIA and NEPA.

[18] *Id*.
[19] 5 U.S.C. § 552

IV. TVA Must Provide a Full Public Process and Prepare an Environmental Impact Statement for the Proposed Gallatin Project.

TVA must prepare an EIS for four distinct reasons. First, Gallatin would produce substantial quantities of pollution under the proposed action, significantly affecting the human environment. Second and third, the highly controversial nature of the Gallatin proposal and its effect on endangered species renders the proposed action "significant." Finally, Gallatin is a "major power generating facility." Each of these reasons provides a separate and sufficient basis for the preparation of an EIS.

A. TVA's Proposed Action Requires Preparation of an EIS because It Is a "Major Federal Action Significantly Affecting the Human Environment."

TVA faces a stark choice between completely or partially retiring the aging Gallatin plant and investing enormous sums of money that would not only allow TVA to continue operating the plant; it would impel TVA to do so for another decade or more in order to recoup its investment from ratepayers. Unlike retiring the plant, continued operation of Gallatin would produce massive amounts of air and water pollution and coal combustion waste. If TVA installs pollution controls, every year for the remainder of its operational life the plant would continue to emit millions of tons of regulated air pollutants, including carbon dioxide, sulfur dioxide, nitrogen oxides, coarse and fine particle pollution and dozens of toxins, such as acid gases, dioxins, mercury, arsenic, lead, copper, selenium, hexavalent chromium, and other heavy metals.[20] The plant also would continue to discharge more than a dozen toxic metal pollutants into the Cumberland River.[21] And the Gallatin plant would significantly increase the amount of coal combustion wastes that it generates to between 430,000 and 830,000 tons of waste annually.[22] Conversely, retiring the Gallatin units would entirely eliminate emissions of air pollutants, discharges of water pollution, and land disposal of coal combustion wastes from the plant.[23] It would also spare ratepayers the $1.2 billion price tag for pollution control retrofits. By any relevant measure, TVA's proposal is a major federal action for which NEPA requires an EIS.

1. TVA's Proposed Action is a Major Federal Action.

NEPA requires an EIS for all "proposals for . . . major Federal actions significantly affecting the quality of the human environment."[24] A major federal action, for NEPA purposes, includes actions with effects that may be major and that are potentially subject to federal control and responsibility.[25] The term "major" has no meaning independent of "significantly," as defined in the CEQ regulations, and merely reinforces the meaning of significantly.[26] An "action" includes new and continuing activities, including projects financed, assisted, conducted, regulated or approved by federal agencies.[27] The proposed action in this case, installing pollution

[20] *See* Draft EA at 80-82, *see also* Report of Dr. Ranajit Sahu, Attachment 24 (hereinafter, Sahu Report).
[21] *See* Draft EA at 94.
[22] *See* Draft EA at 20.
[23] *See* Draft EA at 83, 111; *see also* Sahu Report, Attachment 24.
[24] 42 U.S.C. § 4332(2)(C); *see* 40 C.F.R. § 1502.3, TVA NEPA Procedures § 5.4.1.
[25] 40 C.F.R. § 1508.18.
[26] Id.
[27] 40 C.F.R. § 1508.18(a).

controls and associated facilities at the Gallatin plant, satisfies all of these components of the definition of a major federal action. Not only is the decision to install pollution controls subject to federal control – being proposed, financed, conducted, regulated, and subject to approval by TVA – it is also an action that will clearly have major effects on people and the environment.

2. TVA's Proposed Action Significantly Affects the Human Environment.

Based on their corresponding regulatory definitions, actions are deemed "major" if they "significantly" affect the human environment.[28] Under the CEQ regulations, in order to determine if an action significantly affects the environment, an agency must consider both the context of the action and the intensity of the action.[29] Evaluating the significance of an action necessarily requires analyzing its impacts in several contexts, including: the action in relation to society as a whole; in relation to the affected region in which the action is taking place; in relation to the interests affected by the action; and in relation to the locality affected by the proposed action.[30] Both short-term and long-term effects are relevant for this analysis.[31] As discussed below, the Gallatin proposal implicates all of these contexts and would cause or contribute to significant short-term and long-term impacts locally, regionally, and nationally.

It is equally important that the agency proposing the action correctly analyzes the intensity of the action, in order to determine whether the action is significant for NEPA purposes. Intensity refers to the severity of the impact and includes a wide range of considerations of the impact of the proposed action, including:

> [t]he degree to which the proposed action affects public health or safety, [t]he degree to which the effects on the quality of the human environment are likely to be highly controversial, [t]he degree to which the possible effects on the human environment are highly uncertain or involve unique or unknown risks, [t]he degree to which the action may establish a precedent for future actions with significant effects or represents a decision in principle about a future consideration, [w]hether the action is related to other actions with individually insignificant but cumulatively significant impacts, and [t]he degree to which the action may adversely affect an endangered or threatened species or its habitat.[32]

An action may be "significant" if any one of these factors is met.[33] If the determination of whether a significant environmental impact will or will not result from the proposed action is a close call, then an EIS ***should*** be prepared pursuant to NEPA.[34] As shown below, the Gallatin proposal is not even a close call. The proposed project, individually and in combination with other related and similar activities, would significantly affect the human environment locally, regionally, and nationally; it clearly requires an EIS.

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[28] 40 C.F.R. § 1508.27
[29] Id. See Humane Society of the United States v. Johanns, 520 F.Supp.2d 8 (D.C. Cir. 2007)
[30] 40 C.F.R. § 1508.27(a).
[31] 40 C.F.R. § 1508.27(a).
[32] 40 C.F.R. § 1508.27(b)(2), (4), (5), (6), (7), (9).
[33] Ocean Advocates v. U.S. Army Corps of Eng'rs, 361 F.3d 1108, 1125 (9th Cir. 2004).
[34] Center for Biological Diversity v. National Highway Traffic Safety Admin., 538 F.3d 1172 (9th Cir. 2008) (emphasis added).

"Human environment" must be interpreted comprehensively to include both the natural and physical environment as well as the relationship of people with that environment.[35] The agency must evaluate the project's economic effects to the extent they are interrelated with natural or physical effects.[36] NEPA requires "a narrowly focused, indirect review of the economic assumptions underlying a federal project described in an impact statement."[37] NEPA analysis of the human environment encompasses social or economic impacts that are interrelated with or caused by natural or physical impacts, which flow from the proposed major federal action.[38]

Specifically, the proposed action would have significant impacts on areas including, but not limited to, the following:

a. Landfill

TVA's proposal would require the construction of two enormous new landfills, each of which will be over 150 feet tall, to contain huge amounts of additional ash and scrubber waste from its new emissions control system.[39] The Gallatin plant already ranks as the 9th most polluting coal plant in the United States in terms of coal combustion waste (CCW) discharged to on-site and off-site surface impoundments.[40] If considered as a standalone project, these proposed landfills would warrant an EIS.[41]

Coal combustion wastes include the toxic metals and other contaminants removed from exhaust gases by the plant's air pollution controls. The quantity and composition of coal combustion wastes is dictated, in large part, by the contaminants present in the parent coal burned at the plant. The Gallatin plant currently burns 100% low-sulfur coal, sourced primarily from the Powder River Basin (PRB).[42] When burning low-sulfur PRB coal, the plant generates

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[35] 40 C.F.R § 1508.14.
[36] Id.
[37] *City of Shoreacres v. Waterworth*, 332 F.Supp.2d 992, 1009 (S.D. Texas 2004), quoting *Welch v. U.S. Air Force,* 249 F.Supp.2d 797, 806 (N.D. Texas 2003).
[38] *Morris v. Myers*, 845 F.Supp. 750, 754 (D. Oregon 1993).
[39] Draft EA at 20
[40] *See* U.S. EPA Toxic Release Inventory (TRI) On-site and Off-site Reported Disposed of or Otherwise Released (in pounds), top 100 facilities (of 618) for facilities in NAICS 2211 - Electric Utilities, for All chemicals, U.S., 2011, Attachment 1.
[41] *See People ex rel. Van De Kamp v. Marsh*, 687 F. Supp. 495, 501 (N.D. Cal. 1988) (explaining that EAs prepared by an agency were insufficient to show that a 180-acre landfill would not have significant adverse impact on the human environment, and therefore the agency must conduct further evaluation to determine whether an EIS is necessary); *Azusa Land Reclamation Co. v. Main San Gabriel Basin Watermaster*, 52 Cal. App. 4th 1165, 1194-95 (Cal. App. 2d Dist. 1997) (holding that a proposed landfill expansion was not exempt from the California Environmental Quality Act because there was a reasonable possibility that the activity would have a significant effect on the environment); *Centerville v. Dep't of Natural Resources*, 142 Wis. 2d 240, 256 (Wis. Ct. App. 1987) (holding that "the department's ultimate conclusion that the proposed landfill was not a major action significantly affecting the quality of the human environment [under the Wisconsin Environmental Policy Act, which is patterned off of NEPA] did not represent an exercise of reasonable judgment" because "the department failed to develop a reviewable record of sufficient depth")").
[42] Draft EA at 3.

approximately 185,000 tons of dry fly ash and 46,500 tons of bottom ash annually.[43] Under the proposed project, TVA would switch fuels from 100% low-sulfur PRB coal to a 50-50% blend of low-sulfur PRB coal and higher sulfur Illinois Basin coal.[44] The Illinois Basin coal TVA proposes to use has a sulfur content that is more than 8-times higher than Gallatin's historic fuel; the blended fuel mix would contain almost 5-times more sulfur.[45]

As a result of the proposed pollution control project and, more importantly, the proposed fuel switch to a 50-50% blend of PRB and high-sulfur Illinois Basin coal, the Gallatin plant would generate 2- to 4-times more coal combustion waste that it currently does.[46] If TVA pursues its proposed plan, the facility would generate between 430,000 to 835,000 tons of dry ash every year.[47] The plant also would continue to produce 46,500 tons of bottom ash per year.[48] Based on the new and increased waste streams, TVA would need to construct two separate new landfills, known as the North Rail Loop (NRL) and South Rail Loop (SRL) Landfills.[49] The NRL landfill would occupy 94 acres of land, 50 acres of which TVA would develop as a Resource Conservation and Recovery Act (RCRA) Subtitle D landfill to receive coal combustion waste.[50] Although EPA currently is considering whether to regulate coal combustion waste under the more protective and rigorous standards of RCRA Subtitle C, TVA did not evaluate or discuss how it would meet the more stringent requirements of Subtitle C. The NRL landfill would have a disposal capacity of 6 million cubic yards.[51] TVA would complete the design of the SRL landfill and begin using it at some unspecified future date, as the NRL landfill reaches capacity.[52]

TVA proposes to locate both landfills in areas latticed with karst topography, which exacerbates the risk of environmental contamination and catastrophic failures.[53] Karst topography exists in areas where groundwater erodes subsurface limestone and carbonate rock.[54] Acidic soils at the sites accelerate erosion of the karst formations.[55] Erosion of subsurface karst formations can cause sinkholes which would undermine the landfill structures and rupture their protective liners.[56]

Although TVA has not determined the full extent of unstable karst features at the landfill sites, it has determined that unstable geologic formations cover approximately 5 percent of the NRL site.[57] TVA has not yet designed the SRL, but it has identified its eventual location.[58]

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[43] *Id.* at 20.
[44] Draft EA at Appendix A, A-1.
[45] Id.
[46] Draft EA at 20.
[47] *Id.*
[48] Id.
[49] Id.
[50] Id.
[51] Id.
[52] *Id*. at 95.
[53] *Id*. at 63.
[54] *Id*.
[55] *Id*.
[56] *Id*.
[57] Id.

Remarkably, 47 percent of the proposed SRL site is located over geologically unstable karst formations that are permeated by significant subsurface voids.[59] Several sinkholes already have been identified within the footprint of the SRL site.[60] As a result, these proposed landfills present an enormous risk of failure, with devastating consequences.[61] These landfills would hold millions of cubic yards of coal combustion waste containing dozens of toxic metals. Locating them in such geologically unstable areas subject to subsidence and sinkholes would endanger the groundwater aquifers below the site, the nearby Cumberland River, and people and the environment in the area.

Even without a catastrophic failure, the NRL and SRL landfills would destroy several wetland areas that provide unique and valuable ecological functions.[62] Jurisdictional wetlands comprising more than 5 acres currently exist at sites where the two landfills would be located.[63] Most of these sites are in moderate to good condition and provide good wetland functions—*e.g.*, Wetlands 3, 7, and 8.[64] One, Wetland 10, has unique habitat diversity and landscape values and provides a high level of wetland functions.[65] Wetlands provide important ecological values. The loss of these wetland areas would be particularly significant, as wetlands comprise less than 1 percent of land uses in the Cumberland River watershed.[66]

Moreover, as TVA candidly acknowledges, the landfills would be located in what, until now, has been a Tennessee Wildlife Management Area (WMA).[67] TVA reports that it has reduced the Gallatin Steam Plant WMA, which has been a popular public recreation site, from 1,500 acres to 229 acres in order to place these hazardous landfills atop what had been public parkland.[68] This alone is a significant environmental impact: TVA is proposing to replace hunting and hiking terrain with an ash dump. The EA proposes no mitigation for this activity, and, indeed, does not even fully account for these significant environmental impacts.

In short, though TVA presents its Gallatin life extension project as environmental controls, they are actually transferring literally millions of tons of hazardous waste into a fragile wetland and forest environment now used for wildlife habitat and public parkland. TVA does not provide design details for its landfills, nor does it provide any assurance that they can be safely operated, even if siting such landfills at Gallatin were appropriate, which it is not. This impact is significant and plainly warrants disclosure and discussion in an EIS.

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[58] *Id.* at 21.
[59] *Id*. at 63.
[60] *Id*.
[61] *See, e.g.,* Water Quality-Based Effluent Limits Coal Combustion Waste Impoundments, Attachment 2.
[62] *See* Draft EA at 55-59.
[63] *Id.* at 58-59.
[64] Id.
[65] *Id.* at 59.
[66] *Id.* at 55.
[67] *Id.* at 101.
[68] Id.

b. Surface Water and Groundwater

Retiring the Gallatin plant would greatly diminish or eliminate future water withdrawals and discharges, thus preventing any long-term future effects to local surface waters.[69] Similarly, plant retirement would avoid future groundwater impacts.[70] In contrast, TVA's proposed action alternatives would cause adverse impacts to surface waters and groundwater during project construction and during operation of the plant.

(1) Water Withdrawals

TVA's decision to continue operating the Gallatin plant means that the plant will continue to withdraw and consume even greater quantities of water from the Cumberland River, and to discharge pollutants into the Cumberland River.[71] The Gallatin plant currently withdraws over 930 million gallons of water a day from the Cumberland River.[72] Under TVA's proposed action, the plant would continue to withdraw and use this amount and more. Although adding a dry FGD and other pollution controls would increase the plant's level of water consumption, the Draft EA fails to quantify water consumption, let alone discuss this impact.[73]

In addition, the Draft EA fails to consider available mitigation measures for reducing the impacts of the plant's water consumption—namely, replacing the plant's once-through cooling system with closed-cycle cooling towers. The withdrawal of roughly one-third of the Cumberland River's flow for use as cooling water at the Gallatin plant has deadly consequences for fish and other aquatic life, resulting in both impingement and entrainment.[74] The discharge of very hot once-through condenser cooling water makes the Gallatin plant a major contributor to thermal pollution in the Cumberland River. The Draft EA includes no consideration of the impact of the plant's cooling water intake or thermal discharges to the aquatic life of the Cumberland River.

Pursuant to a consent decree, EPA is scheduled to promulgate cooling water structure intake regulations under section 316(b) of the Clean Water Act by June 2013. The final 316(b) regulations could require replacement of once-through cooling systems with closed-cycle systems for existing facilities like Gallatin. Despite the fact that EPA's anticipated regulation would apply to Gallatin, the Draft EA does not evaluate an alternative that utilizes closed-cycle cooling system technology.

[69] *Id*. at 83.
[70] *Id*.
[71] *See, e.g.,* Draft EA at 86-95.
[72] *See* TVA, Gallatin Fossil Plant – NPDES No. TN0005428- – Application for Renewal, Intake and Effluent Characteristics Form, Outfall 002, at V-1 (May 21, 2009).
[73] *See* Draft EA § 4.2 at 83-98.
[74] *See generally* Sierra Club, Giant Fish Blenders: How Power Plants Kill Fish & Damage Our Waterways (July 2011), Attachment 3.

