**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY**

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| **Effluent Limitations Guidelines and Standards for the Steam Electric Power Generating Point Source Category**<br><br>**84 Fed. Reg. 64,620 (Nov. 22, 2019)** | ) | **Docket ID No. EPA-HQ-OW-2009-0819**<br>*Submitted via regulations.gov* |

# COMMENTS OF EARTHJUSTICE, ENVIRONMENTAL INTEGRITY PROJECT, SIERRA CLUB, CLEAN WATER ACTION, NATURAL RESOURCES DEFENSE COUNCIL, WATERKEEPER ALLIANCE, SOUTHERN ENVIRONMENTAL LAW CENTER, AND THE CENTER FOR BIOLOGICAL DIVERSITY

**January 21, 2020**

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## GLOSSARY LIST

2015 ELG Rule = Effluent Limitations Guidelines and Standards for the Steam Electric Power Generating Point Source Category, 80 Fed. Reg. 67,837 (Nov. 3, 2015)

2019 Proposal = Effluent Limitations Guidelines and Standards for the Steam Electric Power Generating Point Source Category, 84 Fed. Reg. 64,620 (Nov. 22, 2019)

BAT = Best Available Technology

BCA = Benefit Cost Analysis

CWA = Clean Water Act

EA = Environmental Assessment

ELG = Effluent Limitations Guidelines

EPA = Environmental Protection Agency

FGD = Flue Gas Desulfurization

HRTR = High Residence Time Reduction

IPM = Integrated Planning Model

LRTR = Low Residence Time Reduction

NPDES = National Pollutant Discharge Elimination System

NRDC = Natural Resources Defense Council

Proposed BCA = EPA, Benefit and Cost Analysis for Proposed Revisions to the Effluent Limitations Guidelines and Standards for the Steam Electric Power Generating Point Source Category, EPA-821-R-19-011 (Nov. 2019)

Proposed EA = EPA, Supplemental Environmental Assessment for Proposed Revisions to the Effluent Limitations Guidelines and Standards for the Steam Electric Power Generating Point Source Category, EPA-821-R-19-010 (Nov. 2019)

Proposed RIA = EPA, Regulatory Impact Analysis for Proposed Revisions to the Effluent Limitations Guidelines and Standards for the Steam Electric Power Generating Point Source Category, EPA-821-R-19-012 (Nov. 2019)

Proposed TDD = EPA, Supplemental Technical Development Document for Proposed Revisions to the Effluent Limitations Guidelines and Standards for the Steam Electric Power Generating Point Source Category, EPA-821-R-19-009 (Nov. 2019)

RIA = Regulatory Impact Assessment

Sahu Report = Dr. Ranajit (Ron) Sahu, Technical Comments on EPA's Proposed Rule to Revise the Best Available Technology (BAT) Effluent Limitations Guidelines (ELGs) for Flue Gas Desulfurization (FGD) Wastewater and Bottom Ash Transport Water (BATW) ("Sahu Expert Report") (attached)

TDD = Technical Development Document

VIP = Voluntary Incentives Program

## I. INTRODUCTION

Steam electric power plants, mostly coal plants, are responsible for the majority of arsenic, lead, mercury, selenium and other toxic metals discharged into our nation's rivers, lakes, and streams every year. These plants also discharge high levels of nutrients, bromide, and other harmful pollutants. Power plant wastewater discharges have made it unsafe to eat fish from many rivers, contaminated the lakes and rivers where people swim, damaged aquatic ecosystems, and created treatment challenges for drinking water systems.

EPA's 2019 Proposal[1] was born directly from industry requests and has no justification beyond cost savings for the electric utility industry. If finalized as proposed, EPA's revisions would gut long-overdue protections established in the 2015 update to the Clean Water Act Effluent Limitations Guidelines for Steam Electric Power Plants (the "2015 ELG Rule").[2] Among other things, that rule prohibited power plants from dumping fly ash or bottom ash wastewater into U.S. waters and imposed stringent limits on toxic metals and other pollutants in scrubber sludge discharges (known as "Flue Gas Desulfurization" or "FGD" wastewater). Weakening these standards is unjustified and will result in more toxic water pollution that harms human health and the environment. We therefore urge EPA to abandon its misguided and unlawful 2019 Proposal to weaken the 2015 ELG Rule. Instead, for the legal and technical reasons set forth in detail below, EPA must reaffirm the zero discharge requirement for bottom ash transport water and also prohibit the discharge of FGD wastewater.

The record before EPA plainly demonstrates that technologies to eliminate both bottom ash transport water and FGD wastewater are available, achievable, and affordable. Requiring power plants to use these proven technologies would prevent more than a billion pounds of pollutants from entering U.S. waters every year, and provide hundreds of millions of dollars per year in public health and environmental benefits. In light of the clear technical record before EPA, the Clean Water Act requires EPA to eliminate these wastestreams. Our organizations urge EPA to abandon the 2019 Proposal to gut the 2015 ELG Rule and instead act swiftly to strengthen it.

## II. LEGAL BACKGROUND

In the 1972 Clean Water Act amendments, Congress responded to the chronic failure of existing legislation to address water pollution effectively; Congress "was confronted by continuing and increasing massive pollution, which was turning many American rivers into open sewers, was threatening the extinction of marine life in several of the Great Lakes, as well as our ocean harbors, and was endangering the purity of our waters for drinking, for water recreation, for crop irrigation, and for industrial usage."[3] Pre-1972 versions of the Clean Water Act

[1] Effluent Limitations Guidelines and Standards for the Steam Electric Power Generating Point Source Category, 84 Fed. Reg. 64,620 (Nov. 22, 2019) ("2019 Proposal").
[2] Effluent Limitations Guidelines and Standards for the Steam Electric Power Generating Point Source Category, 80 Fed. Reg. 67,837 (Nov. 3, 2015) ("2015 ELG Rule").
[3] *Am. Frozen Food Inst. v. Train*, 539 F.2d 107, 116 (D.C. Cir. 1976)*; see also Weyerhaeuser v. Costle*, 590 F.2d 1011, 1056 (D.C. Cir. 1978) ("Congress realized not only that its water pollution efforts until

attempted to control water pollution by determining "which polluter caused what pollution," a mandate that "proved over the years to be an impractical task."[4]

The modern Clean Water Act represents a "wholly new approach" to protecting our country's waterways.[5] Congress replaced a water-quality based framework that allocated responsibility for pollution that had already occurred with a technology-based framework that prohibits the discharge of pollutants without a permit.[6] Technology-based effluent limitations are the centerpiece of the Act.[7]

The Clean Water Act sets a national goal of eliminating water pollution.[8] To achieve the national goal, the Clean Water Act requires facilities to meet a series of increasingly stringent, technology-based effluent limitations. For pollutants the Clean Water Act classifies as either toxic (such as heavy metals) or "nonconventional" (such as nitrogen), the first standards were best practicable control technology ("BPT"),[9] followed by the more stringent best available technology ("BAT").[10] New sources are subject to the most stringent standards, new source performance standards ("NSPS").[11] The effluent limitations must be based on effluent guidelines ("ELGs"), which are nation-wide, minimum standards for categories of sources.[12] These national standards set a federal floor for environmental protection, in order to avoid a "race to the bottom" by state regulators.[13] In developing BAT effluent guidelines, EPA must consider "the age of equipment and facilities involved, the process employed, the engineering aspects of the application of various types of control techniques, process changes, the cost of achieving such

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then had failed, but also that reliance on receiving water capacity as a crucial test for permissible pollution levels had contributed greatly to that failure.") (citations omitted).

[4] *Am. Frozen Food Inst.*, 539 F.2d at 116.

[5] *Id.*

[6] *See id.* at 115-16; *see also Columbus & Franklin Cty. Metro. Park Dist. v. Shank*, 600 N.E.2d 1042, 1066 (Ohio 1992) (citing S. Rep. No. 414, 92d Cong., 2d Sess. 8, *reprinted in* 1972 U.S.C.C.A.N. 3668, 3675).

[7] *Tex. Oil & Gas Ass'n v. EPA*, 161 F.3d 923, 927 (5th Cir. 1998) (noting that the Clean Water Act was designed to eliminate water pollution "through a system of effluent limitations guidelines"); *Nat. Res. Def. Council, Inc. v. EPA*, 859 F.2d 156, 202 (D.C. Cir. 1988) ("[T]he primary purpose of the CWA is the *elimination* of all pollutant discharges . . . . The central mechanism for achieving this goal is promulgation and imposition of increasingly stringent effluent limits").

[8] 33 U.S.C. § 1251(a)(1). Congress established in the Clean Water Act the goal that all discharges of water pollution from point sources "be eliminated by 1985," *id.*, a goal which EPA failed to meet but which further makes clear that Congress intended BAT to be based on the most effective achievable technologies.

[9] *Id.* § 1311(b)(1)(A).

[10] *Id.* § 1311(b)(2)(A).

[11] *Id.* § 1316(a)(1).

[12] *E. I. DuPont de Nemours & Co. v. Train*, 430 U.S. 112, 127, 129 (1977).

[13] *See Natural Res. Def. Council, Inc. v. Train*, 510 F.2d 692, 709-10 (D.C. Cir. 1974) (explaining that Congress intended these uniform federal requirements to "safeguard against industrial pressures by establishing a uniform 'minimal level of control imposed on all sources within a category or class'").

effluent reduction, non-water quality environmental impact (including energy requirements), and such other factors as the Administrator deems appropriate."[14]

### A. The Best Available Technology Is the Most Stringent Pollution Control That Is Available and Economically Achievable.

BAT represents the best available technology that is economically achievable:[15] a stringent treatment standard that has been held to represent "a commitment of the maximum resources economically possible to the ultimate goal of eliminating all polluting discharges,"[16] including "requir[ing] the elimination of discharges of all pollutants" if "such elimination is technologically and economically achievable."[17] A technology is "available" if it is in use in the industry, even if only by the best-performing plant in the industry, or if it can be demonstrated to be available through pilot studies or its use in other industries.[18] A technology is economically achievable if the costs can be reasonably borne by the industry as a whole.[19] And as discussed below, EPA is precluded from basing its determination of BAT on a cost-benefit analysis.

#### 1. *A treatment technology is "available" even if only in use at a single plant in the industry or can be demonstrated through pilot studies or use in another industry.*

Congress intended BAT to be "technology-forcing," *i.e.*, to drive the development and adoption of increasingly more effective pollution controls in order to "result in reasonable further progress toward the national goal of eliminating the discharge of all pollutants."[20] Courts have thus recognized that Congress intended for EPA to look to the best-performing facilities in the relevant class to determine technological availability.[21] A technology need not even be in

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[14] 33 U.S.C. § 1314(b)(2)(B).
[15] 33 U.S.C. § 1311(b)(2)(B).
[16] *EPA v. Nat'l Crushed Stone Ass'n*, 449 U.S. 64, 74 (1980).
[17] 33 U.S.C. § 1311(b)(2)(A).
[18] *See Chem. Mfrs. Ass'n v. EPA*, 870 F.2d 177, 226 (5th Cir. 1989); *Am. Petroleum Inst. v. EPA*, 858 F.2d 261, 265 (5th Cir. 1988); *Kennecott v. EPA*, 780 F.2d 445, 448 (4th Cir. 1985).
[19] *Waterkeeper All., Inc. v. EPA*, 399 F.3d 486, 516 (2d Cir. 2005); *Rybachek v. EPA*, 904 F.2d 1276, 1290-91 (9th Cir. 1990).
[20] 33 U.S.C. § 1311(b)(2)(A); *see also Nat. Res. Def. Council v. EPA*, 808 F.3d 556, 563-64 (2d Cir. 2015) ("Congress designed this standard to be technology-forcing, meaning it should force agencies and permit applicants to adopt technologies that achieve the greatest reductions in pollution."); *Nat. Res. Def. Council v. EPA*, 822 F.2d 104, 123 (D.C. Cir. 1987) (stating that "the most salient characteristic of this [CWA] statutory scheme, articulated time and again by its architects and embedded in the statutory language, is that it is technology-forcing").
[21] *Chem. Mfrs. Ass'n v. EPA*, 870 F.2d 177, 226 (5th Cir. 1989) ("Congress intended these [BAT] limitations to be based on the performance of the single best-performing plant in an industrial field."); *see also Nat. Res. Def. Council v. EPA*, 863 F.2d 1420, 1426 (9th Cir. 1988); *Kennecott*, 780 F.2d at 448 ("In setting BAT, EPA uses not the average plant, but the optimally operating plant, the pilot plant which acts as a beacon to show what is possible."); *cf. Riverkeeper, Inc. v. EPA*, 475 F.3d 83, 107-08 (2d Cir. 2007) ("The statutory directive requiring facilities to adopt the best technology cannot be construed to permit a facility to take measures that produce second-best results . . . especially given the technology-forcing

commercial use to be available, so long as the technology has been studied and demonstrated, such as through the use of pilot studies.[22] EPA may also conclude that a technology is available if it is in use in another industry, so long as it shows that that technology is transferable to the industry class for which it is establishing BAT.[23] This contrasts with the less-stringent BPT guidelines, which are based on the average of the best-performing plants.[24] In considering available technologies, EPA must consider technologies that lead to zero liquid discharges, in light of the statutory goal of eliminating water pollution.[25] Congress intended BAT to "push[] industries toward the goal of zero discharge as quickly as possible."[26]

2. *A treatment technology is economically achievable if the cost of adopting the technology can be reasonably borne by the industry, and EPA is precluded from basing its BAT determination on a cost-benefit analysis.*

A technology is economically achievable if the "costs can be reasonably borne by the industry."[27] Congress determined that investments in pollution controls are warranted to the greatest degree possible, and therefore the inquiry is not whether the costs of a given control are "worth it" in EPA's estimation. Instead, EPA's determination of economic achievability must be guided by the Supreme Court's holding that BAT limits "represent[] a commitment of the maximum resources economically possible to the ultimate goal of eliminating all polluting discharges."[28] EPA determines BAT for categories of sources, rather than on a plant-by-plant basis,[29] and therefore considers costs to the industry as a whole.[30] While EPA must take into account the cost of achieving BAT,[31] EPA must set BAT limits based on the use of the best available technology.[32] In developing BAT guidelines, costs are to be given even less importance than in developing the less stringent BPT guidelines. Congress underscored this by including a

imperative behind the Act. . . .") (citations omitted), *rev'd on other grounds sub nom. Entergy Corp. v. Riverkeeper, Inc.*, 556 U.S. 208 (2009).

[22] *See Am. Petroleum Inst.*, 858 F.2d at 265 (stating that under BAT, "a process is deemed 'available' even if it is not in use at all"); *FMC Corp. v. Train*, 539 F.2d 973, 983-84 (4th Cir. 1976) (finding EPA justified in setting BAT for chemical oxygen demand based on performance data from a single pilot plant).

[23] *Kennecott*, 780 F.2d at 453 ("[p]rogress would be slowed if EPA were invariably limited to treatment schemes already in force at the plants which are the subject of the rulemaking."); *see also Reynolds Metals Co. v. EPA*, 760 F.2d 549, 562 (4th Cir. 1985).

[24] *Chem. Mfrs. Ass'n*, 870 F.2d at 207-08.

[25] *NRDC*, 822 F.2d at 123.

[26] *Kennecott*, 780 F.2d at 448.

[27] *Waterkeeper All., Inc. v. EPA*, 399 F.3d 486, 516 (2d Cir. 2005); *Rybachek v. EPA*, 904 F.2d 1276, 1290-91 (9th Cir. 1990) (discussing this standard).

[28] *EPA v. Nat'l Crushed Stone Ass'n*, 449 U.S. 64, 74 (1980).

[29] *E.I DuPont de Nemours & Co. v. Train*, 430 U.S. at 127.

[30] *See Am. Iron & Steel Institute v. EPA*, 526 F.2d 1027, 1051 (3d Cir. 1975) (cost must be considered "on a class or category basis, rather than [on] a plant-by-plant basis").

[31] 33 U.S.C. § 1314(b)(2)(B).

[32] *See Am. Iron & Steel Inst. v. EPA*, 526 F.2d at 1051; *Chem. Mfrs. Ass'n v. EPA*, 870 F.2d 177, 204 (5th Cir. 1989).

requirement to balance costs against benefits in promulgating BPT guidelines, but omitting any cost-benefit analysis from the development of BAT guidelines.[33]

"[I]n assessing BAT, total cost is no longer to be considered in comparison to effluent reduction benefits."[34] As the D.C. Circuit has explained, Congress affirmatively rejected amendments which would have required cost-benefit balancing for BAT.[35] "Congress uses specific language when intending that an agency engage in cost-benefit analysis," and it did not allow cost-benefit analysis here.[36]

For decades, courts have rebuffed industry attempts to introduce cost-benefit analysis as a basis for EPA decision-making in the BAT process.[37] Thus, at least seven circuit courts of appeal have affirmed, in accord with the Supreme Court's decisive pronouncement in *Nat'l Crushed Stone*, that EPA cannot base BAT guidelines on cost-benefit analysis. Subsequently, in *Entergy Corp. v. Riverkeeper, Inc.*, 556 U.S. 208 (2009), the Supreme Court affirmed that only certain Clean Water Act standards "authorize cost-benefit analysis," and that the BAT standard does not fall within this group.[38] This analysis is consistent with the long line of cases over the past forty years that have held cost-benefit analysis is not permitted in BAT standard-setting, including the Supreme Court's ruling in *National Crushed Stone*.[39]

Congress declined to premise BAT standards on cost-benefit analysis for sound policy reasons. The sponsors of the 1972 Clean Water Act amendments recognized that the costs of

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[33] *Compare* 33 U.S.C. § 1314(b)(1)(B) *with* 33 U.S.C. § 1314(b)(2)(B).
[34] *EPA v. Nat'l Crushed Stone*, 449 U.S. 64, 71 (1980); *see also Am. Iron & Steel*, 526 F.2d at 1051-52 ("With respect to the [BAT] standards," Congress intended "that there should be no cost-benefit analysis.").
[35] *See Weyerhaeuser v. Costle*, 590 F.2d 1011, 1046 (D.C. Cir. 1978).
[36] *Am. Textile Mfrs. Inst., Inc. v. Donovan*, 452 U.S. 490, 511 (1981); *see also id.* at 511 n.30 (reaffirming *Nat'l Crushed Stone*).
[37] *See, e.g., Am. Iron & Steel Inst. v. EPA*, 526 F.2d at 1052 n.54 ("a cost-benefit analysis is not required at all" for BAT); *CPC Int'l, Inc. v. Train*, 540 F.2d 1329, 1341-42 (8th Cir. 1976) (BAT guidelines are "governed by a standard of reasonableness without the necessity of a thorough cost-benefit analysis"); *Reynolds Metals Co. v. EPA*, 760 F.2d 549, 565 (4th Cir. 1985) ("no balancing is required" for BAT); *Rybachek v. EPA*, 904 F.2d 1276, 1290-91 (9th Cir. 1990) (EPA "need not compare [control] cost with the benefits of effluent reduction"); *BP Exploration & Oil, Inc. v. EPA*, 66 F.3d 784, 799-800 (6th Cir. 1995) (rejecting industry demand for cost-benefit analysis because BAT "does not require cost-benefit analysis" and "EPA need only find … that the cost of the technology is reasonable"); *Tex. Oil & Gas Ass'n v. EPA*, 161 F.3d 923, 928 (5th Cir. 1998) (underlining that "BAT is the CWA's most stringent standard" and must be set based not on cost-benefit analysis but on "the performance of the single, best-performing plant in an industrial field"); *Waterkeeper Alliance v. EPA*, 399 F.3d 486, 516 (2d Cir. 2005) (BAT can be set to the level which can "reasonably be borne by a given industry"); *Am. Paper Inst. v. Train*, 543 F.2d 328, 348 (D.C. Cir. 1976) ("Section 304(b)(2)(B) mandates no such [cost-benefit] balancing for the 1983 limitations"); *Ass'n of Pac. Fisheries v. EPA*, 615 F.2d 794, 805 (9th Cir. 1980) ("The conspicuous absence of the comparative language contained in section 304(b)(1)(B) leads us to the conclusion that Congress did not intend the Agency or this court to engage in marginal cost-benefit comparisons [for BAT].").
[38] 556 U.S. at 219-222.
[39] *See id.* at 222.

pollution controls are more easily quantified than the benefits; Congress understood that while the cost of compliance are "readily quantifiable," "[s]ome economic benefits can be calculated with reasonable accuracy," but many more benefits are "difficult to calculate."[40] As the costs are more easily quantified and monetized than the benefits, any cost-benefit analysis will be biased toward emphasizing costs over benefits.

## III. THE PROPOSED RULE IS UNLAWFUL AND INCONSISTENT WITH THE FIFTH CIRCUIT'S RECENT DECISION IN SOUTHWESTERN ELECTRIC POWER COMPANY.

On April 12, 2019, the U.S. Court of Appeals for the Fifth Circuit in *Southwestern Electric Co. v. U.S. Environmental Protection Agency*, Case No. 15-60821, ruled in favor of environmental petitioners' legal challenges to the legacy wastewater and leachate provisions of the 2015 ELG Rule and vacated those provisions.[41] The 2019 Proposal is inconsistent with the Fifth Circuit's decision in at least three ways, as set forth below.

### A. *Southwestern Electric* Held That Surface Impoundments Are Not BAT For Legacy Wastewater and Leachate, And The Same Reasoning Applies To Other Power Plant Wastestreams.

As the *Southwestern Electric* court noted, "[s]team-electric power plants generate most of the electricity used in our nation and, sadly, an unhealthy share of the pollution discharged into our nation's waters."[42] Noting that the steam-electric ELGs had not been updated since 1982, the court observed that EPA's description of those regulations as "out of date" was a "charitable understatement."[43] Specifically, the court found that the 1982 ELGs were from a "bygone era" in that they allowed coal-burning power plants to manage toxic wastewater in surface impoundments, "which are essentially pits where wastewater sits, solids (sometimes) settle out, and toxins leach into groundwater."[44] Relying on EPA's own findings from the 2015 ELG Rule, the court found that impoundments were "largely ineffective" and that regulations based on impoundments "are relics of the past" that "do not adequately control the pollutants (toxic metals and other[s]) discharged by this industry, nor do they reflect relevant process and technology advances that have occurred in the last 30-plus years."[45]

The *Southwestern Electric* court vacated the legacy wastewater and leachate provisions of the 2015 ELG Rule because EPA had purported to determine that surface impoundments were BAT for those wastestreams. In so holding, the court reaffirmed the well-established law,

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[40] S. Rep. 92-414 (1972), in 1972 U.S.C.C.A.N. 3668, 3713-14.
[41] 920 F.3d 999 (5th Cir. 2019).
[42] *Id.* at 1003.
[43] *Id.* (citing 80 Fed. Reg. 67,838 (Nov. 3, 2015)).
[44] *Id.* (citing 80 Fed. Reg. at 67,840, 67,851).
[45] *Id.* at 1003-04, 1007, 1015, 1017-19, 1025-26 (citing 80 Fed. Reg. at 67,840); *See also* 80 Fed. Reg. at 67,851 ("[P]ollutants that are present mostly in soluble (dissolved) form, such as selenium, boron, and magnesium, are not effectively and reliably removed by gravity in surface impoundments."); 78 Fed. Reg. 34,432, 34,459 (June 7, 2013) ("For metals present in both soluble and particulate forms (such as mercury), surface impoundments will not effectively remove the dissolved fraction.").

explained in detail in Section II - Legal Background above, that ELGs are required to be technology-forcing and establish effluent limitations for all wastestreams based on the best-performing plant in the industrial field and the most effective technologies at eliminating discharges of pollutants that are available and achievable for that industry.[46] The court emphatically rejected EPA's determination that surface impoundments are BAT for legacy wastewater or leachate, in light of EPA's findings that they are "a technology the [2015 ELG Rule] condemns as anachronistic and ineffective at eliminating pollution discharge. In other words, EPA asks us to believe that impoundments are both archaic and cutting-edge at the same time. That we cannot do."[47] Comparing surface impoundments to personal computers, the court described EPA's selection of surface impoundments as BAT in 2015 as, "[i]t was as if Apple unveiled the new iMac, and it was a Commodore 64."[48] This is even more true in 2020, because as explained below, EPA's record demonstrates that power plant wastewater treatment technology has only further improved in the last five years.

Although the Fifth Circuit's decision in *Southwestern Electric* was limited to the legacy wastewater and leachate provisions of the 2015 ELG Rule, its reasoning for why surface impoundments are not BAT is equally applicable to any power plant wastestream, given the overwhelming record that EPA itself has developed that surface impoundments are not effective at reducing discharges of pollutants to surface water, have caused widespread groundwater contamination, and that modern, more effective, and affordable alternatives are available to the industry. Overall, as the Fifth Circuit found with respect to legacy wastewater, "the record fails to explain why impoundments are BAT, if that term is to have any meaning."[49] In the 2019 Proposal, EPA does not attempt to reconsider any of these findings from 2015, nor would it have any legitimate basis to do so. Thus, the Fifth Circuit's reasoning for why surface impoundments are not BAT applies with equal force to this rulemaking as it did to the provisions of the 2015 ELG Rule that were at issue in *Southwestern Electric*. Accordingly, any attempt by EPA to

[46] *See generally Sw. Elec. Power Co.*, 920 F.3d at 1004-07, 1015-33.
[47] *Id.* at 1017. *See also id.* ("[T]he final rule describes impoundments as an outdated and ineffective pollution control technology, and yet the same rule chooses to freeze impoundments in place as BAT for legacy wastewater. That is inconsistent with the 'technology-forcing' mandate of the [Clean Water Act]."); *id.* at 1016 ("[H]aving rejected impoundments as BAT because they would not achieve 'reasonable further progress' toward eliminating pollution from those streams, EPA turned around and chose impoundments as BAT for each of those same streams generated before the compliance date. That paradoxical action signals arbitrary and capricious agency action."); *id.* at 1019 ("Far from demonstrating that impoundments are the 'best available technology economically achievable' for treating legacy wastewater, the evidence recounted in the final rule shows that impoundments are demonstrably ineffective at doing so and demonstrably inferior to other available technologies. In light of this record, we cannot accept that an outdated, ineffective and inferior technology is BAT when applied to legacy wastewater."); *id.* at 1029-30 (noting that allowing surface impoundments to be the sole means for managing leachate "has resulted in numerous documented cases of drinking water pollution," and concluding that EPA's failure to require more stringent treatment technologies for leachate was a "kind of regulation-by-inertia [that] is inconsistent with the 'technology-forcing' mandate of the [Clean Water Act].").
[48] *Id.* at 1004.
[49] *Id.* at 1018 n.20.

determine that surface impoundments are BAT in this rulemaking would be arbitrary, capricious, and contrary to law.

### B. The 2019 Proposal Is Directly Contrary To *Southwestern Electric* By Proposing That Surface Impoundments Are BAT For Subcategories of the Industry.

Remarkably, in the face of the Fifth Circuit's emphatic rejection of surface impoundments in *Southwestern Electric*, EPA nevertheless proposes to once again determine that they are BAT for FGD wastewater for major subcategories of the steam-electric power industry. Specifically, as discussed in more detail below, EPA proposes to determine that surface impoundments are BAT for FGD wastewater, in all of the regulatory options that it considered for this proposed rulemaking, for a newly-created subcategory of boilers whose owners say they will retire by 2028. *See* Section X.B - Retirement Subcategory. EPA also proposes to determine under its preferred Option 2 that surface impoundments are BAT for FGD wastewater for another newly-created subcategory of so-called "low utilization" boilers. *See* Section X.D - Low Utilization Subcategory.

EPA's proposed determination that surface impoundments are BAT for any subcategories of the industry is directly contrary to *Southwestern Electric*. As discussed above, the Fifth Circuit emphatically rejected the proposition that surface impoundments – which it described as "relics of the past" from a "bygone era" – are BAT for legacy wastewater and leachate, and this reasoning applies with equal force to the other power plant wastestreams at issue in this rulemaking.

EPA's flimsy attempt to reconcile with *Southwestern Electric* its determination that surface impoundments can be BAT for subcategories of the industry is arbitrary and capricious. EPA states in the preamble to the 2019 Proposal that the Fifth Circuit "left open the possibility that surface impoundments could be used as the basis for BAT effluent limitations so long as the Agency identifies a statutory factor, such as cost, in its rationale for selecting surface impoundments."[50] This statement grossly mischaracterizes the Fifth Circuit's opinion, which was based on well-established law (discussed above in Section II - Legal Background) on the BAT standard that EPA fails to adhere to in the 2019 Proposal. Specifically, as the Fifth Circuit recognized, a lawful BAT determination must be "'technology-forcing, meaning it should force agencies and permit applicants to adopt technologies that achieve the greatest reductions in pollution.'"[51] Further, a lawful BAT determination must "'be based on the single-best performing plant in an industrial field' . . . 'not the average plant, but the optimally operating plant, the pilot plant which acts as a beacon to show what is possible.'"[52] And while EPA is

[50] 84 Fed. Reg. 64,620, 64,639 (Nov. 22, 2019).
[51] *Sw. Elec. Power Co.*, 920 F.3d at 1005 (quoting *Nat. Res. Def. Council v. EPA*, 808 F.3d 556, 563-64 (2d Cir. 2015)). *See also id.* ("The D.C. Circuit accurately described this aspect of the Act's scheme as 'technology-forcing,' meaning it seeks to 'press development of new, more efficient and effective [pollution-control] technologies.'") (quoting *Nat. Res. Def. Council v. EPA*, 822 F.2d 104, 123 (D.C. Cir. 1987)).
[52] *Id.* at 1018 (quoting *Tex. Oil & Gas Ass'n v. EPA*, 161 F.3d 923, 928 (5th Cir. 1998) (internal quotation marks omitted) & *Kennecott v. EPA*, 780 F.2d 445, 448 (4th Cir. 1985)). *See also id.* at 1025

correct that it is required to consider cost in making a BAT determination, any sort of balancing of costs against benefits is not permitted.[53] Rather, EPA must set BAT at a level that is affordable to the industry as a whole, but that requires industry to invest in pollution controls reflecting "'a commitment of the maximum resources economically possible to the ultimate goal of eliminating all pollutant discharges,' which was the intent of Congress in enacting BAT standards in the first place."[54] Applying these standards to EPA's record, the Fifth Circuit concluded that surface impoundments do not represent the technology in use at the best-performing plant in the industrial field in light of their well-documented lack of effectiveness and the availability and affordability of superior alternatives.[55]

EPA's suggestion in the preamble to the 2019 Proposal that it is free to disregard the Fifth Circuit's analysis of the record – which again, as to surface impoundments, has not changed in any material respect since 2015 – simply because it is now more explicitly invoking cost as a factor than it did in the 2015 ELG Rule, is completely meritless in light of the Fifth Circuit's detailed findings of the failure of surface impoundments to meet the BAT standard. *Southwestern Electric* reaffirmed and relied on over forty years of precedent concerning how EPA may consider cost consistent with the BAT standard, and EPA's statements about cost in the preamble to the 2019 Proposal are contrary to that well-established law, as well as arbitrary and capricious.

### C. The 2019 Proposal Is Arbitrary and Capricious Because It Moves Forward With Changes That Weaken the 2015 ELG Rule And Are Not Legally Required While Failing To Address A Court Order To Strengthen the Rule.

The 2019 Proposal is also inconsistent with *Southwestern Electric*, and therefore arbitrary and capricious, because it proposes to make changes to weaken the 2015 ELG Rule while failing to respond to the Fifth Circuit's order that the legacy wastewater and leachate provisions of the Rule must be strengthened in order to comply with the CWA. The 2019 Proposal mentions the *Southwestern Electric* vacatur only in passing, stating only that "EPA plans to address this vacatur in a subsequent action."[56] EPA has yet to provide any timeframe for taking action in response to *Southwestern Electric*, seeking instead to prioritize this rulemaking over timely compliance with the Fifth Circuit's order.

By contrast, none of the changes in the 2019 Proposal are legally required, resulting instead from EPA's voluntary decision in 2017 to reconsider portions of the 2015 ELG Rule in response to petitions for reconsideration from the Utility Water Act Group and the U.S. Small Business Administration. However, as a coalition of public health and environmental advocates explained in comments submitted to EPA in July 2017 on the proposed Postponement Rule, those reconsideration petitions were lacking in merit and provided no basis for EPA to reconsider

(emphasizing that BAT cannot merely be set as the average of best-performing plants, but must be based on the single best-performing plant in the industrial field).
[53] *Id.* at 1007.
[54] *Id.* at 1030 (quoting *EPA v. Nat'l Crushed Stone Ass'n*, 449 U.S. 64, 74 (1980)).
[55] *Id.* at 1015-22, 1025-26, 1029-33.
[56] 84 Fed. Reg. at 64,625.

the 2015 ELG Rule.[57] This is only underscored by the fact that the 2019 Proposal does not directly discuss *any* of the primary issues set forth in the reconsideration petitions, nor even discuss the substance of those petitions.[58] And although the Fifth Circuit agreed to stay litigation of industry claims challenging the 2015 ELG Rule pending this rulemaking, neither EPA nor the court has ever found those industry claims to have any merit – unlike the deficiencies in the legacy wastewater and leachate provisions that were adjudicated in *Southwestern Electric*. Nevertheless, EPA has chosen to move forward with the 2019 Proposal over seven months after the Fifth Circuit issued a decision in *Southwestern Electric*, without also proposing to address the Fifth Circuit's vacatur of the 2015 ELG Rule's legacy wastewater and leachate provisions.

This is arbitrary and capricious. EPA is not free to ignore court orders simply because the agency might prefer, for political or other reasons, not to respond to them in a timely manner. As the D.C. Circuit has noted, "a reasonable time for agency action is typically counted in weeks or months, not years."[59] Although it is not uncommon for agencies to take a year or more to respond to a court order, under the circumstances here it is patently unreasonable – and contrary to EPA's mission to protect public health and the environment – for the agency to delay commencement of a court-ordered rulemaking to strengthen provisions of the 2015 ELG Rule in favor of a discretionary rulemaking that is not legally required, is contrary to the CWA in numerous respects as discussed in detail throughout these comments, and whose primary purpose is to benefit private industry at the expense of health and environmental benefits to the broader public.

## IV. THE REGULATORY OPTIONS EVALUATED BY EPA DO NOT PROVIDE A MEANINGFUL COMPARISON OF ALTERNATIVES

EPA evaluates four regulatory alternatives – Options 1 through 4 – and compares them to a baseline equivalent to compliance with the 2015 Rule.60 There are three problems with this range of regulatory options. First, the analyses in the record generally exclude all units slated to retire before 2028. Second, EPA's baseline is not appropriate for estimating the practical consequences of the Proposed Rule. Finally, EPA's range of alternatives fails to capture the potential for much greater and potentially more cost-effective pollution reductions. The record shows that the correct application of the BAT standard would result in a zero-discharge rule for both bottom ash transport water and FGD wastewater, so EPA should model a zero-discharge option.

### A. EPA Fails To Account For Pollution Loads From 'Early Retirement' Units

According to EPA's Proposed TDD, the Agency "removed coal-fired generating units that will retire or convert fuel type prior to December 31, 2028 from the analyses supporting this

[57] Comments of Sierra Club *et al.*, Docket ID No. EPA-HQ-OW-2009-0819-6654 (July 6, 2017).
[58] *See* Utility Water Act Group petition for reconsideration of 2015 ELG Rule (Mar. 24, 2017), Docket ID No. EPA-HQ-OW-2009-0819-6478; U.S. Small Business Administration petition for reconsideration of 2015 ELG Rule (Apr. 5, 2017), Docket ID No. EPA-HQ-OW-2009-0819-6481.
[59] *In re: Am. Rivers & Idaho Rivers United*, 372 F.3d 413, 419 (D.C. Cir. 2004).
[60] 84 Fed. Reg. at 64,645; Proposed TDD at 5-1, 6-1.

proposed rule."[61] This means that EPA did not calculate – and the public cannot calculate – the pollution reductions (and associated costs) that might be achieved by requiring pollution control upgrades at these plants. EPA suggests that costs might be disproportionately high for 'early retirement' units because they have fewer years of operating life over which to amortize costs, and might end up with stranded assets.[62] This is simply not a credible concern in light of the fact that these plants can lease, rather than purchase, treatment systems.[63] EPA must evaluate the costs and pollution reductions associated with eliminating the discharge of pollution from all units, including those scheduled to retire by 2028. EPA's failure to evaluate such costs and benefits renders its analysis for the 2019 Proposal arbitrary and capricious.

### B. EPA Fails To Compare Regulatory Options To The Correct Baseline

EPA's baseline – the 2015 ELG Rule – makes sense from a narrow legal perspective, in the sense that one may want to evaluate how the 2019 Proposal will affect existing legal obligations. However, very few plants have installed the pollution controls on bottom ash transport water and FGD wastewater required by the 2015 rule. As a result, for all practical purposes, the rule has not yet been implemented for these wastestreams.[64] If one wants to know how the 2019 Proposal will change costs and pollution loads going forward, the appropriate baseline is current conditions. And indeed, EPA used a current conditions baseline for some purposes, for example in justifying a low-utilization subcategory.[65]

Yet EPA arbitrarily fails to compare its regulatory options to current conditions in most of its analyses. As a result, the Agency fails to provide useful information about the extent to which each regulatory option will affect compliance costs and environmental outcomes relative to the existing state of the industry. This is arbitrary and capricious.

[61] Proposed TDD at 3-4.
[62] 84 Fed. Reg. at 64,640.
[63] *See, e.g.*, ERG, Technologies for the Treatment of Flue Gas Desulfurization Wastewater – DCN SE07367, at M-2, Docket ID No. EPA-HQ-OW-2009-0819-8155 (Oct. 22, 2019).
[64] Very few units have installed the FGD treatment systems required by the 2015 Rule. According to the ERG "current discharges" memorandum, of the seventy-one plants with an FGD treatments system, thirty are simply using ponds (no further treatment), another thirty-one are using chemical precipitation, and only nine are using chemical precipitation and biological treatment (or something more advanced). ERG, Pollutant Loadings Associated with Current Discharges of FGD Wastewater and Bottom Ash Transport Water – DCN SE07214, Docket ID No. EPA-HQ-OW-2009-0819-7836 (July 15, 2019). For bottom ash, where the 2015 Rule would require zero discharge for virtually all units, only 38% of plants are currently achieving zero discharge. *Id.*
[65] *See, e.g.*, 84 Fed. Reg. at 64,638 ("Figure VIII-1 below presents costs per MWh produced as measured against the status quo, rather than against the 2015 rule baseline.").

### C. EPA Fails To Evaluate Regulatory Options That Would Maximize Pollution Reductions

The goal of the Clean Water Act ("CWA") is to eliminate water pollution.[66] EPA must evaluate the most aggressive approach to controlling pollution from the industry in order to determine whether it is or is not possible to achieve the statutory goal. The record shows that it is possible to eliminate all of the pollution associated with bottom ash and FGD systems: EPA concedes that the technologies to eliminate both wastestreams are economically achievable.[67] The record shows that both technologies are available, in use at one or more facilities in the industry.[68] It is therefore incumbent upon EPA to require the elimination of these wastestreams. The Agency cannot disagree without providing a detailed evaluation of the achievability, availability, and impacts (including both costs and pollution reductions) of a zero-discharge rule for each wastestream.

EPA has all of the information it needs to evaluate a zero-discharge regulatory option, or something substantially similar. Such an option would eliminate the exemption for units that are slated to retire by 2028, eliminate the low-utilization subcategory, and calculate costs and pollution reductions associated with the elimination of bottom ash transport water and FGD wastewater. This would allow EPA to evaluate the costs and benefits of an option that is more closely aligned with the zero-discharge goal of the CWA. EPA's failure to evaluate a zero-discharge option – without any subcategories – despite evidence in the record that zero discharge is achievable for both the bottom ash and FGD wastestreams, is arbitrary and capricious.

## V. THE PROPOSED WEAKENING OF BOTTOM ASH LIMITS IS UNJUSTIFIED.

EPA is proposing to reconsider its BAT determination for bottom ash transport water in the 2019 Proposal. As EPA acknowledges, it had previously determined that BAT for bottom ash transport water was zero discharge, based on the use of *either* a dry handling system or a closed loop system in which bottom ash is still handled wet but the transport water is completely

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[66] 33 U.S.C. § 1251(a)(1); *see also id.* § 1311(b)(2)(A) (BAT effluent limitations "shall require the elimination of discharges of all pollutants if the Administrator finds, on the basis of information available to him (including information developed pursuant to section 1325 of this title), that such elimination is technologically and economically achievable for a category or class of point sources.").

[67] 84 Fed. Reg. at 64,634 ("[C]osts do not make the membrane filtration option economically unachievable."); *see also id.* at 64,635 ("EPA does not find this higher cost [of closed-loop systems for bottom ash transport water] to be economically unachievable.").

[68] *See, e.g.*, Proposed TDD at 3-9 (showing that the majority of affected plants and units already employ dry bottom ash handling systems); ERG, Technologies for the Treatment of Flue Gas Desulfurization Wastewater – DCN SE07367, Docket ID No. EPA-HQ-OW-2009-0819-8155 (Oct. 22, 2019) (identifying numerous zero-discharge pilot studies for FGD wastewater treatment across the country); Email from Greg Johnson, New Logic Research, to Phillip Flanders, Docket ID No. EPA-HQ-OIW-2009-0819-8179 (June 22, 2019) ("Regarding our [membrane] system that was installed at the research center in Atlanta, I can confirm that it is begin [sic] moved to the new location and that it will be a permanent installation to treat about 50 gpm of FGD effluent. This is the total flow that they have and this is not intended to be a pilot, it is a final treatment plant that will be permanent." (emphasis added)).

recycled.[69] At the time that the 2015 ELG Rule was issued, EPA found that over fifty percent of power plants were already using dry handling or closed loop systems for their bottom ash transport water.[70] According to the 2019 Proposal, this number has now grown to over seventy-five percent of power plants already using these technologies.[71] More specifically, according to the Proposed TDD, over 60% of power plants are currently handling their bottom ash dry, approximately 20% are handling bottom ash wet in a system that recycles most or all of the transport water, and only approximately 20% are still handling their bottom ash wet in a system with limited or no recycling.[72]

EPA is now proposing to determine a new BAT for bottom ash transport water based on "high-recycle rate systems," which it describes as "partially closed loop" systems that are able to recycle their bottom ash transport water the majority of the time but require regular discharges of a purge stream for various reasons including maintenance and storm events. Specifically, EPA is proposing to allow power plants to operate wet bottom ash systems that would be allowed to purge up to 10% of their transport water by volume on a rolling monthly basis. This translates into allowing such systems to discharge up to their total volume three times in any given monthly period.

For the reasons described below, EPA's proposed redefinition of BAT for bottom ash transport water is meritless and contrary to the CWA. There is no basis in the record for EPA to reconsider its 2015 BAT determination that closed-loop wet bottom ash recycling systems and dry handling systems can achieve zero discharge of bottom ash transport water, as such systems remain available and economically achievable and are already widely in use at the best-performing plants in the industry.

### A. EPA Has Not Justified That the Proposed 10% Purge Allowance Is Needed.

EPA's record for the 2019 Proposal does not support a 10% purge limit. The principal basis for EPA's proposal is a 2018 report from the Electric Power Research Institute ("EPRI").[73] This report does not appear in the public rulemaking docket, but EPA's withholding of this report was in error, as it has already been made publicly available outside of this rulemaking.[74]

The 2018 EPRI Report documents "21 plants with existing or planned partially closed-loop systems" that reported challenges in achieving zero discharge using those systems.[75] EPRI provides no information as to how these 21 plants were chosen or whether they are representative of the industry as a whole. Moreover, the 2018 EPRI Report appears only to

[69] 84 Fed. Reg. at 64,634.
[70] *Id.*
[71] *Id.*
[72] Proposed TDD at 3-9 Tbl. 3-3.
[73] EPRI, Closed-Loop Bottom Ash Transport Water: Costs and Benefits to Managing Purges (2018) ("2018 EPRI Report") (attached).
[74] See Interim Release 2, Part 1, Document No. ED_002364A_00000950-00001 of the publicly available responses to FOIA-EPA-HQ-2019-001328, https://foiaonline.gov/foiaonline/action/public/search/quickSearch?query=EPA-HQ-2019-001328.
[75] 2018 EPRI Report at 1-2.

evaluate remote bottom ash recycling systems, meaning that no systems installed under the boiler were evaluated.[76] This provides an arbitrary basis for any EPA decision-making, as remote mechanical drag systems only account for 18 percent of bottom ash treatment systems.[77]

Although incorporating interviews from operators at 21 plants, the 2018 EPRI Report only analyzes data concerning potential purge volumes from 6 plants.[78] In addition, the 2018 EPRI Report notes that the purge volumes for these 6 plants are "based on estimates and calculations and were not measured . . . ."[79] In addition, EPA does not appear to know the identities of the 6 plants discussed by EPRI, and EPA has not done any independent analysis of those plants to evaluate what the EPRI report says about them or whether these 6 plants are representative of the industry as a whole (much less the best-performing plants in the industry).[80]

Even taking the 2018 EPRI Report at face value, it does not support the 2019 Proposal's 10% purge allowance. As EPA itself acknowledges, the 2018 EPRI Report at most supports a 0-2% monthly volumetric purge allowance in a typical month, and only identifies the possibility of an infrequent event, such as a major storm event or system maintenance, occurring in any given month as a possible justification for a higher purge allowance.[81] Yet EPA's proposed 10% purge allowance is based on the possibility that both a major maintenance event and a major precipitation event[82] – both of which are likely very infrequent, occurring less than once per year – would occur in the same month.[83] And although the probability of both of these types of events occurring in the same month is extremely low, plants would be able to take advantage of the 10%

[76] *Id.* at v, vii.
[77] ERG, Pollutant Loadings Associated with Current Discharges of FDG Wastewater and Bottom Ash Transport Water – DCN SE07214, at Tbl. 2, Docket ID No. EPA-HQ-OW-2009-0819-7836 (July 15, 2019).
[78] *Id.* at 1-2, 1-7.
[79] *Id.* at 1-2. Another flaw in the EPRI reports that EPA has adopted in the 2019 Proposal is that there are insufficiently clear limits on plant operator's calculations of the maximum volume of the bottom ash system for the purpose of defining the 10% purge allowance. *See* Dr. Ranajit (Ron) Sahu, Technical Comments on EPA's Proposed Rule to Revise the Best Available Technology (BAT) Effluent Limitations Guidelines (ELGs) for Flue Gas Desulfurization (FGD) Wastewater and Bottom Ash Transport Water (BATW), at 10-11 ("Sahu Expert Report") (attached). EPA describes this as the "hypothetical maximum volume," 84 Fed. Reg. at 64,633, and the proposed regulatory language defines this as the "primary active wetted bottom ash system volume," to include "the maximum volumetric capacity of bottom ash transport water in all piping (including recirculation piping) and primary tanks" but not "installed spares, redundancies, maintenance tanks, other secondary bottom ash system equipment, and nonbottom ash transport systems," *id.* at 64,672 (proposed 40 C.F.R. § 423.11(aa)). Within these limits, plant operators will have discretion to define the size of their tanks, piping, etc., in the first instance, which is a significant loophole that would likely be used by plant operators to increase the size of their 10% purge allowance. *See* Sahu Expert Report at 10-11.
[80] *See id.* at 10.
[81] 84 Fed. Reg. at 64,663; *see also* Proposed TDD at 8-23 to 8-24; 2018 EPRI Report at 1-8 to 1-2.
[82] In addition, neither the 2018 EPRI Report nor the 2019 Proposal acknowledge that what constitutes a major precipitation event can vary from place to place; in some places, even major storm events can be significantly smaller than in other places. The calculations presented by EPRI (and adopted uncritically by EPA) fall to take this into account and are thus arbitrary for this reason as well.
[83] *See* 84 Fed. Reg. at 64,664 Tbl. XIV-2; *see also* Proposed TDD at 8-23 to 8-24.

purge allowance every single month that they operate, regardless of whether such events actually occur.[84] Nor does the 2019 Proposal require plant operators to submit any certifications or documentation concerning the occurrence of any of the specific events that EPA claims purportedly necessitate such purges – which means that the 2019 Proposal would allow the purge of three times the entire volume of a plant's bottom ash system each month, regardless of whether there is any legitimate need for such discharges. This is arbitrary and capricious.[85]

The 2019 Proposal is also arbitrary and capricious because EPA has failed to consider whether bottom ash system purges due to precipitation can be eliminated by modifications to the design or placement of the system. For example, there is nothing in the record that evaluates whether precipitation inflows into bottom ash recycling systems can be avoided by covering portions of the system that might be exposed to such inflows or taking other commonplace measures (grading, curbing, etc.) to direct stormwater away from bottom ash recycling systems.[86] It is longstanding EPA policy that stormwater not be permitted to commingle with polluted wastewater (thereby further spreading the contamination) whenever it is feasible to keep it separate.[87] Neither the 2019 Proposal, nor the EPRI report upon which the proposed bottom ash purge allowance is based, addresses this issue at all. EPA's failure to do so is arbitrary and capricious.

In addition, the 2019 Proposal would allow power plants to operate in a manner that is not consistent with EPA's own permits and policies concerning industrial stormwater, and is unlawful, arbitrary, and capricious for that reason as well. For example, EPA's multi-sector general permit for industrial stormwater provides that facilities, including power plants, "must minimize the exposure of manufacturing, processing, and material storage areas (including loading and unloading, storage, disposal, cleaning, maintenance, and fueling operations) to rain, snow, snowmelt, and runoff in order to minimize pollutant discharges by either locating these industrial materials and activities inside or protecting them with storm resistant coverings."[88] Further, "[u]nless infeasible," facilities must "[u]se grading, berming or curbing to prevent runoff of contaminated flows and divert run-on away from these areas," and also "[l]ocate materials, equipment, and activities so that potential leaks and spills are contained or able to be contained or diverted before discharge."[89] Power plants in particular are required to minimize contamination of surface runoff from areas adjacent to disposal ponds, landfills, and other areas of the site where process waters are handled.[90] The 2019 Proposal appears to assume, however, that power plants should not be required to follow these basic, longstanding principles of responsible stormwater management.

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[84] *See* Sahu Expert Report at 12.
[85] *See id.*
[86] *See id.* at 12-13.
[87] *See id.*
[88] EPA, National Pollutant Discharge Elimination System (NPDES) Multi-Sector General Permit for Stormwater Discharges Associated with Industrial Activity (MSGP), § 2.1.2.1 (June 4, 2015), https://www.epa.gov/sites/production/files/2015-10/documents/msgp2015_finalpermit.pdf (attached).
[89] *Id.*
[90] *Id.* at Part 8, Subpart O.

With respect to purge discharges due to maintenance events, the 2019 Proposal is also arbitrary and capricious. EPA does not appear to have considered that, during maintenance events, bottom ash transport water could be collected in storage tanks for later recycling or treatment rather than discharged.[91] This is especially true for the vast majority of plants that have wet or dry FGD systems available to utilize the bottom ash purge stream, if managed using storage tanks.[92]

Similarly, the 2019 Proposal is arbitrary and capricious because EPA does not appear to have considered the possibility that routine or minor leaks from bottom ash recycling systems could be managed consistent with the 2015 ELG Rule[93] or eliminated. For example, leaks from pump seals can be eliminated using seal-less technologies, whereas other leaks could be eliminated through timely regular maintenance.[94] In addition, "[t]o the extent that that scaling or corrosion conditions can exacerbate leaks, simple treatments such as pH balancing and using of anti-scaling inhibitors can be used."[95]

In sum, EPA's record for the 2019 Proposal does not demonstrate that a 10% bottom ash purge allowance is needed at *any* plant, let alone the best-performing plants in the industry. As discussed above, the 2018 EPRI report relied on by EPA only looks at remote systems, fails to adequately characterize the industry as a whole, and fails to evaluate available, feasible methods for eliminating discharges of the bottom ash purge stream, and yet EPA adopts its findings uncritically without any independent analysis or further data collection. The 10% purge allowance lacks sufficient justification in the record, and any final rule containing such an allowance would be arbitrary and capricious.

For similar reasons, EPA should not adopt the suggested alternative approaches of allowing permitting agencies to adjust the bottom ash purge rate upward or downward based on site-specific data, or allowing bottom ash purge discharges capped at a specific flow.[96] Because the record does not demonstrate that any purge discharges should be permitted, *a fortiori*, it does not demonstrate that site-specific or flow-based discharges should be permitted. Further, state permitting agencies often lack sufficient resources to evaluate the performance of treatment technologies on a site-specific basis, and permitting agencies are subject to non-technical pressures that make them unlikely in most circumstances to set more stringent effluent limitations than plant operators themselves propose.[97] Accordingly, EPA must also reject its suggested alternative approaches to permitting bottom ash purge discharges.

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[91] *See* Sahu Expert Report at 13.
[92] *Id.*
[93] As EPA notes in the 2019 Proposal, *see* 84 Fed. Reg. at 64,634, the 2015 ELG Rule excludes from the definition of bottom ash transport water "low volume, short duration discharges of wastewater from minor leaks (e.g., leaks from valve packing, pipe flanges, or piping) or minor maintenance events (e.g., replacement of valves or pipe sections)." 40 C.F.R. § 423.11(p).
[94] *See* Sahu Expert Report at 13-14.
[95] *Id.* at 14 (citing 84 Fed. Reg. at 64,636).
[96] *See* 84 Fed. Reg. at 64,636.
[97] *See* Sahu Expert Report at 14-15.

### B. The Proposed 10% Purge Allowance Is Contrary to the BAT Standard, Because It Is Not Based on the Performance of the Best-Performing Plant.

Even if EPA had presented a sufficient record for the 2019 Proposal that the 10% bottom ash purge allowance was needed at *any* power plants (which it has not), EPA cannot lawfully determine that a bottom ash purge allowance is BAT for the industry as a whole. Numerous plants are already achieving zero discharge of BATW through use of either fully closed loop recycling or dry handling systems. As EPA found in 2015, both such systems are affordable, readily available options for eliminating bottom ash discharges. Plainly, the best-performing plants in the industry are achieving zero discharge, and nothing in EPA's record requires reversal of its 2015 BAT determination. The 2019 Proposal is thus contrary to well-established law on BAT, and arbitrary and capricious for this reason as well.

#### 1. *EPA acknowledges that closed-loop systems are available and economically achievable.*

Closed-loop wet bottom ash recycling systems are still available and economically achievable for the industry, and nothing in the record of the 2019 Proposal requires EPA to go back on its prior determination that these systems are BAT for bottom ash transport water and can achieve zero discharge. EPA, in discussing the "challenges" that some plants face in achieving zero discharge of bottom ash transport water, concedes in the 2019 Proposal that the best-performing plants using wet bottom ash recycling systems "can likely eliminate such discharges with additional process changes and expenditures."[98] Moreover, EPA notes that it "does not find this higher cost [of fully closing the loop of a wet bottom ash recycling system] to be economically unachievable."[99]

Separately in the 2019 Proposal, EPA estimates that "the costs of fully closing the loop" in closed-loop systems "to be $43 million in after-tax costs, above and beyond the costs of the systems themselves."[100] This assumption is inflated, however: as EPA acknowledges in the Proposed TDD, it is assuming for the 2019 Proposal that any remote bottom ash recycling systems would need to install additional wastewater treatment – a reverse osmosis system – in order to meet zero discharge requirements.[101]

This assumption is unreasonable, for at least three reasons. First, as discussed above, EPA's record does not establish that *any* plant has a need for a bottom ash purge allowance, let alone a 10% volumetric purge allowance, given that the purported causes of such purges can all be feasibly addressed so as to eliminate any need for discharges of the purge stream.

Second, EPA generalizes this cost assumption to all wet bottom ash recycling systems, without acknowledging that its record (as noted above) is limited to remote systems. There is no analysis in the record of under-the-boiler systems, nor does EPA appear to have even

[98] 84 Fed. Reg. at 64,635.
[99] *Id.*
[100] *Id.*
[101] *See* Proposed TDD at 5-45.

distinguished between remote and under-the-boiler systems in determining which plants would likely discharge a bottom ash purge stream.[102]

Third, as EPA concedes in the Proposed TDD, "[t]he data in the record indicates that most plants would not experience" the water quality issues that it believes would require use of reverse osmosis treatment.[103] In other words, even taking EPA's analysis of the record at face value, the Agency itself acknowledges that reverse osmosis treatment would not be required at most plants in order to fully close the loop of a wet bottom ash recycling system. And yet despite this acknowledgement that most plants will not actually need to install reverse osmosis treatment, EPA nevertheless assumes that all plants would install such systems for purposes of developing its cost estimate.[104] EPA explains this assumption – which has the effect of dramatically increasing the cost estimate to fully close the loop at an average plant – by stating only that it "does not have sufficient plant-specific data to determine which plants may need [reverse osmosis] treatment."[105] EPA's assumption that all plants will install an expensive additional treatment system that even the Agency itself believes most plants will not need is plainly irrational. Even taking the rest of the analysis for the 2019 Proposal at face value, this assumption in and of itself renders EPA's rejection of wet closed-loop systems as BAT arbitrary and capricious.

Finally, EPA's statements in the 2019 Proposal that the statutory factors of process changes and cost justify it not selecting wet closed-loop systems as BAT for bottom ash transport water[106] are without merit. As discussed above in Sections II – Legal Background and III – Southwestern Electric, EPA must set BAT at a level that is affordable to the industry as a whole, but that requires industry to invest in pollution controls reflecting "'a commitment of the maximum resources economically possible to the ultimate goal of eliminating all pollutant discharges,' which was the intent of Congress in enacting BAT standards in the first place."[107] And while EPA is correct that it is required to consider cost in making a BAT determination, any sort of balancing of costs against benefits is not permitted.[108] Similarly, while EPA can consider process changes as a factor in making a BAT determination, consideration of that single factor (or any other single BAT factor) on its own cannot eclipse the over-arching goal of the BAT standard, which is to be "technology-forcing, meaning it should force agencies and permit applicants to adopt technologies that achieve the greatest reductions in pollution."[109] EPA's

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[102] *See, e.g.*, ERG, Generating Unit-Level Costs and Loadings Estimates by Regulatory Option – DCN SE07090, Docket ID No. EPA-HQ-OW-2009-0819-8220 (Sept. 25, 2019) (documenting EPA's unit-level assumptions about technology selection without distinguishing between remote and under-the-boiler wet recycling systems for bottom ash).
[103] *See* Proposed TDD at 5-45.
[104] *Id.*
[105] *Id.*
[106] 84 Fed. Reg. at 64,635.
[107] *Sw. Elec. Power Co. v. EPA*, 920 F.3d 999, 1030 (5th Cir. 2019) (quoting *EPA v. Nat'l Crushed Stone Ass'n*, 449 U.S. 64, 74 (1980)).
[108] *Id.* at 1007.
[109] *Nat. Res. Def. Council v. EPA*, 808 F.3d 556, 563-64 (2d Cir. 2015); *see also Nat. Res. Def. Council, Inc. v. EPA*, 822 F.2d 104, 123 (D.C. Cir. 1987) (stating that "the most salient characteristic of this

suggestion that individual BAT factors might allow it to ignore the requirements of the overall standard is without any support in the CWA or the decades of case law interpreting BAT.

2. *Even if it was true that closed-loop systems could not achieve zero discharge, BAT should still be set at zero discharge due to dry handling systems being available and achievable.*

EPA's purported reconsideration of its 2015 BAT determination for bottom ash transport water also fails because dry handling systems are an available, economically achievable means for the industry to achieve zero discharge. EPA even notes in the 2019 Proposal that there have been advances in dry handling technologies since it issued the 2015 ELG Rule.[110] In particular, EPA points to two new technology options, in addition to the mechanical drag systems that were the technology basis for the zero-discharge bottom ash limits in the 2015 rule, that are "now available and in use at some facilities": pneumatic systems and submerged grinder conveyors.[111] EPA notes that these new systems would "at some facilities . . . have costs similar to recirculating wet systems that would require a purge."[112] EPA claims, however, that it "did not have cost information to determine" for the 2019 Proposal "the subset of facilities for which new dry systems might be least costly."[113]

This is a fatal gap in EPA's analysis. EPA acknowledges that dry handling systems are available to the industry, and it previously determined in the 2015 ELG Rule that one type of dry handling system was economically achievable and thus BAT. Conversion to dry handling may be cost-effective even for plants that have already installed closed-loop systems,[114] yet EPA appears not to have considered this possibility at all in connection with the 2019 Proposal. An expert report submitted during the comment period for the 2013 proposed ELG rule found that dry handling systems are more cost-effective, have lower space requirements, save energy, produce more valuable ash that is easier to manage, eliminate many operation and maintenance issues, and are safer as compared to wet systems (including closed-loop systems).[115] Instead of weakening its 2015 BAT determination, EPA must thoroughly analyze whether dry handling systems can be feasibly adopted at any plants that may experience challenges in achieving zero discharge through closed-loop wet systems. EPA's failure to do a plant-by-plant analysis for the

[CWA] statutory scheme, articulated time and again by its architects and embedded in the statutory language, is that it is technology-forcing").

[110] 84 Fed. Reg. at 64,634.

[111] *Id.*

[112] *Id.* at 64,435 n.41.

[113] *Id.*

[114] *See* Expert Report of Dr. Phyllis Fox, at 16, Docket ID No. EPA-HQ-OW-2009-0819-4704 (Sept. 19, 2013 ("Fox Expert Report") ("[T]he literature on conversion from wet to zero discharge bottom ash handling systems indicates dry bottom ash handling systems pay for themselves in a very short period, as they significantly reduce the O&M costs of bottom ash handling, offsetting the capital investment. In addition, they generate an ash stream that is much more marketable than a wet bottom ash stream.").

[115] *See id.* at 15-22.

2019 Proposal of which plants could feasibly install new dry handling systems is arbitrary and capricious.[116]

In addition, EPA is again applying a legally incorrect test in evaluating whether dry handling systems should be BAT for bottom ash transport water discharges. As discussed in detail above (see Sections II – Legal Background and III – Southwestern Electric), BAT is not based on the "least costly" technology, but rather on the technology that is used at the best-performing plant in the industry that is both available and economically achievable. Because dry handling systems meet this test, as EPA itself acknowledges, EPA must continue to find them to be BAT for bottom ash transport water discharges (and has no basis to reverse its 2015 determination that they are BAT). For this additional reason, EPA must maintain the zero-discharge requirements for bottom ash transport water that it established in the 2015 ELG Rule.

3. *EPA has not justified that a 10% purge allowance reflects the performance of the best-performing plant.*

As EPA determined in 2015, the best-performing plants in the industry are achieving zero discharge of bottom ash transport water using either closed-loop wet systems or dry handling systems. In the record for the 2019 Proposal, EPA itself identified several examples of plants that are currently operating closed-loop wet systems to achieve zero discharge.[117] And as noted above, dry handling systems are currently in use at over 60% of power plants to achieve zero discharge.[118] For all of the reasons discussed above, EPA has no basis to reconsider its 2015 BAT determination for bottom ash transport water.

In addition, as noted above, EPA has based the proposed 10% purge allowance on reports from EPRI that only evaluate data from 6 plants, the data that they analyze is only estimated, not directly measured, and EPA does not appear to have done anything to learn the identities of the 6 plants, independently evaluate EPRI's information about them, or determine whether they are representative of other plants in the industry (much less the best-performing plants, as BAT requires).[119] EPA's failure to develop this record to be able to make specific findings that a 10% purge allowance would be needed at the best-performing plants in the industry makes it unlawful for EPA to determine that a 10% purge allowance reflects BAT. The EPRI reports do not provide a sufficient basis for EPA to determine BAT, there is no other information in the record to support such a determination, and any such determination by EPA would be arbitrary and

[116] *See* Sahu Expert Report at 6. EPA also failed to analyze the costs of dry handling systems for the 2015 ELG rule. As an expert report submitted during the comment period for the 2013 proposed ELG rule found, "[w]hile it may not be feasible to convert 100% of the subject units to dry systems (as it is likely not feasible to convert 100% of subject units to [mechanical drag systems] or remote [mechanical drag systems]), the EPA should have evaluated dry options to bound the range of costs and impacts, or should have assumed that a portion of the fleet would convert to dry." Fox Expert Report at 15.
[117] *See* Sahu Expert Report at 6 (citing ERG, Review of Potential Closed-Loop Bottom Ash Transport Water Systems – DCN SE06493, Docket ID No. EPA-HQ-OW-2009-0819-7148 (Feb. 23, 2018)).
[118] *See* Proposed TDD at 3-9 Tbl. 3-3.
[119] *See* Sahu Expert Report at 9.

capricious because of the deficiencies in those reports and EPA's failure to collect its own data or do an independent analysis of the plants discussed by EPRI.

## VI. THE RECORD BEFORE EPA SHOWS THAT THE AGENCY MUST ADOPT A ZERO-DISCHARGE STANDARD FOR FGD WASTEWATER

EPA is obligated to promulgate limitations that reflect the "Best Available Technology" or BAT. BAT represents the best available technology that is economically achievable, a stringent treatment standard with a specific legal definition. A technology is "available" if it is in use in the industry, even if only by the best-performing plant in the industry, or if it can be demonstrated to be available through pilot studies or its use in other industries.[120] A technology is economically achievable if the "costs can be reasonably borne by the industry."[121] Congress determined that investments in pollution controls are warranted to the greatest degree possible, and therefore the inquiry is not whether the costs of a given control are "worth it" in EPA's estimation. Instead, EPA's determination of economic achievability must be guided by the Supreme Court's holding that BAT limits "represent[] a commitment of the maximum resources economically possible to the ultimate goal of eliminating all polluting discharges."[122] If a technology capable of eliminating a wastestream is "technologically and economically achievable," then EPA is obligated by the Clean Water Act to require the elimination of that wastestream.[123]

The record for the 2019 Proposal shows that a zero-discharge standard for FGD wastewater is available and achievable. Specifically, EPA concedes that membrane filtration is economically achievable, and the record shows that membrane filtration and other zero-discharge technologies are in use in the industry, and therefore "available." EPA is therefore legally obligated to require the elimination of FGD wastewater.

[120] *Chem. Mfrs. Ass'n v. EPA*, 870 F.2d 177, 226 (5th Cir. 1989) ("Congress intended these [BAT] limitations to be based on the performance of the single best-performing plant in an industrial field."); *see also Nat. Res. Def. Council, Inc. v. EPA*, 863 F.2d 1420, 1426 (9th Cir. 1988); *Kennecott v. EPA*, 780 F.2d 445, 448 (4th Cir. 1985) ("In setting BAT, EPA uses not the average plant, but the optimally operating plant, the pilot plant which acts as a beacon to show what is possible."); *Am. Petroleum Inst. v. EPA*, 858 F.2d 261, 265 (5th Cir. 1988) (stating that under BAT, "a process is deemed 'available' even if it is not in use at all"); *FMC Corp. v. Train*, 539 F.2d 973, 983-84 (4th Cir. 1976) (finding EPA justified in setting BAT for chemical oxygen demand based on performance data from a single pilot plant).
[121] *Waterkeeper All., Inc. v. EPA*, 399 F.3d 486, 516 (2d Cir. 2005); *Rybachek v. EPA*, 904 F.2d 1276, 1290-91 (9th Cir. 1990) (discussing this standard).
[122] *EPA v. Nat'l Crushed Stone Ass'n*, 449 U.S. 64, 74 (1980).
[123] 33 U.S.C. § 1311(b)(2)(A).

## A. The Record Before EPA Demonstrates that Membrane Technology or Its Equivalent is BAT for FGD Wastewater

### 1. *Membrane technology is both available and achievable, and clearly meets the BAT standard*

#### a. Membrane filtration is economically achievable

EPA concedes that membrane technology is economically achievable.[124] Indeed, it appears that membrane filtration is the most affordable treatment technology (beyond simple impoundments) for many plants: EPA identified 18 plants for which membrane filtration with compliance in 2028 is cheaper than the technology identified as BAT in the 2019 Proposal (chemical precipitation plus biological treatment).[125] The record also shows 23 plants for which the costs of membrane filtration with compliance in 2028 are even lower than basic chemical precipitation costs. And the record shows 8 plants for which membrane filtration costs are lower than basic chemical precipitation costs even if one assumes immediate compliance (*i.e.*, foregoing the costs savings that accompany waiting until 2028 to install membrane filtration) (see Table below).

**Table.** Plants for which FGD wastewater treatment using membrane filtration is more affordable than treatment using chemical precipitation, assuming immediate compliance.

| Plant | Annualized chemical precipitation costs[126] | Annualized membrane filtration costs[127] |
|---|---|---|
| F.B. Culley Generating Station | $1,529,229 | $1,470,227 |
| J. K. Spruce Power Plant | $1,246,593 | $1,096,656 |
| Lawrence Energy Center | $1,076,531 | $857,521 |
| Marion Generating Station | $1,172,714 | $1,025,964 |
| Muscatine Power and Water Generating Station | $936,068 | $668,842 |
| Plant Hammond | $1,500,683 | $1,460,551 |
| R. M. Schahfer Generating Station | $1,356,742 | $1,322,151 |
| W. A. Parish E.G.S. | $1,434,686 | $1,411,470 |

[124] *See, e.g.*, 84 Fed. Reg. at 64,634 ("[C]osts do not make the membrane filtration option economically unachievable.").
[125] Proposed TDD at 6-15, n.47; EPA, VIP Plant Flags and Analysis Comparing Technology Costs, DCN SE07652, Docket ID No. EPA-HQ-OW-2009-0819-7706 (the "Option 2 VIP Comparison" spreadsheet at this docket number shows lower costs for "FGD Membrane 2028" than for "Option 2 . . . FGD CP + LRTR" for all 18 VIP plants).
[126] Capital cost and annual O&M cost from ERG, Generating Unit-Level Costs and Loadings Estimates by Regulatory Option – DCN SE07090, tbl. 4, Docket ID No. EPA-HQ-OW-2009-0819-8220 (Sept. 25, 2019). Annualized costs were calculated as [annual O&M costs + ((capital cost*0.07)/(1-(1.07)^-20))]. Recurring costs were not included, but for all of the units shown, the recurring costs were the same (cost savings) under either regulatory option.
[127] *Id.* at tbl. 7.

The economic achievability of membrane treatment becomes even clearer when one considers the fact that EPA overestimated compliance costs in at least three ways. First, EPA failed to consider options for lower costs by lowering FGD purge rates.[128] Second, EPA used maximum purge rates to estimate costs; plant owners could easily install equalization capacity to handle peak flows and design their FGD treatment systems around lower, average flow rates at lower cost.[129] Third, EPA used outdated (2016) coal usage data when more recent data would show less coal usage and lower purge flows.[130] Given that membrane filtration is economically achievable using EPA's inflated cost estimates, there can be no question the true costs are affordable.

Finally, it is important to note that these cost estimates are for the purchase of FGD wastewater treatment systems. Yet membrane filtration systems and perhaps other technologies can also be leased,[131] which makes them even more affordable for short-term use. EPA must analyze the extent to which leasing makes membrane filtration economically achievable for the units scheduled to retire by 2028.

### b. Membrane filtration is an available technology

Since membrane filtration is economically achievable, the only material question before EPA is whether membrane filtration is "available." The record clearly shows that it is. Membrane filtration has been used to treat FGD wastewater from coal plants in at least twenty-one pilot studies.[132] Pilot studies – even a single pilot study – are enough to establish that a technology is available.[133] The fact that there have been over twenty pilot studies reinforces that membrane filtration is currently available.

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[128] *See* Dr. Ranajit (Ron) Sahu, Technical Comments on EPA's Proposed Rule to Revise the Best Available Technology (BAT) Effluent Limitations Guidelines (ELGs) for Flue Gas Desulfurization (FGD) Wastewater and Bottom Ash Transport Water (BATW), at 23-24 ("Sahu Expert Report") (attached).

[129] *Id*. at 24.

[130] *Id*.

[131] *See, e.g.*, ERG, Technologies for the Treatment of Flue Gas Desulfurization Wastewater – DCN SE07367, at M-2, Docket ID No. EPA-HQ-OW-2009-0819-8155 (Oct. 22, 2019).

[132] *See, e.g., id.* at Appendix B (describing five pilot studies of the "BKT FMX Membrane Technology"); *id.* at Appendix I ("EPA has reviewed data for four onsite pilot-scale studies with KLeeNwater at steam electric power plants for FGD wastewater treatment"); *id.* at Appendix K (describing seven pilot studies of the "New Logic Membrane Technology" on FGD wastewater); *id.* at Appendix L (describing a pilot study of the "Oasys Forward Osmosis Technology" at Georgia Power's Plant Bowen Power Station); *id.* at Appendix M (identifying four pilot studies of the "Purestream Membrane Technology" at U.S. coal plants).

[133] *Kennecott v. EPA*, 780 F.2d 445, 448 (4th Cir. 1985) ("In setting BAT, EPA uses not the average plant, but the optimally operating plant, the pilot plant which acts as a beacon to show what is possible."); *Am. Petroleum Inst. v. EPA*, 858 F.2d 261, 265 (5th Cir. 1988) (stating that under BAT, "a process is deemed 'available' even if it is not in use at all"); *FMC Corp. v. Train*, 539 F.2d 973, 983-84 (4th Cir.

Several of the membrane technologies evaluated by EPA are in use in other industries, or on other wastestreams in the steam electric industry. For example, the description of the "BKT FMX Membrane Technology" states that "this system has now been operating in the U.S. for the past ten years."[134] The New Logic VSEP system has been installed to treat cooling tower blowdown at four locations that all appear to be steam electric plants.[135] The Purestream/AVARA system has been running in one location (on an unstated wastestream) for three years.[136]

Finally, membrane filtration appears to be in use by at least one plant for treating FGD wastewater. In the 2019 Proposal, EPA states that it "is not aware of any domestic facilities which have to date installed nanofiltration or reverse osmosis membrane filtration systems to remove dissolved pollutants in FGD wastewater."[137] The record shows otherwise, and identifies at least one permanent installation of a membrane filtration system at a U.S. coal plant. In a June 2019 email, Greg Johnson of New Logic Research said the following:

> Regarding our [VSEP membrane] system that was installed at the research center in Atlanta, I can confirm that it is begin [sic] moved to the new location and that it will be a permanent installation to treat about 50 gm of FGD effluent. This is the total flow that they have and this is not intended to be a pilot, it is a final treatment plant that will be permanent.[138]

Although not necessary to establish the availability of membrane filtration, this permanent installation further reinforces the fact that the technology is available. EPA must at the very least evaluate this permanent installation and correct its statements about the absence of domestic installations. EPA must also revise its discussion of "concerns" raised by unnamed sources "about operating a technology . . . that would be the first of its kind in the U.S.,"[139] as those concerns are no longer valid.

In sum, given the numerous pilot studies of membrane filtration of FGD wastewater, the multiple permanent applications to other industries and other wastestreams in the steam electric industry, and at least one permanent installation for treating FGD wastewater in the U.S., there can be no question that membrane filtration is now "available" for purposes of establishing BAT. EPA effectively concedes that membrane filtration is available by assuming that it will be adopted by eighteen plants.[140] The question before EPA is not <u>whether</u> membrane filtration is

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1976) (finding EPA justified in setting BAT for chemical oxygen demand based on performance data from a single pilot plant).

[134] ERG, Technologies for the Treatment of Flue Gas Desulfurization Wastewater – DCN SE07367, at B-2, Docket ID No. EPA-HQ-OW-2009-0819-8155 (Oct. 22, 2019).

[135] *Id.* at K-12.

[136] *Id.* at M-3.

[137] 84 Fed. Reg. at 64,632.

[138] Email from Greg Johnson, New Logic Research, to Phillip Flanders, Ronald Jordan, and Elizabeth Gentile, Docket ID No. EPA-HQ-OW-2009-0819-8179 (June 22, 2019).

[139] 84 Fed. Reg. at 64,633.

[140] Proposed TDD at 6-15, n.47.

available – EPA assumes that it is – but rather when it can be installed. We turn to the question of timing in the next section.

2. *EPA incorrectly assumes that membrane technology cannot be fully implemented until 2028; in fact, membrane systems can be installed much sooner.*

The record shows that membrane filtration systems can be installed within twenty-eight months, and in many cases more quickly than that. EPA's contractor ERG cites a "typical" timeline of twenty-eight months.[141] However, this is based on a single bid, and is in fact the longest timeline in the record. The New Logic VSEP system has a timeline of roughly twenty-five months from request for proposal to full operation.[142] The record contains a bid for a KLeeNwater membrane filtration system with a twelve-month timeline.[143] Purestream's AVARA system "can be built in 180 days and is deployable within two days of on-site delivery."[144] In sum, membrane filtration systems can be installed and operational in as little as six months, with twenty-eight months being an outside estimate. For a rule with an effective date of January 2021, compliance could be achieved by 2023. Yet EPA makes the highly dubious claim that membrane filtration will only be available in 2028.[145] None of EPA's arguments in support of this arbitrary compliance date withstand scrutiny.

EPA first argues that it is only aware of seven pilot studies, and no permanent installations, of membrane filtration systems for FGD wastewater.[146] However, as described above, the record actually includes many more pilot studies and at least one permanent installation.

EPA goes on to suggest that it does not have enough information to "analyz[e] the pollutant removal efficacy and effluent variability" associated with membrane filtration systems.[147] This statement is inconsistent, however, with what EPA actually did, which is analyze a set of data from membrane pilot tests and use the data to derive the limitations that it proposes to apply to the VIP plants.[148]At the same time, this argument is also a red herring. The rulemaking record assumes that membrane filtration systems will not have any effluent at all.[149]

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[141] *See, e.g.*, ERG, FGD and Bottom Ash Implementation Timing – DCN SE08480, at 3, Docket ID No. EPA-HQ-OW-2009-0819-8191 (Oct. 17, 2019) (showing a "typical timeline" for installing membrane filtration with brine encapsulation of twenty-eight months).
[142] Email from Greg Johnson, New Logic Research, to Phillip Flanders, Ronald Jordan, and Elizabeth Gentile, Docket ID No. EPA-HQ-OW-2009-0819-8179 (June 22, 2019).
[143] KLeeNwater, Budgetary Proposal – Wastewater Treatment & Water Reuse Systems – DCN SE07065A18, at 13, Docket ID No. EPA-HQ-OW-2009-0819-7617 (Nov. 16, 2017).
[144] ERG, Technologies for the Treatment of Flue Gas Desulfurization Wastewater – DCN SE07367, at M- 2, Docket ID No. EPA-HQ-OW-2009-0819-8155 (Oct. 22, 2019).
[145] 84 Fed. Reg. at 64,632-33, n.28.
[146] *Id.* at 64,632.
[147] *Id.* at 64,632-33.
[148] Proposed TDD at 8-12; 84 Fed. Reg. at 64,674.
[149] Proposed TDD at 6-15, n.47 ("Where the annualized cost for membrane filtration is less than the other regulatory options, the EPA assumed the plant will install membrane treatment and estimated zero post-

This directly contradicts EPA's decision to derive non-zero limits for the VIP plants – the BAT limits based on a membrane technology basis should be zero. Consistent with EPA's zero-discharge assumption for membrane systems, there is no need to analyze removal efficacy (if removal will be 100%), and there is no need to analyze effluent variability (if there will be no effluent).

Next, EPA suggests that the use of membrane filtration might interfere with the beneficial use of fly ash because owners will use fly ash to encapsulate the brine produced by the treatment membranes.[150] This is another red herring. To begin with, EPA claims that the median facility with a wet FGD system sells "approximately fifty percent" of its fly ash for beneficial use,[151] implying that it would have less fly ash to sell if it started using fly ash to encapsulate brine. However, EPA does not provide any evidence that brine encapsulation would require so much fly ash that owners would be forced to sell less. In other words, there may very well be enough fly ash in the industry to meet both needs. The record provides no reason to believe that the use of fly ash for encapsulation would have any impact on beneficial use.