(2) Surface Water Impacts

The Gallatin plant ranks as the 14th most polluting coal plant in the United States in terms of the quantity of discharges of pollutants to surface waters of the U.S.[75] Currently, the Gallatin plant discharges more than 950 million gallons of polluted stormwater and process water every day into the Cumberland River.[76] The plant discharges approximately 27.9 million gallons of wastewater per day (MGD) from the existing ash pond through Outfall 001, as described in the plant's National Pollution Discharge Elimination System (NPDES) permit.[77] The effluent discharged from Outfall 001 includes oil, grease, suspended solids, toxic metals, and other toxic substances, including those that cause increases in alkalinity.[78] The flow rate of 27.9 million gallons per day, multiplied by average metals concentrations in the discharge water, shows that TVA is annually discharging roughly 136,000 pounds of aluminum, 850 pounds of arsenic, 25,000 pounds of iron, 85 pounds of lead, 2,000 pounds of manganese, 2,000 pounds of selenium, and 85 pounds of silver.[79] In addition, Toxics Release Inventory data for Gallatin show 2011 surface water discharges of 42,000 pounds of barium, 750 pounds of chromium, 3,000 pounds of copper, 560 pounds of vanadium, and 2,700 pounds of zinc.[80]

In addition, the plant discharges approximately 923 MGD from the condenser cooling water channel *via* Outfall 002.[81] The effluent discharged from Outfall 002 includes thermal pollution, residual oxidants, and toxic substances.[82] The state permit under which TVA discharges wastewaters from the Gallatin plant does not impose technology-based effluent limits—as required by the Clean Water Act—on the discharge of the many harmful pollutants that are present in the plant's wastewaters.[83] As a result, those wastewaters receive only the most rudimentary treatment in an unlined settling pond that is not effective at removing dissolved heavy metals and other toxics. Whereas plant retirement would eliminate the discharge of these pollutants, the discharges will persist and increase with continued operation of the plant. The

[75] *See* TRI On-site and Off-site Reported Disposed of or Otherwise Released (in pounds), top 100 facilities (of 618) for facilities in NAICS 2211 - Electric Utilities, for All chemicals, U.S., 2011, Attachment 1A.
[76] *See* Draft EA at 41-42.
[77] *Id*. at 41; *see also* Gallatin NPDES permit: Tennessee Department of Environment and Conservation, National Pollutant Discharge Elimination System Permit No. TN0005428 for the TVA Gallatin Fossil Plant (July 1, 2012); (hereinafter the "Gallatin NPDES Permit"), Attachment 4; Environmental Integrity Project et al., Public Comment on Draft NPDES Permit No. TN0005428 for TVA's Gallatin Fossil Plant (June 13, 2011), Attachment 5.
[78] *Id*. at 42; *see generally* Memo from James A. Hanlon, Director, Office of Wastewater Management to Water Division Directors, Regions 1-10 (June 7, 2010), Attachment 6.
[79] Discharge concentrations were reported in the Gallatin NPDES permit: Tennessee Department of Environment and Conservation, National Pollutant Discharge Elimination System Permit No. TN0005428 for the TVA Gallatin Fossil Plant at A-13 (July 1, 2012), Attachment 4.
[80] U.S. EPA, TRI Explorer, http://iaspub.epa.gov/triexplorer/tri_release.chemical.
[81] *Id*.
[82] *See* Gallatin NPDES Permit (showing that average intake water temperature is 62.6^0 F, while average discharge temperature is 76.3^0 F), Attachment 4.
[83] *See* Petition for Statutory Appeal Before the Tennessee Water Quality Control Board, Attachment 7

Draft EA does not analyze the impacts associated with the continued discharge of inadequately-treated wastewater in the Cumberland River.

TVA reported on biological monitoring of the Cumberland River near Gallatin in 2011.[84] The results showed that Gallatin, through some combination of thermal and chemical pollution and physical impingement, may be having a significant adverse impact on fish populations. TVA uses a metric known as the Reservoir Fish Assemblage Index (RFAI) to assess whether a water body shows a Balanced Indigenous Population of fish (BIP): "[A]ny location that attains an RFAI score of 45 . . . or higher would be considered to have BIP."[85] TVA's downstream sampling location, with an average score of 40, has not met this threshold in any of the seven years of reported data.[86] The upstream sampling location, by comparison, has had RFAI scores higher than 45 twice since 2007.[87] The downstream sampling location has an average score in the "fair" range, while the upstream sampling location is "good."[88] These results show that something between the upstream location and the downstream location is affecting species diversity. Given that the two sampling points are less than ten miles apart, Gallatin is the obvious culprit.

TVA must also recognize the potential risks to the thousands of people for whom the Cumberland River is a source of drinking water. The Gallatin Water Department's intake is located at river mile 239.1, which is about 1.4 miles downstream from the ash impoundment discharge point. According to TDEC, the water department withdraws approximately 5.1 MGD for a population of about 28,000 people.[89]

The construction phase of the project would create substantial additional waste water and sediment discharges from construction storm water runoff, work area dewatering, sewage, equipment washings, dust control, and hydrostatic testing.[90] The new buildings and infrastructure to house pollution controls and related facilities would add impervious surface area to the facility footprint, thus significantly increasing the amount of storm water and pollutant runoff into storm drains, ditches, and streams.[91] Plant retirement would avoid all of these adverse impacts to adjacent surface waters.

In addition to the significant adverse water quality impacts that would be caused by project construction, continued plant operations would wreak a much greater toll, both on water quality and on water quantity. The proposed action could substantially alter the Gallatin wastewater streams by adding new contaminants and increasing pollutant discharges.[92] TVA

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[84] TVA, Biological Monitoring of the Cumberland River in the Vicinity of Gallatin Fossil Plant During Autumn 2010 (July 2011).
[85] Id. at 7.
[86] Id. at 51.
[87] Id.
[88] Id.
[89] *See* TDEC Source Waters Assessment Report (2003), http://www.tennessee.gov/environment/dws/dwassess.shtml.
[90] *Id*. at 84.
[91] Id.
[92] *Id*. at 86-95; *see generally* Technology-based Effluent Limits: Flue Gas Desulfurization (FGD) Wastewater at Steam Electric Facilities, Attachment 6.

acknowledges that the physical structures, reagents and raw materials, operations, and waste products associated with the proposed pollution controls would add and increase water pollution discharges.[93] But the Draft EA makes no attempt to quantify, let alone fully characterize the flow, constituents, or concentrations of additional water pollution the proposed action would produce.[94]

Operation of the dry FGD would produce new wastewater streams from stormwater runoff from reagent storage areas, wastewater from equipment washing, and runoff from scrubber waste disposal.[95] Ammonia storage and ammonia slip associated with the selective catalytic reduction system would add ammonia to the wastewater stream and would create the potential for releases of dangerous levels of ammonia.[96] The new landfills would produce between 26,000 gallons per day (GPD) and 300,000 GPD of concentrated leachate and 340,000 GPD of stormwater runoff.[97] The added pollutant loadings from the leachate collection system would increase the concentration of more than a dozen toxic metals in the ash pond discharge (Outfall 001).[98] Of special concern, the increased discharges of copper and thallium would exceed the instream water quality standards for the Cumberland River.[99] Even without these additional discharges, the Cumberland River already exceeds numeric water quality standards for these two pollutants.[100] As a result, the Clean Water Act prohibits these discharges.[101]

(3) Groundwater Impacts

As discussed in greater detail in the preceding section, the two proposed landfills for this project would be located in geologically unstable areas that are at risk of subsidence and of sinkhole development.[102] Thus, the proposed landfill location creates a risk of structural failure, and liner rupture, and the release of contaminants into nearby groundwater. Engineering reports produced by Stantec Consulting Services, Inc. (Stantec) describe the ongoing risk of accidental discharges from impoundments through seeps, sinkholes, or structural failures.[103] These impacts are significant. TVA has acknowledged that "[p]rivate residential wells occur near the project area,"[104] and to the extent that contaminated groundwater is leaching into the Cumberland River,

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[93] *See* Draft EA at 86-95.
[94] *Id*. at 87-95.
[95] *Id.* at 86-88.
[96] *Id*. at 88-93.
[97] *Id*. at 90.
[98] *Id*. at 93.
[99] *Id*. at 93-94.; *see also* Tennessee Department of Environment and Conservation, National Pollutant Discharge Elimination System Permit No. TN0005428 for the TVA Gallatin Fossil Plant at A-10 to A-14 (July 1, 2012) (showing that exceedances of EPA-recommended water quality criteria for aluminum, iron, and manganese were reasonably likely to occur), Attachment 4.
[100] *Id*.
[101] CWA §§303, 402, 33 U.S.C. §§ 1313, 1342.
[102] Draft EA at 95-96.
[103] Stantec Consulting Servcies, Inc., Report of Phase 1 Facility Assessment: Coal Combustion Product Impoundments and Disposal Facilities - Various Locations - Tennessee, Appendix E: Gallatin Fossil Plant (June 24, 2009); Stantec Consulting Services, Inc., Report of Geotechnical Exploration and Slope Stability Evaluation: Ash Pond / Stilling Pond Complex – Gallatin Fossil Plant (May 27, 2010).
[104] Draft EA at 44.

it could impact the local ecosystem and downstream drinking water users. TVA has not conducted the necessary investigation to fully characterize and quantify the risk of failure and contamination, or to design approaches to mitigate or eliminate this risk.[105] In fact, the Draft EA is based on a design that uses landfill liners specified to meet EPA's RCRA Subpart D criteria.[106] Even though the purported project purpose and need is to comply with the Federal Facilities Compliance Agreement (FFCA) and current and anticipated EPA regulations, the Draft EA does not consider the fact that EPA is scheduled to promulgate standards that could regulate coal combustion waste under the more stringent requirements of RCRA Subpart C, nor does it evaluate the additional measures or costs of regulation under RCRA Subpart C.

Additionally, groundwater monitoring data from Gallatin show ongoing contamination, particularly along the perimeter of the inactive ash pond. The two groundwater wells located between the inactive ash pond and the Cumberland River have both shown elevated concentrations of boron (3 to 6 mg/L), cobalt (100 to 260 ug/L), manganese (11 to 23 mg/L), and sulfate (1,400 to 5,000 mg/L) in recent years.[107] One of these two wells, 19-R, has also shown elevated concentrations of aluminum (80 to 90 mg/L), beryllium (11 to 17 ug/L), cadmium (3 to 6 ug/L), and nickel (120 to 180 ug/L).[108] Since groundwater flow in that area is toward the river, and since the strip of land between the inactive ash pond and the river is very narrow, the practical reality is that these pollutants are leaching directly into the river. Another well adjacent to the cooling water discharge channel, well 21, has shown elevated concentrations of cadmium (3 to 6 ug/L), cobalt (200 to 300 ug/L), mercury (1 to 3 ug/L), manganese (12 to 17 mg/L), and sulfate (roughly 1,000 mg/L). In addition to presenting an ongoing source of environmental contamination, the inactive ash pond offers an important warning about the potential future impact of the active ash ponds.

c. Air Pollution

TVA acknowledges that retiring the Gallatin plant would reduce local and regional air emissions.[109] In fact, retiring the plant would eliminate its emissions of dozens of harmful air pollutants. Some of these air pollutants—such as fine particle pollution,[110] sulfur dioxide,[111] nitrogen oxides,[112] and mercury[113]—cause significant adverse health effects and environmental

[105] *Id.* at 95.
[106] *Id*.
[107] See TVA, Gallatin Fossil Plant – Abandoned Ash Disposal Area – Groundwater Assessment Monitoring Report, April 2012 (May 29, 2012), and earlier reports.
[108] Id.
[109] Draft EA at 30.
[110] *See, e.g.,* National Ambient Air Quality Standards for Particulate Matter, 77 Fed. Reg. 38,890, 38,906-38,911 (June 29, 2012), Attachment 8.).
[111] *See, e.g.*, Primary National Ambient Air Quality Standard for Sulfur Dioxide, 75 Fed. Reg. 35,551 (June 22, 2010), Attachment 9.).
[112] *See, e.g.,* National Ambient Air Quality Standards for Ozone, 73 Fed. Reg. 16,436, 16, 439-16,449 (March 27, 2008), Attachment 10.
[113] *See, e.g.,* Mercury and Air Toxics Standards, 77 Fed. Reg. 9,304 (Feb. 16, 2012), Attachment 11; *see also* Gerald J. Keeler et al., *Sources of Mercury Wet Deposition in Eastern Ohio, USA*, 40 Envtl. Sci. & Tech. 5874, 5874 (Sept. 2006) (Steubenville Study), Attachment 12. This study of mercury-deposition

damage locally and regionally. Others—like acid rain[114] and carbon dioxide[115]—tend to disperse widely across the country and globally, contributing to widespread harm to people and the planet.

These air pollutants wreak both short-term and long-term damage. Pollutants like SO_2, fine particles, and nitrogen oxides (a critical precursor to ground-level ozone pollution) produce acute, localized health and environmental harms. Others, like highly toxic mercury and carbon dioxide, persist in the environment and cause harm to people and the environment for hundreds of years or more.

As we discuss below, TVA has either improperly rejected, or entirely failed to consider, a wide range of reasonable alternatives that would have eliminated this pollution. As such, though TVA presents its Gallatin life extension project as producing air pollution benefits, it is actually producing unnecessary and significant air pollution that will harm the public. This impact is significant and also warrants an EIS.

(1) Carbon Dioxide

There is no question that elevated levels of carbon dioxide (CO_2) in the atmosphere endanger public health and welfare.[116] The harms posed by CO_2-induced climate change are pervasive and severe.[117] Based on the vast weight of scientific evidence, EPA has found that "climate change associated with elevated atmospheric concentrations of carbon dioxide and the other well-mixed greenhouse gases have the potential to affect essentially every aspect of human health, society and the natural environment."[118] The Gallatin life extension project will do nothing to eliminate CO_2 emissions from the plant, and would, instead, prolong these emissions for decades to come.

The adverse effects of human-induced climate change cut across multiple sectors and geographic areas, adversely affecting "human health, air quality, food production and agriculture, forestry, water resources, sea level rise and coastal areas, the energy sector, infrastructure and settlements, and ecosystems and wildlife."[119] The current and projected future consequences of climate change are dire. Rising global temperatures already are producing more frequent and more intense weather events, such as hurricanes and storms, causing enormous

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and source-apportionment from coal combustion in the Steubenville, Ohio area demonstrated that "[t]he dominant contributor to the mercury wet deposition was found . . . to be coal combustion (~70%)." *Id.*

[114] *See* CAA § 401, 42 U.S.C. § 7651.

[115] *See, e.g.,* EPA's Denial of the Petitions to Reconsider the Endangerment and Cause or Contribute Findings for Greenhouse Gases, 75 Fed. Reg. 49,556 (Aug. 13, 2010), Attachment 13.

[116] See Endangerment and Cause or Contribute Findings for Greenhouse Gases Under Section 202(a) of the Clean Air Act, 74 Fed. Reg. 66,496, 66,516 (Dec. 15, 2009), Attachment 14. Of the six greenhouse gases identified in EPA's Endangerment Finding, CO_2, along with methane, ranks as the most important directly emitted pollutant. Id. at 66,517.

[117] *See* 74 Fed. Reg. at 66,523 (linking "human emissions and resulting elevated atmospheric concentrations of . . . greenhouse gases to observed global and regional temperature increases and other climate changes"), Attachment 14.

[118] 74 Fed. Reg. at 66,523.

[119] *Id.*

damage to people, the environment, and the economy (*e.g.*, Hurricane Sandy). Heavy precipitation induces more floods, causing deaths, injuries, water-borne diseases, and mental health problems, such as post-traumatic stress disorders.[120] Higher average temperatures increase the likelihood of extreme heat waves, causing greater numbers of deaths and illnesses.[121] Increased temperatures also will adversely affect air quality, raising ground-level ozone concentrations and associated premature deaths, acute cases of bronchitis, heart attacks, asthma attacks, and other respiratory illnesses.[122] In addition, "[l]arge areas of the country are at serious risk of reduced water supplies, increased water pollution, and increased occurrence of extreme events such as floods and droughts."[123] Coastal areas face rising sea levels and more intense and damaging coastal storms and storm surges.[124] In short, "[o]ver the 21st century, climate change will fundamentally rearrange U.S. ecosystems."[125] As with most environmental risks, these harms will disproportionately burden children, the elderly, and the poor.[126]

Carbon dioxide emissions constitute the largest fraction of total greenhouse gas emissions in the U.S.[127] Fossil-fuel fired power plants are the largest sources of these CO_2 emissions.[128] Thus, fossil-fuel fired power plants, like Gallatin, "are by far the largest emitters of GHGs, primarily in the form of CO_2, among stationary sources in the U.S."[129]

Since the Gallatin plant began operating, it has emitted 420 million tons or more of CO_2.[130] Retiring some or all of the Gallatin units would correspondingly reduce or eliminate the plant's future CO_2 emissions. Under TVA's current proposal, however, that enormous sum would continue to grow at a rate of 8 million tons a year.[131] TVA's proposed action would thus add to the global CO_2 burden, with severe consequences for the human environment, precisely at the time TVA should take steps to reduce its climate change footprint.

The World Meteorological Organization recently determined that "the amount of greenhouse gases in the atmosphere reached a new record high in 2011."[132] A recent report by the World Bank concludes that, unless current greenhouse gas emission trends are sharply reversed, we will experience "unprecedented heat waves, severe drought, and major floods in

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[120] Standards of Performance for Greenhouse Gas Emissions for New Stationary Sources: Electric Utility Generating Units, 77 Fed. Reg. 22,393, 22,402 (Apr. 13, 2012), Attachment 15).
[121] *Id.*
[122] *Id.*
[123] *Id.*
[124] Id.
[125] *Id.*
[126] 74 Fed. Reg. 66,526, Attachment 14.
[127] 77 Fed. Reg. at 22,403, Attachment 15.
[128] *Id.*
[129] *Id.*
[130] The Gallatin plant's greenhouse gas emissions include CO_2, methane, and nitrous oxide. *See* Draft EA at 82. The Draft EA refers to greenhouse gases in terms of their CO_2 equivalent, using CO_2 as the baseline for determining each pollutant's climate change potential. *Id.* These comments simply use CO_2 to refer to all of the Gallatin plant's greenhouse gas emissions.
[131] Draft EA at 82.
[132] *See* World Metereorological Organization, Press Release No. 965 (Nov. 20, 2012), available at http://www.wmo.int/pages/mediacentre/press_releases/pr_965_en.html, Attachment 16.

many regions, with serious impacts on human systems, ecosystems, and associated services."[133] Whereas swift and decisive action to slash CO_2 emissions is imperative to avert or, increasingly more likely, mitigate severe ecological, sociological, and economic impacts from climate change, TVA's proposed action would do just the opposite by adding millions of tons more CO_2 into the air. And because CO_2 is one of the longest lived greenhouse gases, persisting in the atmosphere for decades or centuries, the additional CO_2 emissions from Gallatin will continue to contribute to adverse climate change effects for decades or centuries to come.[134]

The Draft EA's treatment of these matters is misguided. TVA suggests (though it does not explicitly state) that Gallatin's emissions are a small percentage of total U.S. and global emissions and therefore insignificant.[135] This contention is untenable. As the Supreme Court has recognized, because climate change is necessarily a global problem, it can only be addressed by reducing or eliminating emissions from many individually relatively small sources. We must "whittle away" at the problem, meaning that each marginal source of emissions – and any decision to prolong the life of any one of those sources – is itself significant.[136] And Gallatin is hardly "marginal." CEQ's Draft Guidance on climate change in NEPA analysis advises agencies that any decision that allows more than 25,000 tons of greenhouse gases to be emitted should be considered as likely significant.[137] Extending the life of Gallatin will cause more than 8 million tons of avoidable greenhouse gas emissions annually according to TVA. In fact, according to EPA's Greenhouse Gas Reporting Program, Gallatin is the third largest stationary source of greenhouse gas emissions in the state of Tennessee (behind only two other TVA coal-fired power plants) and the 115th largest stationary greenhouse gas source in the country.[138] Deciding whether or not to extend the life of this major source has major climate impacts.[139]

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[133] World Bank Report, *Turn Down the Heat: Why a 4°C Warmer World Must Be Avoided*, at xiii-xiv (Nov. 2012), available at http://climatechange.worldbank.org/content/climate-change-report-warns-dramatically-warmer-world-century, Attachment 17.

[134] 74 Fed. Reg. at 66,517, Attachment 14.

[135] Draft EA at 37-38.

[136] *Massachusetts v. EPA*, 549 U.S.497, 524 (2007).

[137] CEQ, Draft NEPA Guidance on Consideration of the Effects of Climate Change and Greenhouse Gas Emissions at 3 (Feb. 18, 2010), Attachment 18.

[138] *See* ghgdata.epa.gov and data table, Attachment 19.

[139] Moreover, climate change may render other impacts of the plant significant in their own right – a point which TVA entirely failed to consider. As CEQ explains in its draft guidance (at pp. 6-8), the effect of climate change on a proposal must also be considered. For instance, climate change will almost certainly render Tennessee warmer, on average, more subject to violent weather events, and more prone to both floods and drought. Thus, the Tennessee climate in the decades to come will be more likely to cause flood events that may breach ash ponds at Gallatin or increase run-off, or drought conditions that make it more difficult for the plant to withdraw water and intensify the environmental impacts of its water withdrawals and thermal discharges on the Cumberland River ecosystem. Likewise, warmer weather is more conducive to the formation of ground-level ozone, rendering the plant's air emissions more significant as a source of harm to human health and ecosystems. TVA has entirely failed to demonstrate that these impacts are not significant or, indeed, even to consider them. It must acknowledge their significance, which first demonstrates the need for an EIS here.

(2) Ozone

Ground-level ozone, or smog pollution, from coal-fired power plants harms people's lungs and causes respiratory problems, including asthma.[140] Ozone is formed when nitrogen oxides react with volatile organic compounds in the presence of sunlight.[141] Coal-fired power plants emit both ozone precursor pollutants;[142] they are among the largest industrial sources of nitrogen oxides in the United States.[143] Across the nation, smog pollution contributes to hundreds of thousands of hospital admissions and lost days from work and school every year.[144] Young children, the elderly, and people who are active outdoors are especially vulnerable.[145]

(3) Fine Particle Pollution

Fine particle pollution from coal plants has been implicated in more than 10,000 deaths, nearly 10,000 hospitalizations, and more than 20,000 heart attacks a year in the U.S.[146] The total monetized value of these adverse health impacts adds up to more than $100 billion per year.[147] As with smog pollution, the health risks are especially great for the elderly, children, poor and minority groups, and those with respiratory disease.[148] In 2010, Abt Associates issued a study that quantified the deaths and illnesses attributable to fine particle pollution from the Gallatin plant. According to the Abt study, each year, fine particle pollution from the Gallatin plant causes or contributes to more than 100 deaths, over 150 heart attacks, 1,700 asthma attacks, and over 170 hospital visits, at a cost of more than $827 million each year.[149]

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[140] *See, e.g.,* National Ambient Air Quality Standards for Ozone, 73 Fed. Reg. 16,436 (March 27, 2008), Attachment 10.
[141] *Id.*
[142] *Id.*
[143] *Id.*
[144] *Id.*
[145] *Id.*
[146] *See* Clean Air Task Force, "The Toll from Coal: An Updated Assessment of Death and Disease from America's Dirtiest Energy Source" (Sept. 2010), Attachment 20.
[147] Id.; see also National Ambient Air Quality Standards for Particulate Matter, 77 Fed. Reg. 38,890, 38,906-38,911 (June 29, 2012), Attachment 8.
[148] *Id.*
[149] *See* Clean Air Task Force, "The Toll from Coal: An Updated Assessment of Death and Disease from America's Dirtiest Energy Source" (Sept. 2010), Attachment 20; and "Technical Support Document for the Powerplant Impact Estimator Software Tool," prepared for the Clean Air Task Force by Abt Associates (July 2010), Attachment 21. To monetize the health impact of fine particle pollution from each coal plant, Abt assigned a value of $7,300,000 to each 2010 mortality, based on a range of government and private studies. Valuations of illnesses ranged from $52 for an asthma episode to $440,000 for a case of chronic bronchitis.

Annual mortality and morbidity attributable to fine particle pollution from the Gallatin Plant[150]

Type of Impact	Annual Incidence	Valuation
Deaths	110	$780,000,000
Heart attacks	160	$17,000,000
Asthma attacks	1,700	$90,000
Hospital admissions	76	$1,800,000
Chronic bronchitis	64	$29,000,000
Asthma ER visits	100	$37,000

Even with controls, Gallatin will continue to produce fine particle pollution that could have been wholly eliminated by retiring the plant, or sharply limited by retiring portions of the plant.

(4) Mercury

Even with controls, Gallatin would remain a significant source of mercury pollution. Mercury is highly toxic to people, even in very small quantities. Exposure to mercury harms reproduction, the cardiovascular system and, especially, the brain and central nervous system.[151] Fetuses and young children are more sensitive to mercury exposure than adults—and the rapidly developing brains and central nervous systems of fetuses are by far the most vulnerable.[152] Epidemiological studies show that fetuses, breast-fed infants, and children exposed to low or moderate levels of mercury are at risk for developing permanent neurological symptoms including delayed walking, delayed speech, and decreased performance on tests of attention, fine motor function, language, visual-spatial abilities, and memory.[153] Exposure to higher doses of

[150] Id.

[151] *See, e.g.*, MATS, 77 Fed. Reg. 9,304 (Feb. 16, 2012), Attachment 11; *see also,* Choy *et al.*, *Infertility, Blood Mercury Concentrations and Dietary Seafood Consumption: A Case Control Study*, International Journal of Obstetrics and Gynecology, 2002, at 1121-25; Yoshizawa *et al.*, *Mercury and the Risk of Coronary Heart Disease in Men*, New Eng. J. Med., 2002, at 1755-60; Guallar *et al.*, *Mercury, Fish Oils, and the Risk of Myocardial Infarction*, New Eng. J. Med., 2002, at 1747-54; Sanfeliu *et al.*, *Neurotoxicity of Organomercurial Compounds*, Neurotox Res., at 283-305 (2003).

[152] *See, e.g.,* MATS, 77 Fed. Reg. 9,304 (Feb. 16, 2012), Attachment 11; *see also, Toxicological Profile for Mercury*, Agency for Toxic Substances and Disease Registry, U.S. DHHS (1999).

[153] See, e.g., MATS, 77 Fed. Reg. 9,304 (Feb. 16, 2012); see also, Grandjean et al., Cognitive Deficit in 7-Year-Old Children with Prenatal Exposure to Methylmercury, Neurotoxicology and Teratology, 1997 at 417-428); Grandjean et al., Methylmercury Neurotoxicity in Amazonian Children Downstream from Goldmining, Envt'l Health Perspectives, 1999 at 587-591; Steuerwald et al., Maternal Seafood Diet,

mercury during fetal development can result in low birth weight, small head circumference, severe mental retardation, cerebral palsy, deafness, blindness, and seizures.[154] According to the Centers for Disease Control and Prevention's 1999-2002 National Health and Nutrition Examination Survey (NHANES), approximately 10% of U.S. women of childbearing age have mercury levels that exceed EPA's standard for protecting a fetus.[155] Nationally, this means 300,000-630,000 children are born each year having mercury levels associated with cognitive delays, learning disabilities, and loss of IQ.[156]

Low-level mercury exposure is also associated with adverse effects in adults, who may experience loss of motor coordination, loss of or decreased sensation, impaired speech and hearing, and mental disturbances.[157] Adults also may be at higher risk for cardiovascular disease and death.[158] Because mercury takes approximately six months to clear the body, eliminating the risk of adverse effects essentially requires eliminating all dietary sources of mercury.[159]

(5) Sulfur Dioxide

EPA has determined that short-term exposure (*i.e.,* between 5 minutes and 24 hours) to high levels of sulfur dioxide (SO_2) cause respiratory illness, aggravation of respiratory disease, and asthma attacks.[160] As a result, elevated SO_2 levels for even brief periods result in increased emergency room visits and hospitalizations due to acute respiratory attacks and aggravation of chronic respiratory illnesses.[161] Children, older adults, people who exercise outdoors, and certain susceptible ethnic groups are more vulnerable to the harmful effects of SO_2 air pollution.[162]

Methylmercury Exposure, and Neonatal Neurologic Function, Journal of Pediatrics, May 2000, at 599-605.

[154] *See, e.g.,* MATS, 77 Fed. Reg. 9,304 (Feb. 16, 2012), Attachment 11; *see also,* Kondo, *Congenital Minamata Disease: Warnings from Japan's Experience*, Journal of Child Neurology, July 2000, at 458-464.

[155] *See, e.g.,* MATS, 77 Fed. Reg. 9,304 (Feb. 16, 2012), Attachment 11; *see also,* EPA, *Mercury: Human Exposure* (http://www.epa.gov/mercury/exposure.htm (5/27/05); Mahaffey *et al., Blood Organic Mercury and Dietary Mercury Intake: NHANES 1999-2000*, Environ. Health. Persp. 112(5); 562-570; Mahaffey, *Methylmercury: Epidemiology Update* (Jan.26, 2004).

[156] *See, e.g.,* MATS, 77 Fed. Reg. 9,304 (Feb. 16, 2012), Attachment 11; *see also,* Mahaffey, *Methylmercury: Epidemiology Update* (Jan. 26, 2004).

[157] See, e.g., MATS, 77 Fed. Reg. 9,304 (Feb. 16, 2012), Attachment 11; see also, EPA, Mercury Study Report to Congress, Vol. I, 3-24, EPA-452/R-97-005, (Dec. 1997) (Mercury Study); EPA, Study of Hazardous Air Pollutant Emissions from Electric Utility Steam Generating Units–Final Report to Congress (Utility Study) Vol. 1 at 7-18.

[158] See, e.g., MATS, 77 Fed. Reg. 9,304 (Feb. 16, 2012), Attachment 11; see also,EPA, Regulatory Impact Analysis of the Clean Air Mercury Rule: Final Report, Appendix C (March 2005).

[159] *See, e.g.,* MATS, 77 Fed. Reg. 9,304 (Feb. 16, 2012), Attachment 11; *see also,*Mercury Study, Vol. V, at 2-8.

[160] *See* Primary National Ambient Air Quality Standard for Sulfur Dioxide, Final Rule, 75 Fed. Reg. 35520, 35525-29 (June 22, 2010), Attachment 9.

[161] Id.

[162] Id.

Coal-fired power plants are by far the largest industrial sources of SO_2 pollution in the U.S., accounting for roughly 66% of human-generated emissions.[163]

Based on its air operating permit, the Gallatin plant currently is allowed to emit up to 57,820.0 pounds of SO_2 in a 24-hour period.[164] In 2011, the Gallatin plant's maximum hourly SO_2 emission rate was 9,102.3 pounds per hour.[165] As demonstrated in air modeling conducted by Wingra Engineering,[166] the Gallatin plant's allowable and actual maximum hourly SO_2 emissions can cause substantial and widespread violations of the 1-hour SO_2 ambient air quality standards.[167]

In order to meet the 1-hour ambient air quality standard, the Gallatin plant would have to reduce its allowable SO_2 emissions by 88.2% on a continuous basis. According to the draft EA, the proposed pollution control equipment will be designed to achieve up to a 96% reduction of SO_2. But the Wingra modeling demonstrates two important points. First, regardless of the potential control efficiency of the proposed pollution controls, the Gallatin permit must be substantially tightened to assure and require the plant to meet the 1-hour standard. Second, regardless of the potential for the pollution controls to achieve a 96% reduction at any given time, the devices must be maintained and continuously operated at a very high control efficiency to consistently meet the 1-hour standard, including during periods of start-up, shutdown, and malfunction, especially with the higher sulfur fuel blend TVA proposes to use in the future.

Moreover, even if TVA installs and consistently operates the flue gas desulfurization units to achieve a high level of SO_2 control, the Gallatin plant would still adversely affect the human environment. With controls consistently performing to their design specifications and the plant operating at last year's capacity factor, the plant still would emit up to 4,442 tons of SO_2 into the air using the proposed 50-50% PRB-Illinois Basin fuel blend. These emissions, individually and in combination with SO_2 emissions from other large coal-combustion sources, would cause or contribute to ambient concentrations of SO_2, particulate pollution, and acid rain that would be harmful to sensitive populations of people, plants, animals, and aquatic life.

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[163] *Id.* at 33524.

[164] *See* Evaluation of Gallatin Fossil Plant's Compliance with 1-hour SO_2 NAAQS, prepared by Wingra Engineering, S.C. for the Sierra Club, at 4 (March 9, 2012), Attachment 22.

[165] *Id.* Notably, the Gallatin plant achieved this hourly emission rate burning 100% low-sulfur coal from the Power River Basin (PRB). PRB coal has a sulfur content of 0.636 pounds per million British thermal units (lbs/MMBtu). Draft EA at Appendix A, A-1. In the Draft EA, TVA proposes to change its fuel to a 50-50% blend of PRB coal and high sulfur Illinois Basin coal, which has a sulfur content of 5.00 lb/MMBtu. *Id*. The blended fuel would have a sulfur content of 3.05 lb/MMBtu, or nearly 5-times more sulfur than PRB coal. *Id.* Thus, all else being equal, the plant would emit nearly 5-times more SO_2 when burning the 50-50% fuel blend, as proposed.