Furthermore, encapsulation with fly ash is only one of several available methods for dealing with membrane filtration brine. EPA concedes as much in the preamble,[152] and the record repeatedly confirms the fact that membrane brine can be managed without fly ash. Brine can be crystallized, for example.[153] Or it can be solidified.[154] The record also provides examples of hybrid technological approaches that combine, for example, reverse osmosis and thermal treatment, with first-stage treatment significantly reducing the volume to be treated by a second stage. This approach is already in use for treating cooling tower blowdown in the United States,[155] and in use for treating FGD wastewater in China.[156]

Finally, EPA describes one emerging way of dealing with brine – a "forthcoming paste technology" – and then suggests that its nascent stage of development justifies a compliance date of 2028 for the VIP program.[157] EPA fails to identify this technology with any specificity, and completely fails to explain why it will only be ready in 2028. The record simply does not support EPA's conclusion. Even more problematic is the fact that EPA's conclusion rests on a premise

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compliance loadings") (emphasis added). *See also* ERG, Generating Unit-Level Costs and Loadings Estimates by Regulatory Option – DCN SE07090, Docket ID No. EPA-HQ-OW-2009-0819-8220 (Sept. 25, 2019) (showing pollution loads of zero for all FGD wastestreams treated with membrane filtration).

[150] 84 Fed. Reg. at 64,633.

[151] *Id.*

[152] *Id.* ("[T]here are several alternative ways to treat or dispose of the brine generated by membrane filtration").

[153] *See, e.g.*, ERG, Technologies for the Treatment of Flue Gas Desulfurization Wastewater – DCN SE07367, at B-2, L-3, Docket ID No. EPA-HQ-OW-2009-0819-8155 (Oct. 22, 2019).

[154] *See, e.g., id.* at I-2, I-5, K-2.

[155] *Id.* at A-3 and I-2. *See also id.* at B-2 ("Treating FGD wastewater with the FMX system can also be used to achieve significant volume reduction upstream of thermal or solidification zero discharge technologies")

[156] Proposed TDD at 4-5 ("At this plant, the brine undergoes thermal treatment to produce a crystallized salt which is sold for industrial use").

[157] 84 Fed. Reg. at 64,637.

that is obviously false, namely that the "forthcoming paste technology" is the only way of dealing with brine. As described above and in the record, there are many currently available ways of dealing with brine, and there is simply no basis for delayed implementation of membrane filtration.

In sum, membrane filtration is available now, and can be installed and operational within six to twenty-eight months. None of EPA's arguments in favor of delayed compliance withstand scrutiny, and none are supported by the record. EPA must require compliance with a zero-discharge limit on the basis of the availability of membrane filtration (or other technologies)[158] by 2023 at the latest.

### B. Only Membrane Technology or Other Zero-Discharge Technologies Address Pollution from Bromides

Most of the environmental benefit that EPA assumes for the Proposed Rule comes from reduced bromide loads, with an associated decrease in bladder cancer incidence and mortality.[159] Of the technologies evaluated by EPA, only membrane filtration and thermal evaporation technologies can reduce bromide loads.[160] EPA has a legal obligation to require technology that will "result in reasonable further progress toward the national goal of eliminating the discharge of all pollutants," and, if the technology is available, to eliminate the discharge.[161] For bromide – which dominates EPA's estimated environmental benefit – the only technologies that meet EPA's statutory mandate happen to be zero-discharge technologies (membrane filtration or thermal treatment).

[158] EPA acknowledges that at least three plants are already operating evaporation systems capable of achieving zero discharge, and the Agency assumes that these plants will in fact achieve zero discharge under any regulatory option. ERG, Generating Unit-Level Costs and Loadings Estimates by Regulatory Option – DCN SE07090, tbls. 3-7, Docket ID No. EPA-HQ-OW-2009-0819-8220 (Sept. 25, 2019) (showing that the Mayo, Merrimack, and Petersburg plants are already using evaporation systems); *id.* at tbls. 13-17 (showing zero pollution load for these plants under all regulatory options).

[159] *See, e.g.*, 84 Fed. Reg. at 64,660, tbl. XII-8. EPA predicts a mix of environmental benefits (e.g., "reduced cancer risk from DBPs in drinking water" associated with bromide reductions) and 'negative' or foregone environmental benefits (e.g., the cost of increased $CO_2$ emissions). Of environmental benefits with a positive value, the reduced cancer risk from DBPs in drinking water – valued at $37.6 million for the mid-range Option 2 scenario – is by far the largest category. Without these assumed benefits, Option 2 would have a net environmental cost.

[160] *See, e.g.*, Proposed TDD at 8-2 and 8-4 (stating that bromide is "not reliably removed" by chemical precipitation or "CP+LRTR"), and *id.* at 8-6 ("Based on data for thermal systems and process knowledge and performance data for membrane systems, all pollutants present in FGD wastewater would be effectively treated by membrane filtration").

[161] 33 U.S.C. § 1311(b)(2)(A).

### C. The Clean Water Act Requires EPA to Adopt a Zero-Discharge Standard for FGD Wastewater Because the Technology to do so is Available and Achievable.

According to EPA, membrane filtration systems have no pollution load.[162] The Proposed TDD states that "[p]lants installing membrane filtration are estimated to have zero post-compliance loadings because these plants are likely to reuse treatment system effluent (i.e., membrane permeate) within the FGD scrubber system, rather than discharge and monitor this effluent stream."[163] The fact that membrane filtration meets the definition of BAT and has no pollution load means that EPA can and must require the elimination of FGD wastewater.

EPA also assumes that at least three plants will continue to operate their existing evaporation systems, which achieve zero discharge using a different technology.[164] There can be no question that evaporation systems are "technologically and economically achievable" given that they are already being used at three plants. At the very least, even if they were shown to be more expensive or less cost-effective than membrane filtration systems, they are clearly achievable at these three plants. A third option for meeting a zero-discharge standard is spray dryer absorber technology.[165]

The record thus shows that "elimination [of FGD wastewater] is technologically and economically achievable" through the use of membrane filtration or other technologies.[166] In this circumstance, the Clean Water Act unambiguously requires EPA to impose a zero-discharge standard.

## VII. EPA CANNOT WEAKEN THE BEST AVAILABLE TECHNOLOGY REQUIREMENTS FOR FGD WASTEWATER.

As explained above, the record makes clear that a zero-discharge standard is BAT for FGD wastewater. EPA concedes that membrane filtration and other zero-discharge technologies are economically feasible and actually in use in the industry, and therefore "available." If the Clean Water Act's BAT mandate has any meaning, EPA must require EGUs to eliminate the discharge of FGD wastewater through the use of economically and technically achievable membrane technology.[167]

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[162] Proposed TDD at 6-15, n.47. ("Where the annualized cost for membrane filtration is less than the other regulatory options, the EPA assumed the plant will install membrane treatment and estimated zero post-compliance loadings") (emphasis added). *See also* ERG, Generating Unit-Level Costs and Loadings Estimates by Regulatory Option – DCN SE07090, Docket ID No. EPA-HQ-OW-2009-0819-8220 (Sept. 25, 2019) (showing pollution loads of zero for all FGD wastestreams treated with membrane filtration).
[163] Proposed TDD at 6-10.
[164] ERG, Generating Unit-Level Costs and Loadings Estimates by Regulatory Option – DCN SE07090, Docket ID No. EPA-HQ-OW-2009-0819-8220 (Sept. 25, 2019) (showing pollution loads of zero for all FGD wastestreams treated with membrane filtration).
[165] *See* Sahu Expert Report at 21, 24-25.
[166] 33 U.S.C. § 1311(b)(2)(A).
[167] *See* Section VI – Zero Discharge FGD.

Instead of proposing a zero-discharge technology, which is available and achievable, as BAT for FGD wastewater, EPA unlawfully proposes to reconsider and *weaken* the technology requirements for FGD wastewater discharges. As an initial matter, EPA inexplicably includes chemical precipitation alone as a potential BAT option – Option 1 – even though EPA itself has already concluded that the technology, by itself, is *not* effective in reducing toxic selenium or nitrate pollution. As explained below, there is no valid basis for EPA to revisit that finding.

EPA's preferred BAT option for FGD wastewater – chemical precipitation plus a so-called low residence time reduction biological treatment – is similarly flawed. EPA acknowledges that high residence time reduction biological systems are, in fact, technically and economically achievable and widely used in the industry.[168] Nevertheless, the agency does not even include high residence time systems as a BAT option, but instead considers only low residence time systems, which result in substantially weaker numeric limits for selenium and higher variability in pollution reductions.[169] EPA asserts that the long-term average reductions for low residence time systems are "comparable" to high residence systems,[170] but fails to grapple with the fact that low residence time systems triple the so-called BAT limits for selenium, as well as higher arsenic limits. And contrary to EPA's conclusory assertion that the two technologies result in comparable variability, low residence time systems actually result in double the pollutant variability of high residence time systems. As with its failure to explain its proposal to triple the numeric limit for selenium, EPA fails to acknowledge or explain those significant differences in variability. Even if the long-term variability was comparable (and it is not), the agency fails to explain how long-term average pollution reductions adequately protect against short-term spikes in pollution that may harm human and aquatic health. Moreover, the record reflects only five examples of low residence time systems, and EPA does not provide sufficient non-confidential data to provide for a meaningful comparison of the technologies. Instead, the record makes clear that EPA's proposal to walk back its 2015 biological treatment technology standards is impermissibly and exclusively based on cost.

For the reasons described below, EPA's proposed redefinition of BAT for FGD wastewater is arbitrary, capricious, and contrary to the CWA. There is no basis in the record for EPA to weaken the technological standard for FGD wastewater by allowing EGUs to install less effective low residence time biological systems when high residence time systems are available, economically achievable, and already widely in use at the best-performing plants in the industry.

### A. EPA Cannot Lawfully Adopt Chemical Precipitation, By Itself, As BAT.

Under proposed Option 1, EPA would find chemical precipitation alone is BAT for FGD wastewater. The record makes clear, however, that chemical precipitation, by itself, cannot be BAT. BAT-based numeric effluent limits "shall require the *elimination* of discharges of all

[168] 84 Fed. Reg. at 64,627.
[169] *Id.* at 64,632, 64,661.
[170] *Id.* at 64,631.

pollutants if the Administrator finds, on the basis of information available to him . . . that such elimination is technologically and economically achievable."[171]

Here, going back to the 2013 ELG proposed rule, EPA has consistently found that chemical precipitation alone "is not effective at removing many of the pollutants of concern in FGD wastewater, including selenium, nitrogen compounds, and certain metals that contribute to high concentrations of total dissolved solids in FGD wastewater (e.g., bromides, boron)."[172] Selenium is acutely toxic to humans and aquatic organisms,[173] and nitrates in drinking water are especially dangerous for children.[174] EPA concedes that chemical precipitation does nothing to address either of these pollutants. Conversely, and as EPA concedes, chemical precipitation followed by biological treatment achieves substantial reductions in discharges of toxic mercury and arsenic – through the chemical precipitation process – and reductions in selenium and nitrate/nitrate levels through the biological treatment system. And for the pollutants that chemical precipitation does treat, adding biological treatment will "remove approximately 90 percent of the mercury remaining in the effluent from chemical precipitation" alone.[175] Moreover, there is no dispute that "[b]oth chemical precipitation and biological treatment are well demonstrated technologies that are available to steam electric facilities for use in treating FGD wastewater."[176]

In sum, both the 2015 ELG Rule and the 2019 Proposal recognize that chemical precipitation *plus* biological treatment is achievable, available, and would substantially reduce levels of mercury, arsenic, selenium, and nitrates relative to chemical precipitation alone. It is not clear why EPA even included chemical precipitation alone as an option. Indeed, the agency itself states that it is not proposing to revisit its findings with respect to the availability and achievability of chemical precipitation plus some form of biological treatment.[177] Having concluded that chemical precipitation is not effective in removing harmful pollutants from FGD wastewater, and that the addition of biological treatment significantly reduces harmful mercury,

[171] 33 U.S.C. § 1311(b)(2)(A) (emphasis added); *see also EPA v. Nat'l Crushed Stone Ass'n*, 449 U.S. 64, 74 (1980) (holding that BAT limits "represent[] a commitment of the maximum resources economically possible to the ultimate goal of eliminating all polluting discharges.").
[172] 78 Fed. Reg. 34,432, 34,473 (June 7, 2013).
[173] EPA, Environmental Assessment for the Effluent Limitations Guidelines and Standards for the Steam Electric Power Generating Point Source Category, Docket ID No. EPA-HQ-OW-2009-0819-6427, at 3-5-3-6; 3-24-3-26 (Sept. 2015) ("2015 EA").
[174] *See* EPA, Basic Information about Nitrate in Drinking Water, http://water.epa.gov/drink/contaminants/basicinformation/nitrate.cfm (visited Sept. 20, 2013).
[175] 84 Fed. Reg. at 64,632; *see also* 78 Fed. Reg. at 34,473.
[176] 84 Fed. Reg. at 64,631. EPA identifies at least fifteen steam electric facilities with wet scrubbers – or, 11 percent of all steam electric facilities – that have both chemical precipitation and some form of biological treatment in place, and are capable of meeting EPA's proposed numeric limitations for FGD wastewater. Of these fifteen facilities, nine are currently operating anoxic/anaerobic biological treatment designed to substantially reduce nitrogen compounds and selenium in their FGD wastewater. *Id.*
[177] 84 Fed. Reg. at 64,631.

arsenic, selenium, and nitrates, any final rule selecting chemical precipitation alone as BAT would be arbitrary and unlawful.[178]

### B. Chemical Precipitation Plus High Residence Time Reduction Systems Are Readily Available and Achievable and Meet the BAT Standard.

EPA must adopt effluent limitations for FGD wastewater that reflect the "Best Available Technology." As noted above in Sections II – Legal Background and III – Southwestern Electric, BAT must be the best available technology that is economically achievable[179]—that is, "economically possible to the ultimate goal of eliminating all polluting discharges."[180] A technology is "available" if it is in use in the industry,[181] and it is economically achievable if the costs can be reasonably borne by the industry as a whole.[182] Moreover, "in assessing BAT, total cost is no longer to be considered in comparison to effluent reduction benefits."[183] Thus, the inquiry is not whether any additional cost is "worth it," but whether the technology makes reasonable further progress toward eliminating all pollution discharges.[184]

EPA concedes that chemical precipitation followed by high residence time reduction technology is technologically available and economically achievable.[185] Indeed, this combination was the basis for EPA's 2015 BAT determination.[186] The 2015 record and EPA's proposal make clear that the addition of biological treatment, following chemical precipitation, is a very well established technology to treat FGD wastewater, and results in substantial reductions in selenium and nitrate/nitrate levels as well as reductions of mercury and arsenic, above and beyond chemical precipitation alone.[187] In its 2019 proposal, EPA identifies at least five steam electric facilities with wet scrubbers that currently have full-scale chemical precipitation and high residence time reduction systems and several others with similar types of biological treatment

[178] *Sw. Elec. Power Co.*, 920 F.3d at 1016, 1019 (holding that EPA acted arbitrarily unlawfully by selecting as BAT a technology that the agency itself concluded was ineffective and inferior and "would not achieve 'reasonable further progress' toward eliminating pollution from those streams").
[179] 33 U.S.C. § 1311(b)(2)(B).
[180] *EPA v. Nat'l Crushed Stone Ass'n*, 449 U.S. 64, 74 (1980); *see also Nat. Res. Def. Council v. EPA*, 808 F.3d 556, 563-64 (2d Cir. 2015) (the BAT standard is meant "to be technology-forcing, meaning it should force agencies and permit applicants to adopt technologies that achieve the greatest reductions in pollution.").
[181] *See Chem. Mfrs. Ass'n v. EPA*, 870 F.2d 177, 226 (5th Cir. 1989); *Am. Petroleum Inst.*, 858 F.2d at 265; *Kennecott v. EPA*, 780 F.2d 445, 448 (4th Cir. 1985).
[182] *Waterkeeper Alliance, Inc. v. EPA*, 399 F.3d 486, 516 (2d Cir. 2005); *Rybachek v. EPA*, 904 F.2d 1276, 1290-91 (9th Cir. 1990).
[183] *EPA v. Nat'l Crushed Stone*, 449 U.S. 64, 71 (1980); *see also Am. Iron & Steel*, 526 F.2d 1027, 1051-52 (3rd Cir. 1975) ("With respect to the [BAT] standards," Congress intended "that there should be no cost-benefit analysis.").
[184] *Sw. Elec. Power Co.*, 920 F.3d at 1016.
[185] *See, e.g.*, 84 Fed. Reg. at 64,631.
[186] *Id.* at 64,627.
[187] This process has also been used to reduce selenium and other metals in many other industries, including: drainage water from irrigated agriculture, mining wastewater, metals processing wastewaters, and oil refinery wastewaters. Jenkins FGD Report, Appendix C to Comments of Environmental Integrity Project et al., at 4, Docket ID No. EPA-HQ-OW-2009-0819-4702 (Sept. 20, 2013).

systems to reduce selenium and nitrate/nitrite pollution in addition to mercury and arsenic.[188] And EPA concedes that several of those full-scale systems have used the biological technology to treat FGD wastewater for more than a decade under varying operating conditions, climate conditions, and coal sources.[189] In short, there is no serious dispute that chemical precipitation followed by high residence time reduction systems are available, economically achievable and result in significant pollution reductions of mercury, arsenic, selenium, and nitrate/nitrite pollution.

Despite this record, industry continues to argue that biological treatment systems are infeasible due to fluctuations in influent characteristics due to the type of coal burned at different EGUs and cycling of certain coal units. For the reasons set out in the 2019 Proposal[190] and our comments on the 2013 proposed rule and 2017 Postponement Rule and attached technical reports,[191] we agree with EPA that the available data makes clear that chemical precipitation followed by high residence time reduction technology is available and economically achievable.

Although EPA concedes that high residence time reduction systems are available and in use in the industry, economically achievable, and highly effective in removing selenium and nitrate/nitrite pollution (in addition to residual mercury and arsenic pollution),[192] the agency does not even include high residence time systems as a BAT option. Instead, the agency baldly asserts that low residence time reduction systems are less costly, "comparable" in their ability to reduce pollution, and require fewer process or facility modifications.[193] That cursory explanation is arbitrary and capricious, for several reasons.

First, EPA's refusal to even consider a technology that is demonstrably available is arbitrary and capricious, and contrary to the Clean Water Act. In selecting BAT, EPA has an obligation to consider and meaningfully evaluate technologies that are, in fact, available and in use in the industry.[194] A technology need not even be in commercial use to be available, so long as the technology has been studied and demonstrated, such as through the use of pilot studies.[195]

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[188] Proposed TDD at 4-2; 84 Fed. Reg. at 64,631; *see also* FGD Treatment In Place Memorandum – DCN E07092, Doc. EPA-HQ-OW-2009-0819-7807. Of these fifteen facilities, nine are currently operating anoxic/anaerobic biological treatment (either high or low residence time reduction) designed to substantially reduce nitrogen compounds and selenium in their FGD wastewater. The others use other types of biological systems that can remove nitrogen and selenium. 84 Fed. Reg. at 64,631.
[189] *Id.*
[190] *Id.*
[191] Comments of Sierra Club et al., Docket ID No. EPA-HQ-OW-2009-0819-6654, at 27-32 (July 6, 2017); Comments of Environmental Integrity Project et al., Docket ID No. EPA-HQ-OW-2009-0819-4684, at 29-30 (Sept. 20, 2013).
[192] 84 Fed. Reg. at 64,627.
[193] *Id.* at 64,631.
[194] *See Am. Petroleum Inst. v. EPA*, 858 F.2d 261, 265 (5th Cir. 1988); *FMC Corp. v. Train*, 539 F.2d 973, 983-84 (4th Cir. 1976) (finding EPA justified in setting BAT for chemical oxygen demand based on performance data from a single pilot plant).
[195] *See Am. Petroleum Inst. v. EPA*, 858 F.2d 261, 265 (5th Cir. 1988) (stating that under BAT, "a process is deemed 'available' even if it is not in use at all"); *FMC Corp. v. Train*, 539 F.2d 973, 983-84 (4th Cir.

Although EPA concedes that its 2015 rule was based on the use of high residence time reduction technology, the agency arbitrarily and unlawfully fails to provide any explanation for even considering it as an option now.[196] The technology has not somehow become unavailable four years later, nor is there any basis in the record for EPA to claim otherwise.

Second, EPA's assertion that low and high residence time systems achieve "comparable" pollution reductions is demonstrably false. Indeed, a cursory comparison of EPA's 2015 BAT limits (which relied on *high* residence time systems)[197] with revised BAT limits (which rely on low residence time) makes clear that the agency is now proposing to substantially weaken the numeric limits for selenium,[198] one of the key pollutants for which biological treatment is used in the first place.[199] In fact, EPA's proposed low residence time BAT proposal would more than triple the daily maximum selenium discharges that the agency found in 2015 are achievable using high residence time. EPA's proposed low residence time BAT would similarly nearly triple the 30-day average limit for selenium, and increase arsenic concentrations. As noted, biological treatment systems are critical for reducing selenium levels, and the agency arbitrarily fails to acknowledge, let alone grapple with the fact that its proposed BAT revision for such treatments (low residence instead of high residence time) would triple the resulting concentrations of harmful selenium.

BAT must represent the best-performing technology.[200] Despite that clear mandate, EPA proposes to reverse its 2015 BAT determination and select a low-residence time technology for selenium that, according to EPA's own data, results in significantly higher selenium levels than readily available and economically achievable high-residence time technology. EPA's proposal to adopt low residence time as BAT is not only unlawful on the merits—low residence time technology is clearly not the best performing technology for selenium—but the agency arbitrarily fails to acknowledge or explain its reversal. [201]

Third, and as explained in the attached technical comments of Dr. Ranajit Sahu, low and high residence time systems do not actually result in comparable long-term average concentrations.[202] As an initial matter, EPA asserts that "while the effluent" from low residence

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1976) (finding EPA justified in setting BAT for chemical oxygen demand based on performance data from a single pilot plant).

[196] *FCC v. Fox Television Stations, Inc.*, 556 U.S. 502, 515 (2009) ("[T]he requirement that an agency provide reasoned explanation for its action would ordinarily demand that it display awareness that it is changing position. An agency may not, for example, depart from a prior policy sub silentio or simply disregard rules that are still on the books." (emphasis in original)).

[197] 84 Fed. Reg. at 64,627.

[198] *Compare* 80 Fed. Reg. at 67,895 (establishing a 23 ug/L daily numeric limit for selenium (codified at 40 C.F.R. § 423.13(g)(1)(i)), *with* 84 Fed. Reg. at 64,676 (proposing a 76 ug/L daily numeric limit for selenium).

[199] 84 Fed. Reg. at 64,632, 64,661.

[200] *See, e.g.*, *Chem. Mfrs. Ass'n*, 870 F.2d at 226.

[201] *FCC v. Fox Television Stations, Inc.*, 556 U.S. 502, 515 (2009).

[202] Dr. Ranajit (Ron) Sahu, Technical Comments on EPA's Proposed Rule to Revise the Best Available Technology (BAT) Effluent Limitations Guidelines (ELGs) for Flue Gas Desulfurization (FGD) Wastewater and Bottom Ash Transport Water (BATW), at 31-37 ("Sahu Expert Report") (attached).

time systems is "more variable than" than high residence time systems, "both technologies achieve long-term average effluent concentrations for selenium lower than 20 mg/L [sic]"[203] EPA fails, however, to explain why that 20 ug/L threshold is even relevant, given that the long-term average for low residence time systems is more than double high residence time systems.

Again, BAT requires EPA to select the best performing technology. That low residence time biological treatment systems achieve a long term average concentration that is better than some arbitrary threshold is completely irrelevant. Instead, EPA must consider how available technologies compare to each other. Here, the long-term average selenium concentration for high residence time systems is less than half the concentration of low-residence time systems (7.4 ug/L versus 16.6 ug/L), making clear that high residence time systems actually perform significantly better. As explained in Dr. Sahu's report, the long term data make clear that low and high residence time systems do not result in comparable or similar long term average concentrations, and that high residence time technology is significantly more effective at removing selenium form FGD wastewater. In the face of its own data showing that low residence time systems result in significantly higher short- and long-term selenium concentrations than high residence time systems, EPA's proposal to select low residence time technology as BAT is arbitrary and capricious.

Fourth, also as explained in Dr. Sahu's analysis, EPA's assertion that low and high residence time systems have similar variability is similarly false. In developing the 2019 BAT limits, EPA apparently used pilot test effluent data from five unidentified plants. Although EPA withheld the underlying effluent data as confidential (so it is impossible to independently evaluate), EPA's summary of the data reflects wide variability in selenium concentrations—from 7.711 to 26.813 ug/L.[204] While the lowest of these values is roughly comparable to high residence time, the other four plants have significantly higher variability, calling into question EPA's suggestion that there is no "meaningful difference in long-term pollutant removals."[205] The data above also show the significantly higher daily (ranging from 2.989 to 5.076) and monthly (ranging from 1.551 to 1.994) variability factors. As explained further in Dr. Sahu's report, these variability factors are higher than the corresponding daily and monthly variability factors for high residence time systems.[206] Yet, EPA fails (again) to acknowledge or explain those differences.

Fifth, although EPA includes a chart summarizing the pilot test results for five low residence time reduction systems, the agency refused to identify those facilities or disclose the underlying effluent tests, claiming that data is confidential business information. As a result, there is no publicly-available support for EPA's conclusory assertions that similarly-situated steam facilities can achieve comparable pollution reductions using low and high residence time

[203] 84 Fed. Reg. at 64,631.
[204] Supplemental Statistical Support Document: Effluent Limitations for Proposed Steam Electric Power Generating Effluent Limitations Guidelines and Standards - DCN SE8055, at Tbl. 16, Docket ID No. EPA-HQ-OW-2009-0819-8193 (Sept. 2019).
[205] 84 Fed. Reg. at 64,632.
[206] EPA, Technical Development Document for the Effluent Limitations Guidelines and Standards for the Steam Electric Power Generating Point Source Category, at Tbl. 13-4, Docket ID No. EPA-HQ-OW-2009-0819-6432 (Sept. 2015) ("2015 TDD").

reduction technologies. There is no valid basis for withholding from public review the results of effluent monitoring on which EPA is relying to form the basis for nationally-applicable, industry-wide effluent standards. The Clean Water Act mandates that EPA make available to the public "any" records applicable to any applicable effluent limitations, toxic, pretreatment, or new source performance standards, unless the information would divulge methods or processes entitled to protection as trade secrets.[207] Although it is plausible that certain site-specific design, operational, or vendor information could be confidential, there is no valid basis for withholding the actual effluent monitoring data associated with the system.

Without that information, neither the court nor the public have any meaningful ability to evaluate the veracity of EPA's assertion that low and high residence time reduction systems are comparable or achieve similar reductions. Moreover, EPA's "bald assertions" that low and high residence time systems are "comparable" is not sufficient to affirm EPA's proposed BAT determination.[208]

Sixth, EPA concedes that low residence time systems "occasionally may discharge at a level that is higher."[209] – i.e., they result in pollution spikes but fails to explain how long-term average pollution reductions adequately protect against short-term spikes in pollution levels that may harm human and aquatic health. Short-term exposure to selenium, for example, can cause damage to the peripheral nervous system; and selenium is acutely poisonous to fish and other aquatic life in even small doses; concentrations below three to eight μg/L can kill fish, and lower concentrations can leave fish deformed or sterile.[210] Mercury is highly toxic in small quantities. Selenium and mercury also bio-accumulate and interfere with fish reproduction, meaning that it can permanently destroy wildlife populations in lakes and rivers as it works its way through the ecosystem over a period of years. Even accepting EPA's unsupported assertion that long-term pollutant concentrations are comparable between low and high residence time reduction systems, EPA fails to explain how low residence time systems make further reasonable further progress toward eliminating short-term pollution impacts that harm humans and aquatic life. The Clean Water Act requires BAT limits that the "maximum resources economically possible to the ultimate goal of eliminating *all* polluting discharges"[211] – not just assuring long-term discharge rates that are comparable. EPA concedes that low residence time systems may result in high

[207] 33 U.S.C. § 1318.
[208] *See, e.g.*, *Luminant Generation Co. v. EPA*, 675 F.3d 917, 925 (5th Cir. 2012) (rejecting EPA's "passing" and "unsupported" assertions that final action was based on the relevant requirements of the Act); *Texas v. EPA*, 690 F.3d 670, 678 (5th Cir. 2012) (in reviewing a Clean Air Act implementation plan, the court "requires more than the [agency's] bare conclusion"); *La. Envtl. Action Network v. EPA*, 382 F.3d 575, 586–87 (5th Cir. 2004) (rejecting EPA's "naked assertion[s]" and remanding the agency's approval of a Louisiana Clean Air Act plan because agency "fail[ed] to mention or show any evidence" to support its conclusions); *see also In re Bell Petroleum Servs., Inc. v. Sequa Corp.*, 3 F.3d 889, 905 (5th Cir. 1993) ("[j]udicial review 'must be based on something more than trust and faith" in the agency's assertions) (internal citations omitted)).
[209] 84 Fed. Reg. at 64,661.
[210] *See, e.g.*, EPA, Steam Electric Power Generating Point Source Category: Final Detailed Study Report, at 6-4, Docket ID No. EPA-HQ-OW-2009-0819-0387 (Oct. 2009); 2015 EA at 3-4 tbl. 3-1.
[211] *EPA v. Nat'l Crushed Stone Ass'n*, 449 U.S. 64, 74 (1980).

variability of pollutant discharges, yet the agency fails to explain how its proposed BAT determination adequately protects against short-term pollution spikes.

By its very nature, a shorter residence time means that there is less room for error. If FGD wastewater is treated for only 1-4 hours for low residence systems (compared to 10-16 hours for high residence systems), there is simply less time for pollutants to filter or settle out of the wastestream. Nothing in the 2019 Proposal or the TDD grapples with that fundamental issue. Moreover, EPA's 2015 TDD suggests that a biological treatment system's residence time is a critical variable in the efficacy of the technology. In 2015, or example, EPA observed that biological systems need a "sufficiently long residence time" to ensure removal of pollutants like selenium and nitrate/nitrite.[212] Moreover, biological systems "typically require" fine tuning and optimization of residence times and other variables to function properly.[213] EPA's low residence time BAT proposal does not address those issues, or explain how its one-size-fits-all proposal will ensure necessary pollution reductions on a continuous basis.

Moreover, as noted above, the record reflects only four examples of full-scale low residence time systems,[214] and EPA does not provide *any* data that allows for a meaningful comparison between the pollution reductions achievable with low and high residence time systems. As a result, it is impossible to determine whether low residence time systems are, in fact, the "best-performing" technology in the field, as required for any BAT determination under the Act.[215]

Finally, setting aside EPA's arbitrary refusal to explain or demonstrate that low residence time technology is, in fact, the Best Available Technology, the record makes clear that EPA's proposal to walk back its 2015 BAT determination is impermissibly and exclusively based on cost. Indeed, the primary driver in EPA's reversal is that low residence time systems are "less costly" and "less complex" than high residence time systems, saving the industry approximately $72 million annually, while resulting in "comparable," although more variable pollution concentrations.[216] EPA then attempts to justify the potential for pollution spikes and higher

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[212] 2015 TDD at 8-5; *see also id.* at 7-12 ("The bioreactor system typically contains multiple bioreactor cells. For example, the Duke Energy Carolinas' Allen Steam Station and Belews Creek Steam Station have two stages of bioreactor cells in series, as shown in Figure 7-3, but both stages of bioreactors contain multiple cells in parallel. Plants usually require multiple bioreactors to provide the necessary residence time to achieve the specified removals.").

[213] *Id.* at 13-2 to 13-3.

[214] Proposed TDD at 4-3.

[215] *Chem. Mfrs. Ass'n v. EPA*, 870 F.2d 177, 226 (5th Cir. 1989) ("Congress intended these [BAT] limitations to be based on the performance of the single best-performing plant in an industrial field."); *see also Nat. Res. Defense Council v. EPA*, 863 F.2d 1420, 1426 (9th Cir. 1988); *Kennecott*, 780 F.2d at 448 ("In setting BAT, EPA uses not the average plant, but the optimally operating plant, the pilot plant which acts as a beacon to show what is possible."); *cf. Riverkeeper, Inc. v. EPA*, 475 F.3d 83, 107-08 (2d Cir. 2007) ("The statutory directive requiring facilities to adopt the best technology cannot be construed to permit a facility to take measures that produce second-best results . . . especially given the technology-forcing imperative behind the Act. . . .") (citations omitted), *rev'd on other grounds sub nom. Entergy Corp. v. Riverkeeper, Inc.*, 556 U.S. 208 (2009).

[216] 84 Fed. Reg. at 64,631-32.

variability in pollution concentrations by arguing that "EPA would disserve its mandate were it to tilt at windmills by imposing BAT limitations which removed de minimis amounts of polluting agents from our nation's waters . . . ."[217]

But that facile argument crystalizes the flaws in EPA's approach. As an initial matter, Congress determined that investments in pollution controls are warranted to the greatest degree possible, and therefore the inquiry is not whether the costs of a given control are "worth it" in EPA's estimation.[218] Instead, EPA must select the best performing, economically achievable technology as BAT. Here, there is no dispute that high residence time systems are widely available, effective, and economically achievable.

Moreover, although the court in *American Petroleum* recognized that there may be a point at which it would be unreasonable to impose BAT limitations to remove *de minimis* amounts of pollution, the court concluded that EPA had not reached that point, even where the BAT limits at issue regulated "trace" amounts of mercury and cadmium.[219] In any case, it is impossible to characterize the difference between pollution reductions achieved by low and high residence time systems as *de minimus*. In addition, EPA does not even disclose what that difference actually is, let alone address the potential that use of low residence time systems would result in short-term pollution spikes as compared to high residence time systems. EPA's conclusory assertions that low and high residence time reduction systems achieve "comparable" pollution levels are not sufficient to support the agency's action.[220]

In sum, EPA has a legal obligation to require the best-performing technology as BAT, if the technology is available and economically achievable.[221] Both the 2015 rule and the current proposal recognize that chemical precipitation followed by high residence time reduction biological treatment is achievable, available, and would substantially reduce levels of mercury,

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[217] *Id.* at 64,632, n.20 (quoting *Am. Petroleum Inst.* v. *EPA*, 787 F.2d 965, 972 (5th Cir. 1986)).
[218] *See, e.g.*, *Am. Iron & Steel Inst. v. EPA*, 526 F.2d 1027, 1052 n.54 (D.C. Cir. 1978) ("a cost-benefit analysis is not required at all" for BAT); *CPC Int'l Inc. v. Train*, 540 F.3d 1329, 1341-42 (8th Cir. 1976) (BAT guidelines are "governed by a standard of reasonableness without the necessity of a thorough cost-benefit analysis"); *Reynolds Metals Co v. EPA*, 760 F.2d 549, 565 (4th Cir. 1985) ("no balancing is required" for BAT); *Rybachek v. EPA*, 904 F.2d at 1290-91 (EPA "need not compare [control] cost with the benefits of effluent reduction"); *BP Exploration & Oil, Inc. v. EPA*, 66 F.3d 784, 799-800 (6th Cir. 1995) (rejecting industry demand for cost-benefit analysis because BAT "does not require cost-benefit analysis" and "EPA need only find … that the cost of the technology is reasonable"); *Texas Oil & Gas Ass'n v. EPA*, 161 F.3d 923, 928 (5th Cir. 1998) (underlining that "BAT is the CWA's most stringent standard" and must be set based not on cost-benefit analysis but on "the performance of the single, best-performing plant in an industrial field"); *Waterkeeper All. v. EPA*, 399 F.3d at 516 (BAT can be set to the level which can "reasonably be borne by a given industry"); *Am. Paper Inst. v. Train*, 543 F.2d 328, 348 (D.C. Cir. 1976) ("Section 304(b)(2)(B) mandates no such [cost-benefit] balancing for the 1983 limitations"); *Ass'n of Pac. Fisheries*, 615 F.2d at 805 ("The conspicuous absence of the comparative language contained in section 304(b)(1)(B) leads us to the conclusion that Congress did not intend the Agency or this court to engage in marginal cost-benefit comparisons [for BAT].").
[219] *Am. Petroleum Inst.*, 787 F.2d at 972.
[220] *Luminant Generation Co. v. EPA*, 675 F.3d 917, 925 (5th Cir. 2012).
[221] *Chem. Mfrs. Ass'n v. EPA*, 870 F.2d at 226 ("Congress intended these [BAT] limitations to be based on the performance of the single best-performing plant in an industrial field.").

arsenic, selenium, and nitrates. EPA fails to demonstrate that its proposal to establish low residence time reduction technology as BAT will achieve the same pollution reductions or make reasonable progress toward eliminating all discharges. In fact, the agency fails to provide any non-confidential support for this portion of the 2019 Proposal. Instead, the record makes clear that EPA's proposal to walk back its 2015 BAT determination is impermissibly and exclusively based on cost, and is therefore arbitrary, capricious, and contrary to law.

## VIII. THE PROPOSED VOLUNTARY INCENTIVE PROGRAM IS UNLAWFUL, UNNECESSARY, AND EPA'S CLAIM THAT IT WILL RESULT IN SIGNIFICANT REDUCTIONS OF POLLUTION IS NOT SUPPORTED BY THE RECORD.

### A. EPA Proposes To Provide A Compliance Extension for Sources That "Voluntarily" Meet Discharge Limits That Are Stricter Than Those EPA Otherwise Proposes.

EPA proposes to create a compliance extension to the end of 2028 for facilities discharging FGD wastewater whose owner or operator "voluntarily chooses to meet the effluent limitations" which are based on membrane filtration technology and which are more stringent than the proposed limitations for facilities not making this election.[222] The proposal does not specify how (or even whether) a facility owner or operator must commit to meeting the new limits, nor identify specific consequences beyond meeting the otherwise-applicable requirements if someone changes his/her mind and chooses not to meet the more stringent limitations. As discussed in the following sections, this "voluntary incentive program" ("VIP") violates the Clean Water act, lacks record support, and is otherwise arbitrary and capricious.

### B. The Clean Water Act Prohibits EPA from Extending The Compliance Date for Revised Effluent Limitations Guidelines by Eight Years Following The Final Rule.

Assuming that EPA finalizes the proposed revisions to the ELG in 2020, facilities taking advantage of the VIP will have eight years to meet the effluent limitations applicable to such facilities. This extension violates the plain language of the Clean Water Act.

The Act requires dischargers of specified toxic pollutants to achieve "compliance with [BAT] effluent limitations . . . as expeditiously as practicable but in no case later than three years after the date such limitations are promulgated . . . ."[223] EPA thus proposes to authorize a discharger of FGD wastewater to blow by this statutory requirement by five years in exchange for asserting that the facility will meet more stringent requirements than might otherwise apply. The statute plainly prohibits that approach.[224]

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[222] 84 Fed. Reg. at 64,674 (proposed 40 C.F.R. § 423.13(g)(3)(i)); *id.* at 64,637 (describing rationale for choice of technology basis).
[223] 33 U.S.C. § 1311(b)(2)(C).
[224] We acknowledge that the 2015 ELG Rule also allowed extensions of the compliance deadline up to December 31, 2023. 80 Fed. Reg. at 67,854. But EPA's having done something previously does not make

EPA will no doubt respond to this comment by claiming that the three-year deadline for ELG compliance only applies to the first set of BAT limitations for toxic pollutants from an industry. That argument relies on the fact that the compliance deadline provision in section 301(b)(2)(C) of the Act also states that compliance must be achieved "in no case later than March 31, 1989," an interpretation accepted by the U.S. Court of Appeals for the Fifth Circuit in litigation over EPA's rule delaying the compliance dates of the 2015 ELGs.[225] However, that decision was legally erroneous and, even it were correctly decided on the law, does not properly apply to the facts of the present regulation.

The plain text of section 301(b)(2)(C) specifies that compliance must be achieved no later than three years following the promulgation of toxic pollutant BAT limitations and there is nothing ambiguous about that language. That the same section also contains a provision – establishing March 1989 as the presumptive outside date for initial limitations – does not render the otherwise-applicable three-year language (or, for that matter, the otherwise-applicable "as expeditiously as practicable" language) unclear. To the contrary, it underscores that Congress viewed compliance with BAT limitations on toxic pollutants as an urgent priority, to be met quickly after such limitations were promulgated. Moreover, section 301(d) reinforces this approach, demanding that effluent limitations be reviewed and updated as appropriate every five years, "pursuant to the procedure established under" section 301(b)(2);[226] this provision reveals Congressional intent to continually and promptly move industries toward better pollution controls and, by incorporating the procedures of subsection (b), directs EPA to follow the compliance deadlines for BAT limitations on toxic discharges in subsection (b)(2)(C), minus the outdated reference to March 1989.