[166] The Wingra Engineering modeling was conducted in accordance with EPA-specified modeling protocols, including: Applicability of Appendix W Modeling Guidance for the 1-hour SO2 National Ambient Air Quality Standard (Aug. 23, 2010); Revision to the Guideline on Air Quality Models: Adoption of a Preferred General Purpose (Flat and Complex Terrain) Dispersion Model and Other Revisions, Appendix W to 40 C.F.R. Part 51 (Nov. 9, 2005); Meteorological Monitoring Guidance for Regulatory Modeling Applications, EPA-454/R-99-05 (Feb. 2000); AERMOD Implementation Guide (March 19, 2009).

[167] *Id.* at 4, 11, 12.

B. TVA Must Prepare an EIS for the Proposed Action because Gallatin is a "Major Power Generating Facility."

In addition to the CEQ regulations prescribing when an EIS is required, TVA's NEPA Procedures also provide that an EIS is normally required for a "major power generating facility."[168] Although TVA's NEPA Procedures do not define "major power generating facility," there is no question that the proposed Gallatin project qualifies. To meet the requirements of the FFCA, the Utility MATS, and other anticipated regulations, TVA must install and operate a suite of pollution controls, repower to combust renewable biomass, or retire some or all of the Gallatin units.[169] Thus, TVA must choose a course of action that would allow continued operation of the Gallatin facility or it must retire the plant by no later than December 31, 2017.[170] In the Draft EA, TVA has proposed to continue operating the plant.

Pursuant to applicable Clean Air Act terms and definitions, the Gallatin plant is a "major power generating facility" based on its physical design, operating parameters, and emissions profiles. The Gallatin plant comprises four coal-fired units that generate electricity for sale.[171] Units 1 and 2 have a nameplate capacity of 300 MW each; units 3 and 4 have nameplate capacities of 327.6 MW each.[172] The plant has a heat input capacity of at least 8,974 MMBtu/hr.[173] In 2011, the Gallatin plant emitted more than 8 million tons of CO_2,[174] 143,951 tons of a combination of hazardous air pollutants listed in section 112(b) of the Clean Air Act,[175] 5,870 tons of NOx,[176] and more than 23,000 tons of SO_2.[177] After installation of pollution controls, the plant would continue to emit nearly 8 million tons of CO_2, up to 4,442 tons of SO_2 and more than 25 tons of hazardous air pollutants each year.

The Clean Air Act defines "the terms 'major stationary source' and 'major emitting facility' [to] mean any stationary facility or source of air pollutants which directly emits, or has the potential to emit, one hundred tons per year or more of any air pollutant."[178] The Gallatin plant clearly meets this definition.

The prevention of significant deterioration and new source review provisions of the Act define "major emitting facility" to include "fossil-fuel fired steam electric plants of more than two hundred fifty million British thermal units per hour heat input" "which emit, or have the

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[168] TVA NEPA Procedures § 5.4.1(2).
[169] *See* Draft EA at 1.
[170] *Id.*
[171] *Id.* at 3.
[172] *Id.*
[173] *See* Draft EA at 3, 12, Appendix A, A-1.
[174] *Id.* at 82.
[175] EPA, Toxic Release Inventory (2011); *see* summary at http://www.tva.com/environment/air/gallatin.htm, Attachments 1 and 1A.
[176] *See* http://www.tva.com/environment/air/gallatin.htm.
[177] *Id.*
[178] CAA § 302(j), 42 U.S.C. § 7602(j).

potential to emit, one hundred tons per year or more of any air pollutant."[179] Gallatin exceeds these thresholds many times over.

The hazardous air pollutant provisions of Clean Air Act §112 define an electric utility steam generating unit as "any fossil fuel fired combustion unit greater than 25 megawatts that serves a generator that produces electricity for sale."[180] And a "major source" of hazardous air pollutants is defined as any stationary source that "emits or has the potential to emit, considering controls, in the aggregate, 10 tons per year of any hazardous air pollutant or 25 tons per year of any combination of hazardous air pollutants."[181] There is no question that the Gallatin plant is a major source of hazardous air pollutants.

It is equally clear that Gallatin is a major air pollution source that is subject to the operating permit requirements of Title V of the Clean Air Act.[182]

Based on its size, operations, and emissions of regulated air pollutants, the Gallatin power plant is a major source under multiple Clean Air Act programs and definitions. TVA's proposal to install pollution controls necessary to continue operating the plant, thus, is a decision to operate a major power generating facility. Under TVA's NEPA Procedures, this decision requires preparation of an EIS.

C. TVA Must Prepare an EIS for the Proposed Action Because It Is "Highly Controversial."

CEQ and TVA regulations also provide that an EIS is normally required for "any major action, the environmental impact of which is expected to be highly controversial."[183] Courts have clarified that "the term 'controversial' refers 'to cases where a substantial dispute exists as to the size, nature, or effect of the major federal action rather than to the existence of opposition to a use.'"[184] The dispute in this case centers on TVA's proposal to spend $1.2 billion on capital projects that would enable the Gallatin plant to continue operating and generating millions of tons of air pollution and hundreds of thousands of tons of water discharges and coal combustion waste every year, would jeopardize threatened and endangered species, and would destroy ecologically important wetlands, without even examining alternatives that would greatly reduce or eliminate these significant adverse environmental impacts. Stated more simply, this is a dispute over whether to stick ratepayers with a $1.2 billion bill to prolong the life of an aging, highly polluting, and environmentally destructive coal plant. The scope and magnitude of the environmental, economic, and public health consequences at issue in this case are thus substantial and merit an EIS.

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[179] CAA § 169(1), 42 U.S.C. § 7479(1).
[180] CAA § 112(a)(8), 42 U.S.C. § 7412(a)(8).
[181] CAA § 112(a)(1), 42 U.S.C. § 7412(a)(1).
[182] *See* CAA § 501(2), 42 U.S.C. 7661(2) (defining "major source" to include all major sources under CAA § 112, as defined in CAA § 302, and as defined in Part D of subchapter I (addressing nonattainment areas)).
[183] TVA NEPA Procedures § 5.4.1 (4); *see* 40 C.F.R. § 1508.27(b)(4).
[184] *LaFlamme v. FERC*, 852 F.2d 389, 400-401 (9th Cir. 1988) (citing *Foundation for North American Wild Sheep v. U.S. Dept. of Agriculture*, 681 F.2d 1172, 1182 (9th Cir. 1982)) (quoting *Rucker v. Willis*, 484 F.2d 158, 162 (4th Cir. 1973)).

TVA must retrofit, repower, or retire the Gallatin plant to comply with the FFCA and parallel consent decree. The FFCA and consent decree require reductions in emissions of certain air pollutants and expressly provide for retiring the Gallatin plant, which may be done in whole or in part along with other approved measures, as a compliance option.[185] But TVA dismisses examination of retirement for reasons independent of the fundamental project purpose—*i.e.*, compliance with the FFCA and consent decree—that the record does not demonstrate or support.[186] The environmental, economic, and public health consequences of TVA's decision, and the basis for this dispute, are vast and profound.

As the Synapse Report observes, retiring Gallatin would "not only reduce local and regional emissions, but also reduce emissions of carbon dioxide to the atmosphere, reduce thermal and chemical discharges to Old Hickory Lake and the Cumberland River, reduce potential discharges from wastes and effluent stored at the coal ash impoundments on site, and reduce the risk of catastrophic failure at these impoundments."[187] Dr. Ranajit Sahu's analysis quantifies some of the adverse environmental effects that retiring the plant would avoid.[188] Under TVA's proposed action, with controls the Gallatin plant would continue to emit 4,442 tons of SO_2 into the air every year.[189] Retiring the plant would eliminate SO_2 emissions entirely—*i.e.*, it would reduce emissions to 0 tons per year.[190] Even retiring some units and retrofitting others would yield substantial environmental (and economic) benefits, yielding SO_2 emissions ranging from 120 tons per year (retiring 3 units, retrofitting 1 unit, and continuing to burn low-sulfur PRB coal) to 3,430 tons per year (retiring 1 unit, retrofitting 3 units, and changing the fuel to a higher sulfur 50/50 blend of PRB and Illinois Basin coal).[191]

Similarly, retiring Gallatin would avoid 8 million tons of CO_2 and more than 25 tons of dozens of hazardous air pollutants that the plant would emit into the air each year under TVA's proposal. Retirement also would eliminate discharges of more than 950 million gallons of polluted storm water and waste water every day into the Cumberland River[192] and avoid land disposal of between 430,000 and 835,000 tons of coal combustion waste annually.[193] Additionally, TVA's proposal would destroy unique and ecologically important wetlands[194] and jeopardize dozens of species of endangered mussels and fish.[195] Several alternatives, including retirement, would minimize or entirely avoid these impacts. But the Draft EA does not examine these reasonable alternatives.

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[185] *See* Federal Facilities Compliance Agreement Between the United States Environmental Protection Agency and the Tennessee Valley Authority (FFCA) at 23, 32; *see also* Draft EA at 1.
[186] See, e.g., J. Fisher & T Vitolo, Synapse Energy Economics, Assessing the Use of the 2011 TVA Integrated Resource Plan in the Retrofit Decision for Gallatin Fossil Plant, (Nov. 21, 2012) (hereinafter Synapse Report), Attachment 23.
[187] Synapse Report at 2.
[188] *See* Sahu Report and attached Alternatives Spreadsheet (Nov. 30, 2012), Attachment 24.
[189] *See* Sahu Report, Spreadsheet, Attachment 24.
[190] *Id.*
[191] *Id.*
[192] *See* Draft EA at 41-42.
[193] *See* Draft EA at 20.
[194] Draft EA at 55-59.
[195] *See* Letter from M. Jennings (U.S. Fish and Wildlife Service) to C. Wren (TVA) dated November 27, 2012, Attachment 25.

That is the essence of the present dispute. The enormity of TVA's proposal merits a full and transparent public process and preparation of an EIS to properly evaluate the need for the proposed action and the range of reasonable alternatives that would achieve the fundamental project purpose at a drastically lower cost to ratepayers and with greatly diminished impacts to the human environment. In particular, nothing in the record supports TVA's dismissal of plant retirement as a reasonable alternative that would meet the project purpose and need. As demonstrated in these comments and the attached reports and exhibits "retirement has dramatic social and economic benefits [within and] beyond the TVA service territory."[196] By failing to evaluate a full range of reasonable project alternatives, TVA has missed "the opportunity to mitigate environmental harm, as well as harm to ratepayers."[197] Thus, this dispute is "precisely the type of 'controversial' action for which an EIS must be prepared."[198]

D. TVA Must Prepare an EIS for the Proposed Action Because It Jeopardizes Threatened and Endangered Species.

After impermissibly narrowing the range of project alternatives examined in the Draft EA to a pair of functionally identical projects that differ only in their footprints, TVA then selected the most environmentally destructive and, as it turns out, unlawful of the two options as its preferred alternative. According to the Draft EA, "[u]nder both Alternatives 2 and 3, TVA would install and operate the same emission control equipment and CCP disposal facility. The difference in these two alternatives is the location of the dry FGD equipment."[199] Under TVA's preferred Alternative 2, the Cumberland River Aquatic Center (CRAC) "would be dismantled and removed off-site."[200] Despite the fact that TVA's action adversely affects threatened and endangered species and violates its legal obligations, the Draft EA fails utterly to evaluate the effects of the closure of the CRAC, dismissing this as the sole responsibility of TWRA and beyond TVA's authority or control.[201] Factually and legally, TVA could not be more wrong.

The CRAC was developed to fulfill, in part, TVA's non-discretionary legal obligation to mitigate the adverse effects on federally listed endangered and threatened species of its "ongoing operations and maintenance activities at TVA dams in the Tennessee River Basin located in Alabama, Georgia, Kentucky, Mississippi, North Carolina, Tennessee, and Virginia."[202] In a 2006 biological opinion, the U.S. Fish and Wildlife Service (FWS) determined that TVA's operation and maintenance of its system of dams was taking, and could jeopardize, many endangered mussel species throughout the Tennessee River Basin, and that TVA had to mitigate its actions to avoid a jeopardy determination.[203] The Incidental Take Statement issued with that

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[196] Synapse Report at 2, Attachment 23.
[197] Synapse Report at 2.
[198] *LaFlamme v. FERC*, 852 F.2d 389, 400-401 (9th Cir. 1988) (citing *Foundation for North American Wild Sheep v. U.S. Dept. of Agriculture*, 681 F.2d 1172, 1182 (9th Cir. 1982)) (quoting *Rucker v. Willis*, 484 F.2d 158, 162 (4th Cir. 1973)).
[199] Draft EA at 11.
[200] *Id.* at 14.
[201] Draft EA at 5, 14.
[202] *See* Letter from M. Jennings, FWS, to C. Wren, TVA, at 3 (Nov. 27, 2012), Attachment 25.
[203] U.S. FWS Biological Opinion #2006-F-0146, Attachment 26.

formal opinion determined that TVA was required to "promote and enhance recovery of federally listed species"[204] and set out, as a non-discretionary term and condition that:

> TVA will cooperate with appropriate staff from the Tennessee Wildlife Resources Agency to make fish culture raceways at the Gallatin Steam Plant available for mollusk propagation activities. If, during routine surveys, individuals of mussel species known or considered not to be reproducing in the Tennessee River mainstem are found, those individuals will be transported to this facility or other appropriate facility, upon approval by the Service. Juveniles of those species propagated at the facility will be used to augment or reestablish populations in the Tennessee River.[205]

TVA, in other words, has a continuing obligation under the Endangered Species Act (ESA) to cooperate with TWRA *and* to make fish culture raceways at Gallatin available for CRAC. These obligations exist "for the life of [TVA's] dam" operations.[206]

Since its founding, the CRAC facility at the Gallatin plant has developed into one of the most important endangered species propagation facilities in the Southeast, and is certainly the most important such facility in the TVA region. Because of its location on the mainstem of the Cumberland River, "the CRAC facility is uniquely appropriate to hold rescued individuals of several large-river mussel species resulting from 'rescue' of individuals from mussel surveys required for NEPA and ESA compliance for commercial or industrial development, or TVA or COE permitting, or TVA or COE routine maintenance projects."[207] And the CRAC has been supremely successful in efforts to propagate, recover, and reintroduce endangered mussel species. In 2012 alone, the "CRAC produced approximately 18,000 listed mussels, with survival to 11 weeks of approximately 60%. The average survival to 11 weeks at most propagation facilities is approximately 1%."[208] According to the FWS, the CRAC "has shown success beyond expectations while functioning on a small budget."[209] The CRAC also is "uniquely appropriate" to investigate the feasibility of propagating, researching, reintroducing, and recovering threatened, endangered, and rare mussel and fish species.[210]

The FWS has made these points clearly and cogently in comments on the Draft EA.[211] In its comments, the FWS explains that the CRAC holds approximately 30 species, representing 24% of the listed mollusk species in Tennessee, and that the recovery plans for those species depend upon the CRAC.[212] The facility's "great success" at supporting these species makes it

[204] *Id.* at 103.
[205] *Id.* at 104.
[206] Letter from M. Jennings, FWS, to C. Wren, TVA, at 3 (Nov. 27, 2012), Attachment 25.
[207] *Id. Id*.at 5.
[208] *Id. Id*.at 4-5.
[209] *Id. Id*.at 4.
[210] *Id.* at *Id*.4-6.
[211] *Id*.
[212] *Id.* at 4.

"uniquely appropriate" to its work, and may make it irreplaceable.[213] The loss of this facility (as a direct result of TVA's improper actions) alone demonstrates the need for an EIS.

It is undisputed that the CRAC would not close "but for" TVA's proposed action. In fact, under pressure from TVA, "TWRA is in the process of dismantling and closing the Cumberland River Aquatic Center (CRAC) at TVA Gallatin solely because [TWRA has] been instructed to do so by TVA."[214] Yet, though the CRAC's closure is a direct consequence of TVA's actions, TVA has failed to consider it in the Draft EA. This failure constitutes legal error. An EIS should be prepared for any action that "may adversely affect an endangered or threatened species or its [critical] habitat."[215] Thus, the significant environmental consequences of this closure, which will permanently impair the recovery and survival chances of dozens of endangered species, warrant discussion in a full EIS.

TVA's action also violates its independent obligations under the ESA,[216] and undermines other efforts and commitments under the ESA. The individual and cumulative effects of TVA's action thus significantly affect the human environment, mandating an EIS. As a federal agency, TVA "shall, in consultation with and with the assistance of the Secretary, utilize [its] authorities in furtherance of the purposes of [the ESA] by carrying out programs for the conservation of endangered species and threatened species . . . ."[217] Contrary to this mandate, however, TVA has failed to fulfill its consultation obligations under ESA § 7(a)(2), and, by forcing closure of the CRAC, already has taken action that "likely results in adverse effects to listed mussels."[218]

In addition to fulfilling an essential requirement of the Incidental Take Statement by which TVA continues to operate its system of dams, the CRAC has also proven a central and critical component of other agency consultation, mitigation, and recovery efforts. The CRAC "is a critical component of the Cooperative Mollusk Management Memorandum of Understanding (MOU) signed in 2011 by TVA, the Corps of Engineers, the Tennessee Department of Environment and Conservation, and the Nature Conservancy for the purposes of management and recovery of many aquatic species."[219] To "avoid, minimize, or compensate for potential impacts to listed species" related to the Corps of Engineer's Wolf Creek Dam repairs, the Corps "committed to move mussels to the Gallatin facility and to provide funding to refurbish and improve the facility for mussel propagation."[220] To date, the Corps has provided more than $780,000 for this mitigation project.[221] The FWS also has provided funding "to refurbish raceways, install electricity and a back-up generator, install an air injection system, and to enclose the facility with appropriate material."[222] TVA's proposed action would undermine all of these efforts and the substantial federal funding that has already provided for these projects; in

[213] *Id.* at 4-5.
[214] Letter from M. Jennings, FWS, to C. Wren, TVA (Nov. 27, 2012), Attachment 25 (quoting Letter from D. McKinney to M. Jennings (Nov. 14, 2012).
[215] 40 C.F.R. § 1508.27(b)(9).
[216] 16 U.S.C. §§ 1531-1544.
[217] ESA § 7(a)(1), 16 U.S.C. § 1536(a)(1).
[218] Letter from M. Jennings, FWS, to C. Wren, TVA, at 6 (Nov. 27, 2012)Attachment 25.
[219] *Id.* at 1), *see* 2011 Mollusk MOU, Attachment 32.
[220] *Id.* at 3.
[221] *Id*.
[222] *Id*.

fact, it already has to some extent. The loss of these legally mandated and essential projects and resources, individually and in combination, disrupt several ESA consultations and the federally sponsored projects mandated by those consultations. For this reason alone, TVA's action merits preparation of an EIS to examine the direct and cumulative impacts of TVA's proposal.

Finally, as discussed more fully later in these comments, available information makes it clear that TVA has already committed to a specific project and has committed resources to execute that project. Indeed, TVA states in the Draft EA that it anticipates commencing construction of pollution controls and other facilities by February 2013.[223] Section 7(d) of the ESA provides that a federal agency "shall not make any irreversible or irretrievable commitment of resources with respect to the agency action which has the effect of foreclosing the formulation or implementation of any reasonable and prudent alternative measures which would not violate" any ESA consultation requirements.[224] Here, TVA has already committed resources to the one alternative that would violate the mitigation requirements in the FWS October 2006 Biological Opinion and Incidental Take Statement. Having circumvented the procedural requirements of both NEPA and the ESA, TVA must reinitiate both processes.

V. The Incomplete Information Contained in the Draft EA Requires Preparation of an EIS, Cannot Support a FONSI, and Otherwise Fails to Satisfy TVA's Obligations Under NEPA.

NEPA requires the preparation of an EIS for every proposed major federal action significantly affecting the human environment. If there is any question whether a proposed action might significantly affect the human environment, the lead federal agency may prepare an EA to analyze the environmental impacts of the proposed action and of a range of alternatives. However, an agency may not segment connected actions of a project to avoid the full analysis of environmental consequences required by NEPA.

As discussed above, even the incomplete and flawed information presented by TVA in the Draft EA demonstrates that TVA's proposed action will significantly affect the human environment and therefore requires preparation of an EIS. The Draft EA also impermissibly segments connected actions of the proposed action and thereby omits consideration of the true extent of significant environmental impacts. Finally, as discussed below, the Draft EA fails to satisfy even TVA's most basic NEPA obligations because the alternatives information presented therein is facially contrived, or even manipulated, resulting in a *pro forma* NEPA process that appears designed to achieve a predetermined outcome.

Specifically, the Draft EA presents the "no action" alternative in a manner that is factually inaccurate and legally impermissible and which misconstrues the environmental consequences; fails to adequately consider reasonable alternatives to the proposed action; and assumes, without analysis, operational changes at Gallatin that would significantly impact the environment and the NEPA process for this decision. TVA cannot cure the flaws in the Draft EA by tiering to existing prior NEPA documents that lack adequate site-specific analysis for the proposed Gallatin project.

[223] Draft EA at 29, Table 2-3.
[224] 16 U.S.C. § 1536(7)(d).

A. The Draft EA Impermissibly Segments the Project to Avoid Considering Significant Environmental Impacts.

Courts have developed an "impermissible segmentation" rule based on the CEQ regulations implementing NEPA. Impermissible segmentation occurs when small parts of a major federal action are "segmented" in order to escape application of the NEPA process. "The hallmark of improper segmentation is the existence of two proposed actions where the proposed component action has little or no independent utility and its completion may force the larger or related project to go forward notwithstanding the environmental consequences."[225] While the doctrine of improper segmentation may not require consideration of purely speculative parts of an action, it does require that "multiple stages of a development must be analyzed together when the dependency is such that it would be irrational, or at least unwise, to undertake the first phase if subsequent phases were not also undertaken."[226]

The Draft EA improperly segments several stages of the proposed action to avoid the required NEPA analysis and full consideration of the "cumulative effect on a given region."[227] First, the Draft EA impermissibly segments and refuses to consider the site-specific environmental consequences of the wet-to-dry ash conversion processes that it has already announced will occur at all of its coal plants. In the Draft EA, TVA repeatedly asserts that its "plans for closure of surface impoundments to support wet-to-dry conversion plans specific to GAF are not included in the scope of this environmental assessment (EA)."[228] But TVA provides no justification for this conclusion. The only elaboration TVA provides for its refusal to consider the impacts of its wet ash management states, "[e]ven though activities proposed would support TVA's future plans for wet surface impoundment closure and wet-to-dry CCP handling and disposal, the completion of TVA's dry CCP conversion program for GAF is outside of the scope of this EA."[229]

However, while TVA's plans may involve "future" implementation, they have already been announced, given a budget, and are far from speculative. In 2009, after the catastrophic failure of the wet ash impoundment at TVA's Kingston Fossil Plant, the TVA Board approved a fleet-wide Coal Combustion Products Remediation Plan and approved a budget of up to $2 billion to convert wet ash to dry across TVA's fleet.[230] TVA has not provided the public with an update of the status of implementation of this Plan, nor an indication of when the process will be complete at Gallatin, but the wet-to-dry conversion of Gallatin is far from speculative. TVA has already expressed its judgment that wet-to-dry conversion is necessary at each coal-fired facility and has taken steps to effect that result. Therefore, it would be "irrational, or at least unwise," to consider the environmental impacts of a retrofit that is expected to continue generating 46,500

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[225] *Bullwinkel v. U.S. Dep't of Energy*, 2012 U.S. Dist. LEXIS 113264, at 45 (W.D. Tenn. Aug. 13, 2012) (quoting *Hirt v. Richardson*, 127 F. Supp. 2d 833, 842 (W.D. Mich. 1999) (internal citations and quotation marks omitted); and *Anglers of the Au Sable v. United States Forest Serv.*, 565 F. Supp. 2d 812, 831 (E.D. Mich. 2008)).
[226] *Id.*at 45-6.
[227] *Id.* at 45.
[228] Draft EA at 3, 28.
[229] *Id.* EA,at 28.
[230] TVA, "TVA Coal Combustion Products Remediation Plan Proposed," Aug. 20, 2009, http://www.tva.com/news/releases/julsep09/ccprp_other.htm.

tons per year (TPY) of wet ash from the consequences of TVA's proposed management plan for that waste. The generation and management of wet ash are facially connected actions that should be considered together in the present NEPA process. Failure to do so would violate NEPA's "hard look" requirement.

Second, the Draft EA impermissibly segments and fails to consider the impacts of closing the Cumberland River Aquatic Center (CRAC). Under TVA's preferred alternative, "the TWRA CRAC hatchery must be removed from its current location to avoid land use conflicts."[231] The preferred alternative will result in closure of the CRAC. In fact, "TWRA is in the process of dismantling and closing the Cumberland River Aquatic Center (CRAC) at TVA Gallatin solely because we have been instructed to do so by TVA."[232] But for the proposed retrofit, CRAC would remain open and operating.

However, the Draft EA segments CRAC closure from the proposal and refuses to consider the environmental consequences of the action that TVA is demanding. "As TVA does not control the CRAC hatchery operations, activities to be implemented by TWRA related to removing and potentially relocating the structures to a new site to allow for continued operations would be the sole responsibility of the TWRA. Therefore, TWRA's plans for CRAC relocation are speculative and are not included in the scope of this EA. TVA assumes all applicable requirements would be adhered to by the TWRA, assuring species are protected and impacts are avoided."[233] The fact that TWRA controls operations at the CRAC that is located on TVA-owned land and is funded by TVA does not relieve TVA of its NEPA obligations to consider the environmental consequences of a proposal that will require at least temporary closure of the CRAC.

TVA cannot credibly deny that the proposed action and CRAC closure are connected actions, and it cannot avoid analyzing the environmental impacts of the action it proposes simply by segmenting this stage of the project and concluding, without support, that TWRA's role as operator creates for TWRA the sole responsibility to evaluate the environmental impacts of TVA's decision to close or move the CRAC. The tortured logic whereby TVA could escape its environmental analysis obligations by segmenting a potentially harmful portion of the proposed project and punting those obligations to another agency clearly violates NEPA's requirement to take a "hard look" at the consequences of the proposed action, including connected actions which may have cumulative effects on the region.

Finally, TVA improperly segments and obscures consideration of a proposed fuel switch that, standing alone, should trigger more robust NEPA analysis. As explained more fully below, the Draft EA obscures a major connected action within the retrofit proposal – assuming, but not adequately analyzing, a switch to a much more polluting fuel at Gallatin.

In its description of the technology and processes implementing the proposed action, the Draft EA assumes the "Final blend" of coal fuel to be utilized post-retrofit will be composed of 50% Powder River Basin (PRB) coal and 50% Illinois coal, which has sulfur content more than

[231] Draft EA, at 5.
[232] *See* Letter from Mary E. Jennings, FWS, to Cynthia R. Wren, TVA, (Nov. 27, 2012.), Attachment 25.
[233] Draft EA, at 5.

eight times that of PRB coal. Currently, the uncontrolled coal units at Gallatin burn primarily PRB coal because it has much lower sulfur content and therefore produces drastically lower SO_2 emissions. In fact, if TVA burned a 50/50 blend of PRB/Illinois coal without scrubbers installed at the facility, the resulting emissions would violate the SO_2 NAAQS.[234] The only way that TVA can switch its fuel coal to a 50/50 blend is to first install scrubbers capable of adequately controlling SO_2 emissions. However, the Draft EA impermissibly fails to consider the environmental impacts of switching to a 50/50 blend for fuel at Gallatin – upon which TVA based the design of its proposed control technology – even though the fuel switch and scrubber installation are facially connected actions. "It would be irrational, or at least unwise," to consider them separately.

B. The Draft EA Mischaracterizes the "No Action" Alternative and Its Environmental Consequences, Rendering TVA's Analysis of That Alternative Insufficient for NEPA Purposes.

Every EA must include consideration of a "no action" alternative.[235] The no action alternative serves as a baseline against which other alternatives are measured. The meaning of "no action alternative" depends on the circumstances of the proposed project. In the case of an ongoing plan or program,[236] "no action" means "'no change' from current management direction[.]"[237] In other words, the no action alternative is what would occur if the agency "continu[ed] with the present course of action[.]"[238] In the case of a proposed project, "no action" means "the proposed activity would not take place".[239] Under either of these definitions, "no action" means that Gallatin cannot continue to operate after 2017, as described in the following paragraphs.

Under TVA's current management plans, the present course of action is to retire Gallatin by 2017 unless TVA retrofits or repowers the plant. TVA adopted this course of action when it voluntarily entered into the FFCA in 2011. Under the terms of the FFCA, TVA must retrofit Gallatin or convert the plant to biomass by December 31, 2017.[240] If TVA does not take either of

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[234] *See* Evaluation of Gallatin Fossil Plant's Compliance with 1-hour SO_2 NAAQS, prepared by Wingra Engineering, S.C. for the Sierra Club, at 4 (March 9, 2012), Attachment 22.

[235] See 40 C.F.R. § 1508.9(b) (mandating that an environmental assessment "[s]hall include brief discussions . . . of alternatives as required by section 102(2)(E)"); Draft EA at 11 (explaining that TVA included a no action alternative "for the purpose of NEPA compliance," even though it did not consider the alternative viable or reasonable); *Grand Canyon Trust v. U.S. Bureau of Reclamation*, 623 F. Supp. 2d 1015, 1028 (D. Ariz. 2009) ("NEPA regulations mandate consideration of a 'no action' alternative in an EIS, *see* 40 C.F.R. § 1502.14, strongly suggesting that such an alternative should also be considered in an environmental assessment.")

[236] Courts have interpreted the terms "plan" and "program" broadly to include everything from land management plans to permit renewals to power sales contracts. *See Am. Rivers v. FERC*, 201 F.3d 1186, 1201 (9th Cir. Or. 1999); *Ass'n of Pub. Agency Customers v. Bonneville Power Admin.*, 126 F.3d 1158, 1188. (9th Cir. 1997).

[237] Forty Most Asked Questions Concerning CEQ's National Environmental Policy Act Regulations, Question 3, 46 Fed. Reg. 18,026, 18,027 (Mar. 23, 1981).

[238] Id.

[239] Id.

[240] *See* FFCA at 23, 32; *see also* Draft EA at 1.

these actions, the agency must retire Gallatin. In other words, TVA cannot legally operate Gallatin as an uncontrolled coal plant after 2017. This is the legal and factual baseline for TVA taking "no action" – Gallatin must be retired in 2017, at which time all emissions would cease.[241]

But the Draft EA inaccurately describes the no action alternative as follows: "TVA would continue current operation of GAF Units 1-4 and would not implement activities to further reduce emissions, complying with applicable environmental regulatory requirements (MATS and the FFCA)[.]" This directly contradicts TVA's agreed-upon and legally binding "management direction", as articulated in the FFCA. As a result, using TVA's proposed baseline as a point of comparison for other alternatives would be an impermissible "useless academic exercise."[242] TVA admits as much by stating that its no action alternative "is not considered viable or reasonable."[243] TVA must therefore revise its no action alternative to be consistent with TVA's pre-existing and binding plans for the facility, under which TVA cannot continue to operate the plant if it takes no action.

Not only is TVA's description of the "no action" alternative contrary to TVA's voluntarily-assumed obligations, it also would violate existing law. Courts have held that a no action alternative cannot be based on the continuation of an activity or management plan that is unlawful. In one closely analogous case, the court held that because the terms of a lease required an agency to remove a dock, the agency erred by determining that the dock would remain in place – degrading and leaching contaminants – under the no action alternative.[244] In another case, the court held that an agency could not rely on a comprehensive management plan to establish its no action alternative, when the plan had previously been invalidated.[245] NEPA also requires agencies to account for a court order when crafting their no-action alternative.[246] Accordingly, TVA cannot rely on a plan that would violate federal law and TVA's own legally-binding agreement. TVA admits that the no action alternative it describes – running the uncontrolled Gallatin units indefinitely – would violate its legal obligations under the FFCA after 2017 and might violate MATS after 2015. TVA must revise its no action alternative to comply with existing law.

Although TVA's proposed action will result in significant environmental impacts even compared to TVA's incorrect no action alternative, the significance of these environmental impacts are brought into even greater relief when compared to the true no action alternative – a termination of operations by 2017. Viewed against this baseline, it is clear that the proposed action would have significant environmental impacts beyond 2017. "No action" (i.e. retirement) would result in a permanent cessation in emissions from Gallatin of SO_2, NO_x, and other hazardous air pollutants, as well as the concomitant reduction in waste streams and waste

[241] *See Greenpeace USA v. Stone*, 748 F. Supp. 749, 757 (D. Haw. 1990) (describing a plaintiff's claim that an agency circumscribed its "no action" alternative by entering into a binding agreement, and therefore indicating that agencies have based their no action alternatives on agreements in the past).
[242] Id.
[243] *See* Draft EA at 11.
[244] *Preserve Our Island v. U.S. Army Corps of Eng'rs*, No. C08-1353RSM, 2009 U.S. Dist. LEXIS 71198, at *46-47 (Aug. 13, 2009)).
[245] *See* Friends of Yosemite Valley v. Scarlett, 439 F. Supp. 2d 1074 (E.D. Cal. 2006).
[246] *Conservation Northwest v. Rey*, 674 F. Supp. 2d 1232, 1246 (W.D. Wash. 2009)).

generated. In contrast, the proposed action would introduce large quantities of these pollutants into the environment, causing significant impacts as described in Section IV.