Even if one were to accept – which we do not – the interpretation that the three-year deadline for BAT limitations on toxic discharges only apply to the initial promulgation of such limitations, the limitations established by this rulemaking for FGD wastewater qualify as such initial limits. In the 1982 steam electric ELG rule, EPA expressly "reserv[ed] effluent limitations for four types of wastewaters for future rulemaking," including "[f]lue gas desulfurization waters," not setting any effluent limitations at all specific to those wastestreams.[227]

The legislative history of the Act supports this interpretation as well. Although Congress initially set a March 31, 1989 deadline for compliance with BAT effluent limitations, with the intention that EPA would promulgate ELGs setting forth those BAT limits before the deadline, Congress also amended section 309 of the Act to allow EPA to address issues involving compliance with BAT limits through enforcement discretion.[228] Based on this legislative history,

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it lawful. Moreover, unlike the proposal, the 2015 ELG Rule at least required compliance for all effluent limitations "as soon as possible" on or after the three-year deadline. *Id.*

[225] *See Clean Water Action v. EPA*, 936 F.3d 308, 316-17 (5th Cir. 2019) (accepting EPA argument that deadlines only apply to initial promulgation).

[226] 33 U.S.C. § 1311(d).

[227] 47 Fed. Reg. 52,290, 52,291 (Nov. 19, 1982).

[228] *See* 33 U.S.C. § 1319(a)(5)(A) ("Any [enforcement] order issued . . . shall specify a time for compliance . . . not to exceed a time the Administrator determines to be reasonable in the case of a violation of a final deadline, taking into account the seriousness of the violation and any good faith efforts to comply with applicable requirements."); *see also* H.Rep. No. 99-1004, at 115-16 (1986) (Conf. Rep.)

the U.S. Court of Appeals for the Fifth Circuit held that EPA lacks discretion to extend compliance deadlines for BAT limits beyond the three-year outer bound set forth in the statute.[229]

Finally, in a separate subsection of section 301, Congress spoke directly to the notion of providing an extended compliance date for more aggressive control technologies, further establishing that EPA lacks the authority to invent a compliance date of its own choosing for the VIP. Subsection (k) specifies that a facility that, among other things, installs "an innovative control technique that has a substantial likelihood for enabling the facility to comply with the applicable effluent limitation by achieving a significantly greater effluent reduction than that required by the applicable effluent reduction and moves toward the national goal of eliminating the discharge of all pollutants," may receive a compliance date "no later than two years after the date for compliance with such effluent limitation which would otherwise be applicable . . . if it is also determined that such innovative system has the potential for industrywide application."[230] This provision plainly provides that Congress intended that, should EPA believe the promotion of advanced controls warrants additional compliance time, the agency both must make certain findings in order to do so and must limit the supplemental time to two years at most.[231] In the case of the VIP, EPA has done neither. Therefore, the plain language of the Clean Water Act forbids EPA's proposed VIP.

### C. The Proposed Voluntary Incentive Program Unreasonably Fails to Consider Critical Issues and Lacks a Basis in The Agency's Administrative Record.

EPA's plans for implementing the VIP and its claims about the likely participation in the program irrationally disregard important matters and are factually unsupported. Accordingly, they are arbitrary and capricious.[232]

The most important way in which the proposed VIP ignores important factors is that it lacks virtually any implementation details. For instance, the proposed rule inexplicably fails to specify how a discharger would opt in to the VIP, much less include requirements to ensure that those owners/operators taking advantage of the VIP's extended compliance delay actually meet the VIP effluent limits. Relatedly, the VIP does not include a mechanism to ensure that plants that might withdraw from the program would be required to timely comply with FGD

("If dischargers in an entire category are unable to meet the March 31, 1989, deadline provided in the conference substitute as a result of the Administrator's failure to promulgate effluent limitations in sufficient time to allow for compliance by such date, non-compliance resulting from the Administrator's delay can be dealt with under EPA's current post-1984 deadline enforcement policy.").

[229] *Chem. Mfrs. Ass'n v. EPA*, 870 F.2d 177, 242 (5th Cir. 1989).

[230] 33 U.S.C. § 1311(k).

[231] *E.g.*, 53 Fed. Reg. 18,764, 18,784 (May 24, 1988) (utilizing subsection (k) in the ore mining and dressing ELG).

[232] *Motor Vehicle Mfrs. Assn. v. State Farm Mut. Auto. Ins. Co.*, 463 US 29, 43 (1983) (agency rule is arbitrary and capricious if, among other things, "the agency has relied on factors which Congress has not intended it to consider, entirely failed to consider an important aspect of the problem, offered an explanation for its decision that runs counter to the evidence before the agency, or is so implausible that it could not be ascribed to a difference in view or the product of agency expertise").

wastewater limits.[233] The proposed program's lack of consequences for withdrawing from the VIP, combined with EPA's failure to require VIP participants ultimately to meet the stricter limits, is particularly unreasonable because it permits unscrupulous operators to make an end-run around the principal set of effluent limitations for an extended period of time by simply claiming they will voluntarily meet the stricter standards later. Because of these critical omissions, EPA cannot predict with any confidence which facilities will meet the VIP effluent limits, versus facilities for which the owner/operator merely will announce an intention to do so.

EPA also ignores a critical factor in any Clean Water Act rulemaking – the purpose of the Act, including the ELG program. These ELGs are required to be technology-forcing and to achieve expeditious compliance, as evidenced by the Act's requirement that toxic pollutant dischargers meet BAT limits that are achieved "as expeditiously as practicable," and its requirement for regular review of ELGs' adequacy.[234] However, the VIP undermines these fundamental statutory goals. For instance, the proposal assumes that eighteen power plants will participate in the program under EPA's preferred regulatory option,[235] but then ignores the obvious upshot of that conclusion: a significant subset of facilities using a specific technology because it is economically practicable for their operation only underscores that such technology – namely, membrane filtration in this case – must be considered BAT and required across the industry. As noted in the Legal Background section of these comments, a technology is "available" if it is in use in the industry, even if only by the best-performing plant in the industry, or if it can be demonstrated to be available through pilot studies or its use in other industries, and a technology is economically achievable if the costs can be reasonably borne by the industry as a whole.

Additionally, the rationale for the proposed compliance delay to the end of 2028 for power plants that participate in the program runs counter to the evidence before the agency. Although EPA claims that the 2028 "timeframe is based on the amount of time necessary to pilot, design, procure, and install both the membrane filtration systems and the brine management systems,"[236] the agency provides no evidence to support its argument and materials in the record indicate otherwise. In particular, Northern Indiana Public Service Company ("NIPSCO") met with EPA and provided its arguments in support of an extended compliance deadline, relying in part on its estimate of the time for the final ELGs to be litigated and for state public utility commission processes; however, neither of those factors has anything to do with the achievability of the limits.[237] Even with those additional considerations, NIPSCO argued that retrofitting facilities as part of a VIP could be accomplished by 2026. Interestingly, EPA's own

[233] Although we strongly opposed the loophole that the proposed VIP would create for the reasons discussed in this section, if EPA nevertheless proceeds to finalize the scheme, it must adopt provisions to guarantee facilities' compliance with the VIP limits. For instance, EPA could require facility owners and operators to certify promptly that they will participate in the VIP and require that such facilities' NPDES permits specify that the stricter limits will be automatically applicable on the VIP compliance date.
[234] 33 U.S.C. §§ 1311(b)(2)(C) & (d).
[235] Proposed BCA at p. 2-1.
[236] 84 Fed. Reg. at 64,637.
[237] Email from Nicholas M. Dernik, NiSource, Inc., to Richard Benware, EPA, Docket ID No. EPA-HQ-OW-2009-0819-8274 (July 17, 2018); email from Nicholas M. Dernik, NiSource, Inc., to Richard Benware, EPA, Docket ID No. EPA-HQ-OW-2009-0819-8275 (June 8, 2018).

economic analysis shows that fifteen of the eighteen facilities it anticipates participating in the VIP would find membrane technology to be the least costly option if the agency established a VIP compliance date of 2025.[238]

Finally, the VIP is premised on an assumption that contradicts the evidence before the agency. In particular, EPA has not demonstrated that a significant number of power plants will participate in the program. The 2015 rule's VIP was only opted into by a small number of plants that had other reasons for opting in; the program by itself failed to incentivize significant reductions in pollution. EPA's own preamble admits this, saying that facilities installing the VIP- level technology did so due to "water quality-based effluent limitations imposed by the NPDES permitting authority,"[239] not because of the incentive of additional compliance time.

## IX. PROPOSED OPTIONS FOR ADRESSING BROMIDE DISCHARGES DO NOT REFLECT USE OF BAT AND WILL NOT PROTECT PUBLIC HEALTH.

### A. The Record Shows Public Health Benefits of Controlling Bromide Discharges from Power Plants are Significant.

Coal-fired power plants discharge a significant amount of bromide into surface waters every year. Bromide is naturally present in all coal but some plant operators burn coal refined with bromide and/or inject bromide during combustion to reduce mercury air emissions.[240] EPA's review of the literature on bromide, summarized in the Supplemental Environment Assessment ("Proposed EA"), identified numerous studies that have documented elevated bromide levels in surface waters downstream of coal plants.[241] EPA's literature review also showed that levels of bromide in FGD wastewater can exceed 175 mg/L.[242] As part of the record for this proposed rulemaking, EPA estimated bromide loadings from seventy coal plants and found that concentrations of bromide in untreated FGD wastewater from plants that do not add bromide or burn refined coal average 59.1 mg/L, while bromide concentrations average 167 mg/L for plants that do add bromide or burn refined coal.[243] EPA also estimated that bromide concentrations in bottom ash wastewater discharges average 5.1 mg/L.[244] Estimated average bromide concentrations in FGD wastewater and in bottom ash transport water are much higher than estimated average background levels in fresh surface waters, which range from 0.014 mg/L to 0.2 mg/L.[245]

Though the presence of bromide in fresh surface waters is not believed to impact aquatic ecosystems or pose a risk to human health, low concentration of bromide present in drinking

[238] EPA, VIP Plant Flags and Analysis Comparing Technology Costs – DCN SE07652, Option 2 VIP Comparison, Docket ID No. EPA-HQ-OW-2009-0819-7706.
[239] 84 Fed. Reg. at 64,637.
[240] Proposed TDD at 3-6.
[241] Proposed EA at 2-4.
[242] *Id*.
[243] ERG, Mass Balance Approach to Estimating Bromide Loadings from Steam Electric Power Plants – DCN SE07260, Docket ID. No. EPA-HQ-OW-2009-0819-8242 (Oct. 2019).
[244] Proposed TDD at 6-13, Tbl. 6.2.
[245] Proposed EA at 2-4.

water sources can become a public health risk because it is a precursor for the formation of trihalomethanes (THMs), which are known carcinogens.[246] These disinfectant byproducts (DBPs) can form when bromide reacts with common drinking water disinfectants used to control microbial pathogens. As described in the Proposed EA, several studies have "documented evidence of a linkage between DBP exposure and bladder cancer and, to a lesser degree, colon and rectal cancer, other cancers, and reproductive and developmental effects."[247] A 2015 study estimated that a 0.05 mg/L increase in raw water bromide concentrations could result in a lifetime excess bladder cancer risk of up to one in a 1,000.[248]

Because of these known human health risks from DBP exposure, drinking water systems have to maintain a running average Maximum Contaminant Level (MCL) of 80 ug/L for total THMs in finished drinking water.[249] EPA has also established health-based goals for some individual THMs, known as MCL Goals (MCLGs), which are the levels at which no known or expected risks to human health exist.[250] For some DBPs, there are "no safe levels," meaning any detectable level in finished drinking water poses a health risk.[251] The Proposed EA cites several studies that have documented elevated bromide levels at drinking water intakes downstream of coal plants discharging FGD wastewater and additional studies that have correlated increases in DBPs at drinking water systems with increases in upstream bromide discharges.[252]

Chapter 4 of the Proposed Benefit and Cost Analysis describes the impacts elevated bromide levels can have on drinking water systems and quantifies some of the human health benefits of reducing bromide discharges from coal plants. EPA estimated that 31.4 million people are potentially impacted by these discharges.[253] EPA then quantified the estimated number of avoided bladder cancer cases and associated monetary benefits under the four proposed regulatory options.[254] Option 4 (membranes as BAT for FGD wastewater) was estimated to avoid 769 bladder cases, more than twice as many as under Option 2 and nearly twice as many as under Option 3, at an estimated benefit of $54.3 to $84.3 million dollars.[255] However, the number of avoided bladder cancer cases is likely an underestimate because EPA only quantified the health benefits of incremental changes in DBP levels between the MCL and MCLGs.[256] EPA limited its analysis because the agency concluded the drinking water systems that would most benefit from reducing bromide discharges coming from coal plants have total THM levels below the MCL but above the MCLGs for individual trihalomethanes.[257] EPA's

[246] S. Regli et al., Estimating Potential Increased Bladder Cancer Risk Due to Increase Bromide Concentrations in Sources of Disinfected Drinking Waters, Envtl. Sci. & Tech., 49(22):13094-13102, DCN SE07927, Docket ID No. EPA-HQ-OW-2009-0819-7848 (2015) ("S. Regli *et al*. (2015)").
[247] Proposed EA at 2-5.
[248] S. Regli et al. (2015).
[249] *Id*. at 2-6, Tbl. 2-1.
[250] *Id.* at 2.5, 2.6, Tbl. 2-1.
[251] Proposed BCA at 2-5, Tbl. 2-2.
[252] Proposed EA at 2-6.
[253] Proposed BCA at 4-6, Tbl. 4.1.
[254] *Id.* at 4-18, Tbl. 4-7.
[255] *Id*.
[256] *Id*. at 4-3.
[257] *Id*.

analysis is flawed because it does not capture the public health benefits of preventing MCL violations. Though drinking water systems would be required to adjust their treatment or make operational changes to address MCL violations, there are quantifiable benefits to drinking water systems in the form of avoided treatment costs. EPA claims "it did not have data on drinking water treatment technologies at potentially impacted Public Water Systems or cost estimates for those technologies," yet the agency could have collected this data.[258] As part of its benefit-cost analysis EPA identified 26 Public Water Systems "that together account for approximately 70 percent of estimated benefits for proposed Options 2 and 4."[259] EPA should have requested cost estimates for different drinking water treatment technologies from these potentially impacted systems. Moreover, there remain significant benefits to the public in the form of reduced bladder cancer risk, as any changes made in response to an MCL violation would only occur after that violation was detected and reported and after any delay in returning to compliance. During the interim period, which could realistically be months or years, the public would be exposed to egregiously high levels of THMs and would experience elevated cancer risks. In addition, as described in the Proposed EA, some DBP treatment options used to come into compliance with the THM MCL may not actually reduce total risks to human health.[260] EPA should expand its analysis to account for these avoided treatment costs and human health benefits.

The record before EPA clearly demonstrates the significant impact bromide wastewater discharges from coal plants have on downstream drinking water systems and the tremendous human health benefits of controlling this pollution. One of the greatest human health benefits quantified in this proposal is the number of bladder cancer cases that would be avoided from reducing bromide discharges. EPA should act on the findings in its own analysis and revise its proposal to require limits on bromide discharges in FGD wastewater.

### B. The Record Shows FGD Wastewater Limits Must Be Strengthened to Address Bromide Discharges.

As discussed in Section VI - Zero Discharge FGD of these comments, the EPA record demonstrates that membrane technology or its equivalent is BAT for FGD wastewater discharges. Only membranes or equivalent technology would adequately control bromide discharges, and the agency has a legal obligation to require technology to eliminate this pollution. According to EPA, requiring membranes for FGD at all plants would remove twenty-nine million pounds of bromide annually[261] and avoid 769 bladder cancer cases.[262] By contrast, if the eighteen plants that EPA predicts will participate in the Voluntary Incentives Program

[258] BCA at 2-12.
[259] EPA, Compliance With Total Trihalomethanes Standards at Selected Public Water Systems Downstream of Steam Electric Power Plants – DCN SE07792, Docket ID. No. EPA-HQ-OW-2009-0819-8168 (Oct. 2019).
[260] Proposed EA at 2-5.
[261] ERG, Bromide Loadings for FGD Wastewater (MS Excel spreadsheet) – DCN SE07260A1, Docket ID No. EPA-HQ-OW-2009-0819-8242 (2019).
[262] Proposed BCA at 4-18, Tbl. 4-7.

install membranes, only 343 bladder cancer cases would be avoided[263] and thirteen million pounds of bromide would be removed annually – and not until 2028.[264]

1. *Water Quality-Based, Site-Specific Approach to Addressing Bromide Discharges is Insufficient*

As it did in the 2015 rule, EPA is proposing "a water quality-based approach as the most appropriate approach" for addressing "the potential impacts of bromides on downstream drinking water treatment facilities, as determined by state permitting authorities."[265] Yet, EPA acknowledges that since 2015 it is only aware that Pennsylvania, Alabama, and North Carolina have required monitoring of bromide discharges, and it is unaware of how many states (if any) have "acted to address such discharges."[266] This lack of state action demonstrates that most states lack the resources and data necessary to establish water quality-based effluent limits (WQBELs) on a site-specific basis. Given competing demands and limited resources, it is unlikely that states will prioritize requiring limits on bromide discharges on a site-specific basis in the future.

A recent example from Maryland underscores the reluctance states have to require site-specific limits on bromide discharges. In July 2018, the Maryland Department of the Environment (MDE) determined that monthly bromide monitoring would be required at the Dickerson Generating Station after several water utilities that draw their supply from the Potomac River expressed their concerns about bromide discharges coming from Dickerson.[267] In addition to urging MDE to require bromide monitoring, the utilities wrote, "Clean Water Act program requirements must ensure that the pollutant load of bromide is controlled at the source because it cannot be removed at downstream treatment plants. Limits need to control discharges to concentrations of bromide equal to background levels currently found in the Potomac River."[268] In its response to the public comments letter, MDE acknowledged the drinking water utilities' concern but stopped short of requiring bromide limits because "there is currently no water quality standard in Maryland for bromides and data collected for Dickerson's discharge is very limited with regards to bromide."[269]

EPA has a responsibility under Section 1311(b)(2)(A) to regulate pollutants found in steam electric power plant wastestreams and should not assume state permit writers have the resources to effectively control bromide discharges through WQBELs alone. Moreover, because bromide is non-reactive in water, power plant bromide discharges can have a cumulative impact on downstream surface waters in multiple states – well beyond just the sub-watersheds where

[263] *Id.*
[264] ERG, Bromide Loadings for FGD Wastewater (MS Excel spreadsheet) – DCN SE07260A1, Docket ID No. EPA-HQ-OW-2009-0819-8242 (2019).
[265] 84 Fed. Reg. at 64,642.
[266] *Id.*
[267] Maryland Department of the Environment, Response to Public Comments Regarding Dickerson Generating Station, State Discharge Permit Application No. 14-DP-0048, NPDES Permit No. MD002640 at 16-20 (July 25, 2018) (attached).
[268] *Id*. at 16.
[269] *Id*. at 19.

bromides are discharged.[270] Given the interstate nature of these pollution discharges, enforceable, national technology-based standards to limit bromide discharges are most appropriate.

2. *The Three Proposed "Sub-Options" for Addressing Bromide Discharges Are Inadequate*

None of the three proposed bromide "sub-options," even if all were required collectively, are adequate to deal with this pollution and fail to address the full scope of the problem. Both bromide monitoring and the minimization of bromide should be required – but in addition to, and not instead of, enforceable bromide limits in FGD wastewater discharges.

**a. Bromide Monitoring**

Monthly monitoring of bromide concentrations to more accurately characterize power plant discharges is critical and should be required in addition to, and not in place of, requiring bromide limits in FGD wastewater. Unfortunately, the two bromide monitoring options proposed by EPA are insufficient because they are time-limited (i.e., would require only two or five years of monthly monitoring). EPA should not artificially limit the total bromide monitoring period. Two years of monthly monitoring is not sufficient for understanding long-term bromide loadings and seasonal variability. Instead, at a minimum, plants should be required to collect monthly samples at all outfall points that are known to contain bromide. Plants should also be required to collect a monthly sample at enough distance upstream of any outfalls containing bromide (e.g., a mile upstream) to better capture what true bromide background levels are in each receiving water. This monthly monitoring data collected at multiple locations should be made available to downstream drinking water utilities so they can better understanding bromide concentration trends that have the potential to impact treatment options and human health.

**b. Bromide Minimization Plans**

Plans to reduce a facility's use of bromide on a site-specific basis could be a useful part of a larger, comprehensive plan to address bromide discharges but would not eliminate the need for monthly monitoring and enforceable bromide limits. Because all coal contains some level of bromide and because even low concentrations of bromide in source water can create treatment challenges for drinking water systems, minimizing the use of bromide and/or switching coal types alone may not be enough to adequately reduce risks to human health. Should EPA pursue this option, it is essential that facilities be required to continue to monitor bromide concentrations monthly to track the effectiveness of any bromide minimization plan over time. Any minimization plan should also be created in consultation with state or federal permit writers and downstream drinking water utilities to ensure that each facility pursues a plan that would result in the greatest possible reduction of bromide. EPA should prohibit the use of any additive substitutes for bromide, such as additives containing iodide or other halides, that could result in

[270] K.D. Good & J.M. VanBriesen, Coal-Fired Power Plant Wet Flue Gas Desulfurization Bromide Discharges to U.S. Watersheds and Their Contributions To Drinking Water Sources, 53 Envt'l Sci. & Tech. 213, 223 (2019), DCN SE08117, Docket ID No. EPA-HQ-OW-2009-0819-7888.

similar or greater challenges to drinking water treatment and, therefore, greater risk to human health.

#### c. Bromide Limits Based on Product Substitution

As discussed above, because bromide is naturally present in coal, eliminating bromide as an additive or switching coal type is not an effective substitute for enforceable bromide limits in power plant FGD discharges. Under this option as described by EPA, a bromide limit based on product substitution would only account for the incremental "difference in concentrations naturally occurring in coal as opposed to levels of found in refined coal or from other halogen applications."[271] As EPA's recent analysis of bromide concentrations in untreated FGD wastewater revealed, coal plants that do not burn refined coal or use bromide as an additive have average bromide concentrations of 59.1 mg/L, which are well above estimated average background levels in fresh surface waters.[272] As discussed in an earlier section of these comments, a recent study estimated that a 0.05 mg/L increase in raw water bromide concentrations could result in a lifetime excess bladder cancer risk of up to one in 1,000.[273] Instead of developing a numeric limit based on product substitution, EPA should require a limit on bromide concentrations in FGD wastewater and, indeed, should prohibit bromide discharges in FGD wastewater, given that the truly Best Available Technology, membrane filtration, would eliminate bromide entirely, such as under proposed Option 4 (i.e., membranes at BAT for FGD wastewater).

### 3. *Absent Strict Standards to Control Bromide Discharges, Human Health Will Continue to Be at Risk and Drinking Water Systems Will Continue to Face Increasing Costs and Treatment Challenges*

As documented in the record, described in the Proposed EA and Proposed BCA and discussed above, drinking water systems in different regions of the country are being impacted by coal plant bromide discharges. Even when drinking water systems are able to adjust treatment to ensure regulated DBPs do not exceed the MCL, different DBP treatment options come with their own human health risks and treatment challenges. Consequently, EPA should require upstream power plants to control their bromide discharges. As discussed in an earlier section of these comments, there is no "safe level" for some brominated DBPs, so any reduction of DBP concentrations below the MCL will benefit human health.

By failing to require bromide limits in FGD wastewater, EPA continues to shift the burden from coal plants polluting upstream onto downstream drinking water utilities and their customers. A more equitable approach to this problem would be to control this pollution at its source – in upstream bromide discharges – rather than forcing drinking water systems to invest in complicated treatment options that could continue to put public health at risk. By not requiring coal plants to limit their own bromide discharges, EPA is failing to meaningfully act on vital

[271] 84 Fed. Reg. at 64,643.
[272] ERG, Mass Balance Approach to Estimating Bromide Loadings from Steam Electric Power Plants – DCN SE07260, Docket ID. No. EPA-HQ-OW-2009-0819-8242 (Oct. 2019).
[273] S. Regli et al. (2015).

information available in its own rulemaking record. Moreover, the same treatment technologies that would more effectively address bromide pollution in FGD wastewater discharges – in particular: membrane technology or its equivalent – would also similarly eliminate other pollutants in the discharge stream, creating substantial additional public health benefits that the 2019 Proposal foregoes by not requiring the best-performing technologies as BAT.[274]

## X. EPA HAS NOT JUSTIFIED ANY NEW SUBCATEGORIES FOR THE INDUSTRY.

### A. EPA's Authority to Create Industry Subcategories Is Constrained by the Clean Water Act.

EPA has limited authority to create industry subcategories when promulgating industry-wide ELGs. Because EPA would exceed that authority by creating the three new subcategories that it has proposed in the rule, EPA must eliminate those subcategories from the final rule.

The Clean Water Act requires EPA to determine the best available technology (BAT) for controlling pollution from "categories or classes" of industries.[275] Although the Act does not explicitly authorize EPA's creation of industry *sub*categories, courts have upheld EPA's decision to do so when based on consideration of the same statutory factors that EPA must consider in determining BAT.[276] Those factors are the "age of equipment and facilities involved, the process employed, the engineering aspects of the application of various types of control techniques, process changes, the cost of achieving such effluent reduction, non-water quality environmental impact (including energy requirements), and such other factors as the Administrator deems appropriate."[277] In determining BAT for a category or subcategory of industry dischargers, EPA must consider *all* of these factors; EPA "is not free to ignore any individual factor entirely."[278]

EPA is not required to create subcategories for groups of plants unless "they are so fundamentally different from other plants" in the same industry that they cannot achieve the same effluent limitations.[279] As the Court of Appeals for the Fifth Circuit has explained, EPA's "task is to establish numerical standards limiting effluent pollution;" "[i]f plants can meet the same limitation, they need not be subcategorized simply because they are different."[280] This presumption against subcategorization is consistent with the Clean Water Act's emphasis on uniformity.[281]

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[274] *See* Section XIII - Benefits.
[275] 33 U.S.C. § 1314(b)(2).
[276] *See, e.g., Chem. Mfrs. Ass'n v. Nat. Res. Def. Council, Inc.*, 470 U.S. 116, 130-31 (1985); *Chem. Mfrs. Ass'n v. EPA*, 870 F.2d 177, 214-15 (5th Cir. 1989).
[277] 33 U.S.C. § 1314(b)(2)(B).
[278] *Tex. Oil & Gas Ass'n v. EPA*, 161 F.3d 923, 934 (5th Cir. 1998).
[279] *Chem. Mfrs. Ass'n v. EPA*, 870 F.2d at 214-15.
[280] *Id.* (internal quotations omitted).
[281] *See E. I. du Pont de Nemours & Co. v. Train*, 430 U.S. 112, 133-36 (1977) (holding that Section 301 of the Act authorizes EPA to achieve the "statutory goal" of setting "uniform" effluent limitations for *categories* of plants rather than plant-by-plant limitations); *see also Nat. Res. Def. Council, Inc. v. Train*,

EPA also cannot create industry subcategories for plants based solely on their disproportionate compliance costs. It is well-established that "[w]ith respect to the overall impact of the [Act], Congress clearly contemplated that cleaning up the nation's waters might necessitate the closing of some marginal plants."[282] As the Court of Appeals for the D.C. Circuit has explained:

> [T]he legislative intent [of the Act] is as clear as the result is harsh. Most prominently, the Act's supporters in both Houses acknowledged and accepted the possibility that its 1977 requirements[283] might cause individual plants to go out of business . . . They self-consciously made the legislative determination that the health and safety gains that achievement of the Act's aspirations would bring to future generations will in some cases outweigh the economic dislocation it causes to the present generation.[284]

The Fifth Circuit similarly emphasized Congressional intent in upholding EPA's decision *not* to subcategorize a group of plants based on cost despite the fact that the effluent limitations would "have a serious economic impact" on those plants.[285] In so doing, the Court explained that "Congress clearly understood that achieving the CWA's goal of eliminating all discharges would cause 'some disruption in our economy,' including plant closures and job losses," and therefore subcategorizing plants based on disproportionate compliance costs was not appropriate.

EPA would contravene the Clean Water Act's purpose if it created subcategories of plants with less stringent pollution-control requirements based solely on those plants' compliance costs. As courts repeatedly have explained, cost "is not a paramount consideration" in determining pollution control requirements.[286] Rather, EPA must select the best available

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510 F.2d 692, 709-10 (D.C. Cir. 1974) (explaining that Congress intended ELG requirements to "safeguard against industrial pressures by establishing a uniform 'minimal level of control imposed on all sources within a category or class'").

[282] *Am. Iron & Steel Inst. v. EPA*, 526 F.2d 1027, 1051-52 (3d Cir. 1975).

[283] Although this quotation refers to the 1977 BPT requirements, Congressional intent and case law make clear that EPA owes even less consideration to costs in setting BAT limitations than BPT limitations. *See, e.g., Am. Iron & Steel Inst.*, 526 F.2d at 1051 ("It is immediately apparent that Congress contemplated that the Administrator should give greater consideration to the cost of compliance when defining 1977 'BPCTCA' technology levels than he should when defining the 1983 'BATEA' levels."); *Chem. Mfrs. Ass'n v. EPA*, 870 F.2d at 250 ("Both Congress and the Supreme Court have made clear that in setting BAT, the EPA is not required to compare the costs against the benefits of pollution reduction in the same manner as the EPA is required to do in setting BPT standards.").

[284] *Weyerhaeuser Co. v. Costle*, 590 F.2d 1011, 1036-37 (D.C. Cir. 1978).

[285] *Chem. Mfrs. Ass'n v. EPA*, 870 F.2d at 251.

[286] *BASF Wyandotte Corp. v. Costle*, 598 F.2d 637, 656 (1st Cir. 1979); *see also Am. Iron & Steel Inst.*, 526 F.2d at 1051 ("[I]t is clear that . . . the cost of compliance was not a factor to be given primary importance."); *Weyerhaeuser Co.*, 590 F.2d at 1025 (explaining that Congress's commitment to cleaning up the nation's waters was illustrated "by the drafters' realization that enforcement of the Act would probably shut down some plants around the nation"); *Chem. Mfrs. Ass'n v. EPA*, 870 F.2d at 250 ("Because standards based on BAT, like BAT itself, reflect the intention of Congress to push industries

pollution control technology that represents "a commitment of the maximum resources economically possible to the ultimate goal of eliminating all polluting discharges."[287] In making this selection, EPA is precluded from weighing pollution-reduction benefits against costs and instead must prioritize protecting the nation's waters over protecting plants' bottom lines. EPA would flip the Act on its head and violate Congressional intent if it created industry subcategories as a means of keeping dirty and marginal plants online. Carving out a subcategory for these worst-performing plants would run directly counter to the Act's requirement that BAT "be based on the single-best performing plant in an industrial field," which is to act "as a beacon to show what is possible" for the rest of the industry.[288]

Finally, EPA cannot create subcategories unless those subcategorization decisions are supported by the rulemaking record in accordance with the Administrative Procedure Act. EPA's decision to create a subcategory is unlawful if its explanation for that decision "runs counter to the evidence before [it]" or lacks factual support in the record.[289]

A review of past ELGs reveals that, to date, EPA has created subcategories based primarily on plants' fixed characteristics and has rejected subcategories based on cost. Among the 58 ELG industry categories, EPA most frequently created subcategories based on the fixed characteristics of plants' raw material used, product type, or manufacturing process.[290] EPA rejected costs as a basis for subcategorization in several industries due in part to the variability of compliance costs.[291] EPA also frequently concluded that subcategories must relate to a facility's

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toward the goal of eliminating the discharge of pollutants as quickly as possible, this goal is factored into determinations of the reasonableness of the costs associated with the regulation.").

[287] *Sw. Elec. Power Co. v. EPA*, 920 F.3d 999, 1030 (5th Cir. 2019) (quoting *EPA v. Nat'l Crushed Stone Ass'n*, 449 U.S. 64, 74 (1980)).

[288] *Id.* at 1018 (quoting *Chem. Mfrs. Ass'n v. EPA*, 870 F.2d at 226 and *Kennecott v. EPA*, 780 F.2d 445 (4th Cir. 1985)) (internal quotations omitted).

[289] *Motor Vehicle Mfrs. Ass'n of U.S., Inc. v. State Farm Mut. Auto. Ins. Co.*, 463 U.S. 29, 43 (1983); *see also Sw. Elec. Power Co.*, 920 F.3d at 1022 (holding that EPA's BAT selection for legacy wastewater was "wanting in light of the agency record" and therefore "arbitrary and capricious"); *Tex. Oil & Gas Ass'n*, 161 F.3d at 934 (agency action must "bear[] a rational relationship to the statutory purposes" and must be supported by "substantial evidence in the record").

[290] *See, e.g.*, Development Document for Effluent Limitations Guidelines and Standards for the Nonferrous Metals Manufacturing Point Source Category, Vol. 1, 34 (May 1989) (10 subcategories based on raw materials) (attached); Development Document for Effluent Limitations Guidelines and Standards for the Electrical and Electronic Components Point Source Category (Phase I), 3-1 (Mar. 1983) (21 subcategories based on product type) (attached); Development Document for Final Effluent Limitations Guidelines and Standards for the Iron and Steel Manufacturing Point Source Category, 6-1 (Apr. 2002) (13 subcategories based on manufacturing process) (attached).

[291] *See, e.g.*, Development Document for Effluent Limitations Guidelines and Standards for the Centralized Waste Treatment Industry, Vol. I, 5-2 (Aug. 2000) ("EPA did not use treatment costs as a basis for subcategorization because costs will vary and are dependent on the following wastestream variables: flow rates, wastewater quality, and pollutant loadings.") (attached); Development Document for Effluent Limitations Guidelines and Standards for the Inorganic Chemicals Manufacturing Point Source Category, 36 (June 1982) ("[T]he cost of treatment will fluctuate because of variations in quality, loading and flow rates and subcategorization on the basis of treatment cost is not recommended.") (attached); Development Document for Effluent Limitations Guidelines and Pretreatment Standards, and New Source

wastewater characteristics and therefore subcategories based on costs are inappropriate because costs have no effect on such characteristics.[292] Upon review of past ELGs, commenters found no instances in which EPA created industry subcategories based exclusively on cost.

In the 2019 Proposal, EPA has proposed creating three new subcategories that would be subject to less stringent pollution control requirements than the rest of the industry. Those subcategories would apply to high flow facilities, low utilization boilers, and boilers retiring by 2028.[293] As explained in detail below, creation of each of these subcategories would exceed EPA's authority under the Clean Water Act and Administrative Procedure Act because they are based primarily on plants' compliance costs or lack sufficient support in the record.[294] EPA therefore must eliminate these three subcategories from the final rule.

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Performance Standards for the Pesticide Chemicals Manufacturing Point Source Category, 4-7 (Sept. 1993) ("[T]he cost of treatment and the energy required will vary depending on flow rates, wastewater quality, and the amount and identity of pollutants in the wastewater. Moreover, alternative technologies could be selected by dischargers. Therefore, subcategorization based on treatment costs and energy requirements is not appropriate.") (attached); Development Document for Final Effluent Limitations Guidelines and Standards for the Pharmaceutical Manufacturing Point Source Category, 4-12 (July 1998) ("[T]he cost of treatment and the energy required will vary depending on flow rates and wastewater characteristics" and therefore "subcategorization based on treatment costs is not appropriate.") (attached); Final Development Document for Effluent Limitations Guidelines and Standards for the Transportation Equipment Cleaning Category, 5-15 (June 2000) ("Treatment costs vary significantly among facilities and are primarily dependent upon water pollution control technologies being used and on facility wastewater flow rates" and therefore "treatment costs alone are not considered an appropriate basis for subcategorization.") (attached); and Development Document for Final Effluent Limitations Guidelines and Standards for Commercial Hazardous Waste Combustors, 3-15 (June 2000) ("Treatment costs do not appear to be a basis for subcategorization because costs will vary and are dependent on the following wastestream variables: flow rates, waste quality, waste energy content, and pollutant loadings. Therefore, treatment costs were not used as a factor in determining subcategories.") (attached).

[292] *See, e.g.*, Development Document for Effluent Limitations Guidelines and Standards for Battery Manufacturing, Vol. I, 139 (Aug. 1984) ("The necessity for a subcategorization factor to relate to the raw wastewater characteristics of a plant automatically eliminates certain factors from consideration as potential bases for subdividing the category . . . treatment costs . . . have no effect on the raw wastewater generated in a plant.") (attached); Development Document for Effluent Limitations Guidelines and Standards for the Porcelain Enameling Point Source Category, 48 (Nov. 1982) (same) (attached); and Development Document for Effluent Limitations Guidelines and Standards for the Coil Coating Point Source Category, 36 (Nov. 1983) ("[T]reatment costs have no effect on the raw wastewater generated in a plant. The water pollution control technology employed at a plant and its cost are the result of a requirement to achieve a particular effluent level for a given raw wastewater load. It does not affect the raw wastewater characteristics, and thus does not impact subcategorization.") (attached).

[293] 84 Fed. Reg. at 64,622. EPA is also proposing to maintain the two subcategories for oil-fired boilers and small generating units of 50 MW or less.

[294] *See, e.g., id.* at 64,638 ("EPA is proposing to establish a new subcategory for facilities with high FGD flows based on the statutory factor of cost.").

### B. EPA's Proposed Subcategory for Boilers Retiring by 2028 Is Not Legally Permissible and Not Supported by Evidence.

EPA proposes to establish a subcategory for boilers that commit to retire by December 31, 2028.[295] Units falling into this subcategory would be subject to effluent limitations for both FGD wastewater and bottom ash transport water based on surface impoundments as the best available technology.[296] EPA asserts that this subcategory will prevent "premature closures" of units that might occur where units already scheduled to retire by 2028 would face pressure to retire earlier (e.g., by 2023) in order to avoid installing pollution control systems. According to EPA, these "premature" retirements could adversely affect reliability.

This proposed subcategory for boilers retiring by 2028 is supported by neither the law nor the evidence in the record. According to Commenters' analysis of EPA's data, 66 units discharging bottom ash transport water, FGD wastewater, or both would be exempt from meaningful pollution limits as a result of this subcategory.[297] These units would be allowed to discharge highly toxic wastewater for up to eight years longer than otherwise allowed. This subcategory amounts to a massive loophole in the BAT standards that fails to protect downstream communities or ensure an even playing field across the steam electric generating industry. As discussed in Section X.C – Retirement Subcategory Enforceability, the subcategory is also unenforceable and therefore prone to gaming by facilities seeking to skirt reasonable clean water protections.

#### 1. *The Clean Water Act Does Not Permit EPA to Establish a Subcategory Solely to Prevent Facility Closure*

EPA asserts that in establishing this subcategory, it considered the statutory factors of "cost, the age of the equipment and facilities involved, non-water quality environmental impacts (including energy requirements), and other factors as the Administrator deems appropriate."[298] Yet EPA gives mere lip service to the breadth of these statutory factors. EPA's sole reason for establishing this subcategory is cost, and the possible impact of those costs on continued facility operation. EPA asserts that units with plans to retire by 2028 face disproportionately high costs of compliance due to the shorter period of time in which those units could recover the capital costs of measures to meet the ELGs for FGD and bottom ash wastewater. This could lead to "premature closure" of those units, prior to the ELG compliance date, in order to avoid incurring those costs.

To begin with, EPA's assertion that the closure of certain units before their currently scheduled retirement date is "premature" conveys an inappropriate and misinformed judgment about when such units *should* retire. Generation units should retire when, after factoring in the costs of compliance with environmental regulations mandated by statute, they are uneconomical to operate compared to other available sources of generation. There is nothing "premature" about the retirements in question—prior to the 2015 ELG Rule, EPA delayed updates to the ELGs for

[295] *Id.* at 64,640.
[296] *Id.*
[297] Attachment: Units in 2028 Subcategory (attached).
[298] 84 Fed. Reg. at 64,640.

decades, and plants that cannot afford to invest in modern and affordable pollution control technologies are retiring at the time that they should, or perhaps even later than appropriate. Moreover, the average age of the units in this subcategory is over 54 years, which is close to the maximum lifetime of coal units; retirement of these units is in no way premature.