Furthermore, the Draft EA fails to provide any specifics for why the shut-down required by the FFCA under the No Action baseline is not reasonable. Separate from its inaccurate description and consideration of the No Action Alternative, TVA's dismissal of retirement as an alternative requiring environmental analysis is built solely upon conclusory and vague notions of maintaining non-existent "asset diversity," which is not the stated purpose or need for the proposed project. As discussed more fully below, TVA provides no specifics for why it is logically absurd to consider full or partial retirement of the Gallatin units, either alone (as ultimately required by the FFCA in the No Action Alternative) or in conjunction with the reasonable alternatives of capacity replacement with natural gas, energy efficiency and demand response, renewable energy, or purchased power.

C. The Draft EA Fails to Meet TVA's NEPA Obligations to Study, Develop, and Describe Appropriate Alternatives to the Proposed Action.

The Draft EA fails to consider appropriate alternatives to the project, and impermissibly eliminates several reasonable alternatives from further discussion. Specifically, the Draft EA: does not consider retiring the facility in favor of several different clean energy alternatives; does not consider replacement power purchases; does not consider alternative pollution control technology; and summarily eliminates reasonable natural gas, energy efficiency and demand response, and renewable energy resource alternatives without providing the level of analysis required by NEPA. Nor does it consider partial retirement of some of Gallatin's four separate coal-fired units, which would greatly reduce the plant's pollution, alternate pollution control technologies at those units, alternate approaches to managing waste from those facilities, or using coal blends (such as the coal mix currently used at the plant) that would reduce environmental impacts. Indeed, the *only* alternatives which TVA considers at all are two essentially identical plans that differ only by the location of *identical* control technology. This illegally truncated choice is contrary to NEPA's fundamental purpose of providing a wide range of reasonable alternatives for public and agency consideration. TVA must issue a full EIS considering all reasonable alternatives to the project.

1. TVA cannot summarily dismiss from further consideration reasonable alternatives such as replacement with or repowering to natural gas, and replacement with energy efficiency or demand side resources.

TVA devotes four paragraphs of its EA to a summary dismissal of any alternative that would involve retiring the Gallatin facility in favor of a cleaner energy alternative – including replacing the plant as a whole with energy efficiency. Because retirement is not only a reasonable, but a prudent, alternative, this cursory discussion violates NEPA.

Courts have recognized that "[n]o decision is more important than delimiting what these 'reasonable alternatives' are."[247] The range of "reasonable alternatives" that an agency must consider depends on the purpose of the project. "The broader the purpose, the wider the range of

[247] *Id.* Simmons v. U.S. Army Corps of Eng'rs, 120 F.3d 664, 666 (7th Cir. 1997)

alternatives; and vice versa."[248] Accordingly, courts will guard vigilantly against agency attempts to "contrive" purposes in such a way as "to define competing 'reasonable alternatives' out of consideration (and even out of existence)."[249] Courts will not tolerate agency efforts to constrict the definition of the project's purpose, and thereby exclude what truly are reasonable alternatives, which frustrates Congressional will and violates NEPA.[250]

The stated purpose of the Draft EA is "to comply with the FFCA, the Utility MATS, and other anticipated regulations" in a manner "consistent with TVA's 2011 Integrated Resource Plan (IRP) and help TVA achieve a more balanced portfolio of energy resources on the TVA system."[251] Unlike its complete failure to consider partial retirement and replacement power purchase alternatives, TVA at least mentions natural gas, energy efficiency and demand response, and renewable energy resources under the general heading of "Unit Retirement" as potential alternatives for meeting the project's purpose and need. TVA concedes that the retirement "alternative would comply with the FFCA and applicable regulations and would reduce local and regional emissions," but refuses to discuss the environmental consequences of this alternative based on a prudential determination that keeping Gallatin as a coal-fired plant makes more business sense than the alternative.

The Draft EA attempts to change NEPA's requirement to evaluate "reasonable" alternatives into a requirement that the agency only evaluate its "preferable" alternatives. However, "that is not the test for whether alternatives should be studied in an EA."[252] When an agency suggests that an otherwise achievable alternative is not "feasible" or "prudent," the agency must back up that assertion with specifics such as "cost studies, cost/benefit analyses, or other barriers that warrant a conclusion that [the proposed] alternatives are unreasonable, standing alone or in conjunction with other alternatives."[253] Here, the Draft EA references TVA's earlier IRP processes and NEPA documentation to support conclusory statements that natural gas, energy efficiency, and renewable energy alternatives are inconsistent with TVA's business desire to "maintain an existing energy asset available to generate reliable and cost-effective energy for the region" and speculation that the current market advantage of natural gas "could disappear or weaken."[254]

The Draft EA succinctly states the essence of TVA's prudential argument that it need not consider anything other than its preferred alternatives: "As part of the analysis carried out in the IRP, TVA determined that over-reliance on any specific type of energy resource was not optimal either from a cost or risk perspective."[255] The Draft EA then proceeds to eliminate natural gas, renewable energy, and energy efficiency and demand response resource alternatives from environmental analysis, insinuating that increased investment in those resources as alternatives at Gallatin somehow would result in TVA-wide over reliance on one energy resource. TVA's

[248] Id.
[249] Id.
[250] See id.
[251] Draft EA, at 1.
[252] *Davis v. Mineta*, 302 F.3d 1104, 1121 (10th Cir. 2002).
[253] *Id.* at 1122.
[254] Draft EA, at 30.
[255] Id.

conclusory concern regarding "over-reliance" does not satisfy TVA's NEPA obligations to analyze the environmental consequences of those alternatives.

In the more than 200 pages of the Draft EA, only four paragraphs are devoted to explaining why nothing other than the no action alternative and proposed action must be evaluated, the Draft EA suggests that system-wide conclusions and business judgments reached nearly two years ago in the IRP and related processes obviate any need to analyze the environmental consequences of otherwise reasonable alternatives that appear to the agency less desirable than the proposed action. The Draft EA does not even attempt to suggest that natural gas replacement or repowering, replacement with energy efficiency and demand response savings, or replacement with renewable energy resources are not technically achievable. In fact, like partial retirement and purchased power, all of these alternatives are "practical, reasonable, and perhaps even preferable."

A series of expert analyses (all attached and incorporated by reference, and many based on TVA's own data) amply demonstrate that these alternatives are available. Initially, the General Accountability Office has determined that TVA has systematically failed to analyze energy efficiency as an alternative in its planning processes, and has undervalued the role of energy efficiency as such an alternative.[256] The GAO explained that "TVA cannot be sure that its current resource plans reflect the full scope and possible extent of energy efficiency programs or that the plans are realistic."[257] One consequence of this flawed process, the GAO concluded, was that TVA has tended to unduly favor capital assets (like Gallatin) in its planning process, to the inappropriate exclusion of demand side resources.[258] In fact, a later study by Global Energy Partners confirms that TVA has available significant under-used and cost-effective energy efficiency potential.[259]

This energy efficiency potential amply demonstrates that retiring Gallatin, entirely, is a reasonable alternative. A fall 2012 report by Synapse Energy Economics demonstrates both that Gallatin is, in fact, economically inefficient to operate (and will become even more so if retrofitted along the lines TVA proposes here) and that energy efficiency will produce significant savings as an alternative.[260] Even with minimal retrofits, Gallatin costs more than the market price of power to run, and more than a new natural gas plant.[261] The project TVA proposes would be rejected as *unreasonable* by any Public Utility Commission.[262] Moreover, Gallatin's economics look even worse when the full suite of likely compliance costs is taken into account. Its units will cost more than $10/MWh to operate than the market price under those conditions.[263] These costs will be passed on to TVA's customers. Synapse calculates that retrofitting Gallatin

[256] GAO, TVA: Full Consideration of Energy Efficiency and Better Capital Expenditures Planning Are Needed (Oct. 2011), available at http://www.gao.gov/assets/590/586006.pdf), Attachment 27.
[257] *Id.* at 2.
[258] *Id.* at 27-32.
[259] Global Energy Partners, Tennessee Valley Authority Potential Study (Dec. 21, 2011) (hereinafter "GEP Study"), Attachment 28.
[260] Synapse Energy Economics, *TVA Coal In Crisis* (2012) at 13-20, Attachment 29.
[261] *Id.* at 13.
[262] *See id.* at 12.
[263] *Id.* at 20.

would raise monthly bills for the average residential ratepayer by roughly $2.40 per month for the next two decades.[264]

Such costs can be avoided, meaning that opting for Gallatin retrofits instead violates TVA's statutory mandate to provide power at the "lowest possible rates."[265] Energy efficiency, for instance, is far less expensive than the retrofit project. Using TVA's own cost figures, which are unduly high, Synapse calculated that replacing Gallatin with energy efficiency could be achieved by as early as 2015 (at a 1.2% per year energy savings rate that TVA has deemed achievable), saving TVA at least $2.7 billion in net present value over the next twenty years, and reducing bills by over $3 per month relative to the bills required to retrofit the plant.[266] Energy efficiency is thus not only reasonable, but preferable, and is consistent with TVA's mandate. Because retrofitting Gallatin instead produces higher cost power, it is an unreasonable alternative, and should have been rejected.

Moreover, TVA's earlier integrated resource planning process, which TVA insists did not favor retiring Gallatin, was flawed and does not provide the kind and level of analysis required for the Gallatin NEPA process. A second report by Synapse, attached and incorporated by reference, demonstrates as much. That report shows that TVA never directly considered retiring Gallatin in the IRP process. Instead "the IRP did not evaluate the economic vitality of installing controls at Gallatin at all, and to the extent that it can possibly be construed to have performed this analysis, the analysis was critically flawed and outdated."[267]

Synapse demonstrates that the IRP did not directly consider retiring Gallatin at all, but instead only considered a scenario that improperly assumed coal plants would only be retired in a scenario with minimal energy efficiency and high use of expensive nuclear power and transmission investments.[268] It impermissibly and inexplicably weighted the planning process against coal retirement and did not consider energy efficiency as an alternative (just as TVA continues to fail to do in the Draft EA).[269] Thus, TVA has not considered retiring Gallatin at any time, even though this alternative is clearly preferable, and would have prevailed in planning had it been considered. TVA must consider it now, and should select it as the preferred alternative, as it produces the optimum economic and environmental result.

We note in this regard that TVA has identified *no* reason why retiring Gallatin is not feasible. Instead, TVA merely expresses a preference for coal in its resource mix as a matter of "diversity." Even if asset diversity was TVA's main goal, the fact remains that coal is by far TVA's most-relied upon asset. While it is self-evident that *over*-reliance may not be optimal, TVA's suggestion that any consideration of the environmental consequences of partially or wholly replacing Gallatin with natural gas, renewable energy, or energy efficiency and demand response resources would result in over-reliance is inconsistent with the facts of TVA's power supply. In FY 2012, TVA relied on its coal-fired facilities for approximately 41% of its net

[264] *Id.* at 25-26.
[265] 16 U.S.C. § 831j.
[266] TVA Coal in Crisis, at 3, 25-27, Attachment 29.
[267] Synapse Energy Economics, Assessing the Use of the 2011 TVA Integrated Resource Plan in the Retrofit Decision for the Gallatin Fossil Plant (Nov. 21, 2012) at 2, Attachment 23.
[268] *Id.* at 6.
[269] *See id.*at 7-10.

generation, compared to just 12% from natural gas and/or oil-fired facilities, 0.017% from non-hydroelectric renewable resources, and 0.391% from energy efficiency and demand response programs.[270] Stated in terms of net summer capability, TVA relied on its coal-fired facilities for more than 36% of its capacity, compared to 25% from natural gas and/or coal-fired facilities, 0.966% from TVA-operated and contracted renewable resources, and approximately 6% from power purchase and other agreements.[271]

If there is any specific type of energy resource that TVA is "over-relying" upon, it is clearly coal-fired generation. The suggestion in the Draft EA that natural gas, renewable energy, or energy efficiency and demand response resources are over-represented in TVA's current energy mix is facially inaccurate and, regardless, cannot support a refusal to consider the environmental consequences of reasonable alternatives.

TVA offers no other reason for rejecting retirement (and other cleaner alternatives) and there does not appear to be any technical reason why these alternatives are not feasible. In particular, a technical report by reliability and transmission expert Peter Lanzalotta, attached and incorporated by reference, demonstrates that replacing Gallatin with energy efficiency would improve the reliability of the TVA electric system. Mr. Lanzalotta explains that system "load" – that is demand on the system – is the major threat to reliability, and that energy efficiency reduces load:

> Therefore, if the power from the Gallatin Plant is offset by increases in energy efficiency (EE), these increases in EE would be manifested by load reductions at various locations on the TVA system. Any transmission system loading and/or voltage concerns that might exist on the TVA system would tend to offset by such load reductions, depending, in part, on the proximity of the location of the load reductions to the location of the Gallatin Plant. The larger these EE load reductions are, and the closer they are, electrically, to the location of the Gallatin Plant, the more directly such load reductions will reduce loads on the TVA transmission system from power that would otherwise come from the Gallatin Plant but for its retirement. In short, promoting EE in the TVA system (and especially in large TVA service areas near Gallatin, like Nashville) will actually promote the reliability of the system.[272]

Thus, TVA has no technical justification for declining to pursue renewable energy as an alternative to retrofitting Gallatin.

This is also, of course, not the only clean (or cleaner) energy alternative available which TVA illegally failed to consider. In addition to renewable energy and wholesale power purchases, For instance, assuming that replacement generation would be necessary to support retirement or partial retirement – a suggestion not made in the Draft EA – ample power resources are available, even if energy efficiency is not available, as it plainly is. TVA has not considered, discussed, or even mentioned the alternative of using replacement power to support retirement or

[270] TVA, FY 2012 10-K, at 12, 21.
[271] TVA, FY 2012 10-K, at 13-14.
[272] Lanzalotta Report (Nov. 12, 2012) at 4, Attachment 30.

partial retirement at Gallatin. Specifically, the Draft EA fails to consider power purchased from other generators in connection with retirement or partial retirement. Far from proving that such power purchases are "absurd," TVA has shown that power purchases are reasonable as it has historically relied on such purchases, or the contractual availability of such purchases, as an integral component of its system planning. For example, TVA reported that power purchases constituted more than 6% of net summer capability in fiscal year (FY) 2012.

TVA also improperly dismissed the alternative of replacing Gallatin (in whole or in part) with a natural gas facility. Although natural gas is certainly not preferable to energy efficiency or non-fossil sources of power, it does have the advantage of having significantly lower air pollution emissions and essentially no solid waste production. Thus, a natural gas replacement power solution would be a reasonable way for TVA to comply with its current environmental obligations.

Yet, TVA dismisses natural gas stating that, "until recently" gas has been subject to "wide price swings and supply shocks," and suggesting that these market conditions will soon return.[273] This speculation is supported by no evidence on TVA's part, and does not even acknowledge the shale gas boom that has transformed the U.S. gas market, causing gas prices to fall to their lowest level in years and are projected to remain at fairly low levels for years and, in the estimation of the Energy Information Administration, permanently disfavoring coal powered generation.[274] As Synapse Energy Economics explains "[i]t is common knowledge that recent innovations in gas production have resulted in massive price drops."[275] TVA has, instead, rejected natural gas as an alternative for consideration on the basis of badly outdated commodity pricing projections, as Synapse also demonstrates.[276] Again, though we do not advocate natural gas as the preferred alternative, it clearly was a reasonable alternative, and should have been considered.

A NEPA-compliant process and documentation will not necessarily demand a different outcome, but TVA bears the burden under NEPA to show why these facially reasonable alternatives are technically "absurd" in order to avoid analysis. The conclusory and factually inaccurate statements offered in the Draft EA regarding vague "diversity" of assets do not meet that burden.

Because "[a]lternatives were dismissed in a conclusory and perfunctory manner that do not support a conclusion that it was unreasonable to consider them as viable alternatives in the EA," then "those conclusions are so vague and unspecific as to be little more than platitudes[.]"[277] That is less than NEPA requires, and it is less than the public deserves. While NEPA does not prevent an agency from ultimately exercising its best business judgment, courts have rejected attempts to substitute prudential considerations in place of the NEPA-mandated environmental analysis of otherwise reasonable alternatives. When "the Project EA addresses alternatives to the Project in a conclusory manner, and addresses only the preferred alternative

[273] Draft EA at 30.
[274] *See* EIA, Annual Energy Outlook 2012 at 3-4.
[275] Synapse Energy Economics, Assessing the Use of the 2011 TVA Integrated Resource Plan in the Retrofit Decision for the Gallatin Fossil Plant at 11, Attachment 23.
[276] *Id.* at 10-13.
[277] *Davis*, 302 F.3d at 1121-22.

and the no project alternative as alternatives subject to full analysis," the NEPA process is "fatally flawed."[278] TVA must evaluate the environmental consequences of the natural gas replacement or repowering, replacement with energy efficiency or demand response savings, and replacement with renewable energy resource alternatives.