Avoiding premature closure of units is not a valid basis for establishing a subcategory. As explained in Section II – Legal Background, "Congress clearly contemplated that cleaning up the nation's waters might necessitate the closing of some marginal plants."[299] Indeed, it would contravene the Clean Water Act's purpose to subcategorize plants solely to prevent those plants from closing due to increased costs. Doing so amounts to creating a special exemption for the worst-performing plants, rather than requiring such plants to instead meet the standard set by the best-performing plant in the industry. The Clean Water Act recognizes that some units may need to retire as a result of technology-based standards; this is an acknowledged and accepted impact of BAT standards which are intended to reflect "a commitment of the maximum resources economically possible to the ultimate goal of eliminating all pollutant discharges."[300] To set weaker BAT standards in order to avoid the closure of marginal plants undermines the statute's purpose.

Indeed, in the 2015 ELG Rule, EPA rejected requests that it establish a subcategory based on retirement dates.[301] EPA justified its rejection of these proposed subcategories on grounds that the final rule was "economically achievable for the industry as a whole" regardless of plants' expected retirement dates.[302]

> EPA did consider whether it would be appropriate to establish differentiated requirements for units or plants based on their remaining useful life, but concluded that even plants and units that are retiring or expected to retire are still capable of achieving the limitations and standards in the final rule. EPA's economic achievability analysis considered potential plant closures attributable to the final rule. As EPA's analysis makes clear, the final rule is affordable to the industry as a whole . . . .[303]

EPA's decision in 2015 was correct—subcategories should not be created solely for the purpose of ensuring that the rule is economically achievable for each idiosyncratic subset of units that EPA can conjure. The proper unit of analysis for the statutory factor of economically achievable is the "industry as a whole." EPA's reasons for departing from its 2015 rejection of a similar requested subcategory are unpersuasive and inconsistent with the fundamental purpose of the Clean Water Act.

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[299] *Am. Iron & Steel Inst. v. EPA*, 526 F.2d 1027, 1051-52 (3d Cir. 1975).
[300] *Sw. Elec. Power Co. v. EPA*, 920 F.3d 999, 1030 (5th Cir. 2019) (quoting *EPA v. Nat'l Crushed Stone Ass'n*, 449 U.S. 64, 74 (1980)).
[301] EPA, Response to Comments on ELG for Steam Electric Power Generating Point Source Category, at 3-579, 3-588, Docket ID No. EPA-HQ-OW-2009-0819-6469 (Sept. 2015).
[302] *Id.* at 3-548.
[303] *Id.* at 3-579.

It is well-established that cost "is not a paramount consideration" in determining pollution control requirements.[304] Even if EPA had studied the cost of compliance for these units, which, as described below, it did not, it is inappropriate for EPA to create a subcategory based solely on the higher costs that soon-to-retire units may face compared to their peers. While EPA may consider cost in delineating subcategories or making a BAT determination, balancing of costs against benefits is not permitted,[305] It is especially inappropriate to give such weight to cost where the costs do not reflect differences in the plant's product type, process type, raw material or wastewater characteristics, which are the most common bases on which EPA has previously established subcategories. EPA rejected a request for a similar subcategory in 2015 because its record "shows that neither age nor location of a plant or generating unit 'by itself in general affect the wastewater characteristics, the processes in place, or the ability to install and operate the treatment technologies evaluated as part of this rulemaking.'"[306]

Instead, the consideration of costs here reflects the plant's supposed ability to *recover* the costs. Ability to recover costs varies widely within the steam electric generating unit sector, based on differences in regulatory structures, energy prices in the different wholesale markets in which particular units may sell, and myriad other factors. EPA's proposal to subcategorize on this basis would open the Agency up to countless requests for subcategories based on differences in the profitability of various plants. Subcategorizing on the basis of ability to recover costs requires EPA to go far outside its core expertise, creates ample opportunities for gaming, and is contrary to the purpose of federal ELGs to establish some degree of uniformity in regulatory requirements across the industry. EPA offers no limiting principle for why certain plants' challenges with recovering costs justify a subcategory and not others. Nor does EPA articulate why it has drawn the line at 2028. The same rationale could be offered for extending this exemption to resources retiring through 2030 or 2035 – indeed, EPA seeks comment on whether it should extend the subcategory in this manner. This why consideration of the recovery of revenues – a complex economic matter that EPA cannot accurately model – is an inherently flawed basis on which to create a subcategory. The exception could easily swallow the rule, thus undermining the fundamental objective of the Clean Water Act to promote the rapid elimination of pollution from our nation's waters.

EPA has failed to fully consider the other statutory factors, besides cost, in proposing to establish this subcategory. EPA does not discuss the age of the units falling into this subcategory, and previously found that bottom ash conversions "have occurred on generating units that have

[304] *BASF Wyandotte Corp. v. Costle*, 598 F.2d 637, 656 (1st Cir. 1979); *see also Am. Iron & Steel Inst.*, 526 F.2d at 1051 ("[I]t is clear that . . . the cost of compliance was not a factor to be given primary importance."); *Weyerhaeuser Co.*, 590 F.2d 1011, 1025 (D.C. Cir. 1978) (explaining that Congress's commitment to cleaning up the nation's waters was illustrated "by the drafters' realization that enforcement of the Act would probably shut down some plants around the nation"); *Chem. Mfrs. Ass'n v. EPA*, 870 F.2d at 250 ("Because standards based on BAT, like BAT itself, reflect the intention of Congress to push industries toward the goal of eliminating the discharge of pollutants as quickly as possible, this goal is factored into determinations of the reasonableness of the costs associated with the regulation.").

[305] *Sw. Elec. Power Co. v. EPA*, 920 F.3d at 1007.

[306] EPA, Response to Comments on ELG for Steam Electric Power Generating Point Source Category, at 3-590, Docket ID No. EPA-HQ-OW-2009-0819-6469 (Sept. 2015).

been operating for over 50 years."[307] EPA does not evaluate whether the processes involved at units that would retire by 2028 differ in any relevant way from those not retiring. Nor does EPA evaluate all of the non-water quality environmental impacts of establishing this subcategory. In part this is because EPA failed to include these units in its baseline case for IPM modeling, which would have disclosed the air quality and climate impacts of continued operation of these units. EPA's failure to consider the broader suite of factors required by statute reflects an elevation of one factor in a manner that undermines the overall statutory standard that BAT be technology-forcing and reflects the maximum commitment of resources to the goal of eliminating pollution from the nation's waters.

2. *EPA has not established that units in this subcategory face unacceptable costs or will retire prematurely as a result*

**a. EPA did not examine the costs of compliance for units retiring by 2028**

While EPA rests its entire case for this subcategory on cost, it never evaluates the costs of compliance for the units it indicates would fall into this subcategory. As detailed in the report of Synapse Energy Economics,[308] EPA excluded these units from its baseline scenario for purposes of IPM modeling. EPA did not develop cost estimates for these units, or even survey the relevant water pollution control technologies in place at these units.

Lacking this critical data, EPA's sole argument that cost distinguishes the units in this subcategory is based on a generalized arithmetic exercise in which a theoretical $100 million capital cost for compliance is amortized over different numbers of years.[309] While this unsurprisingly illustrates that the annualized cost is higher when costs much be recovered over fewer years, it says nothing about the scale of the capital costs that would actually be incurred at these units. According to EPA's IPM inputs for the baseline scenario, unit-level capital costs average $11.9 million. Even a multiple unit plant would likely incur costs far less than the $100 million that EPA uses for illustrative purposes. As such, the annualized cost values presented in Table 2 of the August 2019 ERG memo are highly misleading. EPA's IPM inputs for the baseline scenario do contain cost estimates for some units that will retire by 2028, where those retirements were announced after EPA's compiled data for its IPM runs. For example, the two units at Entergy Arkansas' White Bluff plant would incur capital costs of just over $51,000 to comply with the requirements under the 2015 rule.[310] Even amortized over the eight years that these two units will presumably remain in operation, rather than the 20-year life otherwise expected, the annualized cost is a drop in the bucket for these two 850 MW units. This example reveals that units retiring by 2028 will not necessarily incur disproportionate or unachievable economic costs; retirement date is simply not a valid proxy for cost, or a reliable indicator of costs that might drive even earlier retirement.

[307] *Id.* at 3-591 (citing DCN SE05813), Docket ID No. EPA-HQ-OW-2009-0819-6206 (Nov. 3, 2015).
[308] *See* Section XIII – Benefits.
[309] *See* ERG, Steam Electric Effluent Guidelines Reconsideration – Evaluation of Potential Subcategorization Approaches, at 4 Tbl. 2, Docket ID No. EPA-HQ-OW-2009-0819-7911 (Aug. 29, 2019).
[310] IPM Cost Inputs for Baseline Scenario, Docket ID No. EPA-HQ-OW-2009-0819-8166.

EPA has not provided information about what pollution controls are already installed at the units in this subcategory, and what additional costs would be incurred. For example, one of the plants in this subcategory, according to EPA data, is the Allen Steam Station in North Carolina, all five units of which will retire by 2028. The Allen plant already has a chemical precipitation and biological treatment system for its FGD wastewater—the technology combination that EPA determined to be BAT in the 2015 rule. As such, the Allen plant would likely not incur material costs to comply with EPA's current proposed limits for FGD wastewater, which are based on a less sophisticated treatment technology. Yet, by falling into this subcategory, Allen may no longer be required to operate its already-installed treatment system (except as required to meet the water quality based effluent limits in its permit). Three units at the Pacificorp Dave Johnston plant would also fall into the retirement subcategory because they are scheduled to close in 2027 according to EPA data. Yet from 2017 to 2019, the operator spent nearly $15 million to convert the bottom ash systems for those three units to comply with the ELGs.[311] Thus, these units may already be close to compliance with the 2015 ELG Rule bottom ash transport water requirements.

Among the many reasons that EPA in 2015 rejected an exemption for plants that would retire soon was that the cost of meeting the standards might be relatively small and quick to implement at a particular plant, and that permitting authorities could readily determine this on a case-by-case basis. EPA gave several examples, such as a plant with a FGD wastewater stream that has the equipment in place for various forms of chemical precipitation, but is currently not adding the chemicals needed to achieve the pollutant reductions. EPA noted: "[i]t would not be appropriate to suggest that such a plant should not have to meet the effluent limitations for the several remaining years of operation, particularly given the very little (if any) additional capital cost and relatively little added O&M costs."[312] A second example EPA offered was "a plant that typically operates a dry fly ash handling system but occasionally operates a backup wet system during startup or when the dry system is undergoing maintenance or ash is not being marketed." EPA explained that "such a plant clearly has the capability to meet the zero discharge limitation." "Because such plant-specific considerations need to be taken into account, and because there are situations where it would be reasonable to require a plant to meet the BAT effluent limitations even if only for a relatively short period before it retires, EPA determined it was not appropriate to categorically exclude all plants from the BAT limitations merely because they may soon retire."[313]

Since EPA has not developed cost estimates for these units, it also did not do any analysis to assess how significant those costs may be compared to the unit's revenue, such as the screening analysis that EPA undertook for every other unit in the source category. This cost-to-revenue analysis and the subsequent IPM modeling are critical components of EPA's process for assessing whether a particular technology is economically achievable for the industry as a whole.

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[311] California Public Utility Commission, PacifiCorp California General Rate Case, Application 18-04-002; Exhibit Accompanying Direct Testimony of Shelly E. McCoy, at Page 8.5.24 (Project Description: "DJ UO ELG Install Bottom Ash Disposal System U1-3") (attached).
[312] EPA Response to Comments on ELG for Steam Electric Power Generating Point Source Category, at 3-548, Docket ID No. EPA-HQ-OW-2009-0819-6469 (Sept. 2015).
[313] *Id.*

Absent a unit-level cost assessment, and information on how those costs compared to the units' revenues, EPA has no basis to conclude that the technology it has selected as BAT for the rest of the category will not work for plants in this subcategory.

EPA also refers to concerns expressed by certain utilities regarded stranded assets for ELG treatment technologies installed relatively close to the end of the unit's useful life.[314] EPA does not cite to any particular examples of this, or other substantiation for these concerns. These concerns are relevant only for those units owned by vertically integrated utilities regulated by state public utility commissions, so even if these concerns were substantiated and legally relevant, they would not support subcategorizing merchant-owned coal units.[315] Vague concerns about plant owners being unable to obtain cost recovery are inadequate to defend the creation of a subcategory. Whether or not cost recovery will be allowed is a highly fact-dependent inquiry turning on, among other factors, the degree of the costs (unknown here due to EPA's failure to develop unit-level cost estimates, as noted above), the remaining useful life of the unit, and its economics relative to available alternative energy or capacity. It is not uncommon for regulators to determine that capital investments are justified during the last few years of a unit's planned useful life where the regulators conclude that better alternatives are not available. Indeed, even large expenditures may sometimes be approved. For example, in 2018, the Indiana Utility Regulatory Commission approved the Indiana Michigan Power Company's $274.2 million dollar expenditure to install selective catalytic reduction at Unit 2 of the Rockport plant, despite the company's lease interest in that plant terminating in 2022.[316] As evident above in the example of Pacificorp's expenditure on ELG compliance at the Dave Johnston plant, Pacificorp is clearly able to invest additional capital into these units despite their relatively short remaining useful life.

One recent case that commenters are aware of in which regulators denied recovery of ELG compliance costs reflects an extreme set of circumstances. The Commonwealth of Virginia State Corporation Commission denied recovery of costs for ELG compliance costs at two units at Dominion Energy Virginia's Chesterfield plant.[317] The Commission did so because at the time Dominion made the decision to retrofit the two units in question (mid-2015) and the utility was also undertaking analysis for an Integrated Resource Plan in which both of units were to be

[314] 84 Fed. Reg. at 64,640.
[315] According to our analysis, 14 of the 66 units in this subcategory are merchant. *See* Attachment: Units in 2028 Subcategory (attached).
[316] Indiana Utility Regulatory Commission Cause No 44871, Verified Petition of Indiana Michigan Power Company (I&M), an Indiana Corporation, for Approval of a Clean Energy Project and Qualified Pollution Control Property and for Issuance of Certificate of Public Convenience and Necessity for use of Clean Coal Technology; for Ongoing Review; for Approval of Accounting and Ratemaking, Including The Timely Recovery of Costs Incurred During Construction and Operation of Such Project, Order of the Commission issued Mar. 26, 2018 (attached).
[317] Commonwealth of Virginia State Corporation Commission, *Petition of Virginia Electric and Power Company For Approval of a Rate Adjustment Clause designated Rider E, for recovery of costs incurred to comply with state and federal environmental regulations pursuant to §56-585.1 A 5 e of the Code of Virginia*, Case No. PUR-2018-00195, Final Order issued Aug. 5, 2019, http://www.scc.virginia.gov/docketsearch/DOCS/4%243v01!.PDF (attached).

retired by 2020.[318] Consistent with this plan, operating staff for these units had also begun to avoid other major capital expenditures associated with life extension.[319] By the time the Commission was considering whether to allow costs, the units in question had already been placed on cold storage—an inactive reserve status.[320] Thus, the Commission concluded that the new equipment was not used and useful. This is a different situation from a plant that seeks to install treatment technology that will be used for multiple years.

EPA also did not evaluate the potential for units retiring by 2028 to lease treatment equipment to avoid significant capital expenditures. The record demonstrates that several vendors of FGD wastewater treatment technologies provide customers with the ability to lease equipment rather than purchasing it.[321] Other vendors may also be able to lease treatment systems to serve facilities that wish to avoid large capital costs; the record does not show that EPA has comprehensively assessed which treatment systems could be leased. The opportunity to lease equipment would largely eliminate the problems EPA has suggested regarding stranded costs and the need to recover capital costs over relatively short periods of time.

#### b. EPA's assertion that units in this subcategory might retire earlier if subject to the ELGs is baseless

Although EPA has not even developed costs or cost-to-revenue information for these units, it takes the next step to express concern that units in this subcategory might retire earlier than planned in order to avoid ELG compliance costs. EPA relies upon a crude survey in which unit owners self-reported the basis for retirements, and fewer than a third cited environmental regulations as one contributing factor.[322] From this, EPA concludes that "additional flexibility may help to avoid premature closures for some facilities and/or boilers."[323] As explained above, avoiding closures is not a valid objective for EPA to consider when establishing ELGs. Such closures are only "premature" if one ignores the Clean Water Act's mandates to develop BAT-based standards, which EPA has long failed to implement with respect to steam electric generating units. And of course, the "flexibility" to which EPA refers here is a euphemism for a full exemption from any requirements to reduce toxic water pollution from these facilities.

Even if avoiding retirement were a valid objective, EPA has not even shown that units in this subcategory would retire earlier than currently scheduled in order to avoid ELG costs. The fact that units have announced retirement dates after the "no later than" ELG compliance date suggests that those units have already factored ELG compliance costs into their decision about

[318] *Id.* at 6-8.
[319] *Id.* at 7-8.
[320] *Id.* at 6.
[321] *See* ERG, Memorandum from ERG to Steam Electric Rulemaking Record, Technologies for the Treatment of Flue Gas Desulfurization Wastewater – DCN SE07367 (Oct. 22, 2019), at M-2, Docket ID No. EPA-HQ-OW-2009-0819-8155 (Oct. 22, 2019) (notes potential to lease Purestream AVARA mechanical vapor recompression modules); ERG, Notes from Meeting with Pall Water, at 3, Docket ID No. EPA-HQ-OW-2009-0819-7613 (Aug. 9, 2019) (noting availability of mobile membrane systems for lease).
[322] 84 Fed. Reg. at 64,640.
[323] *Id.*

when to retire.[324] Presumably, if the ELG costs were going to be significant for those units, they would have already announced retirements before the "no later than" ELG compliance date.

The survey results upon which EPA relies show that environmental regulation compliance costs were far from the most significant contributing factor to retirements.[325] It is absurd for EPA to rely upon such self-interested and self-reported survey results when it has at its disposal, but has failed to use, far more sophisticated methods to assess whether imposing ELG compliance costs on units will cause earlier unit retirement. As noted above, EPA decided not to undertake updated IPM analysis that would have allowed the public to understand the retirement impacts requiring units in this subcategory to comply with ELGs based on a more stringent BAT.

However, EPA's 2015 assessment showed that the final rule option selected at that time would result in a net reduction of 843 MW in generating capacity as of the model year 2030.[326] This reflects less than 0.1% of total generating capacity in the United States, and only 0.3% of installed coal capacity.[327] In other words, EPA previously determined that the 2015 rule was unlikely to drive more than *de minimis* retirements. This evidence undermines EPA's case that units in this subcategory would accelerate their retirements in order to avoid ELG compliance costs, especially where EPA's preferred Option 2 would make the ELGs less stringent.

3. *Increasing the use of the CCR rule's alternative closure provision is not a valid basis to establish this subcategory*

EPA offers an additional justification for the 2028 subcategory – that it "would ensure that facilities could make better use of the CCR rule's alternative closure provision, by which an unlined surface impoundment could continue to receive waste and complete closure by 2028."[328] EPA fails to explain why it assumes that the alternative closure provision is generally: (1) available to units retiring by 2028, or (2) desirable to promote.

The alternative closure provision in the CCR rule is currently available only to facilities that can establish that disposal options are physically unavailable, not merely relatively expensive to access.[329] Although EPA has proposed to expand the availability of the alternative closure provision through the recently proposed Part A rule, this expansion is still subject to

[324] Those requirements have been well-known since September 2015, and in effect except for several months in 2017.
[325] 84 Fed. Reg. at 64,640 (74 out of 107 facilities did not cite environmental regulation as even one among several contributing causes).
[326] *Id.* at 64,643.
[327] U.S. Energy Information Administration, *Electricity explained*, https://www.eia.gov/energyexplained/electricity/electricity-in-the-us-generation-capacity-and-sales.php ("At the end of 2018, the United States had about 1,097,859 MW—or 1.1 billion kilowatts (kW)—of total utility-scale electricity generating capacity. . . "); *id.* (noting that coal comprised 22% of electricity generating capacity in 2018).
[328] 84 Fed. Reg. at 64,641.
[329] *See* 40 C.F.R. § 257.103(a), (b); *see also Util. Solid Waste Activities Grp. v. EPA*, 901 F.3d 414 (D.C. Cir. 2018) (confirming that costs are an impermissible factor under RCRA Subtitle D).

public comment and a final decision from EPA – and thus is far from assured. While the date upon which a facility ceases to receive waste is relevant to its eligibility for the alternative closure provision, EPA appears to be ignoring the current requirement that the operator of the CCR impoundment also show that safer disposal sites are physically unavailable.

Second, EPA's apparent intent to promote the use of the less-protective alternative closure provision is perverse, as it would undermine the CCR rule's protections against potential harm to health and the environment. Here, EPA seems to be encouraging more plants to take advantage of what was originally designed as a narrow exemption intended for plants where it would not have been physically possible for them to continue operating without an extension of the impoundment closure deadline. Indeed, it seems that rather than touting the increased use of the alternative closure provision as a result of this subcategory, EPA should be noting the negative non-water quality environmental impacts associated with creating this subcategory,[330] because increased use of alternative closure provision will increase risks of exposure to toxic pollutants in coal combustion residual wastes disposed of in unlined impoundments, including increased risk of groundwater contamination and catastrophic impoundment failures.

4. *Surface Impoundments are Not BAT for the Retirement Subcategory*

Even if it were appropriate for EPA to establish a subcategory for boilers that will retire by 2028, it must then determine the best available technology for that subcategory by applying the CWA Section 304(b)(1)(b) factors, and based on the best-performing plant for that subcategory as described in Section II - Legal Background. Subcategories are permissible to reflect real operational and physical differences among a source category, not merely to create an exemption from a technology-based standard for a broad swath of the industry.

But EPA has done just that by concluding that surface impoundments are BAT for boilers retiring by 2028.[331] As described in Section III - Southwestern Electric, the Fifth Circuit Court of Appeals decision in the *Southwestern Electric* case makes clear that surface impoundments cannot constitute BAT.[332] The record for this rule establishes that surface impoundments are ineffective at removing dissolved pollutants in the wastewater. EPA has made no findings to the contrary in the proposed rule. EPA instead deems surface impoundments to be BAT without any discussion of what treatment technologies are already in use among the plants in this subcategory, what the best-performing plant is able to achieve, or any of the other standard methods that EPA uses to implement its statutory duty.

EPA's conclusion seems to be that requiring facilities in this subcategory to spend a single dollar reducing toxic water pollution would be too much cost to bear, and therefore EPA will require nothing. Specifically, "EPA proposes to find that surface impoundments are the only technology that would not impose such disproportionate costs on this subcategory of boilers."[333] But EPA has not *even evaluated* what other technologies would cost for units in this subcategory; it has instead summarily determined that any technology, other than the most

[330] CWA § 304(b)(1)(B), 33 U.S.C. § 1314(b)(1)(B).
[331] 84 Fed. Reg. at 64,640.
[332] *Sw. Elec. Power Co. v. EPA*, 920 F.3d at 1003-04, 1007, 1015, 1017-19, 1025-26 (citing 80 Fed. Reg. at 67,840).
[333] *Id.*

primitive, imposes disproportionate costs. This does not constitute reasoned decision-making and demonstrates precisely the same flaws of lack of rigor, diligence, and statutory fealty that the Fifth Circuit found with EPA's 2015 determination that surface impoundments were BAT for legacy and leachate wastewater.

EPA asserts that it can skirt its prior finding that surface impoundments are an outdated, inefficient technology by simply citing cost concerns.[334] But the Clean Water Act does not permit EPA to rely upon cost as an overriding concern when establishing BAT.[335] And as demonstrated above, EPA has not shown that the units in this subcategory face unachievable costs.

Moreover, EPA could have, but did not, decline to establish BAT for this subcategory and leave the matter to the judgment of individual state or federal permitting authorities. EPA determined that doing so would be "problematic" because the "technologies a permitting authority would necessarily consider are the same systems that result in unacceptable disproportionate costs according to the EPA's analysis."[336] But EPA's record is devoid of analysis of the cost for units in this subcategory to install any of the possible treatment technologies that would be more effective than surface impoundments. For instance, EPA does not evaluate the costs of using chemical precipitation to reduce the pollutants in FGD wastewater, or the availability of leased treatment systems to minimize or eliminate the upfront capital costs. Without any such analysis, EPA has improperly determined that the costs are "unacceptable," and then takes the next step of depriving state or federal permitting authorities from making a more nuanced case-by-case determination.

By establishing a weak and unsupported BAT determination for the units in this subcategory, EPA presumes that a state permitting authority could not find it feasible for a particular plant to install additional technologies to reduce its water pollution for the years it remains in operation. But as EPA has previously explained, site-specific factors can significantly change this question of feasibility. It is therefore inappropriate for EPA to set BAT for this subcategory based on the weakest possible treatment system available. Even if EPA is unwilling to do the analysis on what reasonably modern treatment systems might present "acceptable" costs for these units, it should not deprive state or federal permitting authorities of the ability to do so.

### C. EPA's Subcategory for Boilers Retiring by 2028 is Not Practically Enforceable.

EPA is proposing a new subcategory for boilers with a "limited remaining useful life," which the agency defines as those boilers whose owners say that they intend to close them no

[334] 84 Fed. Reg. at 64,640 ("As mentioned above, the Fifth Circuit's decision in Southwestern Electric Power Company v. EPA left open the possibility that surface impoundments could be used as the basis for BAT effluent limitations, so long as the Agency identifies a statutory factor, such as cost, in its rationale for selecting surface impoundments.").
[335] *See* Section II - Legal Background; *Sw. Elec. Power Co.*, 920 F.3d at 1007.
[336] 84 Fed. Reg. at 64,639.

later than December 31, 2028.[337] Not only is this proposed subcategory unjustified and unlawful, as described in these comments, it is also not practically enforceable.

EPA's proposed subcategory for boilers retiring by 2028 does not include any provisions that would prevent power plant owners or operators from delaying or withdrawing their plans to retire by 2028. EPA is proposing that facilities seeking this subcategorization make the request as part of the permit renewal or re-opening, submit a one-time certification to the permitting authority stating the date of expected retirement, and provide a citation to any filing, such as an integrated resource plan, or other documentation in support of that date.[338] According to EPA, this requirement of citation to any filing or other documentation is meant to provide the permitting authority with further evidence that a boiler will actually cease the production of electricity by the indicated date.[339] However, EPA is not proposing any type of enforcement mechanism nor is it proposing any type of ongoing reporting or recordkeeping requirement that goes beyond this proposed one-time certification. In contrast, for the proposed subcategory for boilers with low utilization, EPA is proposing tiered limitations for facilities that exceed the two-year net generation requirements as measured per calendar year.[340] Under EPA's proposed implementation of the low utilization subcategory, if a facility reports it exceeded the two-year average net generation of 876,000 MWh for a unit and no longer qualifies for the subcategory, it would automatically have two years until it must comply with a second set of limitations for discharges of FGD wastewater and bottom ash transport water, which are the effluent limits established for units that are not subject to any of the proposed subcategories.[341] Additionally, in contrast to the proposed retirement subcategory, EPA is proposing that all facilities with units subject to the low utilization subcategory be required to annually recertify that the units meet the requirements of the subcategory.

1. *EPA Must Make Retirement Commitments for the Proposed Subcategory Federally Enforceable.*

Although we strongly oppose EPA's new proposed subcategories, if EPA finalizes a subcategory for boilers whose owners say they intend to retire them by 2028, the agency must make the retirement commitments federally enforceable by including mechanisms that would prevent power plant owners or operators from delaying or withdrawing retirement plans that would no longer qualify the boilers for the subcategory.[342] The Clean Water Act requires effluent limitations established in ELGs to be federally enforceable.[343] Therefore, if a unit no longer qualifies for the subcategory, EPA must include provisions that would automatically subject the unit to the effluent limits established for units that are not subject to any subcategory, immediately. If a facility includes a retirement subcategorization request as part of a permit

[337] 84 Fed. Reg. at 64,640.
[338] *Id.* at 64,667.
[339] *Id.*
[340] *Id.* at 64,666.
[341] *Id.*
[342] The Clean Water Act authorizes EPA to prescribe conditions of NPDES permits "as the Administrator determines are necessary to carry out the provisions of this chapter." 33 U.S.C. § 1342(a)(1)-(2).
[343] Effluent limitations must be based on ELGs promulgated by EPA. *See id.* § 1311(b). Effluent limitations become federally enforceable at a particular facility when they are incorporated into a NPDES permit. *See id.* §§ 1342, 1319.

renewal or re-opening, the permitting authority should include tiered limitations (like EPA is proposing for the low utilization subcategory) in the facility's permit. In order to ensure that boilers no longer planning to retire by 2028 are immediately subject to the second set of limitations, EPA should require that plant owners notify the permitting authority that it no longer intends to retire the unit by 2028 as soon as they publicly report this information in any forum, such as to the public utility commission or investors. The permit should also include a provision that if such information is not reported but the unit continues to operate beyond December 31, 2028, the unit is immediately prohibited from all discharges of FGD and/or bottom ash wastewater, as applicable.

These requirements would not only make the facility's retirement commitment federally enforceable, they would also be in line with other EPA regulations that established exemptions or different numeric limits based on retirement or closure dates.

**a. Other EPA regulations require standards or limitations based on retirement or closure dates to be federally enforceable.**

i. The Boiler MACT Rule

In the Boiler MACT Rule,[344] EPA established federally enforceable numeric limitations for subcategories of industrial boilers that emit hazardous air pollutants. The Clean Air Act's hazardous air pollutant provisions are similar to the ELG provisions of the Clean Water Act. Under Section 112 of the Clean Air Act, EPA must set a national emission standard for each category or subcategory of "major sources" of "hazardous air pollutant" emissions.[345] In 1990, Congress amended Section 112 to require technology-based standards—or "maximum achievable control technology"—based on a two-step process. First, EPA identifies a MACT floor for each pollutant and source category – that is, "the average emission limitation achieved by the best performing 12 percent of the existing sources" or, if there are fewer than 30 sources, "the average emission limitation achieved by the best performing 5 sources."[346] In the second step, EPA selects as its technology-based standard either the applicable MACT floor identified in the first stage or a more stringent, beyond-the-floor limitation if such a standard is "achievable" in light of costs and other factors and methods.[347] EPA considers, among other factors, whether emissions can be reduced through "process changes," treatment, design or work practices, or other methods of control; the cost of achieving such emission reduction; any non-air quality health and environmental impacts; and energy requirements.[348]

[344] Codified at 40 C.F.R. Part 63, Subpart DDDDD.
[345] 42 U.S.C. § 7412(d)(1).
[346] *Id.* § 7412(d)(3).
[347] *Id.* § 7412(d)(2).
[348] *Id.*; *see generally Cement Kiln Recycling Coal. v. EPA*, 255 F.3d 855, 857-58 (D.C. Cir. 2001) (per curiam) (explaining two-step MACT process for hazardous waste combustors); *Nat'l Lime Ass'n v. EPA*, 233 F.3d 625, 628–29 (D.C. Cir. 2000) (explaining two-step MACT process for Portland cement manufacturing plants); *Nat. Res. Def. Council v. EPA*, 489 F.3d 1250, 1254 (D.C. Cir. 2007) (boiler MACT litigation).

Based on those statutory factors, EPA established numeric limitations for several categories and subcategories of industrial boilers that emit hazardous air pollutants, including a subcategory for "[l]imited-use boilers and process heaters," which are any boilers or process heaters that burn "any amount of solid, liquid, or gaseous fuels *and has a federally enforceable* annual capacity factor of no more than 10 percent."[349] Limited use boilers are exempt from the numeric hazardous air pollutant standards applicable to other boilers.[350] In order to qualify for the limited use subcategory, the source must accept a "federally enforceable permit that limits the annual capacity factor to less than or equal to 10 percent."[351]

ii. The ACE Rule

Although the Affordable Clean Energy (ACE) Rule does not contain a per se exemption for retiring sources, it does allow states to "take into consideration factors, such as the remaining useful life of such source," in establishing the best system of emission reduction.[352] EPA included that provision, in part, because Section 111(d) of the Clean Air Act explicitly requires EPA to "permit the State in applying a standard of performance to any particular source under a plan submitted under this paragraph to take into consideration, *among other factors, the remaining useful life of the existing source to which such standard applies*."[353] The visibility provisions of the Clean Air Act include the same "remaining useful life" consideration as a factor in evaluating "best available retrofit technology" or additional pollution reductions necessary to make "reasonable progress" toward natural visibility.[354] Under both regulatory regimes, if a state opts not to require emission reductions because of a reduced operating capacity or retirement commitment, the state must include any such retirement or reduced-capacity commitment in a federally enforceable permit or a state implementation plan.[355] Similar to the Clean Air Act's requirements that all aspects of state implementation plans be federally enforceable, the Clean Water Act requires effluent limitations established in ELGs to be federally enforceable via NPDES permits.[356]

[349] 40 C.F.R. § 63.7575 (emphasis added).
[350] *Id.* § 63.7500.
[351] *Id.* § 63.7555(a)(3); *see also* 78 Fed. Reg. 7138 (Jan. 31, 2013).
[352] 40 C.F.R. § 60.24a(e).
[353] 42 U.S.C. § 7411(d) (emphasis added).
[354] *Id.* § 7491(g)(1)-(2).
[355] 40 C.F.R. Part 51, App'x. Y § IV(D)(4)(d)(1) (BART Guidelines: where a utility projects that future operating parameters (e.g., limited hours of operation or capacity utilization) "will differ from past practice, and if this projection has a deciding effect in the BART determination," then the state must" make those operating parameters or assumptions into enforceable limitations"); *id.* § IV(D)(4)(k) (BART Guidelines requiring a federally-enforceable provision assuring the date on which a source permanently stops operations); 84 Fed. Reg. 32,520, 32,558 (July 8, 2019) ("It is important to note that (as with all aspects of the state plan) the standard of performance and associated retirement date will be federally enforceable upon approval by the EPA.").
[356] *See* 33 U.S.C. §§ 1311(b), 1342, 1319.

iii. The CCR Rule

The Coal Combustion Residuals (CCR) Rule also contains an exemption for boilers that cease operations by a date certain, which is based on specific statutory language in the Resource Conservation and Recovery Act (RCRA).[357] Similar to the Clean Air Act rules above, the CCR Rule requires these retirement commitments to be federally enforceable. Under the CCR Rule, a landfill or impoundment may continue to receive coal ash "if the owner or operator certifies that the facility will cease operation of the coal-fired boilers within" certain timeframes (2021, 2023, or 2028) depending on the size and type of the CCR unit.[358] To qualify for the exemption, the operator must also (i) document that no alternative disposal capacity is available; (ii) remain in compliance with all other requirements of the Rule, including the requirement to conduct any necessary corrective action; and (iii) prepare an annual progress report documenting the continued lack of alternative capacity and the progress toward the closure of the coal-fired boiler.[359] The operator must also complete the required, federally enforceable notice and documentation requirements by a date certain.[360]

**b. EPA should not finalize subcategories that do not have federally enforceable limitations.**

EPA is soliciting comments on whether this subcategory would incentivize coal-fired boilers that were not otherwise planning to retire by 2028 to accelerate their retirement to 2028.[361] EPA's request for comment on this potential incentive underscores the need for this proposed subcategory to be enforceable. If some plant owners may only be choosing to retire certain units by 2028 to take advantage of the weaker limits for the subcategory, it is reasonable to assume that those plant owners would be at risk of delaying or withdrawing their retirement decisions if the rule does not require a firm retirement commitment in order to qualify for the subcategory. We commend EPA for drawing a distinction between involuntary and voluntary withdrawals[362] and recommend that EPA maintain both this distinction and the agency's use of the savings clause if the retirement subcategory is finalized. However, if the retirement subcategory is finalized, EPA must go further and require that all retirement commitments, as

[357] EPA interprets RCRA's "integration" provision, 42 U.S.C. § 6905, to allow it to "reduce or eliminate RCRA requirements" so long as the agency demonstrates that the integration meets RCRA's protectiveness mandate. *See* 80 Fed. Reg. 21,302, 21,424 (Apr. 17, 2015) (citing *Chem. Waste Mgmt. v. EPA*, 976 F.2d 2, 23, 25 (D.C. Cir. 1992) (approving EPA rule that allowed temporary impoundment of diluted, previously-hazardous waste). In the final CCR Rule, EPA explained that it believed it could relax CCR requirements where other compliance with "other EPA statutes which may lead an owner or operator to close a coal-fired power plant." 80 Fed. Reg. at 21,424. The Clean Water Act does not include a similar provision, which suggests that CWA requirements cannot be reduced or eliminated based on retirement plans made in response to other statutes.
[358] 40 C.F.R. § 257.103(b).
[359] *Id.*
[360] *Id.* § 257.103(d) (citing 40 C.F.R. § 257.102(g), 257.105(i)); *see also* 80 Fed. Reg. at 21,309 ("states or citizens can enforce the requirements of this rule under RCRA's citizen suit authority.").
[361] 84 Fed. Reg. at 64,641.
[362] *Id.* at 64,666.

they relate to subcategory qualification, be federally enforceable and included in the operator's NPDES permit.

2. *EPA should revise the proposed rule's implementation requirements for the retirement subcategory.*

Furthermore, similar to the requirements for the proposed low utilization subcategory, EPA should include a reporting requirement that plant owners "annually recertify that the boiler continues to meet the requirements of this subcategory" [363] rather than the one-time certification EPA is proposing. As a part of the annual recertification process, EPA should require that plant owners seeking the retirement subcategorization identify the timeline of steps they believe to be necessary to finalize retirement of a unit and provide updates on the retirement process during each recertification. According to EPA, the agency has set the retirement date for this subcategorization as 2028 in order to allow plant owners and operators enough time to take the steps EPA believes are necessary to complete deactivation, such as modifications to integrated resource plans, requests for approval of any necessary replacement generation, and evaluation of the need for any transmission system upgrades needed to allow deactivation.[364] If the agency and plant operators identify these steps and a timeline that they deem appropriate, EPA should require that operators document the progress made toward retirement of the units in their annual recertification in order for the units to maintain eligibility for the subcategory. Additionally, the agency should also require that plant operators have already submitted a deactivation request to the system operator or other relevant authority by the time they seek this subcategorization. The filings or other documentation that EPA cites are not likely to be binding or enforceable, and the information included in such documentation may be altered in future filings. By requiring that plant operators submit a deactivation request and annually recertify that their units meet the requirements of the subcategory, EPA will be requiring operators to take the necessary steps to ensure there will be no unforeseen or unexpected causes for delayed or withdrawn retirements.

In summary, EPA should not finalize a subcategory for boilers retiring by 2028 because the proposed provisions are unenforceable and, therefore, invalid under the Clean Water Act. If EPA intends to finalize the proposed retirement subcategory, the agency must ensure that the retirement commitments are federally enforceable by requiring that tiered limitations, which would be applied immediately if a unit no longer meets the requirements of the subcategory, be included in the plant's NPDES permit. Furthermore, EPA should require that plant operators have already submitted a deactivation request by the time they make a subcategory request and annually recertify that their units meet the requirements of the subcategory while also documenting the progress made towards retirement of the units.

[363] *Id.* at 64,667.
[364] *See* Docket ID Nos. EPA-HQ-OW-2009-0819-8274 & 8275.

### D. The Proposed Subcategory for "Low Utilization" Units is Unjustified.

#### 1. *EPA lacks the legal authority to create a subcategory based exclusively on compliance costs.*

To the extent that EPA has any authority to create subcategories, it must consider all of the statutory BAT factors and cannot base its decision on any one factor in isolation.[365] Yet, the record shows that EPA impermissibly based its decision to create the "low utilization" subcategory exclusively on cost.

Although EPA claims that the new low-utilization subcategory was created "based on the statutory factors of cost and non-water quality environmental impacts," the sum total of EPA's evaluation of "non-water quality environmental impacts" is as follows: "[T]he EPA considered non-water quality environmental impacts (including energy requirements). Low utilization boilers tend to operate only during peak loading. Thus, their continued operation is useful, if not necessary, for ensuring electricity reliability in the near term."[366]

EPA provides nothing more than two sentences of speculation, unsupported by any data. Nothing in the record suggests that the units in the proposed low-utilization subcategory are necessary for ensuring reliability. In fact, many of them are not peaking units at all: As discussed in more detail below in Section X.E – Reliability, many of the units in the proposed subcategory run at relatively high utilization rates, and many smaller units could run at 100% capacity and still qualify for the subcategory.

In addition, a cursory review of the record fails to show any meaningful difference in unit retirements between Option 2 (which includes the low-utilization subcategory) and Option 4 (which does not). As EPA acknowledges, the fate of the coal industry is largely being driven by factors other than environmental regulations.[367] EPA estimates that national coal capacity under the baseline scenario will decline by 32 GW, or 18%, between 2021 and 2050.[368] The changes associated with Options 2 and 4, by contrast, are minimal – by 2050, national coal capacity under either option is projected to differ from capacity under baseline by less than 1 GW.[369] In other words, the choice of regulatory option has virtually no impact on trends in coal capacity, which are being driven by other factors. The differences between Options 2 and 4 are even smaller. In fact, EPA projects that coal capacity under Option 4 (without the low-utilization subcategory) will be higher than under Option 2.[370] There is simply no basis in the record for EPA's off-hand speculation about reliability.

Moreover, there are many "non-water quality environmental impacts" that EPA simply failed to consider, most notably the effects of carbon emissions. If EPA truly believes that the

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[365] *See* Section X.A - Legal Authority for Subcategorization; *Chem Mfrs. Ass'n v. Nat. Res. Def. Council, Inc.*, 470 U.S. 116, 130-31 (1985); *Chem. Mfrs. Ass'n v. EPA*, 870 F.2d 177, 214-15 (5th Cir. 1989); *Tex. Oil & Gas Ass'n v. EPA*, 161 F.3d 923, 934 (5th Cir. 1998).
[366] 84 Fed. Reg. at 64,639.
[367] Proposed RIA at 2-9 to 2-10.
[368] Proposed RIA at 5-6, Tbl. 5-2.
[369] Proposed RIA at 5-7, Tbl. 5-3.
[370] *Id.*

ELG rule would force some of the so-called low-utilization units to retire, then the Agency should balance any purported reliability impacts caused by those retirements (to be clear, the record shows no such impacts – see Section X.E – Reliability) against the corresponding reductions in carbon emissions. Yet, EPA is silent about any "non-water quality environmental impacts" other than electricity reliability.

EPA's speculation about reliability contradicts the record and is unsupported by any evidence, so the Agency cannot claim to have considered electricity reliability in any meaningful way. And EPA did not even mention any other "non-water quality environmental impacts." In sum, the Agency did not actually consider the "non-water quality environmental impacts" factor at all.

Nor did EPA consider any of the other statutory factors. EPA makes no mention of whether the "low-utilization" units differ in terms of the "age of equipment and facilities involved," the "process employed," the "engineering aspects . . . of control techniques," or any "process changes."[371] Indeed, the available evidence in the record indicates that the "low-utilization" units are similar to the rest of the industry with respect to these factors, which further undermines EPA's arbitrary subcategorization. The CWA requires that "similar point sources with similar characteristics . . . meet similar effluent limitations."[372] EPA has not shown, through an evaluation of all statutory BAT factors, that the so-called "low-utilization" plants are dissimilar. It is very unlikely that EPA could make such a showing even if it tried. Because these units are in fact "similar point sources" and must "meet similar effluent limitations," the proposed subcategory is unlawful.

2. *'Disparate costs' are not a legitimate justification for a subcategory*

Not only did EPA fail to consider any statutory factors other than cost, it also failed to evaluate cost correctly. EPA argues that the so-called "low-utilization" plants will face "disparate costs" and will be at a competitive disadvantage unless the Agency grants them an exemption from the BAT limits that apply to the rest of the industry. EPA has not demonstrated that this is true, but, in any case, EPA is not authorized to create subcategories for the purpose of preventing a competitive disadvantage. As explained above, "the [CWA]'s supporters in both Houses acknowledged and accepted the possibility that its 1977 requirements might cause individual plants to go out of business,"[373] and "Congress clearly understood that achieving the CWA's goal of eliminating all discharges would cause . . . plant closures."[374]

Inevitably, some plants will have higher compliance costs than other plants. A creative data analyst could probably carve out dozens of subcategories with higher costs than the rest of the industry. But that would be an irrelevant and arbitrary exercise that is antithetical to the CWA's requirements. It is not EPA's job to make sure that its regulations are convenient. EPA's

[371] 33 U.S.C. § 1314(b)(2)(B).
[372] *Chem Mfrs. Ass'n v. Nat. Res. Def. Council, Inc.*, 470 U.S. 116, 130 (1985) (quoting S. Rep. No. 92-1236, at 126 (1972)).
[373] *Weyerhaeuser Co. v. Costle*, 590 F.2d 1011, 1036-37 (D.C. Cir. 1978).
[374] *Chem Mfrs. Ass'n*, 870 F.2d at 251.

job is to ensure that polluters commit the "maximum resources economically possible to the ultimate goal of eliminating all polluting discharges."[375]

EPA's statutory authority for considering cost is narrow. An available technology is BAT if it is also "economically achievable," and a technology is "economically achievable" if the "costs can be reasonably borne by the industry [or, in this case, the subcategory]."[376] Compliance costs can be higher for a subcategory and still be reasonable for that subcategory. EPA has not shown, or even tried to show, that the costs of complying with the default BAT standard cannot be reasonably borne by the low-utilization plants. If the costs can be reasonably borne by the low-utilization plants, then there is simply no basis for the subcategory.

3. *EPA's definition of the low-utilization subcategory is arbitrary; a fair assessment of the record fails to support the need for the subcategory*

Even if EPA had authority to create a subcategory based on cost (it does not), the record shows that there is no cost-based justification for a low-utilization subcategory. The Agency's arguments to the contrary fall apart under the most cursory level of scrutiny. The holes in EPA's logic become evident when one looks at how the Agency defines the proposed subcategory. A more objective and careful appraisal of the evidence shows that power plants that run less often do not face higher costs than other power plants.

EPA creates a "low utilization" subcategory defined by unit-level utilization in Megawatt hours (MWh) per year. This is arbitrary and irrational in several ways:

- First, it assumes that unit-level characteristics, rather than plant-level characteristics, are an appropriate unit of comparison;
- Second, it fails to distinguish between bottom ash costs and FGD costs, even though there is no reason to believe that the relationship between cost and utilization (or some other metric) would be the same for both wastestreams;
- Third, it defines "low utilization" in a way that will include many high-utilization units and also exclude many low-utilization units;
- Fourth, it assumes that utilization is an appropriate unit of comparison and fails to consider capacity factor;
- Finally, it uses a different baseline than it uses elsewhere in the rulemaking record.

Each of these flaws is discussed in more detail below. A more careful analysis of the data in the record shows that there is simply no legitimate or practical basis for a low-utilization threshold.

To begin with, EPA fails to explain why unit-level generation is relevant when power plants with multiple units benefit from economies of scale and can treat wastewater at lower per-unit cost. For example, the Kingston Fossil Plant has nine generating units, and each unit

[375] *EPA v. Nat'l Crushed Stone Ass'n*, 449 U.S. 64, 74 (1980).
[376] *Waterkeeper All., Inc. v. EPA*, 399 F.3d at 516; *Rybachek v. EPA*, 904 F.2d 1276, 1290-91 (9th Cir. 1990) (discussing this standard).

generates less than 876,000 MWh per year. As a result, the entire power plant qualifies for the low-utilization subcategory, despite the fact that the plant as a whole generates over 5,000,000 MWh per year. This is plainly irrational. Common sense indicates that the Tennessee Valley Authority could treat the FGD wastewater at Kingston with a single treatment system, and the costs would be much lower than the costs for nine separate single-unit power plants. And indeed, EPA's primary cost calculations are at the plant level: Page 5-59 of the Supplemental Technical Development Document explains that "[t]o estimate total industry compliance costs for each regulatory option with subcategories, the EPA first estimated plant-level FGD and bottom ash technology option compliance costs."[377] EPA then apportioned these plant-level costs to the unit level according to each unit's capacity.[378] If costs are incurred at the plant level, with potential economies of scale for multi-unit plants, then it is arbitrary and capricious for EPA to analyze unit-level cost impacts for purposes of subcategorization.

The second problem with EPA's analysis is that the Agency combines treatment costs for FGD wastewater and bottom ash transport water into a single simplistic analysis of per-MWh costs. This ignores the very real possibility that the relationship between cost and generation is different for the two treatment technologies.

We aggregated generation and annualized[379] compliance costs at the plant level, keeping the two wastestreams separate, and plotted per-MWh compliance costs for Option 4 in Figures LU1 and LU2 below. Similar figures using Option 3 costs would be substantially the same.[380] These figures show three things. First of all, contrary to EPA's depiction in Figure VIII-1 of the 2019 Proposal, there are very few plants that appear to fall into a low-generation cluster with higher per-MWh costs. This is particularly true for FGD wastewater, where there are at most two plants that fall outside the main group of plants. This shows that EPA is effectively creating a plant-level exemption, which is something that it is legally prohibited from doing.[381]

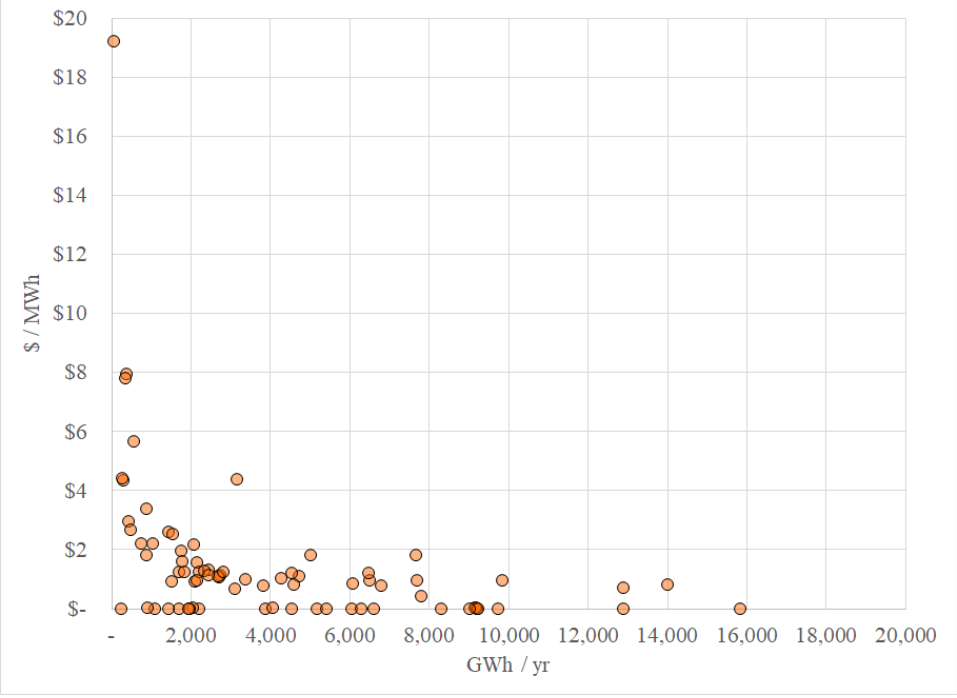
Next, for these plants, there is no evidence that the costs are "disparate,"[382] much less "unreasonable." To be "disparate," the costs would have to be more than just relatively high or above-average. The word disparate is defined as "utterly different in kind, incommensurable."[383] This hardly describes the costs for low-generation plants shown in Figures LU1 and LU2 below; for each wastestream, only a small handful of plants have per-MWh costs that are more than

[377] Proposed TDD at 5-59.
[378] *Id*.
[379] *See supra* Section VI – Zero Discharge FGD for how we annualized costs.
[380] EPA plotted data for Option 3, but noted that "a similar comparison could be made for the technologies comprising Options 1 or 4." 84 Fed. Reg. at 64,639. In fact, compliance costs for bottom ash transport water are exactly the same for Options 3 and 4.
[381] *See Am. Iron & Steel Inst. v. EPA*, 526 F.2d 1027, 1051 (3d Cir. 1975) (cost must be considered "on a class or category basis, rather than [on] a plant-by-plant basis").
[382] 84 Fed. Reg. at 64,639.
[383] Lexicon Publications, The New Lexicon Webster's Encyclopedic Dictionary of the English Language, Deluxe Edition (1989).

three times higher than average.[384] More importantly, there is no evidence to suggest that these costs could not be "reasonably borne" by the plants in question.[385] To the contrary, the record shows that the costs can be reasonably borne – there is no meaningful difference in costs as function of revenue between Option 2 (with the proposed low-utilization subcategory) or Option 4 (without): 108 plants incur non-zero compliance costs under either option.[386] There are very few plants that incur costs greater than 3% of revenue under any option; under Option 2, there are 2 such plants, while under Option 4 there are 5 such plants.[387]

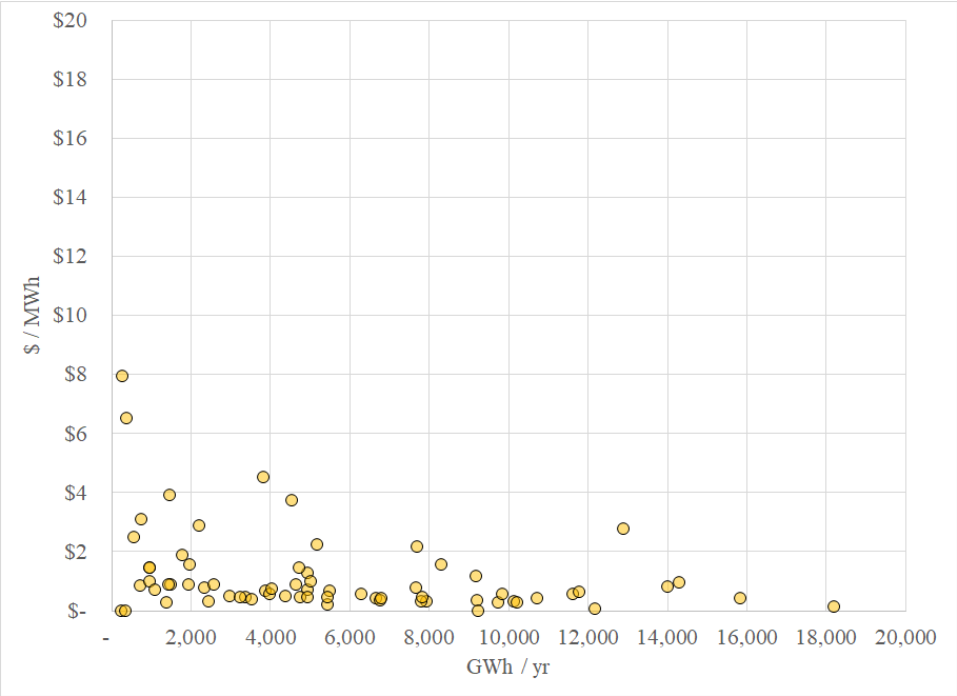
Figures LU1 and LU2 also show that the cost-MWh relationship is not the same for the two wastestreams. For bottom ash transport water, there is some evidence that per-MWh costs are higher at lower levels of generation (even if they never rise to the level of "disparate"). For FGD wastewater, on the other hand, there is no such evidence. Two of the low-generating plants have above-average costs, but another two low-generating plants have very low costs (in fact, zero cost). Overall, the costs are largely unrelated to generation.

Figure LU1. Per-MWh compliance costs for bottom ash transport water under Option 4, plotted against generation.[388]




[384] For bottom ash transport water, the average (mean) treatment cost is $1.50/MWh, and 4 plants have costs that exceed $4.50/MWh. For FGD wastewater, the average treatment cost is $1.15/MWh, and 5 plants have costs that exceed $3.46/MWh.
[385] Again, a technology is economically achievable if the "costs can be reasonably borne by the industry." *Waterkeeper Alliance v. EPA*, 399 F.3d 486, 516 (2d Cir. 2005); *Rybachek v. EPA*, 904 F.2d 1276, 1290-91 (9th Cir. 1990) (discussing this standard).
[386] Proposed RIA at 4-3 to 4-4, Tbls. 4-1 and 4-2.
[387] Proposed RIA at 4-3 to 4-4, Tbls. 4-1 and 4-2.
[388] All data from ERG, Generating Unit-Level Costs and Loadings Estimates by Regulatory Option - DCNSE07090, Docket ID No. EPA-HQ-OW-2009-0819-8220 (Sept. 25, 2019).

Figure LU2. Per-MWh compliance costs for FGD wastewater under Option 4, plotted against generation.




A third, glaring problem with EPA's analysis is that the proposed subcategory is not what it claims to be. EPA's definition of the subcategory includes any unit generating less than 876,000 MWh per year. This definition could include many units that are "utilized" close to 100% of the time. Specifically, any unit with a capacity of 100 MW or less will automatically be included, regardless of how often the unit runs, because its maximum output will be less than 876,000 MWh. For example, Hennepin Power Station Unit 1 is a 75-MW unit.[389] It runs most of the time (57% of capacity),[390] but it would qualify as a "low-utilization" unit. The same problem affects larger units as well. For example, Shawnee Fossil Plant units 2, 3, 5 and 6 are all 175-MW units, and they each run at 53-56% of capacity.[391] Despite the fact that these units are running more than half of the time, EPA would categorize them as "low-utilization" based on their output.

It is arbitrary and irrational for EPA to define "low utilization" in a way that includes units running most of the time, including (at least theoretically) up to 100% of the time. This is particularly true where the Agency's purported rationale is based not on output but on capacity factor. EPA claims that it needs the low-utilization subcategory to prevent "disparate costs" for certain units. The units that EPA appears to be concerned about include "cycling or peaking boilers" and "larger units that have continued to reduce electricity generation due to market

[389] *Id.* at Tbl. 2.
[390] *Id.*
[391] *Id.*

forces (*e.g.*, a 400 MW boiler running at 25% capacity)"[392] – in other words, units with low capacity factors. EPA makes this explicit when it states that "[l]ow utilization boilers tend to operate only during peak loading."[393] Yet, EPA defines the subcategory based on net electricity generation, arbitrarily selecting a characteristic that is only incidentally related to utilization rate.

This flawed logic cuts both ways. EPA's "low-utilization" definition also excludes many truly low-utilization units. For example, the two units at the Victor J. Daniel Jr. plant run at 21-22% capacity; yet, because they are large units (548 MW each), they each generate over one million MWh per year.[394]

In short, EPA's definition of "low utilization" is not actually defined by utilization rate. It includes many "high-utilization" units (units that are utilized most of the time) and excludes many "low-utilization" units (units that are rarely utilized) and, therefore, fails to hold up to the most basic level of scrutiny. Because the definition of the subcategory does not accomplish EPA's purported aims in establishing the subcategory, it is arbitrary and capricious for that reason as well.

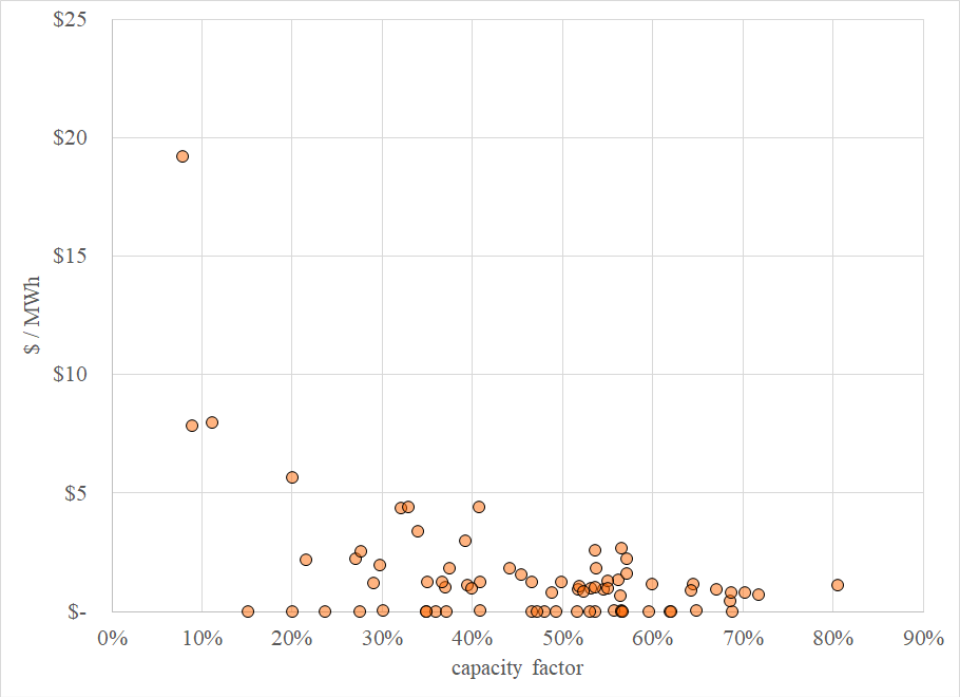
This leads to the fourth problem with EPA's analysis, which is that EPA fails to explain why generation levels are a necessary or useful basis for a subcategory. The rule already has a subcategory that relaxes the limits on small units (below 50 MW). The new low-utilization subcategory would include an overlapping subset of the industry by virtue of the fact that smaller units are more likely to generate less than 876,000 MWh per year. In fact, since a 50-MW unit can only generate a maximum of 438,000 MWh per year, all low-capacity units will also be low-utilization units.

EPA also fails to explain why it did not evaluate compliance costs on the basis of capacity factor rather than raw generation. Again, the purported source of EPA's concern is that certain units will have disproportionate costs, with those units being cycling or peaking boilers and larger ones that are generating fewer and fewer MWh per year.[395] In that case, EPA should have evaluated the compliance costs sorted by capacity factor. We do that in Figures LU3 and LU4 below.[396] These figures show that, aside from at most three plants' bottom ash compliance costs, there is no relationship, or at most a very weak relationship, between per-MWh costs and capacity factor. In other words, plants that run less often do not have significantly higher per-MWh costs than plants that run more often.[397] EPA's concerns about power plants that operate at

[392] 84 Fed. Reg. at 64,639.
[393] *Id.*
[394] ERG, Generating Unit-Level Costs and Loadings Estimates by Regulatory Option - DCNSE07090, at Tbl. 2, Docket ID No. EPA-HQ-OW-2009-0819-8220 (Sept. 25, 2019).
[395] 84 Fed. Reg. at 64,639.
[396] Again, although we chose to show Option 4 costs, charts using Option 3 costs would be substantially the same.
[397] Although the data are not shown here, we also evaluated the relationship between capacity factor and compliance costs per unit of capacity factor, and found the same thing – there is no relationship between the two, and plants running at low rates of utilization do not have higher costs (expressed per unit of capacity factor) than other plants.

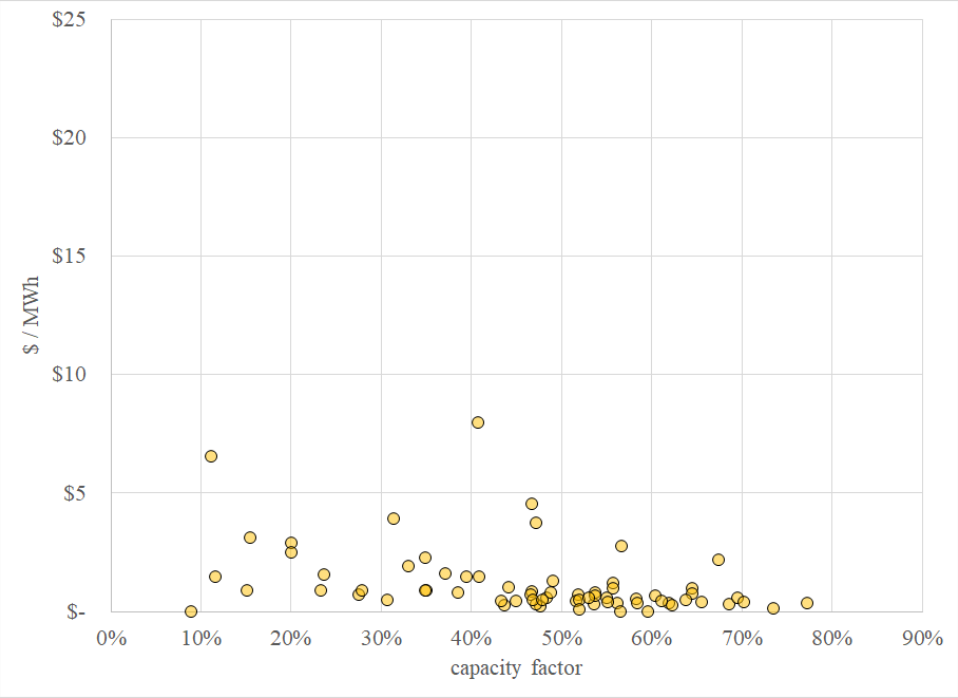
low capacity factors (e.g., peaking and cycling boilers) and about "ensuring electricity reliability"[398] are simply unfounded and not at all supported by the record.

Figure LU3. Per-MWh compliance costs for bottom ash transport water under Option 4, plotted against capacity factor.[399]




[398] 84 Fed. Reg. at 64,639.
[399] All data from ERG, Generating Unit-Level Costs and Loadings Estimates by Regulatory Option - DCNSE07090, Docket ID No. EPA-HQ-OW-2009-0819-8220 (Sept. 25, 2019).

Figure LU4. Per-MWh compliance costs for FGD wastewater under Option 4, plotted against capacity factor.



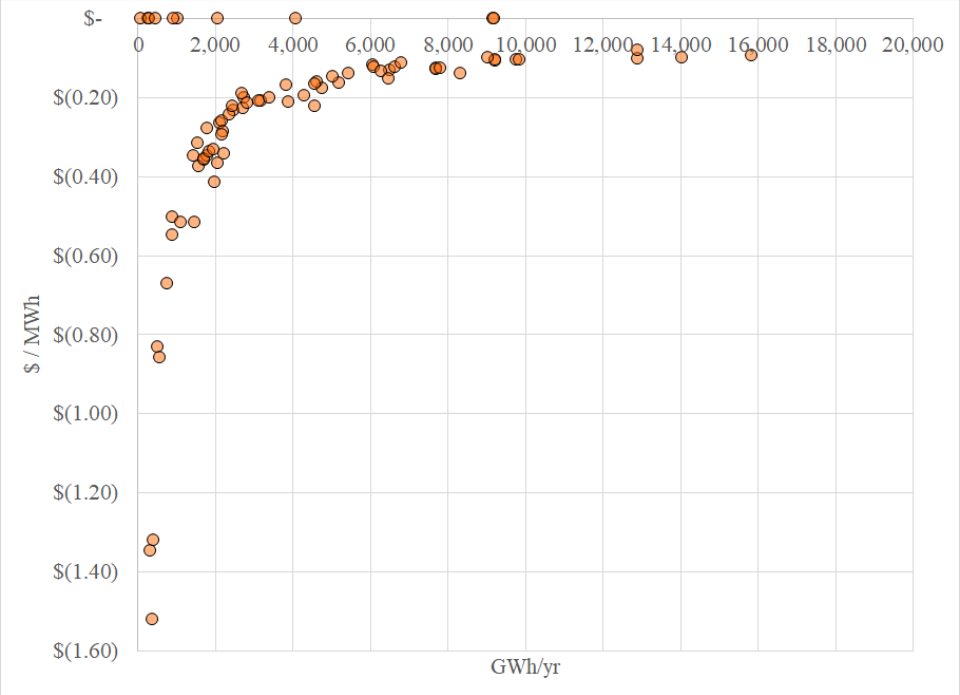

The fifth problem with EPA's low-utilization analysis is that it arbitrarily uses a different baseline than elsewhere in the record. Virtually all of the analyses in the record, including the analyses in the Technical Development Document and the Benefit Cost Analysis, use a baseline defined by assuming compliance with the 2015 ELG Rule.[400] Against this baseline, EPA finds that all regulatory options reduce costs (which is not surprising given the various loopholes and subcategories that water down EPA's prior BAT determinations).[401] Yet, for purposes of justifying a low-utilization subcategory, EPA decided to evaluate costs relative to a baseline defined by current conditions.[402] Against this baseline, all regulatory options come with an additional compliance cost.[403] This results in EPA's saying two contradictory things: The compliance costs of the rule are negative (cost savings) and the costs are positive. Of course, both cannot be true simultaneously. EPA cannot cherry-pick its baseline to justify a poor decision.

If EPA were to evaluate per-MWh costs using the same baseline that it uses elsewhere, compliance with the 2015 ELG Rule, then it would have to conclude that the so-called "low-utilization" units do not face disparate costs and, if anything, enjoy a relatively greater benefit in the form of compliance cost savings, as Figures LU5 and LU6 below illustrate.[404] For bottom ash

[400] *See, e.g.*, Proposed TDD at 5-1; Proposed BCA at 1-2.
[401] *See, e.g.*, 84 Fed. Reg. 64,645, Table VIII-1 (showing negative costs for all regulatory options).
[402] *Id.* at 64,638.
[403] *See, e.g., id.* at 64,639, Fig. VIII-1 (showing compliance costs greater than or equal to zero for all units).
[404] Again, charts using Option 3 costs instead of Option 4 costs would show substantially the same thing.

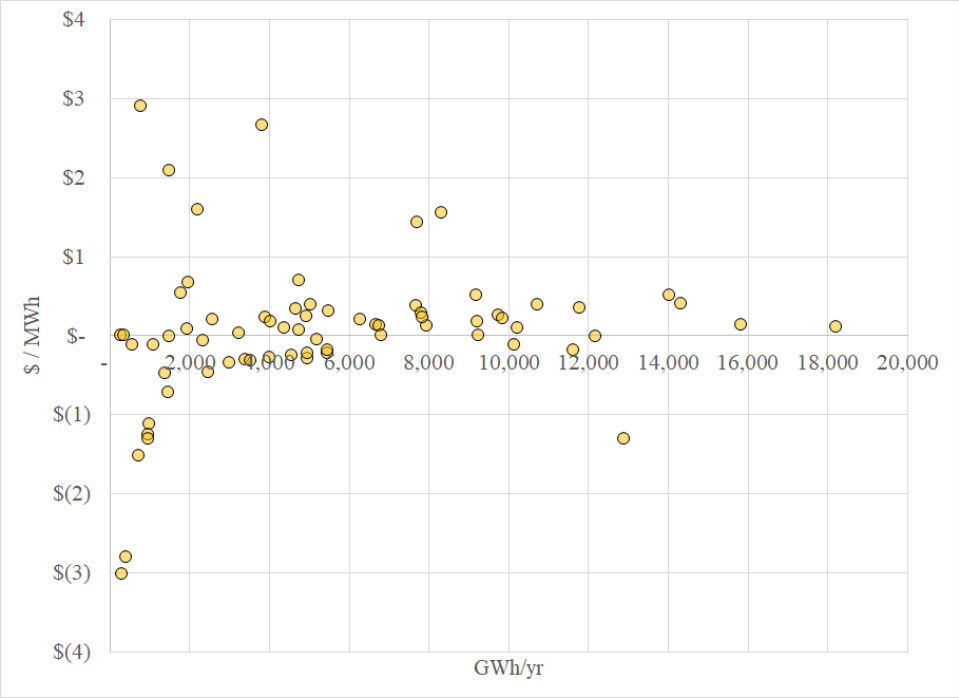
treatment, the entire industry would save money (relative to the 2015 Rule), and low-utilization plants would actually save more money than other plants. For FGD costs, some plants would see a cost increase while others would see a cost savings, but there is no relationship between the cost impact and generation.

Figure LU5. Per-MWh compliance costs for bottom ash transport water under Option 4, using compliance with 2015 rule as a baseline.[405]




[405] All data from ERG, Generating Unit-Level Costs and Loadings Estimates by Regulatory Option - DCNSE07090, Docket ID No. EPA-HQ-OW-2009-0819-8220 (Sept. 25, 2019).

Figure LU6. Per-MWh compliance costs for FGD wastewater under Option 4, using compliance with 2015 rule as a baseline.




Figures LU5 and LU6 show that if EPA used the same baseline it used elsewhere in the rulemaking record, it would have to conclude that the "low-utilization" units are better off than other units, even under Option 4. This directly contradicts EPA's suggestion that these units would face "disparate costs" and further establishes that the Agency's rationale for a low-utilization subcategory is arbitrary and capricious.

For all of the above-listed reasons, EPA's definition of a low-utilization subcategory lacks a reasoned justification. The Agency's reliance on a single, arbitrary metric, without any deeper analysis, suggests that the Agency was simply looking for a way to exempt more units from compliance. This is wholly improper. The record shows that power plants running at a low capacity factor do not face higher costs than other power plants, much less "disparate" costs. Indeed, if EPA used the same baseline that it used elsewhere in the record, then it would have to conclude that the "low-utilization" plants are in a better position than other plants and have no need whatsoever for special treatment.

4. *EPA cannot create a subcategory based on a characteristic that changes from year to year*

As discussed above, when EPA has created subcategories in past ELGs, it has done so based on fixed characteristics such as product type or manufacturing process[406] or, in the case of the 2015 ELG Rule, unit capacity. EPA has declined to create subcategories based on cost

[406] *See* Section X.A – Legal Authority for Subcategorization.

because cost varies, and EPA has determined that it would be inappropriate to create subcategories on the basis of variable characteristics.[407] EPA has also maintained that subcategories must relate to a facility's wastewater characteristics and that costs are inappropriate because costs have no effect on such characteristics.[408]

In the 2019 Proposal, EPA arbitrarily deviates from its past practice by creating a low-utilization category based on electricity generation, a characteristic that is not fixed, that varies from year to year, and that has no effect on wastewater characteristics. A plant that generates 880,000 MWh/yr for two years and then generates 870,000 MWh/yr for two years has not magically transformed into a different plant. It is the same plant, with the same fixed characteristics, the same wastewater quality, and the same ability to treat its wastewater. Yet, the 2019 Proposal would treat the plant differently after the second two-year period, relaxing the treatment requirements. If the plant goes back to generating more than 876,000 MWh, it once again enters the realm of the default BAT limitations. This clearly frustrates enforcement by creating a moving target that may change its status in the middle of an enforcement action. It also frustrates the goals of the CWA by allowing owners to game the system – as long as they never exceed the low-utilization threshold for more than a two consecutive years, they can avoid stricter pollution controls indefinitely.

5. *Allowing an additional 2-year compliance extension after the low-utilization threshold is exceeded is arbitrary and will result in the discharge of avoidable pollution*

The 2019 Proposal provides a 2-year compliance extension for any previously low-utilization unit that starts generating more than 876,000 MWh/yr (or otherwise fails to certify that it qualifies as a low-utilization unit).[409] This creates two problems. First, it arbitrarily allows for two additional years of excess pollution, despite the fact that treatment systems can be purchased or leased, installed, and operational over much shorter time frames. For example, Purestream's AVARA system "can be built in 180 days and is deployable within two days of on-site delivery."[410]

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[407] *See id.*

[408] *See, e.g.*, Development Document for Effluent Limitations Guidelines and Standards for Battery Manufacturing, Vol. I, 139 (Aug. 1984) ("The necessity for a subcategorization factor to relate to the raw wastewater characteristics of a plant automatically eliminates certain factors from consideration as potential bases for subdividing the category . . . treatment costs . . . have no effect on the raw wastewater generated in a plant."); Development Document for Effluent Limitations Guidelines and Standards for the Porcelain Enameling Point Source Category, 48 (Nov. 1982) (same); and Development Document for Effluent Limitations Guidelines and Standards for the Coil Coating Point Source Category, 36 (Nov. 1983) ("[T]reatment costs have no effect on the raw wastewater generated in a plant. The water pollution control technology employed at a plant and its cost are the result of a requirement to achieve a particular effluent level for a given raw wastewater load. It does not affect the raw wastewater characteristics, and thus does not impact subcategorization.").

[409] *See, e.g.*, 84 Fed. Reg. at 64,674.

[410] ERG, Technologies for the Treatment of Flue Gas Desulfurization Wastewater – DCN SE07367, at M-2, Docket ID No. EPA-HQ-OW-2009-0819-8155 (Oct. 22, 2019).

The second problem is that the two-year window allows plants to drift back and forth across the low-utilization threshold without ever installing the technology that would otherwise be BAT. If, for example, a plant exceeded the threshold over a two-year period, it could generate less than 876,000 MWh over the next two years and re-certify as a low-utilization plant before it had to comply with the default limitations. In this way, plants could theoretically generate more than 876,000 MWh/yr, averaged over a long-term period of four or more years, but never have to install BAT technology, so long as there are sufficiently frequent 2-year periods over which the plant does generate less than 876,000 MWh/yr.

Although EPA claims that, anytime the tiered limits are triggered, the 2019 Proposal would "preclude future use of the low utilization subcategory" for plants that fail to certify that they qualify for the subcategory, the text of the proposed rule does no such thing. Instead, the proposed regulatory language explains how a unit gets into the subcategory (by certifying that it generated less than 876,000 MWh/yr)[411] and what happens when a unit leaves the subcategory. There is nothing in the Proposed Rule that would prevent a unit from re-entering the subcategory. If EPA intends to make departure from the low-utilization subcategory permanent, it should say so in the text of the rule by, for example, amending 40 C.F.R. § 423.13(g)(1)(iii)(B) to say "such units shall be precluded from re-certifying as low-utilization boilers in the future, regardless of electricity generation rate."

6. *EPA has not shown that the technology bases for the proposed low-utilization subcategory are BAT.*

To the extent that EPA has any authority to create subcategories, it must make a BAT determination for each subcategory using the same statutory factors that it uses to identify BAT for the industry as a whole and it must apply the same standards regarding availability and economic achievability.[412] For the low-utilization subcategory, EPA proposes to impose limitations based on chemical precipitation (for FGD wastewater) and surface impoundments with Best Management Practices plans (for bottom ash transport water).[413] EPA selected these technologies without making a BAT determination and without evaluating whether more stringent technologies might be BAT for the subcategory. As a result, EPA arbitrarily and impermissibly selected technologies that are clearly not the Best Available Technology for each wastestream.

The record shows that the Best Available Technology for FGD wastewater is membrane filtration.[414] There is no question that the technical "availability" of this technology is the same for the proposed subcategory as it is for the industry as a whole – since the availability of a

[411] 84 Fed. Reg. at 64,672 (proposed 40 C.F.R. § 423.11(z)).
[412] *See* Section X.A – Legal Authority for Subcategorization; *Chem Mfrs. Ass'n v. Nat. Res. Def. Council, Inc.*, 470 U.S. 116, 130-131 (1985); *Chem. Mfrs. Ass'n v. EPA*, 870 F.2d 177, 214-15 (5th Cir. 1989); *Tex. Oil & Gas Ass'n v. EPA*, 161 F.3d 923, 934 (5th Cir. 1998).
[413] 84 Fed. Reg. at 64,630.
[414] *See* Section VI – Zero Discharge FGD.

technology can be demonstrated by showing that it is in use in another industry,[415] the fact that membrane filtration is available for some coal-fired power plants means that it is also available for EPA's proposed subcategory of power plants. The "economic achievability" of membrane filtration is also the same for the proposed subcategory as it is for the industry as a whole: Figures LU1 and LU2 above show that with Option 4, under which most plants would adopt membrane filtration, costs for low-utilization plants are not substantially higher than costs for other plants. If EPA looks at what it purports to be concerned about – capacity factor – there is even less of an issue. Costs for plants that run at a low capacity factor are no different than costs for other plants (Figures LU3 and LU4 above). EPA concedes that membrane filtration is economically achievable for the industry as a whole;[416] since the costs for low-utilization or low-capacity factor plants are not fundamentally different, membrane filtration is achievable for these plants as well.

In any case, EPA has simply failed to provide any evidence that membrane filtration costs for the low-utilization plants could not be "reasonably borne" by those entities, which means that EPA has failed to show that the costs are unachievable.[417] Since membrane filtration is available and achievable for the so-called "low-utilization" plants, it is the Best Available Technology, and there is no need for a subcategory.