2. TVA must consider a full range of reasonable alternatives, including partial retirement, replacement power purchases, and alternative pollution control technology.

In addition to its failure to consider retiring the plant entirely, TVA violated NEPA by failing to consider retiring, or better controlling, one or more individual units among Gallatin's four coal boilers. Each incremental retirement, or improved control decision, would have reduced the plant's environmental impacts, and combining retirements with improved compliance pathways would have produced a far preferable outcome to the one that TVA proposes. Indeed, TVA's preferred alternative is, in fact, among the most environmentally damaging and expensive alternatives available, and yet TVA has failed to consider other patently more reasonable options. TVA has thus violated NEPA in this regard as well.

NEPA requires all federal agencies to "study, develop, and describe appropriate alternatives to recommended courses of action in any proposal which involves unresolved conflicts concerning alternative uses of available resources."[279] The CEQ regulations implementing NEPA emphasize that analysis of alternatives forms "the heart of the environmental impact statement."[280] Accordingly, all federal agencies are required, among other things, to "[r]igorously explore and objectively evaluate all reasonable alternatives" and "[d]evote substantial treatment to each alternative considered in detail including the proposed action so that reviewers may evaluate their comparative merits."[281] TVA has adopted additional regulations specifying that EAs must "include brief discussions of the need for the proposed action, reasonable alternatives, the environmental impacts of the proposed action and alternatives, measures (if any) to minimize or mitigate such impacts, and a listing of the agencies and persons consulted."[282]

Courts have recognized that "[n]o decision is more important than delimiting what these 'reasonable alternatives' are," and the range of alternatives that an agency must consider is necessarily bounded by logic.[283] While TVA need not examine every "conceivable" alternative, it must consider alternatives that are "reasonable" – that is, those that are technically achievable rather than speculative. To "justify the [agency's] failure to examine the idea at all," an alternative must be "absurd" as a matter of logic.[284]

[278] *Id.* at 1110, 1113.
[279] NEPA § 102(2)(E).
[280] CEQ § 1502.14.
[281] CEQ § 1502.14(a), (b).
[282] TVA, Instruction IX Environmental Review, "Procedures for Compliance with the National Environmental Policy Act," Tit. 5.3.3., "EA Preparation."
[283] Simmons v. U.S. Army Corps of Engineers, 120 F.3d 664, 666 (7th Cir. 1997).
[284] *Id.* at 669.

In the Draft EA, TVA has failed to examine at all several alternatives that are "practical, reasonable, and perhaps [ ] even preferable" to the proposed action.[285] Dr. Ranajit Sahu, an experienced environmental engineer, has provided an expert report considering these alternatives in detail, which we attach and incorporate by reference.[286] Dr. Sahu explains that TVA could and should have considered alternatives that include (1) retiring one or more of Gallatin's coal units, (2) refraining from using high-sulfur coal at those units, as TVA now proposes to do, (3) recycling rather than landfilling waste from those units, and (4) using wet FGD systems (which are more effective at controlling air pollution) at those units, rather than the dry FGD system that TVA now proposes. Altogether, Dr. Sahu examined 34 such alternatives (plus two full plant retirement options on different timelines). Essentially every one of these alternatives produces superior environmental outcomes to the alternative which TVA proposes to select, yet TVA does not even consider them.

a. Coal Type

As Dr. Sahu explains in detail, simply opting to continue to use cleaner, low-sulfur coal at Gallatin, even without individual unit retirements, would greatly reduce the plant's impacts.[287] In its description of the technology and processes implementing the proposed action, the Draft EA assumes the "Final blend" of coal fuel to be utilized post-retrofit will be composed of 50% Powder River Basin (PRB) coal and 50% Illinois coal, which has sulfur content more than eight times that of PRB coal. Currently, the uncontrolled coal units at Gallatin burn primarily PRB coal because it has much lower sulfur content and therefore produces drastically lower SO_2 emissions. TVA acknowledges that it currently burns lower-sulfur PRB coal at Gallatin in order to comply with existing SO_2 rules.[288] In fact, if TVA burned a 50/50 blend of PRB/Illinois coal without scrubbers installed at the facility, the resulting emissions would violate the SO_2 NAAQS.[289] The only way that TVA can switch its fuel coal to a 50/50 blend is to first install scrubbers capable of adequately controlling SO_2 emissions.

While the Draft EA proposes installation of pollution controls designed to control emissions from a 50/50 blend, it conspicuously fails to discuss the alternative control configurations possible and environmental consequences of continuing to burn PRB coal, without any suggestion that maintaining the status quo fuel source is logically absurd or otherwise unreasonable. TVA instead bases all of its calculations and consideration of environmental consequences off the presumption that the future fuel source will be a 50/50 blend. This circular reasoning, whereby TVA has selected a preferred control design to control emissions from a fuel blend that is only legally permissible if the preferred design is selected, effectively preempts meaningful public review of the NEPA analysis of the project and its alternatives.

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[285] *Davis*, 302 F.3d at 1121.
[286] Dr. Ranajit Sahu, Comments on the Draft EA for TVA's Gallatin Generating Station (2012), Attachment 24.
[287] Sahu Report at 13-15.
[288] Draft EA, at 3.
[289] *See* Evaluation of Gallatin Fossil Plant's Compliance with 1-hour SO_2 NAAQS, prepared by Wingra Engineering, S.C. for the Sierra Club, at 4 (March 9, 2012), Attachment 22.

TVA does not explain in the Draft EA why a move to a 50/50 blend is necessary. While a 50/50 blend theoretically might achieve marginal decreases in CO_2 emissions, for which there currently is no federal limit, compared to PRB coal, these gains must be considered against the increased SO_2 emissions, for which there is a federal limit, one which is tightening. Instead, TVA's fuel switching proposal obscures the fact that maintaining the status quo fuel source might require relatively smaller, cheaper, or otherwise less environmentally impactful control technologies. Dr. Sahu's Report, in fact shows that the higher sulfur fuel mix increases Gallatin's SO_2 emissions and waste production by a factor of five over all corresponding alternatives which do not use high-sulfur coal.[290] As he explains: "TVA's decision not to consider this reasonable alternative has major environmental consequences, greatly increasing waste and air pollution from the site, even after the project TVA proposes has been implemented."[291]

A move to a fuel blend which produces drastically higher hazardous emissions than the status quo clearly constitutes a significant environmental impact, and demands a full EIS. Even at the preliminary EA level, TVA must consider reasonable alternatives to switching to a more polluting fuel source. Again, far from demonstrating the absurdity of an alternative in which Gallatin continues to burn PRB coal, TVA has shown by its very history of burning PRB-only coal as fuel at Gallatin and across its coal fleet that such an alternative is reasonable and must be analyzed fully.

b. Waste Handling

TVA likewise does not even consider alternatives that would recycle, rather than landfill, scrubber waste generated by its scrubber. Dr. Sahu explains that such alternatives are readily available:

> [E]ven the vendor for TVA's preferred dry FGD technology (Alstom) notes that the waste from its NIDS technology can be beneficially used. In fact, Alstom stated that "[T]he typical end product is a dry powder consisting of a pozzolanic mixture of fly ash, calcium sulfite/sulfate, -hydroxide, -carbonate, -chloride, etc. These products may be disposed of in a landfill, but may also be used in the following applications: lightweight aggregate; acid mine drainage control; mine backfilling; disposal cell sealing layers; or road beds."

Given this, it is not clear why the Draft EA did not consider a beneficial reuse scenario even in its limited analysis. TVA should have done so.[292]

These alternatives would entirely or partially eliminate the new, expanded landfills which are among the most environmentally detrimental aspects of TVA's proposal. Yet, TVA fails to consider any degree of waste recycling, or, indeed, even offsite disposal in less environmentally sensitive areas. This failure is unjustifiable, and results in TVA's unwarranted rejection of reasonable alternatives.

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[290] Sahu Report at 13-15 and Attachment C thereto, Attachment 24.
[291] *Id.* at 13.
[292] *Id.* at 15-16.

c. Scrubber System

As Dr. Sahu explains, both "wet" and "dry" FGD technology is available to control SO_2 emissions, and wet (or WFGD) scrubbers have generally higher control efficiencies (a 98% control efficiency is generally available with WFGD, as opposed to the 96% control efficiency with DFGD that TVA claims for Gallatin).[293] Dr. Sahu's calculations (reflected in Attachment C to his report) shows that WFGD would significantly reduce SO_2 emissions from Gallatin's coal units (assuming that some of those units are not retired). WFGD is a well-demonstrated, frequently-installed technology. Yet TVA fails to consider this set of reasonable alternatives as well. This, too, violates NEPA.

d. Partial Retirements

Finally, Dr. Sahu's analysis demonstrates that the more units at Gallatin are retired, the more emissions and solid waste can be avoided.[294] Because, as we have discussed above, energy efficiency (and other alternative, cleaner sources) are readily available to replace *all* of Gallatin's power in the next few years, it is certainly available to support retirement some of the coal units. Yet TVA entirely fails to consider partial retirement as an alternative.

These alternatives, of course, can be combined – TVA might, for instance, consider retiring two units, then replace one with energy efficiency and one with gas, or it might consider retiring one unit while using low-sulfur coal in the others while recycling their waste. These options and uniformly produce results preferable to the alternative which TVA has selected – operating the entire plant with high sulfur coal while landfilling the waste. TVA has impermissibly refused even to consider preferable alternatives which are both reasonable and available.

Ultimately, NEPA does not dictate particular substantive environmental results, but it "binds federal officials to justify their plans in public, after a full airing of alternatives. . . . Officials must think through the consequences of – and alternatives to – their contemplated acts; and citizens get a chance to hear and consider the rationales the officials offer."[295] Courts will only excuse an agency's failure to consider an alternative that is logically absurd. For the reasons set forth above, even if TVA ultimately chooses its currently-preferred alternative, it must fully analyze the environmental consequences of a partial retirement alternative, a replacement power purchase alternative, and alternative pollution control technologies because it has not and cannot demonstrate that those alternatives are absurd.

[293] *Id.* at 12, 16.
[294] *Id.* at 16.
[295] *Simmons*, 120 F.3d at 666.

3. TVA's execution of contracts for the implementation of the proposed action is an irreversible and irretrievable commitment of resources and violates NEPA's prohibition on actions that would limit the choice of reasonable alternatives.

TVA has indicated that it already has entered into contracts to execute it preferred alternative at the Gallatin plant. By doing so, TVA has made an irreversible and irretrievable commitment of resources to the continued operation of the plant, thus rendering the assessment of alternatives other than its preferred alternative an exercise in futility. The Draft EA represents a *post hoc* rationalization for a predetermined result and cannot serve its purpose to engender thoughtful decision-making informed by thorough analysis of environmental consequences. The CEQ regulations require that agencies "shall integrate the NEPA process with other planning at the earliest possible time" and forbid any actions concerning the proposal that "[l]imit the choice of reasonable alternatives."[296] Courts have interpreted these regulations to require the preparation of EAs or EISs "before any irreversible and irretrievable commitment of resources."[297]

Where an agency makes an irreversible and irretrievable commitment of resources prior to the preparation of an EA, as TVA has done here, the degree to which the agency's planning and decisions could reflect environmental values, as required under NEPA, is seriously impeded.[298] It is highly likely that because of TVA's prior commitments, the EA was slanted in favor of finding that the continued operation of the Gallatin plant would not significantly affect the environment. By making such commitments before preparing the EA, TVA failed to take a "hard look" at the environmental consequences of its proposed action.

D. TVA Cannot Cure These Flaws by Tiering to Its 2011 Programmatic EIS, Which Does Not Provide the Necessary Analysis of Site-Specific Impacts and Alternatives.

A major federal action significantly affecting the environment requires an EIS, even if the action is tiered to a programmatic EIS. Tiering from a programmatic EIS to a site-specific analysis involves "incorporating by reference the general discussions [in the programmatic EIS] and concentrating solely on the issues specific to the statement subsequently prepared."[299] NEPA regulations encourage tiering "to eliminate repetitive discussions of the same issues and to focus on the actual issues ripe for decision at each level of environmental review."[300] But tiering does not eliminate the need to prepare an EIS for a site-specific proposal if the project otherwise requires an EIS. As the CEQ explains,

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[296] 40 C.F.R. §1501.2; § 1506.1.

[297] *Metcalf v. Daley*, 214 F.3d 1135, 1143 (9th Cir. 2000) (holding that contracts awarded prior to the issuance of an EA were an irreversible and irretrievable commitment of resources; *see also Conner v. Burford,* 848 F.2d 1441, 1446 (9th Cir.1988); *Envtl. Def. Fund v. Andrus,* 596 F.2d 848, 852-53 (9th Cir. 1979) ("After major investment of both time and money, it is likely that more environmental harm will be tolerated.").

[298] *Metcalf v. Daley*, 214 F.3d at 1143-45; *see also Save the Yaak Comm. v. Block,* 840 F.2d 714, 718–19 (9th Cir.1988) (contracts awarded prior to preparation of EA).

[299] 40 C.F.R. § 1502.28; *see also* TVA NEPA Instructions 5.8.6.

[300] 40 C.F.R. § 1502.20.

> where a Federal agency adopts a formal plan which will be executed throughout a particular region, and later proposes a specific activity to implement that plan in the same region, both actions need to be analyzed under NEPA to determine whether they are major actions which will significantly affect the environment. If the answer is yes in both cases, both actions will be subject to the EIS requirement, whether tiering is used or not.[301]

Courts have affirmed this position: "Nothing in the tiering regulations suggests that the existence of a programmatic EIS . . . obviates the need for any future project-specific EIS[.]"[302] If a programmatic EIS does not analyze the site-specific effects of a particular action, the agency must conduct a site-specific EIS regardless of whether it tiers to the programmatic statement.[303]

Moreover, a site-specific EIS must fully analyze alternatives, even when tiering is utilized. Courts have rejected agency attempts to argue that a previous programmatic EIS should limit the scope of reasonable alternatives that must be considered in a site-specific EIS, explaining that:

> The way [the agency] would have it, it was neither required to examine alternatives to [the proposal] in the PEIS (because the site-specific threshold had not yet been crossed) nor in the SEIS (because [the proposal] was mandated by the PEIS as articulated in the SEIS purpose and need statement). [The agency] can't have it both ways. . . . Somewhere, [the agency] must undertake site-specific analysis, including consideration of reasonable alternatives.[304]

In sum, tiering to a previous EIS does not relieve an agency of its duty to provide a site-specific EIS that fully evaluates impacts and reasonable alternatives.

TVA's proposal is a major action requiring an EIS, as described above in Section III. Yet TVA has not prepared an EIS for the present decision, the Draft EA does not meet the requirements of an EIS (see Sections IV.A-C), and TVA instead attempts to substitute a programmatic EIS that TVA issued on March 2, 2011 in place of the required site-specific analysis. The EIS was related to TVA's 2011 Integrated Resource Plan (IRP).[305] But the 2011 EIS is inadequate for two reasons. First, the programmatic EIS did not include site-specific information or the necessary analysis of alternatives to retrofitting Gallatin. Second, even if the

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[301] CEQ, Memorandum to Agencies Containing Guidance on Agency Implementation of NEPA Regulations, 48 Fed. Reg. 34,263 (July 28, 1983).
[302] Blue Mts. Biodiversity Project v. Blackwood, 161 F.3d 1208, 1214 (9th Cir. 1998).
[303] See Or. Natural Res. Council v. U.S. BLM, 470 F.3d 818, 822 (9th Cir. 2006) (holding that the lack of a cumulative effects analysis in an EA could not be cured by tiering "to other documents that did not contain the requisite site-specific information about cumulative effects"); Klamath-Siskiyou Wildlands Ctr. v. BLM, 387 F.3d 989, 997 (9th Cir. 2004) (explaining that "[t]iering to the RMP-EIS cannot save the EAs" because neither the EAs nor the previous EIS includes any specific information about the cumulative effects of four timber sales); Te-Moak Tribe of Western Shoshone of Nev. v. U.S. DOI, 608 F.3d 592, 605 (9th Cir. 2010) ("Although the EA tiers to a number of EAs and EISs, including the original HC/CUEP's EA, these documents do not supplement the EA's incomplete analysis.").
[304] *'Ilio'ulaokalani Coal. v. Rumsfeld*, 464 F.3d 1083, 1097 (9th Cir. 2006).
[305] Tennessee Valley Authority, 2 Integrated Resource Plan at 1 (Mar. 2, 2011) (hereinafter "IRP").