EPA has flatly failed to demonstrate why it believes chemical precipitation to be BAT for the proposed low-utilization units. It has not shown that these units are qualitatively different from other units in the industry nor that they have different treatment capabilities. Although EPA makes a superficial attempt to show that the costs of treating FGD wastewater with what would otherwise be BAT (chemical precipitation plus biological treatment) are higher for the low-utilization units, that attempt does not stand up to scrutiny, as described above. More importantly, EPA never evaluates whether the costs of Option 3 or Option 4 technologies could be "reasonably borne" by the proposed subcategory – as the CWA requires.[418]

Taking all available record evidence into account, there is simply no basis for distinguishing between the so-called "low-utilization" units and other units, and there is no basis for concluding that chemical precipitation is BAT for FGD wastewater. The record does show that EPA must identify membrane filtration as BAT, and this applies equally to low-utilization units, which means that there is no basis for a low-utilization subcategory.

With regard to bottom ash transport water, the same logic applies. EPA has provided no evidence or analysis to support the idea that surface impoundments are BAT for the low-utilization units. Indeed, EPA's determination flies in the face of recent Circuit Court

[415] *Kennecott*, 780 F.2d at 453 ("Progress would be slowed if EPA were invariably limited to treatment schemes already in force at the plants which are the subject of the rulemaking."); *see also Reynolds Metals Co. v. EPA*, 760 F.2d 549, 562 (4th Cir. 1985).
[416] 84 Fed. Reg. at 64,634 ("[C]osts do not make the membrane filtration option economically unachievable.").
[417] *Waterkeeper All., Inc. v. EPA*, 399 F.3d 489, 516 (2d Cir. 2005); *Rybachek v. EPA*, 904 F.2d 1276, 1290-91 (9th Cir. 1990) (discussing this standard).
[418] *Waterkeeper All., Inc. v. EPA*, 399 F.3d at 516; *Rybachek v. EPA*, 904 F.2d at 1290-91 (discussing this standard).

jurisprudence, which strongly rejected EPA's selection of surface impoundments as BAT for legacy wastewater and leachate.[419] Surface impoundments are simply not the "Best Available Technology" for any wastestream, and EPA provides no evidence to the contrary.

As discussed above, the record shows that the Best Available Technology for treating bottom ash transport water is closed-loop handling with zero discharge, or dry handling.[420] In the absence of any evidence that meaningfully distinguishes between the treatment capabilities of low-utilization units and other units, this BAT determination would have to apply equally to the low-utilization units. As shown above, to the extent that the record illuminates bottom ash treatment cost, it shows that costs for units that run at a low capacity factor are not significantly higher than for other units.[421] More importantly, EPA provides no evidence that a zero-discharge standard for bottom ash could not be "reasonably borne" by the proposed subcategory.[422]

As with FGD wastewater, taking all record evidence into account, EPA must conclude that closed-loop or dry handling is BAT for bottom ash transport water, and this applies equally to low-utilization units, which means that there is no basis for a low-utilization subcategory.

7. *EPA should revise the proposed rule's implementation requirements for the low utilization subcategory.*

Although we strongly oppose EPA's creation of a subcategory for low utilization boilers, EPA should revise the proposed implementation requirements and reporting requirements for the low utilization subcategory to ensure that plant owners and operators are not abusing the proposed subcategory. As discussed above, EPA is proposing to include tiered limitations for units in the low utilization subcategory. If the proposed low utilization subcategory is to be finalized, which we believe it should not, EPA must retain the tiered limitations as they are critical for enforceability and to ensure that plant operators do not game the system.

EPA's proposed low utilization subcategory is based on the fluctuating net generation reported annually to the U.S. Energy Information Administration.[423] As a result, EPA is proposing that boiler "net generation" be determined by "the average of the most recent two calendar years of net generation for that boiler," which cannot exceed 876,000 MWh per year.[424] According to EPA, "the use of a two-year average will ensure that a low utilization boiler responding to a single extreme demand event in one year (e.g., unexpectedly high peak demand in summer or winter) can still qualify for this subcategory if its average net generation over the two years remains below 876,000 MWh."[425] Furthermore, "the facility must annually provide the

[419] *See* Section III - Southwestern Electric.
[420] *See* Section V - Bottom Ash.
[421] *See* Figure LU3.
[422] *Waterkeeper All., Inc. v. EPA*, 399 F.3d at 516; *Rybachek v. EPA*, 904 F.2d at 1290-91 (discussing this standard).
[423] 84 Fed. Reg. at 64,665.
[424] *Id.*
[425] *Id.* at 64,665-66.

permitting authority an updated two-year average net generation for each subcategorized boiler within 60 days of submitting annual net generation information to the EIA."[426]

Although EPA is attempting to justify the agency's use of a two-year average net generation, it fails to realize that a two-year average could allow plant owners or operators to game the system by intentionally exceeding the 876,000 MWh threshold by a significant margin in a given year. We understand the need to account for unexpected extreme demand events.[427] However, we also strongly believe that there should be adequate provisions in place to prevent unethical behavior on behalf of plant operators. For instance, if a unit runs significantly under the low utilization threshold in the first of two years, there is nothing preventing the plant operator from intentionally exceeding the threshold in the second year as long as they still do not exceed the two-year average net generation. In order to ensure that plant operators do not intentionally run significantly over the low utilization threshold in any one particular year, EPA should require that participating boilers' net generation not exceed the 876,000 MWh threshold by more than 10% in either of the two most recent calendar years.

Additionally, EPA is proposing that facilities participating in the low utilization subcategory "annually recertify that the boiler continues to meet the requirements of this subcategory, along with an updated two-year average net generation calculation and information for each applicable boiler."[428] As mentioned *supra*, if a boiler exceeds the threshold for eligibility for this subcategory, it would have two years to install the necessary treatment equipment and be subject to the second tier of effluent limitations for discharges of FGD wastewater and BA transport water. EPA should require that the proposed annual net generation recertification submissions be made available on the permitting authority's website and sent to anyone who filed comments on a permit. This would ensure that the necessary parties as well the public are adequately involved and notified. Furthermore, EPA should require that if a boiler exceeds the threshold for this subcategory, the operator must notify the permitting authority and interested parties immediately, rather than wait until the facility's time to annually recertify. EPA should ensure that there are no gaps between when a facility no longer qualifies for the low utilization subcategory and when the two-year deadline for the second tier of limitations kicks in.

In addition, EPA should strongly consider requiring enforceable caps on generation for any units that opt into this subcategory. Or alternatively, if EPA truly believes that it can substantiate its purported concerns about units running at a low capacity factor, then EPA should consider re-defining this subcategory on the basis of capacity factor, and should require enforceable caps on capacity factor, as it has done elsewhere. For example, as discussed above, the Boiler MACT Rule includes a subcategory for "limited-use boilers and process heaters," but requires a "federally enforceable annual capacity factor of no more than 10 percent."[429] Here, EPA should strongly consider restricting the availability of the low utilization subcategory to units that have federally enforceable caps on net generation or capacity factor to prevent owners

[426] *Id.* at 64,666.
[427] *Id.* at 64,665.
[428] *Id.* at 64,667.
[429] 40 C.F.R. § 63.7575.

from gaming the system and improperly taking advantage of what amounts to a very generous loophole.

In summary, EPA should not finalize the proposed subcategory for low utilization boilers because the subcategory is unjustified, and therefore, invalid under the Clean Water Act. If EPA intends to finalize the subcategory, the agency must revise its two-year net generation averaging approach and its reporting requirements as recommended above in order to better ensure that plant operators cannot abuse the proposed system for the low utilization boiler subcategory.

### E. Neither the Retirement Nor the Low Utilization Subcategory Is Needed to Ensure Reliability.

In support of both the low-utilization and boilers retiring by 2028 subcategories, EPA advances unsubstantiated reliability justifications. In the case of the low-utilization subcategory, EPA states that "[l]ow utilization boilers tend to operate only during peak loading. Thus, their continued operation is useful, if not necessary, for ensuring electricity reliability in the near term."[430] In the case of the boilers retiring by 2028 subcategory, EPA noted that "utilities expressed the need for sufficient time to plan, construct, and obtain necessary permits and approvals for replacement generating capacity," and that "[i]n discussions of example Integrated Resource Plans (IRPs) and the associated process, utilities suggested timelines that would extend for five to eight years or longer."[431] EPA also refers to a recent report by North American Electric Reliability Corporation ("NERC") finding that reliability of the electric system would be reduced were a large percentage of the generating fleet retired without being replaced, and notes that "the well-planned construction of new generation capacity and orderly retirement of older facilities are vital to ensuring electricity reliability."[432]

Beyond these conclusory statements in the Preamble of the proposed rule, the sole support in EPA's record appears to be a single, five-page ERG memorandum that adds scarce additional detail to EPA's rationale.[433] The reliability arguments in support of these two subcategories are completely unfounded.

#### 1. *Low-Utilization Units Are Not Peakers Essential For Reliability.*

EPA's case that the low-utilization subcategory is somehow necessary or even helpful in retaining reliability finds no support in the record. EPA incorrectly equates low-utilization units with "peakers" and then wrongly asserts that such peaking units are important for reliability. The proposed rule defines low-utilization units in terms of megawatt-hours of operation annually, not capacity factors. This subcategory therefore sweeps in small units running at high capacity factors, as well as larger units running at low capacity factors.[434] It includes units such as those at Plant Hammond in Georgia, which had negative net generation for much of 2016—such units are

[430] 84 Fed. Reg. at 64,639.
[431] *Id.* at 64,640.
[432] *Id.*
[433] *See* ERG Memorandum, Steam Electric Effluent Guidelines Reconsideration – Evaluation of Potential Subcategorization Approaches, Docket ID No. EPA-HQ-OW-2009-0819-7911 (Aug. 29, 2019).
[434] *See* Section X.D - Low Utilization.

clearly not essential for reliability. It also does not differentiate between low capacity factor units that operate as seasonal peakers, and those that simply operate at a very low level, such as their economic minimum, most of the year.

Moreover, coal units do not operate reliably as peakers, since many can take more than 24 hours to start up,[435] and have a high percentage of failed starts.[436] Grid reliability does not require units that operate infrequently (low-utilization units)—it requires resources that can quickly and accurately respond to changes in load, frequency and voltage.[437] However, frequent cycling imposes wear and tear on thermal system components that render coal plants prone to forced outages. An analysis by the United States Department of Energy's National Energy Technology Laboratory found that the forced outage rate for coal units more than doubles when those units are cycled frequently as compared to when they are operating at a steady output.[438] In other words, relying on coal units to operate as peakers is a poor strategy to ensure reliability.

To the extent that low-utilization coal plants *in fact* serve peak loads, this is because it is only during peak load events, when power prices increase, that coal plants are economic to operate.[439] That expensive plants come online during peak load events says nothing about how important those plants are for reliability. If a handful of coal plants were no longer available to operate during peaks, the high wholesale prices during peak events will incent entry by and operation from more reliable and lower cost generation resources, as well as demand response.[440]

EPA's own IPM results show that the effect of the low-utilization subcategory on coal retirements is negligible – less than a one GW difference in coal retirements in each year for which EPA reported results.[441] Retirements of this scale hardly register on the U.S. bulk electric system, which at the end of 2018 had 1,098 GW of capacity installed.[442] IPM modeling

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[435] *See, e.g.*, Southwest Power Pool Market Monitoring Unit, Self-committing in SPP markets: Overview, impacts, and recommendations at 21 & Fig. 4-10 (Dec. 2019), available at https://assets.documentcloud.org/documents/6573451/Spp-Mmu-Self-Commitment-Whitepaper.pdf;(attached).

[436] U.S. EPA Office of Air and Radiation, Assessment of startup period at coal-fired electric generating units – Revised (Nov. 2014), at tbl. 1 (showing that across the two-year period evaluated, pulverized coal boilers failed to start in 2,103 out of 9,467 total starts - circulating fluidized bed boilers performed only slightly better) (attached).

[437] *See, e.g.*, Michael Milligan, Sources of grid reliability services, ELECTRICITY J., 31:9, at 1-7 (Nov. 2018) (attached).

[438] Nichols, C. "Characterizing and Modeling Cycling Operations in Coal-fired Units". EIA Modeling Meeting. (June 2016), https://www.eia.gov/outlooks/aeo/workinggroup/coal/pdf/EIA%20coal-fired%20unit%20workshop-NETL.pdf (attached).

[439] *See, e.g.*, Michael Goggin, Grid Strategies LLC, Fossil lab misses mark in cold weather "resilience" report (Mar. 28, 2018), http://sustainableferc.org/fossil-lab-misses-mark-in-cold-weather-resilience-report/ (noting that increased coal unit operation during severe winter weather events reflects higher costs of those units, not their necessity for reliability) (attached).

[440] *Id.*

[441] *See* Summary Comparison of IPM Results, Coal Retirements tab, Docket ID No. EPA-HQ-OW-2009-0819-8166.

[442] U.S. Energy Information Administration, *Electricity explained*, at U.S. Energy Information https://www.eia.gov/energyexplained/electricity/electricity-in-the-us-generation-capacity-and-sales.php.

undertaken by the Natural Resources Defense Council shows that even a more rigorous standard requiring zero discharge of all FGD and bottom ash wastewater, including for units projected to fall into EPA's proposed low-utilization subcategory, only 200 MW of additional coal capacity retires compared to a base case in which the 2015 standards are implemented.[443] These IPM results, unsurprisingly, revealed no reliability problems associated with this extremely small level of retirements.[444]

In most regions of the United States, electric generation capacity is oversupplied. The vast majority of the units that would fall into the low-utilization subcategory are in the SERC NERC region, with a smaller number in the PJM region. The four SERC sub-regions have anticipated 2024 reserve margins of between twenty-five percent and thirty-six percent, and a cumulative expected capacity surplus of nearly twenty-five GW.[445] PJM has an anticipated 2024 reserve margin of thirty-four percent, and an expected capacity surplus of nearly twenty-seven GW.[446] For comparison, the reference margin level, or target reserve margin needed for reliability in these two regions is 15% and 15.7%, respectively.[447] As such, there is ample generation capacity available today to fill any gaps left by expensive, low-utilization coal plants that might retire absent a carve-out from the ELGs. And any retirements would likely be quickly replaced by new entrants given the healthy investment environment for generation.

2. *Retirement Of Units Already Scheduled To Retire Will Not Impair Reliability.*

EPA's reliability case for the boilers retiring by 2028 subcategory is equally weak. EPA relies upon two premises: (1) the "time to plan, construct, and obtain necessary permits and approvals for replacement generating capacity" can take five to eight years; and (2) near-term retirement of a large percentage of the generation fleet would cause reliability issues, according to a recent NERC stress test analysis.

EPA cites no authority or evidence for its assertion that the construction of replacement capacity can take five to eight years. As an initial matter, replacement generating capacity is often not even necessary due to excessive reserve margins in most regions.[448] It is also a fallacy to suggest that one-for-one replacement of retiring generation units is needed. Most utilities rely upon a regional pool of resources for resource adequacy, and can purchase energy and capacity from other suppliers during a period in which their own generation may be less than their needs. A number of the early retirement units are in the PJM Interconnection LLC region, where resource adequacy is ensured through a number of regional wholesale market mechanisms,

[443] *See* Section XIII.D – IPM Modeling.
[444] *See id.*
[445] North American Electric Reliability Corporation, 2019 Long-Term Reliability Assessment, Detailed Findings at Fig. 1 & tbl. 1 (Dec. 2019), https://www.nerc.com/pa/RAPA/ra/Reliability%20Assessments%20DL/NERC_LTRA_2019.pdf (attached).
[446] *Id.*
[447] *Id.* at tbl. 1.
[448] *See generally id.*

including a capacity market.[449] A retiring unit is immediately replaced in the region's capacity portfolio by other newly developed resources whose construction is incented by the capacity market. PJM's capacity market currently clears a reserve margin well in excess of the reliability target,[450] reflecting a surplus of low-cost capacity in the region.

Even if a plant did need to be replaced on a one-to-one basis, the time to plan, construct and obtain approvals for replacement resources takes less than five to eight years. As part of its National Energy Modeling System, the U.S. Energy Information Administration assumes lead times of one to three years for the most common new generation types.[451] Approval and installation of wind and solar facilities are particularly quick due to the reduced environmental permitting requirements for these non-emitting, non-discharging facilities. PJM's capacity market operates on a three-year forward basis, reflecting the consensus that three years is adequate lead time to develop new generation facilities.

Furthermore, EPA's reliance upon the NERC Special Reliability Assessment is misplaced.[452] NERC modeled an extreme scenario for power plant retirements, and then imposed a worst-case perfect storm event with high electricity demand and widespread electricity supply outages. As EPA acknowledges, NERC explains that "as a stress test, the scenario is not a predictive forecast."[453] Without any evidence that premature retirements associated with not carving out early retirement units would resemble the scenarios invoked in the NERC report, EPA states that NERC's "findings are consistent with the concern that electric utilities conveyed to the EPA: That the well-planned construction of new generation capacity and orderly retirement of older facilities are vital to ensuring electricity reliability."[454] Absent from this discussion is any defense of the implicit assertion that not providing an exemption for units retiring before 2028 would lead to disorderly retirement of generation units. In fact, EPA would be hard-pressed to make such a showing, because the maximum possible impact of the ELG rule is much less than what NERC modeled: EPA's data show that 6,084 MW (6.1 GW) of generation with ELG compliance needs have announced retirement or refueling dates between

[449] *See* PJM Interconnection, LLC, Capacity Market (RPM), https://learn.pjm.com/three-priorities/buying-and-selling-energy/capacity-markets.aspx (last viewed Jan. 4, 2020).
[450] *See, e.g.*, PJM Interconnection, 2021/2022 RPM Base Residual Auction Results, https://www.pjm.com/-/media/markets-ops/rpm/rpm-auction-info/2021-2022/2021-2022-base-residual-auction-report.ashx ("The 2021/2022 Reliability Pricing Model (RPM) Base Residual Auction (BRA) cleared 163,627.3 MW of unforced capacity in the RTO representing a 22.0% reserve margin. Accounting for load and resource commitments under the Fixed Resource Requirement (FRR), the reserve margin for the entire RTO for the 2021/2022 Delivery Year as procured in the BRA is 21.5%, or 5.7% higher than the target reserve margin of 15.8%.").
[451] *See* U.S. EIA, Assumptions to the Electricity Market Module at tbl. 2 (Feb. 2019), https://www.eia.gov/outlooks/aeo/assumptions/pdf/electricity.pdf.
[452] 84 Fed. Reg. at 64,640 (citing NERC, Special Reliability Assessment: Generation Retirement Scenario (Dec. 18, 2018), https://www.nerc.com/pa/RAPA/ra/Reliability%20Assessments%20DL/NERC_Retirements_Report_2018_Final.pdf).
[453] 84 Fed. Reg. at 64,640 & n.69.
[454] *Id.* at 64,640.

2024 and 2028.[455] These units constitute the universe upon which EPA's reliability concerns must rest, since they are the only units whose retirement could otherwise be accelerated by the absence of a subcategory. By contrast, the special stress test in NERC's Special Reliability Assessment retired 118 GW of generation by 2022, which was 91 GW above the anticipated retirements that had already been announced.[456] There is simply no basis for concluding that the NERC Special Reliability Assessment stress test is relevant to the scale of retirements that could even plausibly result from the absence of a subcategory for boilers retiring by 2028.

Even if EPA had shown that a unit otherwise planning to retire in 2028 would retire in 2023 to avoid ELG compliance costs (which it has not, as described in Section X.B - Retirement Subcategory), it has not shown that this "premature" retirement would not be replaced in due course with other generation resources, as needed to ensure resource adequacy. NERC's stress test relies upon ignoring how state regulator oversight and electricity markets' inherent balancing of electricity supply and demand prevents retirements from causing reliability problems. If large quantities of generation capacity were to suddenly retire, increasing energy and capacity prices would drive investment and new entrants to the market. To pretend otherwise is to willfully ignore state planning processes and economic fundamentals. Concerns expressed by utilities that retirements accelerated by a couple of years may create reliability problems, *unsupported by any evidence of actual problems that would arise*, are inadequate to carve out a significant subset of facilities from critical Clean Water Act standards.

### F. The Proposed Subcategory for Units with "High Flow" FGD Systems is Unjustified.

In the 2019 Proposal, EPA proposes a high FGD flow subcategory ("High Flow Subcategory"), which would establish BAT based on chemical precipitation alone for facilities with purge flows greater than four million gallons per day.[457] The High Flow Subcategory would apply only to the Cumberland Fossil Plant ("Cumberland Plant"), a coal plant owned and operated by the Tennessee Valley Authority ("TVA"), the nation's largest publicly-owned utility.[458]

The Cumberland Plant is the largest coal-fired power plant in TVA's fleet.[459] The Cumberland Plant is located in Cumberland City, Tennessee, at the confluence of Wells Creek and a stretch of the Cumberland River known as Lake Barkley and is upstream from cherished recreational and wildlife areas in Tennessee, including Barkley Wildlife Management Area, Cross Creeks National Wildlife Refuge, and Land Between the Lakes National Recreation

[455] *See* Attachment: Units in 2028 Subcategory (attached).
[456] NERC, Special Reliability Assessment, at 6.
[457] 84 Fed. Reg. at 64,638.
[458] Danielle Stewart, Environmental Research Group, Alternative Flue Gas Desulfurization Treatment Costs for High Flow Plants – DCN SE07126, EPA-HQ-2009-0819-8200 (Oct. 30, 2019) ("[O]nly one plant, Cumberland (plant ID 6329), meets the requirements of this subcategory.").
[459] Tenn. Valley Auth., Cumberland Fossil Plant, https://www.tva.gov/Energy/Our-Power-System/Coal/Cumberland-Fossil-Plant (2,470 megawatt generating capacity) (attached).

Area.[460] The Cumberland River/Lake Barkley (river miles 90.3–108) is included on Tennessee's list of Known Exceptional Tennessee Waters and Outstanding National Resource Waters due to the Cross Creeks National Wildlife Refuge and the presence of state-endangered lake sturgeon.[461] Several drinking water intakes are also located downstream from the Cumberland Plant.[462]

The Cumberland Plant burns millions of tons of coal annually, resulting in approximately one million tons of coal combustion residuals (coal ash) waste generated annually and, in 2016, an average of 2,097 million gallons of wastewater each day.[463] In the 2019 Proposal, EPA asserts that the Cumberland Plant is the single largest source of FGD wastewater in the country, accounting for "approximately one-sixth to one-seventh of all industry FGD wastewater flows."[464]

In 1994, TVA chose to install a scrubber that discharges large amounts of FGD wastewater after a single use rather than recycling the wastewater in its industrial process.[465] TVA's stated reasons for selecting a high-flow, once-through scrubber included "the ability to burn a wide range of coals" and "the lack of any wastewater treatment effluent limitations for metals."[466] Like most other coal plants, prior to the adoption of the 2015 ELG Rule, TVA's NPDES permit included no limits on toxic pollutants like mercury, arsenic, and selenium.[467] For this reason, shifting toxic pollution from the air to the water made economic sense for TVA in 1994.

For decades, TVA has been discharging massive quantities of toxic pollutants into state-designated Exceptional Tennessee Waters on the Cumberland River. A 2016 report published by the Environmental Integrity Project identified the Cumberland Plant as the worst mercury

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[460] S. Envtl. Law Ctr., Cumberland Fossil Plant: Managed Natural Resource Areas Downstream, May 22, 2015 (attached).
[461] Tenn. Dep't Envt. & Conservation, Exceptional Tennessee Waters & ORNWs in Tennessee: Cumberland River (Lake Barkley), http://tdec.tn.gov:8080/pls/enf_reports/f?p=9034:34304:0: (last visited Apr. 25, 2019) (attached).
[462] S. Envtl. Law Ctr., Tennessee Valley Authority Coal Ash Sites and Downstream Drinking Water Intakes, June 30, 2016 (attached).
[463] Tenn. Valley Auth., Cumberland Fossil Plant Coal Combustion Residuals Management Operations Environmental Impact Statement (Apr. 2018), at S-1 ("The plant consumes an average of 5.6 million tons of coal annually and produces approximately 1 million tons of CCR each year.") (attached); Tenn. Valley Auth., Cumberland Fossil Plant (CUF) – NPDES Permit No. TN0005789 – Updated Permit Renewal Application (Aug. 1, 2016) (reporting an average flow of 2,096.987 mgd from Outfall 2, which includes discharge from internal Outfall 001) (attached).
[464] 84 Fed. Reg. at 64,638 n.54.
[465] Tenn. Valley Auth., Cumberland Fossil Plant – NPDES Permit No. TN0005789 – TVA Request for Alternative Effluent Limitations for Wet Flue Gas Desulfurization System Discharges Based on Fundamentally Different Factors Pursuant to 33 U.S.C. § 1311(n), at 4 (Apr. 28, 2016) (attached).
[466] Tenn. Valley Auth., Cumberland Fossil Plant – NPDES Permit No. TN0005789 – TVA Request for Alternative Effluent Limitations for Wet Flue Gas Desulfurization System Discharges Based on Fundamentally Different Factors Pursuant to 33 U.S.C. § 1311(n), at 5 (Apr. 28, 2016) (attached).
[467] Tenn. Dep't of Envtl. & Conservation, Cumberland Fossil Plant, NPDES Permit No. TN0005789 Part A, 2 (effective date Jan. 1, 2008) (attached).

polluter among coal plants nationwide.[468] Mercury is a neurotoxin that accumulates in fish and can cause damage to a person's nervous, digestive, and immune systems.[469] The report, based on information provided by TVA to the federal EPA and available to the public in the Toxics Release Inventory, found that in 2015, TVA dumped 120 pounds of mercury generated at the Cumberland Plant into the Cumberland River.[470] The same report identifies the Cumberland Plant as the second-worst selenium polluter among coal plants nationwide.[471] Like mercury, selenium also accumulates in fish. Selenium can cause damage to a person's circulatory system.[472] In 2015, TVA dumped 6,000 pounds of selenium generated at the Cumberland Plant into the Cumberland River.[473] Although TVA's subsequent Toxic Release Inventory reporting indicates a reduction in mercury discharges, in 2018, TVA continued to dump 60 pounds of mercury into the river.[474] In 2016, the last year TVA reported, the utility discharged 1,300 pounds of selenium from the Cumberland Plant.[475]

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[468] Environmental Integrity Project, Toxic Wastewater from Coal Plants, at 16 (Aug. 2, 2016), http://environmentalintegrity.org/wp-content/uploads/Toxic-Wastewater-from-Coal-Plants-2016.08.11-1.pdf (attached); *see also* Mark Hicks, Cumberland City Plant Rated Worst Mercury Polluter, Clarksville Leaf-Chronicle (Aug. 11, 2016), http://www.theleafchronicle.com/story/news/2016/08/11/cumberland-fossil-plant-rated-worst-mercury-polluter-us/88559336/ (attached).

[469] Environmental Integrity Project, Toxic Wastewater from Coal Plants, at 8 (Aug. 2, 2016), http://environmentalintegrity.org/wp-content/uploads/Toxic-Wastewater-from-Coal-Plants-2016.08.11-1.pdf (attached).

[470] Environmental Integrity Project, Toxic Wastewater from Coal Plants, at 16 (Aug. 2, 2016), http://environmentalintegrity.org/wp-content/uploads/Toxic-Wastewater-from-Coal-Plants-2016.08.11-1.pdf (attached).

[471] Environmental Integrity Project, Toxic Wastewater from Coal Plants, at 16 (Aug. 2, 2016), http://environmentalintegrity.org/wp-content/uploads/Toxic-Wastewater-from-Coal-Plants-2016.08.11-1.pdf (attached).

[472] Environmental Integrity Project, Toxic Wastewater from Coal Plants, 8 (Aug. 2, 2016), http://environmentalintegrity.org/wp-content/uploads/Toxic-Wastewater-from-Coal-Plants-2016.08.11-1.pdf (attached)

[473] Environmental Integrity Project, Toxic Wastewater from Coal Plants, 16 (Aug. 2, 2016), http://environmentalintegrity.org/wp-content/uploads/Toxic-Wastewater-from-Coal-Plants-2016.08.11-1.pdf (attached).

[474] EPA, TRI On-Site and Off-Site Reported Disposed of or Otherwise Related (In Pounds) Trend Report for Facilities in US TVA Cumberland Fossil Plant (TRI ID 37050STVCM815CU) for Mercury Compounds Chemical US 2000-2018 (Nov. 12, 2019), https://enviro.epa.gov/triexplorer/release_trends?tri=37050STVCM815CU&p_view=TRYR&trilib=TRIQ1&sort=_VIEW_&sort_fmt=1&state=All+states&county=All+counties&chemical=N458&industry=ALL&core_year=&tab_rpt=1&FLD=AIRLBY&FLD=E1&FLD=E2&FLD=E3&FLD=E4&FLD=E41&FLD=E (attached).

[475] EPA, TRI On-Site and Off-Site Reported Disposed of or Otherwise Related (In Pounds) Trend Report for Facilities in US TVA Cumberland Fossil Plant (TRI ID 37050STVCM815CU) for Selenium Compounds Chemical US 2000-2018 (Nov. 12, 2019), https://enviro.epa.gov/triexplorer/release_trends?tri=37050STVCM815CU&p_view=TRYR&trilib=TRIQ1&sort=_VIEW_&sort_fmt=1&state=All+states&county=All+counties&chemical=N725&industry=ALL&core_year=&tab_rpt=1&FLD=AIRLBY&FLD=E1&FLD=E2&FLD=E3&FLD=E4&FLD=E41&FLD=E (attached).

Although, as discussed throughout these comments, technologies exist and have long existed to remove toxic pollutants from FGD wastewater, for the better part of the past decade, TVA has sought to exempt itself from its obligation under the CWA to install modern water pollution controls at the Cumberland Plant.

During the comment period for the 2015 ELG Rule, TVA requested a less stringent subcategory for Cumberland. TVA wrote that "a uniform BAT requirement for all FGD designs is impracticable and that a subcategory or other approach for existing 'once through' and/or high-flow FGD designs is warranted."[476] TVA primarily argued that Cumberland could not achieve the ELGs because its FGD system, due to its metallurgy, would corrode if it recirculated wastewater. And TVA claimed that modifying Cumberland's scrubber material to something more corrosion resistant, or simply complying without recirculation, would be too expensive.[477] In the 2015 ELG Rule, EPA rejected these claims and denied TVA's request for a special subcategory. EPA disagreed with TVA's technical premise, finding Cumberland could recirculate some wastewater without corroding its FGD system. Moreover, EPA found its proposed BAT to be affordable for industry as a whole, as the Clean Water Act requires.[478]

Rather than complying with the 2015 ELG Rule, TVA has persisted in its efforts to seek less stringent effluent limitations for Cumberland. In April 2016, TVA applied for a Fundamentally Different Factors ("FDF") variance to exempt Cumberland from the 2015 ELGs. TVA rehashed the same arguments: Cumberland cannot recycle wastewater, so compliance would be expensive.[479] EPA never granted TVA's application,[480] and the State of Tennessee incorporated the 2015 ELGs into TVA's NPDES permit, which was reissued in 2018.[481] In TVA's comments on the draft permit, TVA expressly stated that it could comply with the 2015 ELG Rule's limits on mercury and arsenic by September 1, 2021, when the utility would complete installation of a new physical-chemical treatment system for the Cumberland Plant.[482]

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[476] EPA, Effluent Limitations Guidelines and Standards for the Steam Electric Power Generating Point Source Category: EPA's Responses to Public Comments, Docket ID No. EPA-HQ-OW-2009-0819-4607-A1, Comment Excerpt No. 4, 3-583 (Sept. 2015).
[477] *Id.*, Comment Excerpt No. 5, 5-35 to 5-38.
[478] *Id.* at 5-38 to 5-41.
[479] Tenn. Valley Auth., Cumberland Fossil Plant – NPDES Permit No. TN0005789 – TVA Request for Alternative Effluent Limitations for Wet Flue Gas Desulfurization System Discharges Based on Fundamentally Different Factors Pursuant to 33 U.S.C. § 1311(n) (Apr. 28, 2016) (attached).
[480] In December 2016, environmental groups, including the Southern Environmental Law Center and the Sierra Club, submitted comments to EPA Region 4 outlining the inadequacy of TVA's FDF variance application, which is attached and incorporated by reference. Letter from Amanda Garcia et al., Southern Envtl. Law Ctr., to Heather McTeer Toney, Envtl. Prot. Agency, re: TVA, Cumberland Fossil Plant – NPDES Permit No. TN0005789 – TVA Request for Alternative Effluent Limitations for Wet Flue Gas Desulfurization System Discharges Based on Fundamentally Different Factors Pursuant to 33 U.S.C. § 1311(n) (Apr. 28, 2016) (Dec. 21, 2016) (attached).
[481] Tenn. Dep't Envt. & Conservation, NPDES Permit No. TN0005789 I(A)(4), at 6 (2018) (attached).
[482] Tenn. Valley Auth., Cumberland Fossil Plant – NPDES Permit No. TN0005789 – Draft NPDES Permit Comments, at 3 (May 23, 2018) ("We suggest establishing Tier limits for mercury and arsenic that would apply on September 1, 2021, or upon construction and startup of physical/chemical treatment and division approval of the initial operating period.") (attached).

Meanwhile, a coalition of industry trade groups, of which TVA is a member, had successfully petitioned the EPA to reconsider the 2015 ELG Rule.[483] TVA then lobbied EPA for special effluent limitations for Cumberland, meeting with David Ross, Assistant Administrator of the Office of Water, in September 2018, to discuss the "uniqueness of their once-through systems and the need for either an FDF [variance] or some other relief in the regulation."[484]

Since that meeting, TVA has confidently assumed that, one way or another, the Cumberland Plant will not have to comply with the 2015 ELGs. In July 2019, TVA published an Environmental Assessment for the proposed construction of FGD wastewater treatment facilities, whose purpose was "to meet the regulatory limits established by EPA's ELGs for Steam-Electric Generating Facilities."[485] The draft EA explored three alternatives, only one of which would comply with the 2015 ELG Rule. TVA's preferred alternative, and the one it ultimately selected, would lead it to violate the 2015 ELGs' restrictions on selenium and nitrate/nitrite and the terms of its current NPDES permit.[486]

The High Flow Subcategory culminates TVA's years-long campaign to receive special treatment for the Cumberland Plant.

1. *EPA proposes a subcategory just for Cumberland.*

The High Flow Subcategory would "establish a new subcategory for facilities with high FGD flows based on the statutory factor of cost."[487] In the 2019 Proposal, EPA discusses only the Cumberland Plant in the context of the High Flow Subcategory, and a memorandum from the Environmental Research Group confirms that the Cumberland Plant will be the only member of this subcategory.[488] For the FGD wastewater category, EPA proposes to establish chemical precipitation plus biological treatment as BAT.[489] In contrast, EPA proposes chemical precipitation alone as BAT for the High Flow Subcategory.[490]

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[483] EPA, Proposed Rule, Postponement of Certain Compliance Dates for the Effluent Limitations Guidelines and Standards for the Steam Electric Power Generating Point Source Category, 82 Fed. Reg. 26,017, 26,018 (June 6, 2017).
[484] Email from Richard Benware to Jan Matuszko, Docket ID No. EPA HQ-2019-006928, at 61 (Sept. 12, 2018).
[485] Tenn. Valley Auth., *Cumberland Fossil Plant (CUF) Wastewater Treatment Facility Final Environmental Assessment*, at 5 (July 2019) (attached).
[486] Tenn. Dep't Envt. & Conservation, NPDES Permit No. TN0005789 I(A)(4), at 6 (2018) (attached). The Southern Environmental Law Center and the Sierra Club submitted comments on TVA's draft environmental assessment highlighting TVA's obligation to comply with existing law. These comments are attached and incorporated by reference. Letter from Christina Reichert et al., S. Envtl. Law Ctr., to Ashley Farless, Tenn. Valley Auth., re: Tennessee Valley Authority's Draft Environmental Assessment for the Cumberland Fossil Plant (CUF) Wastewater Treatment Facility (May 1, 2019) (attached).
[487] 84 Fed. Reg. at 64,638.
[488] ERG, Alternative Flue Gas Desulfurization Treatment Costs for High Flow Plants – DCN SE07126, Docket ID No. EPA-HQ-2009-0819-8200 (Oct. 30, 2019) ("[O]nly one plant, Cumberland (plant ID 6329), meets the requirements of this subcategory.").
[489] 84 Fed. Reg. at 64,631.
[490] *Id.* at 64,638.

Although TVA previously stated that it could comply with the 2015 ELG Rule limits on mercury by September 1, 2021, the High Flow Subcategory would allow Cumberland to discharge nearly ten times the concentration of mercury as other FGD wastewater dischargers.[491] According to EPA, Cumberland discharges "millions of gallons per day [more] than the next highest flow rate in the entire industry."[492] EPA's proposed mercury limit coupled with its estimate of the Cumberland Plant's flows would result in the Cumberland Plant discharging over twenty times more mercury than other facilities.[493] EPA proposes no limitations for selenium or nitrate/nitrite for Cumberland.[494] The High Flow Subcategory thus shields Cumberland from the selenium and nitrate/nitrite limitations EPA proposes for the FGD wastewater category.[495]

2. *The CWA prohibits EPA's proposed subcategory.*

The High Flow Subcategory is inconsistent with the requirements of the Clean Water Act, which does not authorize a subcategory of one based on cost.

**a. Subcategories of One**

The text, structure, and legislative history of the Act demonstrate that BAT is a categorical, industry-wide standard. Congress created a separate mechanism, the FDF variance, for plant-by-plant determinations. Prior to codification of the FDF variance in the CWA, the Supreme Court suggested in dicta that single-member subcategories are permissible.[496] But Congress's subsequent codification of a more limited FDF variance changed the Act's structure, making clear that "Congress intended 'fundamentally different' characteristics of particular plants to be considered by the EPA in a Section 301(n) FDF variance proceeding."[497]

The Clean Water Act requires the EPA to establish "effluent limitations *for categories and classes* of point sources" by applying the "best available technology economically achievable *for such category or class*, which will result in reasonable further progress toward the national goal of eliminating the discharge of all pollutants."[498] "[S]uch effluent limitations shall require the elimination of discharges of all pollutants if the Administrator finds . . . that such elimination is technologically and *economically achievable for a category or class of point sources* . . . ."[499] The related BAT provision requires EPA to "identify . . . the degree of effluent

[491] *Id.* at 64,673-74.
[492] *Id.* at 64,638.
[493] Consultant ERG estimates Cumberland's FGD Purge Flow as 5,142,240 gallons per day (gpd) and its Optimized FGD Flow as 4,418,898 gpd. ERG, Flue Gas Desulfurization Flow Methodology for Compliance Costs and Pollutant Loadings – DCN SE07091, Docket ID No. EPA-HQ-2009-0819-8200 (July 8, 2019). Those figures are more than twice as much as the next highest rates: FGD Purge Flow of 2,153,520 gpd at Big Bend Station and Optimized Purge Flow of 1,644,985 gpd at Trimble County. *Id.*
[494] 84 Fed. Reg. at 64,674.
[495] *Id.* at 64,673.
[496] *See Chem Mfrs. Ass'n v. Nat. Res. Def. Council*, 470 U.S. 116, 131 (1985) ("EPA could promulgate rules . . . creating a subcategory for each source which is fundamentally different").
[497] *Chem Mfrs. Ass'n v. EPA*, 870 F.2d 177, 236 (5th Cir. 1989).
[498] 33 U.S.C. § 1311(b)(2)(A) (emphasis added).
[499] *Id.* (emphasis added).

reduction attainable through the application of the best control measures and practices achievable *. . . for classes and categories of point sources.*"[500]

In contrast to the ELG provisions' emphasis on "categories and classes," the FDF variance in the same section authorizes modifying effluent limitations "for a facility."[501] "[W]hen the legislature uses certain language in one part of the statute and different language in another, the court assumes different meanings were intended."[502] This textual distinction between "categories and classes of point sources" and "a facility" is meaningless if an individual facility can be a category.[503]

As the courts have long recognized, "Congress intended BAT limitations to be based on the performance of the single best-performing plant in an industrial field."[504] BAT only works by comparing facilities, requiring multiple plants within a category for the standard to function as designed. The BAT standard requires EPA to compare facilities across an industrial field and to set standards based on what the single best facility is doing.