2011 EIS had provided this analysis, new information and changed circumstances have developed which would require a supplemental EIS. Therefore, TVA must prepare an EIS now, even if TVA tiers its analysis off of the 2011 EIS.

1. The 2011 IRP and EIS are general planning documents that do not even attempt to address the possibilities of retrofitting, retiring, or repowering Gallatin.

Both the programmatic EIS and the IRP assess TVA's plans in a general manner, rather than making a detailed determination about any specific facility. The IRP compares five fleet-wide strategies to arrive at a broad recommended planning direction. As TVA explains, the IRP is designed to "set the direction for many decisions that will be proposed in the future."[306] The IRP and EIS do not address Gallatin specifically, evaluate the alternatives to retrofitting Gallatin, or examine the environmental impacts of retrofitting any specific plant, as described below.

TVA did not consider alternatives to retrofitting Gallatin in the IRP or the EIS. As we have explained above, and as the Synapse report explains in great detail, the IRP, and its underlying documents, are systematically flawed in ways that prevented TVA from *ever* considering retiring Gallatin in a fair way, or examining reasonable alternatives to continuing to operate the plant, including replacing it with energy efficiency. TVA obviously may not legally rely upon either the IRP or its EIS given those flaws: They neither perform, nor could perform, the alternative analysis which is now before TVA.

In fact, the IRP does not mention Gallatin. The EIS references Gallatin only a handful of times, but does not undertake any of the necessary facility or unit-specific analyses.[307] TVA has not considered, for example, the extent to which operation of some or all of the Gallatin units could be replaced by energy efficiency, natural gas, or biomass. TVA also failed to analyze whether it could meet demand by retrofitting some of the Gallatin units and retiring the rest, or operating at reduced loads. Instead, TVA compared overarching strategies that included a mix of idling plants, replacing them with other energy sources and energy efficiency, and continuing to operate existing plants. Moreover, even TVA's broad assessment in the IRP and EIS was intentionally limited. For example, the IRP did not discuss energy efficiency percentage goals beyond 2015.[308] In other words, the 2011 EIS gives a limited analysis of broad alternatives, and does not consider site-specific options.

Courts have rejected attempts to rely on general plans to avoid a site-specific EIS when the general plan mentioned the proposed project "only in a pool of possible projects that would help meet the goals of [the plan]" and there "was no detail concerning those projects and their impacts."[309] Here, Gallatin may have been in a pool of possible coal plants that could help TVA meet its goals, either through idling or continuing to run the plant, but TVA did not provide any

[306] IRP at 170.
[307] *See* Tennessee Valley Authority, Environmental Impact Statement at 71, 75, 94, 135, 139, 146, & 167 (Mar. 2011) (listing basic information about the facility and explaining that recent studies on biomass conversions did not include Gallatin).
[308] IRP at 190.
[309] Muckleshoot Indian Tribe v. U.S. Forest Serv., 177 F.3d 800, 810-11 (9th Cir. 1999).

details about the specific project now proposed or its impacts. The 2011 EIS considered idling coal plants in the aggregate, but did not address Gallatin in particular. In its recommended planning direction, TVA concluded that the optimal amount of coal plants idled could be anywhere from 2,400 to 4,700 MW. This large range does not present a specific decision, much less a decision about any one coal plant such as Gallatin. Although TVA indicates that it used a ranking system to determine that 1,000 MW of capacity should be retired at its Widows Creek, Shawnee, and John Sevier plants, TVA has not provided the public with the substance of the rankings or the process used to arrive at this conclusion.[310] Any such hidden considerations certainly fail to meet NEPA's fundamental objective of forcing agencies to justify their decisions in public. Moreover, TVA seems to have based its rankings on certain factors that did not include environmental impacts or other considerations that must be taken into account under NEPA. [311] Finally, TVA gave no indication of how it planned to reach the remainder of its targeted idling goal of 2,400 to 4,700 MW.[312] The EIS and IRP did not even mention the alternative of coal plant retirement, much less the retirement of a specific plant such as Gallatin.

The EIS addresses broad environmental impacts of alternative actions at a regional and sometimes national or global level; it does not evaluate local impacts of the Gallatin project. As the EIS acknowledges, the natural and socioeconomic resources that will be impacted by the alternative strategies are "described at a regional scale rather than a site-specific scale."[313] The EIS looks at the entire TVA region – roughly 59 million acres – as a whole.[314] Moreover, neither the EIS nor the IRP address the impacts of retrofits, such as those proposed for Gallatin, as compared to the impacts of options such as idling. This is insufficient to satisfy NEPA's "hard look" requirement.

The programmatic EIS that TVA now wishes to substitute in place of site-specific evaluation explicitly states that more analysis needs to be done before making a decision to run or retire a particular plant: "Because this is a programmatic EIS, site specific issues associated with constructing and operating power facilities are not addressed. Before implementing a specific resource option, a resource-specific environmental review will be conducted as appropriate."[315] In the IRP, TVA emphasized that "it is important to remember that this IRP is meant to serve as a roadmap for making future asset decisions and not meant to define specific decisions."[316] One of the recommended "next steps" in the IRP was to "[p]erform detailed optimization analyses to determine both the optimum level of idling and the best units for idling

[310] EIS at 143.
[311] *Id.*
[312] *Id.* Even if this analysis is provided elsewhere, TVA cannot tier to it because only the EIS went through public review. *See Kern v. U.S. Bureau of Land Mgmt.*, 284 F.3d 1062, 1073 (9th Cir. 2002) ("[T]iering to a document that has not itself been subject to NEPA review is not permitted."); *League of Wilderness Defenders v. U.S. Forest Serv.*, 549 F.3d 1211, 1219 (9th Cir. Or. 2008). In documents provided in response to a FOIA request, TVA does appear to have concluded that Gallatin should be retired under some scenarios and strategies. However, this analysis did not appear in the IRP or EIS and was not subject to public notice or comment.
[313] EIS at 51.
[314] *Id.* at S-14.
[315] *Id.* at 12 ("The more site-specific effects of specific actions proposed to implement the IRP will be addressed in later tiered environmental reviews.").
[316] IRP at 170.

after accounting for risks, uncertainty and all known costs."[317] TVA has failed to conduct this analysis for Gallatin, and therefore must provide the public with an EIS that fulfills these needs.

TVA's own practice when making major generation source decisions such as this has been to conduct an EIS for a site-specific proposal, even when tiering off of a programmatic EIS. For example, TVA conducted a site-specific EIS in addition to a programmatic EIS when adding baseload capacity,[318] adding peaking capacity,[319] purchasing electricity,[320] and constructing new plants.[321] In all of these cases, TVA tiered off of a previous EIS entitled "Energy Vision 2020." Therefore tiering does not relieve TVA of its duty to conduct an EIS, as the agency has recognized many times in the past.

In sum, TVA has never taken a hard look at alternatives to retrofitting Gallatin. This is impermissible under NEPA, and TVA must therefore prepare an EIS and rectify the deficiencies in the Draft EA and IRP EIS.

2. Even if TVA had analyzed the proposed decision in the IRP EIS, new information and changed circumstances warrant a supplemental EIS.

As described above, the 2011 EIS did not assess the impacts of and alternatives to retrofitting Gallatin. But even if it had, TVA would have to conduct a supplemental EIS to account for new information and changed circumstances.[322] Courts have held that an EIS must be supplemented if "new information shows that the remaining action will affect the quality of the environment . . . to a significant extent not already considered."[323] Here, there are both significant new circumstances and new information.

Critical information has come to light since the March 2011 EIS. The IRP and associated EIS were issued without important data regarding TVA's energy efficiency potential. The U.S. Government Accountability Office identified this data gap as a problem with the IRP process, and recommended that TVA build the results of a third-party energy efficiency study into its future decision making.[324]

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[317] *Id.* at 171.
[318] TVA, Addition of Electric Generation Baseload Capacity in Franklin County, TN 68 Fed. Reg. 24,043 (May 6, 2003)).
[319] 65 Fed. Reg. 30,469 (May 11, 2000); 66 Fed. Reg. 21,189 (Apr. 27, 2001); 64 Fed. Reg. 38,932 (July 20, 1999)).
[320] 63 Fed. Reg. 44,944 (Aug. 21, 1998)).
[321] 72 Fed. Reg. 45,859 (Aug. 15, 2007)).
[322] 40 C.F.R. § 1502.9(c)(1).
[323] *Nat'l Comm. for the New River v. FERC*, 373 F.3d 1323, 1330 (D.C. Cir. 2004) (quoting *Marsh v. Oregon Natural Res. Council,* 490 U.S. 360, 374 (1989)).
[324] U.S. Government Accountability Office, Tennessee Valley Authority: Full Consideration of Energy Efficiency and Better Capital Expenditures Planning Are Needed, at PDF pp. 2, 29 (Oct. 2011), Attachment 27 (concluding that "TVA cannot be sure that its current resource plans reflect the full scope and possible extent of energy efficiency programs or that the plans are realistic . . . [u]ntil this study is completed . . .").

On December 21, 2011, Global Energy Partners (GEP) released its study, commissioned by TVA, of TVA's energy efficiency potential.[325] The GEP Study revealed that TVA's potential energy efficiency savings could be as high as 5 percent by 2015, and 19.8 percent by 2030 – much higher than TVA's goal in the IRP of 3.5 percent by 2015.[326] The GEP Study also describes recommended methods for achieving these energy efficiency targets.[327] TVA must conduct an EIS to evaluate this information and fully analyze the reasonable alternatives to retrofitting.

In addition, circumstances have changed since early 2011, including reductions in energy demand and transformations in the natural gas and coal markets. Due at least in part to very mild weather and slow economic growth in the Tennessee Valley, demand forecasts have dropped. Also, the price of natural gas has remained lower than expected and the price of renewable generation continues to fall, while the costs of coal control technology and coal as a fuel are escalating. The Draft EA conspicuously fails to mention these important changed circumstances. In the EIS that TVA is required to prepare for the proposed action, TVA should consider the facts are they now exist, rather than as they exists years ago.

Therefore even if the 2011 EIS was sufficient (which it is not), TVA would still have to prepare a supplemental EIS. Supplemental EISs must be prepared, circulated, and filed in the same fashion as draft and final EISs.[328]

VI. In the Alternative, TVA Must Provide an Opportunity for Additional Public Comment Before Undertaking the Proposed Action.

If TVA does issue a FONSI—which, given the inadequacies of the Draft EA that preclude meaningful analysis, it cannot until it prepares and circulates a revised draft[329]—it must allow for another public comment period.[330] The CEQ regulations require that a FONSI be made available for public review if "[t]he proposed action is, or is closely similar to, one which normally requires the preparation of an [EIS] under the procedures adopted by the agency."[331] The NEPA procedures adopted by TVA mirror this requirement and call for the additional public review period where the proposed action "is, or is closely similar to" a major power generating facility, a major action the environmental impact of which is expected to be highly controversial, or any major action which will have a significant effect on the quality of the human environment.[332] As discussed above, the Gallatin plant is a major power generating facility, the continued operation of this plant is a major action with significant and highly controversial impacts on the environment. Therefore, any FONSI issued must be made available to the public in accordance with the procedures outlined in TVA's NEPA Procedures and Section 1501.4 of the CEQ regulations.

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[325] *See* GEP Study, Attachment 28.
[326] GEP Study at 20.
[327] GEP Study at 24-25.
[328] *See* 40 C.F.R. § 1502.9(c)(4).
[329] 40 C.F.R. § 1502.9(a).
[330] 40 C.F.R. § 1501.4(e)(2); TVA NEPA Procedures 5.3.4.
[331] 40 C.F.R. § 1501.4(e)(2)(i).
[332] TVA NEPA Procedures 5.3.4, 5.4.1.

VII. TVA Has Improperly Made Commitments and Limited Alternatives Before This NEPA Process Has Been Completed.

The NEPA process is a mandatory, and vital, decision-making and disclosure tool.[333] Few NEPA violations are worse, therefore, than making decisions, and limiting alternatives, prior to the conclusion of the NEPA process. Yet, that is just what TVA has done – and, because TVA's actions affect endangered species, it has violated the ESA's similar command as well. This failure infects the entire process. TVA must undo the damage it has done and start again with a new, untainted, process.

Specifically, the NEPA regulations provide that until a final record of decision has been issued, "no action concerning the proposal shall be taken which would (1) have an adverse environmental impact; or (2) limit the choice of reasonable alternatives."[334] TVA has violated this cardinal commandment and appears to have done so in multiple regards.

Most glaringly, TVA has already required – and is actively hastening – the dismantling of the CRAC. According to the FWS and TWRA: "TWRA is in the process of dismantling and closing the Cumberland River Aquatic Center (CRAC) at TVA Gallatin solely because we have been instructed to do so by TVA."[335] We understand that individuals of endangered species have already been transferred from the facility and that the facility is being taken apart, and that TWRA has been forced to expend public funds on this move.

This is illegal. TVA has improperly put the CRAC – and its major role supporting endangered species in the region – at risk, and is already causing active damage to the facility and its mission, while costing the public significant funds. This is a textbook commitment of resources, foreclosing alternatives that would leave the CRAC in place and causing adverse environmental impacts by limiting or ending the CRAC's functions. TVA must stop immediately and must restart this process with a clean slate and a new, open, public process.

This is also not the only commitment that TVA has made. TVA appears to have set its course, and begun making commitments to the Gallatin project, long ago. The TVA Board approved the GAF spending over a year ago, and we believe, based on TVA's representations to us and to our members at meetings since then, that TVA has already expended significant funds on contracting and permitting for the project (as reflects the February 2013 start date TVA has announced) and that TVA has, in fact, entered into binding contracts for the provision of materials, design, and labor for its proposed option. In the Draft EA itself, in the appendices, is a letter dated June 8, 2012 from the TVA to the Tennessee Historical Commissions that states plainly that "TVA proposes to install a lime-based dry flue gas desulfurization system (FGD) and a selective catalytic reduction (SCR) system at the GAF." These are the same controls that constitute the only alternative analyzed in the Draft EA. As noted, the June 8, 2012 date clearly predates, by several months, the Draft EA. Additionally, in a August 2012 press release, it is noted that "The Tennessee Valley Authority (TVA) said it plans to spend up to $1 billion to install emissions control technology at the Gallatin coal-fired power plant by 2017, according to

[333] *See* 42 U.S.C. § 4332(C).
[334] 40 C.F.R. § 1506.1(a).
[335] Letter from Mary Jennings, FWS, to Cynthia Wren, TVA (Nov. 27, 2012) at 2, Attachment 25.

The Tennessean newspaper . . . . Some of the upgrades includes the installation of four scrubbers to cut sulfur dioxide emissions and a selective catalytic reduction system to reduce nitrogen oxide levels, the article said."[336] This press release and the referenced article in the Tennessean newspaper also predate the draft Draft EA by several months.

Such activity obviously limits alternatives and (per the rest of these comments, will cause adverse environmental impacts because TVA is pursuing an unnecessarily polluting and unreasonable option). Indeed, even if TVA can unwind some of these contracts, the logistics involved and time and money invested biases the agency in favor of its preferred alternative, and so violates the law even if it were to be undone.

Moreover, the illegal commitments which TVA has made also violate the Endangered Species Act (ESA). The ESA provides that where an agency must consult on actions which affect endangered species they shall make no "irreversible or irretrievable commitment of resources" which would foreclose alternatives or violate consultation requirements.[337] FWS has advised TVA that it must initiate consultation if it takes actions which affect the CRAC, as it has done.[338] TVA therefore is bound by the ESA as well.[339]

In short, TVA has illegally short-circuited the NEPA and ESA consultation, fatally flawing this process. TVA must undo the damage it has done and start again.

I. Conclusion.

For all of these reasons, TVA cannot issue a ROD based on the Draft EA. TVA must prepare an EIS that fully complies with the requirements of NEPA, as described above.

Dated: November 30, 2012

[336] TVA Plans Emissions Controls Project at Coal-Fired Power Plant (Aug. 27, 2012) http://www.power-eng.com/articles/2012/08/tva-plans-emissions-controls-project-at-coal-fired-power-plant.html.
[337] 16 U.S.C. § 1536(d).
[338] Jennings-Wren Letter at 6, Attachment 25.
[339] To the extent that TVA is violating the ESA in this regard, this is further evidence that its action are environmentally significant and warrant an EIS.

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