The statute provides two ways to establish BAT for a facility. One is through categorical effluent limitation guidelines, "which are nationwide standards set by the EPA Administrator to govern pollutant discharges from point sources."[505] The second method is through individual FDF variances: EPA may create a less stringent, single-facility BAT for any facility that demonstrates that it is fundamentally different with respect to at least one factor EPA considered in setting BAT for the broader category or subcategory.[506] The EPA must consider the same factors for an FDF variance that it has considered for setting BAT pursuant to § 1314(b)(2)(B) – "other than cost."[507]

The two mechanisms create a distinct structure: generalized, categorical BAT standards "are to be established prior to consideration of the characteristics of the individual plant."[508]

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[500] *Id.* (emphasis added). Analyzing this text, the Supreme Court has read ELGs as categorical mechanisms, in contrast with the Act's individual mechanisms like NPDES permits and FDF variances. *E.I. du Pont de Nemours & Co. v. Train*, 430 U.S. 112, 136 (1977) ("The statute thus focuses expressly on the characteristics of the 'category or class' rather than the characteristics of the individual point sources. Normally, such classwide determinations would be made by regulation, not in the course of issuing a permit to one member of the class.").

[501] 33 U.S.C. § 1311(n)(1).

[502] *Sosa v. Alvarez-Machain*, 542 U.S. 692, 711 n.9 (2004).

[503] The ordinary meaning of "class" or "category" implies multiple constituent members. A single plant cannot be a category or class by itself.

[504] *Sw. Elec. Power Co. v. EPA*, 920 F.3d 999, 1018 (5th Cir. 2019) (quoting *Chem. Mfrs. Ass'n v. EPA*, 870 F.2d 177, 226 (5th Cir. 1989)); *see also Kennecott v. EPA*, 780 F.2d 445 (4th Cir. 1985) ("In setting BAT, EPA uses not the average plant, but the optimally operating plant, the pilot plant which acts as a beacon to show what is possible.").

[505] *Sw. Elec. Power Co. v. EPA*, 920 F.3d at 1005.

[506] 33 U.S.C. § 1314(n)(1)(A).

[507] *Id.*

[508] *Du Pont*, 430 U.S. at 127 n.17. *See also Texas Oil & Gas Ass'n v. EPA*, 161 F.3d 923, 939 (5th Cir. 1998) ("We agree that Congress intended to foreclose plant-by-plant evaluation of facilities within a subcategory.").

Congress created a "coherent statutory scheme: One vehicle promulgating categorical regulations of national scope and one vehicle to address concerns relating to individual [facilities]."[509]

A subcategory of one, like the High Flow Subcategory proposed by EPA, turns BAT on its head. Rather than forcing all facilities to operate as cleanly as the single best facility, EPA would set BAT based on the single worst-polluting facility. EPA would allow Cumberland to remain the largest wastewater polluter by setting a standard lower than what any every other FGD wastewater facility must achieve. By comparing all plants to the best performers, Congress structured the BAT standard to demand improvement. "BAT must achieve 'reasonable further progress' towards the Act's goal of eliminating pollution,"[510] and EPA's proposal fails that essential requirement.[511]

**b. The Act Prohibits EPA from Creating Single-Facility, Cost-Based BAT Subcategories.**

Even if a subcategory of one were permissible, which it is not, a subcategory of one based on cost is flatly inconsistent with the Clean Water Act.

The costs of an individual facility are not relevant in setting BAT. The Act requires BAT to be "economically achievable for a category or class of point sources."[512] As the 1972 conference report explains, Congress directed EPA to "make the determination of the economic impact of an effluent limitation on the basis of classes and categories of point sources, as distinguished from a plant-by-plant determination."[513] Courts have consistently found that BAT "does not refer to any individual plant" in assessing economic achievability.[514]

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[509] *Chem. Mfrs. Ass'n v. EPA*, 870 F.2d at 259. The Fifth Circuit panel was discussing the structural relationship of the pretreatment standards (categorical) with removal credits provision (plant-by-plant) but expressly compared that structure to the "FDF variance scheme discussed above" – about which the court stated that "Congress intended 'fundamentally different' characteristics of particular plants to be considered by the EPA in a Section 301(n) FDF variance proceeding." *Id.* at 236.

[510] *Sw. Elec. Power Co.*, 920 F.3d at 1006.

[511] *See Chem. Mfrs. Ass'n v. EPA*, 870 F.2d at 236 (rejecting industry request for a single-plant subcategory and finding that setting BAT in a national rulemaking based on a single plant's characteristics conflicts with the structure Congress created).

[512] 33 U.S.C. § 1311(b)(2)(A).

[513] Sen. Rep. No. 92-1236, at 121 (1972) (Conf. Rep.).

[514] *Du Pont*, 430 U.S. at 127 n.17. The Supreme Court pointed to 33 U.S.C. § 311(c), which allows modification of BAT limitations for a facility if "such modification requirements (1) will represent the maximum use of technology within the economic capability of the owner or operator; and (2) will result in reasonable further progress toward the elimination of the discharge of pollutants." The Court explained, "This provision shows that the [33 U.S.C. § 1311(b)] limitations for 1983 are to be established prior to consideration of the characteristics of the individual plant. Moreover, it shows that the term 'best technology economically achievable' does not refer to any individual plant. Otherwise, it would be impossible for this 'economically achievable' technology to be beyond the individual owner's 'economic capability.'" *Du Pont*, 430 U.S. at 127 n.17 (internal citation omitted). *See also Texas Oil & Gas Ass'n*, 161 F.3d at 928 ("[I]n promulgating ELGs the EPA must set discharge limits that reflect the amount of

Congress structured the Clean Water Act to prohibit EPA from setting effluent limitations for toxic pollutants[515] based on an individual facility's costs. BAT sets effluent limitations based on industry-wide costs, not individual facility costs.[516] Section 301(c) modifications allow EPA to modify an individual facility's effluent limitations based on facility-specific costs.[517] But Congress prohibited such modifications for toxic pollutants, like those at issue here.[518] The FDF variance allows individual accommodation based on any factor "other than cost."[519] FDF variances are unavailable here because cost is the only factor EPA cites to support subcategorization.

Legislative history confirms that the Act does not authorize EPA to create single-facility, cost-based BAT subcategories.

When codifying the FDF variance, Congress reiterated its intent to prohibit single-facility, cost-based subcategories. Regarding the FDF variance, the 1986 conference report stated, "The bill specifically excludes consideration of costs, independent of other eligible factors, as a basis for establishing a fundamental difference with regard to an individual facility."[520]

Senator Robert Stafford (R-VT), Chairman of the Environment and Public Works Committee and a member of the conference committee, explained:

> If a facility faces higher individual cost than the industry average, that is a reflection of economic efficiency of the facility rather than

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pollutant that would be discharged by a point source employing the best available technology that the EPA determines to be economically feasible across the category or subcategory as a whole."); *Chem. Mfrs. Ass'n v. EPA*, 870 F.2d at 219 n.157 ("Congress intended that economic impacts be determined only for classes of facilities, rather than on a plant-by-plant basis. 118 Cong.Rec. 33758 (1972), 1972 Leg. Hist. at 255, 304.").

[515] Arsenic, mercury, and selenium are toxic pollutants for purposes of setting BAT. *See* 33 U.S.C. § 1317(a)(1) (requiring EPA to publish list of toxic pollutants); § 1317(a)(2) (requiring EPA to set BAT for listed toxic pollutants); 40 C.F.R. § 401.15 (listing arsenic, mercury, and selenium as toxic pollutants pursuant to 33 U.S.C. § 1317(a)(1)).

[516] *Du Pont*, 430 U.S. at 127 n.17. *See also EPA v. Nat'l Crushed Stone Ass'n*, 449 U.S. 49, 79 (1980) ("Congress foresaw and accepted the economic hardship, including the closing of some plants, that effluent limitations would cause; and Congress took certain steps to alleviate this hardship . . . ").

[517] 33 U.S.C. § 1311(c).

[518] *Compare id.* ("The Administrator may modify the requirements of subsection (b)(2)(A) of this section with respect to any point source for which a permit application is filed after July 1, 1977, upon a showing by the owner or operator of such point source satisfactory to the Administrator that such modified requirements (1) will represent the maximum use of technology within the economic capability of the owner or operator; and (2) will result in reasonable further progress toward the elimination of the discharge of pollutants.") *with id.* § 1311(*l*) ("Other than as provided in subsection (n) of this section, the Administrator may not modify any requirement of this section as it applies to any specific pollutant which is on the toxic pollutant list under section 1317(a)(1) of this title.").

[519] *Id.* § 1314(n)(1)(A). Section 301(g) provides another mechanism to modify ELGs for individual facilities, but 301(g) modifications are likewise barred for toxic pollutants. *Id.* § 1311(g)(4)(a).

[520] H.R. Rep. No. 99-1004, at 123 (1986) (Conf. Rep.).

> the ability of the industry as a whole to meet the necessary pollution control costs. To establish individual effluent limits on the basis of plant-specific cost of compliance would be to vitiate the principle of industrywide minimum treatment levels. For these reasons . . . the conferees agreed to adopt the Senate approach and exclude the individual cost of compliance from the factors the Administrator may consider when deciding whether to grant an FDF variance to a particular facility. Although *the act does not and should not provide a mechanism to modify the requirements of an effluent guideline on the basis of fundamentally different costs at an individual facility*, section 301(c) of the act provides for modification of requirements in a case where such requirements are beyond the economic capability of the owner. . . . In addition, section 301(c) is subject to section 301(*l*), which prohibits the Administrator from modifying any requirement as it applies to a toxic pollutant. *This provision assures that toxic pollutants will be controlled, regardless of the economic capability of the discharger*.[521]

In short, the Clean Water Act does not authorize EPA to make single-plant, cost-based exceptions to effluent limitations for toxic pollutants, as EPA proposes to do in the High Flow Subcategory.

3. *EPA has no reasoned basis for its policy shift in establishing the High Flow Subcategory.*

In the 2015 ELG Rule, EPA rejected both a high flow subcategory and the use of chemical precipitation alone to establish BAT. The EPA has provided no reasoned basis for its policy reversal.

**a. The High Flow Subcategory Is an Unexplained Reversal.**

EPA proposes a subcategory for "facilities with high FGD flows based on the statutory factor of costs."[522] EPA explains, "Based on the typical chloride concentrations in the FGD scrubber, the facility would be able to recycle little, if any, of the wastewater back to the scrubber as a means for reducing the flow volume sent to a treatment system. . . . [A]s a result of the inability to recycle these high flows, TVA stated that the cost of a biological treatment system would be high."[523] EPA takes TVA at its word, justifying the subcategory on that basis.

But in 2015, EPA considered and rejected doing exactly what it now proposes. TVA had argued that "a uniform BAT requirement for all FGD designs is impracticable and that a subcategory or other approach for existing 'once through' and/or high-flow FGD designs is

[521] 132 Cong. Rec. S16,426 (daily ed. Oct. 16, 1986) (statement of Sen. Stafford) (emphasis added).
[522] 84 Fed. Reg. at 64,638.
[523] *Id.*

warranted."[524] TVA asserted that the FGD systems' metallurgy at certain facilities, including Cumberland, could not achieve the flow minimization EPA presumed.[525] The result is that "facilities with 'once-through' and/or high-flow FGDs would unfairly bear the brunt of the industry's cost to treat to comply with the ELGs."[526]

In 2015, EPA disagreed. The agency found that the FGD wastewater BAT, chemical precipitation plus biological treatment, was "achievable and affordable for the industry as a whole."[527] Finding high FGD flow wastewater characteristics to be "within the same range" as other facilities in the category, EPA declined to create a high FGD flow subcategory.[528] EPA cited the "variability of FGD wastewater flow rates at plants," which could incentivize plants to discharge more wastewater to become part of the less stringent subcategory.[529] The scenario would likely lead to "an increase in intake water, which is non-water quality environmental impact" and "an increase in wastewater discharge volumes and potentially no reduction in pollutant loadings, which would not result in reasonable further progress toward the national goal of eliminating the discharge of all pollutants."[530]

In the 2015 ELG Rule, EPA considered and rejected TVA's arguments that Cumberland's FGD system metallurgy prohibited compliance with the BAT limitations due to corrosion and operational concerns. EPA found that the Cumberland FGD system could tolerate higher concentrations of chloride than TVA stated would be possible, thus allowing for increased wastewater recirculation.[531] Highlighting several options for wastewater recycling, EPA emphasized that "plants are not required to install or operate a certain FGD wastewater treatment technology to meet the final ELG's [sic]."[532]

The only new information EPA cites for the policy shift is a brief email, in which TVA provides "preliminary estimates [of compliance costs] with an accuracy of -30% to +50%."[533] EPA has not addressed its 2015 findings that a high FGD flow subcategory would create incentive to discharge more wastewater and result in related non-water quality environmental impacts of increased intake water. Facing the same arguments TVA presented in 2015, and with essentially the same data, EPA reaches the opposite conclusion. Yet EPA fails to explain the inconsistencies of doing so.

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[524] EPA, Effluent Limitations Guidelines and Standards for the Steam Electric Power Generating Point Source Category: EPA's Responses to Public Comments, Docket ID No. EPA-HQ-OW-2009-0819-4607-A1, Comment Excerpt No. 4, 3-583 (Sept. 2015).
[525] *Id.*, Comment Excerpt No. 5, 5-35.
[526] *Id.*, Comment Excerpt No. 4, 3-584.
[527] *Id.* at 3-585.
[528] *Id.* at 3-586.
[529] *Id.*
[530] *Id.*
[531] *Id.* at 3-587.
[532] *Id.*, Comment Excerpt No. 5, 5-40 to 5-41.
[533] *See* Email from Carolyn Koroa, Tenn. Valley Auth.,to Anna Wildeman, EPA (Nov. 13, 2018) - DCN SE08195, Docket ID No. EPA-HQ-OW-2009-0819-8276.

**b. EPA Proposes a BAT It Previously Rejected as Inadequate.**

EPA unlawfully proposes a BAT that it previously rejected as inadequate. EPA proposes chemical precipitation alone as BAT for high FGD flow facilities.[534] But in 2015, EPA rejected chemical precipitation as BAT. The agency found chemical precipitation was "not effective at removing selenium, nitrogen compounds, and certain metals that contribute to high concentrations of TDS in FGD wastewater."[535] Discharging those pollutants "caus[es] adverse human health impacts and some of the most egregious environmental impacts."[536] EPA therefore "determined that, by itself, chemical precipitation would not result in reasonable further progress toward the national goal of eliminating the discharge of all pollutants (see CWA section 301(b)(2)(A)), and rejected that technology basis as BAT."[537]

In the 2019 Proposal, EPA does not explain or acknowledge important inconsistencies created by its policy reversal: How can a technology EPA once rejected as inadequate become the best available technology more than four years later? Does EPA still expect human health impacts and egregious environmental impacts from pollutants discharged in wastewater treated only by chemical precipitation? Most importantly, does chemical precipitation alone result in reasonable further progress toward the national goal of eliminating the discharge of all pollutants? EPA's proposed rule is arbitrary and capricious because it fails to explain or even acknowledge these critical inconsistencies. Instead, EPA relies solely on cost to explain its proposal.

**c. EPA has no basis in the CWA for the High Flow Subcategory.**

EPA has no reasoned basis to reverse its policy, because it has no statutory authority for its current position. As discussed, the Clean Water Act authorizes EPA to promulgate ELGs for categories and classes of point, and other provisions, like the NPDES program or FDF variance, tailor the Act's requirements for individual facilities.[538] Congress made every effort to prohibit EPA from modifying a facility's effluent limitations for toxic pollutants based on an individual facility's compliance costs.[539] A one-facility, cost-based subcategory for toxic pollutants flouts the text, structure, and legislative history of the Clean Water Act. Therefore, EPA has no reasoned basis for its new policy.

4. *The proposed High FGD Flow Subcategory is arbitrary and capricious.*

Even if EPA acknowledges and explains the many inconsistencies of its policy shift, the proposed subcategory would still be arbitrary and capricious because the agency overestimates

[534] 84 Fed. Reg. at 64,638.
[535] 80 Fed. Reg. at 67,851.
[536] *Id.*
[537] *Id.* at 67,852.
[538] *See* Section X.F.2 – The Act Prohibits EPA's Proposed Subcategory.
[539] *See* Section X.F.2.B - The Act Prohibits EPA from Creating Single-Facility, Cost-Based BAT Subcategories.

costs, gives controlling weight to an irrelevant factor while ignoring mandated factors, ignores reasonable alternatives, and reaches contradictory conclusions.

**a. EPA Overestimates Compliance Costs.**

EPA justifies the High Flow Subcategory based only on compliance costs, but the agency significantly overestimates those costs. Compliance costs correlate to FGD wastewater flow rate,[540] which EPA estimates as exceeding four million gallons per day (mgd) for the Cumberland Plant.[541]

First, EPA's cost calculations incorrectly assume the Cumberland Plant constantly operates at full capacity, generating 2,470 MW, but Cumberland's average generation over the last three years was 1,244 MW.[542] About half the generation means about half the FGD wastewater flow rates and about half the costs.

It is irrational to base costs on peak output. Cumberland rarely reaches 2,470 MW in generation. Those peaks have become increasingly rare, a trend likely to continue.[543] TVA could meet peak demand through other facilities in its diverse generation portfolio. TVA could add equalization capacity, temporarily storing excess FGD wastewater in rare instances when the Cumberland Plant must approach 2,470 MW. These alternative responses to peak demand would lower costs by ensuring that the Cumberland Plant could consistently recirculate FGD wastewater without risk of corrosion.

Second, EPA ignores TVA's reasonable alternatives to decrease FGD flow and thereby decrease costs. EPA states that chlorine concentrations bar wastewater recirculation at the Cumberland Plant, leading to high flows and high costs. But TVA has an obvious and simple solution to lower chlorine concentrations in its FGD wastewater: use more Powder River Basin coal, which has about twenty times less chlorine than TVA's current blend.[544] Lower chlorine levels would allow the Cumberland Plant to recirculate more wastewater without risk of corrosion. By recirculating more wastewater, Cumberland would decrease its FGD purge flow and compliance costs.

Although EPA asserts in the preamble that its rationale for the High Flow Subcategory "reflects the reasonably predictable flow associated with actual and expected FGD

[540] *See* Proposed TDD, Section 5.2.1.
[541] EPA does not expressly find Cumberland exceeds 4 mgd in the preamble, but it cites Cumberland in establishing this category for facilities exceeding 4 mgd. EPA seems to rely on memoranda from the Environmental Research Group (ERG), which estimate Cumberland's FGD wastewater flows as exceeding 4 mgd. *See, e.g*, ERG, Flue Gas Desulfurization Flow Methodology for Compliance Costs and Pollutant Loadings – DCN SE07091, Docket ID No. EPA-HQ-2009-0819-8200 (July 8, 2019).
[542] Dr. Ranajit (Ron) Sahu, Technical Comments on EPA's Proposed Rule to Revise the Best Available Technology (BAT) Effluent Limitations Guidelines (ELGs) for Flue Gas Desulfurization (FGD) Wastewater and Bottom Ash Transport Water (BATW), at 48 ("Sahu Expert Report") (attached).
[543] *See id.* at 46-47.
[544] *See id.* at 44.

operations,"[545] the agency did not consider the ramifications of the Cumberland Plant's actual (and declining) capacity factors in its cost analysis.[546] EPA's cost analysis is unsupported by the record, which shows that Cumberland Plant's costs are much lower than EPA estimates and that TVA has reasonable alternatives to lower those costs.

**b. EPA Relies on an Irrelevant Factor and Ignores Statutory Factors.**

EPA improperly considered the costs of a single facility in setting BAT for the High Flow Subcategory. BAT must be economically achievable, but "Congress intended that economic impacts be determined for classes of facilities, rather than on a plant-by-plant basis."[547] The Act's structure and legislative history show that Congress intended to prohibit EPA from setting effluent limitations for toxic pollutants based on an individual facility's costs.[548] And while industry-wide costs are relevant in setting BAT, they are of secondary importance.[549] Allegedly disproportionate costs for a single facility are not a legitimate factor for setting BAT, which "represents a commitment of the maximum resources economically possible to the ultimate goal of eliminating all polluting discharges."[550] By justifying BAT for toxic pollutants solely based on Cumberland's relatively high compliance costs, "the agency has relied on factors which Congress has not intended it to consider."[551]

EPA ignored BAT's express statutory factors. To justify a BAT subcategory, a class of facilities must be fundamentally different with respect to the factors listed in 33 U.S.C. § 1314(b)(2)(B).[552] "Although the EPA has significant discretion in deciding how much weight to accord each statutory factor under the CWA, it is not free to ignore any individual factor entirely. Both the CWA, 33 U.S.C. § 1314(b)(2), and the EPA's own regulations, 40 C.F.R. § 125(c)-(d), state that the EPA *shall* take into account (or apply) certain factors in making a BAT determination . . . ."[553] Those factors include "the engineering aspects of the application of various types of control techniques, process changes, [and] non-water quality environmental impact." 33 U.S.C. § 1314(b)(2)(B). In the High Flow Subcategory, EPA has ignored every factor but cost. Nowhere does EPA address the non-water quality environmental impacts, despite the agency's 2015 refusal to create a high FGD flow subcategory partly because of the potential "increase in intake water, which is non-water quality environmental impact that EPA is required

[545] 84 Fed. Reg. at 64,638.
[546] Sahu Expert Report at 47-48.
[547] *Chem. Mfrs. Ass'n v. EPA*, 870 F.2d at 219 n.157.
[548] *See* Section X.F.2 - The Act Prohibits EPA's Proposed Subcategory.
[549] *See Am. Iron and Steel Inst. v. EPA*, 526 F.2d 1027, 1052 n.51 (3d Cir. 1975) ("[I]t is clear that for 'BATEA' standards, cost was to be less important than for the 'BPCTCA' standards, and that for even the 'BPCTCA' standards cost was not to be given primary importance.").
[550] *Nat'l Crushed Stone*, 449 U.S. at 74.
[551] *Motor Vehicle Mfrs. Ass'n of U.S., Inc. v. State Farm Mut. Auto. Ins. Co.*, 463 U.S. 29, 43 (1983).
[552] *Citizens Coal Council v. EPA*, 447 F.3d 879, 893 (6th Cir. 2006).
[553] *Texas Oil & Gas Ass'n*, 161 F.3d at 934. *See also Sw. Elec. Power Co.*, 920 F.3d at 1006 ("[T]he Act lists factors the Administrator must consider in determining BAT.").

to consider under section 304(b) of the Clean Water Act."[554] EPA's failure to consider relevant statutory factors is arbitrary and capricious.

Even if EPA had considered the BAT factors, not one supports subcategorization. TVA has argued against complying with the 2015 ELG Rule based on non-water quality impacts, process changes, and engineering aspects of the application of the 2015 BAT. TVA has argued that changing its FGD wastewater pollution control technology would "risk air compliance impacts."[555] But other plants meet their equally stringent air compliance obligations while also recycling FGD wastewater. TVA has cited concerns of increased mercury in the gypsum it markets.[556] Not only is that concern unsupported by any evidence, but protecting the economic viability of a marketing program is not a reason the Clean Water Act contemplates for relaxing effluent limitations.[557] TVA has stated that recirculation "increases the complexity of wastewater which reduces its ability to be treated."[558] But other facilities overcome this same "complexity," which is present in all FGD recirculated wastewater. And as EPA found in 2015, the Cumberland Plant's FGD system metallurgy can recirculate wastewater without corroding. TVA has acknowledged the system's ability to accept up to 3,175 ppm chloride, a level sufficient to increase FGD wastewater recirculation without causing corrosion.[559] Finally, because TVA's average generation at the Cumberland Plant is much lower than EPA assumes, for the vast majority of the time the Cumberland Plant's actual flow rates are less than 4 mgd – the threshold EPA has established for the High Flow Subcategory – without any changes at all to how the units are operating.[560] In summary, the facts show that the sole plant for which EPA proposes the High Flow Subcategory does not require subcategorization.

### c. EPA Ignores Reasonable Alternatives.

EPA unlawfully fails to consider any alternatives. Under all four options EPA considered, BAT for the High Flow Subcategory is chemical precipitation.[561] There are numerous available technologies EPA refused to consider for high FGD flow facilities, including various combinations of chemical precipitation, biological treatment (high- or low-residence time), membrane technology, thermal technology. EPA's failure is particularly egregious because the

[554] EPA, Effluent Limitations Guidelines and Standards for the Steam Electric Power Generating Point Source Category: EPA's Responses to Public Comments, Docket ID No. EPA-HQ-OW-2009-0819-4607-A1, Comment Excerpt No. 4, 3-586 (Sept. 2015).
[555] Tenn. Valley Auth., *Cumberland Fossil Plant (CUF) Wastewater Treatment Facility Final Environmental Assessment*, at 12 (July 2019) (attached).
[556] *Id.*
[557] In 2019, TVA reported to its state regulator that it was acquiring the wallboard facility to which it previously marketed its gypsum. Tenn. Valley Auth., Wet FGD Wastewater Treatment and Bottom Ash ELG Project Updates, Cumberland Fossil Plant, NPDES Permit No. TN0005789, Annual Report 2018 (Jan. 24, 2019) (attached).
[558] *Id.*
[559] Sahu Expert Report at 43.
[560] *Id.* at 48.
[561] *See* 84 Fed. Reg. at 64,630.

agency failed to evaluate a single alternative – despite a congressional mandate to find the "best available technology economically achievable."

Similarly, in proposing the High Flow Subcategory, EPA fails to consider Cumberland's alternatives for meeting the same standard as other facilities. Assuming Cumberland's scrubber metallurgy prevents compliance with the FGD wastewater category's BAT (a position EPA rejected in 2015), TVA could modify its scrubber materials or line its absorbers to increase resistance to corrosion. TVA could replace some or all high sulfur coal with low sulfur and low chlorine sub-bituminous Powder River Basin coal at Cumberland. As EPA informed TVA in 2015, "plants are not required to install or operate a certain FGD wastewater treatment technology to meet the final ELG's."[562] EPA now assumes that BAT mandates a single technology, arguing that Cumberland's inability to implement that technology justifies special treatment. Erroneously ruling out one existing technology for one plant does not justify weakening BAT, a "technology-forcing" standard Congress created "to press development of new, more efficient and effective pollution-control technologies."[563] Even if Cumberland could not achieve the effluent limitations through the same technology as other facilities in the category, TVA has alternative means to comply with the standards. EPA has unlawfully failed to consider any of those alternatives.

#### d. EPA Paradoxically Endorses and Rejects the Same Technology as BAT.

Setting chemical precipitation as BAT, despite rejecting it elsewhere as inadequate, is arbitrary and capricious. In 2015, EPA found that chemical precipitation would not result in reasonable further progress.[564] Consistent with that finding, EPA's current proposal rejects the chemical precipitation as BAT for the FGD wastewater category, partly because chemical precipitation inadequately reduces discharges of pollutants, including selenium and nitrate/nitrite.[565] EPA's "paradoxical action" –selecting chemical precipitation as BAT, while rejecting it as inadequate elsewhere – "signals arbitrary and capricious agency action."[566] Further, "EPA has contravened the plain language of the CWA, which defines BAT as the technology that '*will result* in reasonable further progress' toward pollutant discharge elimination."[567]

## XI. EPA'S PROPOSED DELAY OF COMPLIANCE DEADLINES FOR FGD WASTEWATER IS UNJUSTIFID AND UNLAWFUL.

EPA's newly proposed compliance deadlines for FGD wastewater are unjustified and unlawful. EPA is proposing to delay the compliance deadline for FGD wastewater until

[562] EPA, Effluent Limitations Guidelines and Standards for the Steam Electric Power Generating Point Source Category: EPA's Responses to Public Comments, EPA-HQ-OW-2009-0819-4607-A1, Comment Excerpt No. 5, 5-40 to 5-41.
[563] *Sw. Elec. Power Co. v. EPA*, 920 F.3d at 1005.
[564] 80 Fed. Reg. at 67,852.
[565] 84 Fed. Reg. at 64,632.
[566] *Sw. Elec. Power Co.*, 920 F.3d at 1016.
[567] *Id.* (emphasis original).

December 31, 2025.[568] If EPA's proposed rule is finalized in 2020, the rule will not require compliance with the FGD wastewater limitations until five years after promulgation. A five-year deadline to comply with effluent limitations is unjustified and violates the requirements of the Clean Water Act. Based on the administrative record and the Clean Water Act, EPA should require compliance with the FGD wastewater limitations no later than December 31, 2023, which would be approximately three years from issuance of the BAT determinations for FGD wastewater.

### A. EPA's Proposed Delay of Compliance Deadlines for FGD Wastewater is Unjustified.

EPA's proposed delay of compliance deadlines for FGD wastewater is unjustified because the administrative record shows that the large majority of units can comply with the proposed rule's requirements within 2-3 years. EPA is proposing to keep the "no later than" implementation date for bottom ash transport water as December 31, 2023.[569] However, EPA is proposing to delay the "no later than" implementation date for FGD wastewater until December 31, 2025, five years after the rule will be finalized. According to EPA, "[w]hile three years may be appropriate for a facility on an individual basis, several utilities and EPC firms pointed out difficulties in retrofitting on a company-wide or industry-wide basis. Moreover, the same engineers, vendors, and construction companies are often used across facilities."[570] Therefore, the agency reasons that "more time for implementation of the proposed BAT limitations [for FGD wastewater] will help to accommodate the process changes necessitated by combining chemical precipitation and LRTR, and alleviate competition for resource."[571] However, EPA acknowledges throughout the preamble and proposed rule that most units can comply with the FGD wastewater limitations within 2-3 years.

As EPA states in the preamble:

> Information in the record indicates a *typical time frame of 26 to 34 months* to raise capital, plan and design systems (including any necessary pilot testing), procure equipment, and construct and then test systems (including a commissioning period for FGD wastewater treatment systems). Many facilities have already completed initial steps of this process, having evaluated water balances and conducted pilot testing to prepare for implementing the 2015 rule.[572]

During EPA's reconsideration of the 2015 rule, the agency collected implementation timing information from vendors for FGD wastewater treatment technologies.[573] Specifically,

[568] 84 Fed. Reg. at 64,642.
[569] *Id.* at 64,641.
[570] *Id.* at 64,642.
[571] *Id.*
[572] *Id.*
[573] *See* ERG, FGD and Bottom Ash Implementation Timing memo, Docket ID No. EPA-HQ-OW-2009-0819-8191.

ERG, EPA's technical support consultant, reviewed information from three vendors for low residence time reduction (LRTR) and membrane filtration installations.[574] The timing estimates for installing LRTR systems indicate a total implementation timeframe of approximately twenty-five months while the timing estimates for installing membrane filtration indicate a total implementation timeframe of no more than twenty-eight months.[575] EPA should base the compliance deadlines for FGD wastewater on the data in the administrative record rather than on expressed difficulties by some utilities.

Furthermore, in determining that "low utilization" units can comply with the effluent limitations for bottom ash transport water and FGD wastewater within two years,[576] EPA acknowledges that three years for compliance with the FGD wastewater limitations is achievable. As discussed in Section X.D – Low Utilization, EPA is proposing to implement tiered limitations for the agency's proposed subcategory for "low utilization" boilers, which EPA defines as a unit that does not exceed a two-year average net generation of 876,000 MWh.[577] Specifically, if an operator reported that it exceeded the two-year average net generation for a unit, it would have two years before discharges of FGD wastewater would be subject to the rule's effluent limitations.[578] As EPA explains, the two-year timeframe for compliance with the FGD wastewater limitations is "consistent with the engineering documents provided to the EPA for the installation of the appropriate technologies."[579] Furthermore, the two-year timeframe for compliance would "ensure a *timely transition* to more stringent limitations as soon as the reason for the less stringent limitations (disproportionate cost) is gone."[580] By proposing compliance deadlines of five years, EPA contradicts its own determinations elsewhere in the proposed rule and goes against the information in the administrative record.

Although EPA mentions that the same engineers, vendors, and construction companies are often used across facilities, the administrative record shows that there is actually a wide variety of vendors as well FGD wastewater treatment technologies that alleviates any vendor bottleneck that the agency is stating as the reason for the delay of compliance deadlines. As EPA identified in the Technical Development Document for the proposed rule, there are several different types of FGD wastewater treatment technologies that have been developed and installed or tested at power plants.[581] The options of treatment technologies include high residence time reduction (HRTR) and LRTR biological treatments, zero-valent iron, membrane filtration,

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[574] *Id.* at 2-3; *see also* Frontier Water Systems, Project Timeline, Docket ID No. EPA-HQ-OW-2009-0819-8177; Envirogen, Selenium Projects Timeline, Docket ID No. EPA-HQ-OW-2009-0819-8178; New Logic Research, Implementation timelines for Membranes, Docket ID No. EPA-HQ-OW-2009-0819-8179.
[575] ERG memo at 2-3; *see also* Section VI – Zero Discharge FGD.
[576] 84 Fed. Reg. at 64,666.
[577] *Id.*
[578] *Id.*
[579] *Id.*
[580] *Id.*
[581] EPA, Supplemental Technical Development Document for Proposed Revisions to the Effluent Limitations Guidelines and Standards for the Steam Electric Power Generating Point Source Category, Docket ID No. EPA-HQ-OW-2009-0819-8211 (Nov. 2019) ("2019 Proposed TDD"), 4-1.

thermal treatment and solidification as well as other pilot-scale tested alternative technologies.[582] Additionally, EPA received information and data regarding FGD wastewater treatment technologies from several different vendors.[583] Overall, the information and data EPA received and reviewed regarding implementation timing and the different types of treatment technologies from various vendors do not support a five year timeframe for compliance with FGD wastewater limitations.

### B. EPA's Proposed Delay of Compliance Deadlines for FGD Wastewater is Unlawful.

EPA's proposed five-year timeframe for compliance with FGD wastewater limitations is unlawful because the proposed provision violates the effluent limitation requirements of the Clean Water Act.[584] EPA is proposing to delay the "no later than" implementation date for FGD wastewater until December 31, 2025, approximately five years after the FGD wastewater limitations are to be finalized.[585] By extending these compliance deadlines, EPA is violating the Clean Water Act provision that requires compliance with the ELGs no later than three years after the limitations are promulgated.[586] [587]

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[582] *Id.* at 4-1, 4-2.

[583] *See* Final BKT Engineering Meeting Notes, Docket ID No. EPA-HQ-OW-2009-0819-7316; Final Envirogen Meeting Notes, Docket ID No. EPA-HQ-OW-2009-0819-7324; Final Oasys Meeting Notes, Docket ID No. EPA-HQ-OW-2009-0819-7334; Final FTS Meeting Notes, Docket ID No. EPA-HQ-OW-2009-0819-8159; Final KLeeNwater Meeting Notes, Docket ID No. EPA-HQ-OW-2009-0819-7617; Saltworks Vendor Meeting Notes, Docket ID No. EPA-HQ-OW-2009-0819-7328; Final Heartland Vendor Meeting Notes, Docket ID No. EPA-HQ-OW-2009-0819-7619; New Logic Meeting Notes, Docket ID No. EPA-HQ-OW-2009-0819-7623; Carmeuse Meeting Notes, Docket ID No. EPA-HQ-OW-2009-0819-7624; Final Novinda Meeting Notes, Docket ID No. EPA-HQ-OW-2009-0819-7629; Final SUEZ Meeting Notes, Docket ID No. EPA-HQ-OW-2009-0819-7630; Final Aquatech Meeting Notes, Docket ID No. EPA-HQ-OW-2009-0819-7631; Final GreenBlu Meeting Notes, Docket ID No. EPA-HQ-OW-2009-0819-7632; Final Purestream Meeting #1 Notes, Docket ID No. EPA-HQ-OW-2009-0819-7640; Final Evoqua Meeting Notes, Docket ID No. EPA-HQ-OW-2009-0819-7641; Final Mitsubishi Meeting Notes, Docket ID No. EPA-HQ-OW-2009-0819-7642; Final Veolia Meeting Notes, Docket ID No. EPA-HQ-OW-2009-0819-7643; Final Montrose Meeting Notes, Docket ID No. EPA-HQ-OW-2009-0819-8089 & Docket ID No. EPA-HQ-OW-2009-0819-8090.

[584] Several of the commenters challenged EPA's 2017 rule that postponed the compliance deadlines for bottom transport water and FGD wastewater established in the 2015 ELG rule on the basis, amongst other reasons, that the Clean Water Act required compliance with ELGs within three years of promulgation. The United States Court of Appeals for the Fifth Circuit denied the commenters' petition for review in August 2019. *See Clean Water Action v. EPA*, 936 F.3d 308 (5th Cir. 2019).

[585] 84 Fed. Reg. at 64,642.

[586] 33 U.S.C. § 1311(b)(2)(C) (requiring "compliance with [BAT] effluent limitations . . . as expeditiously as practicable but in no case later than three years after the date such limitations are promulgated . . . , and in no case later than March 31, 1989"). Subsections (D) and (F) are also applicable and include identical language requiring that compliance with effluent limitations be achieved within three years after promulgation.

[587] Congress initially set a March 31, 1989 deadline for compliance with BAT effluent limitations, Pub. L. No. 100–4, 101 Stat 7 (1987), with the intention that EPA would promulgate ELGs setting forth those

EPA will no doubt respond to this comment by claiming that the three-year deadline for ELG compliance only applies to the first set of BAT limitations for toxic pollutants from an industry. That argument relies on the fact that the compliance deadline provision in Section 301(b)(2)(C) of the Act also states that compliance must be achieved "in no case later than March 31, 1989," an interpretation accepted by the U.S. Court of Appeals for the Fifth Circuit in litigation over EPA's rule delaying the compliance dates of the 2015 ELGs.[588] However, that decision was legally erroneous and, even it were correctly decided on the law, does not properly apply to the facts of the present regulation.

The plain text of Section 301(b)(2)(C) specifies that compliance must be achieved no later than three years following the promulgation of toxic pollutant BAT limitations, and there is nothing ambiguous about that language. That the same section also contains a provision – establishing March 1989 as the presumptive outside date for initial limitations – does not render the otherwise-applicable three-year language (or, for that matter, the otherwise-applicable "as expeditiously as practicable" language) unclear. To the contrary, it underscores that Congress viewed compliance with BAT limitations on toxic pollutants as an urgent priority, to be met quickly after such limitations were promulgated. Moreover, Section 301(d) reinforces this approach, demanding that effluent limitations be reviewed and updated as appropriate every five years, "pursuant to the procedure established under" Section 301(b)(2);[589] this provision reveals Congressional intent to continually and promptly move industries toward better pollution controls and, by incorporating the procedures of subsection (b), directs EPA to follow the compliance deadlines for BAT limitations on toxic discharges in subsection (b)(2)(C), minus the outdated reference to March 1989.

Even if one were to accept – which we do not – the interpretation that the three-year deadline for BAT limitations on toxic discharges only apply to the initial promulgation of such limitations, the limitations established by this rulemaking for FGD wastewater qualify as such initial limits. In the 1982 steam electric ELG rule, EPA expressly "reserve[ed] effluent limitations for four types of wastewaters for future rulemaking," including ""[f]lue gas

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BAT limits before the deadline. Additionally, Congress amended 33 U.S.C. § 1319 to allow EPA to address issues involving compliance with BAT limits through enforcement discretion. *See* 33 U.S.C. § 1319(a)(5)(A) ("Any [enforcement] order issued . . . shall specify a time for compliance . . . not to exceed a time the Administrator determines to be reasonable in the case of a violation of a final deadline, taking into account the seriousness of the violation and any good faith efforts to comply with applicable requirements."); H.R. Conf. Rep. No. 1004, 99th Cong., 2d Sess. 115 (1986) ("If dischargers in an entire category are unable to meet the March 31, 1989, deadline provided in the conference substitute as a result of the Administrator's failure to promulgate effluent limitations in sufficient time to allow for compliance by such date, non-compliance resulting from the Administrator's delay can be dealt with under EPA's current post-1984 deadline enforcement policy."). Based on this legislative history, courts have held that EPA lacks discretion to extend compliance deadlines for BAT limits beyond what the statute requires. *See Chem. Mfrs. Ass'n v. EPA*, 870 F.2d 177, 242, *clarified on reh'g*, 885 F.2d 253 (5th Cir. 1989); *see also Rybachek v. EPA*, 904 F.2d 1276, 1300 (9th Cir. 1990).

[588] *See Clean Water Action*, 936 F.3d at 316-17 accepting EPA argument that deadlines only apply to initial promulgation).

[589] 33 U.S.C. § 1311(d).

desulfurization waters," not setting any effluent limitations at all specific to those wastestreams.[590]

The Clean Water Act's requirement that compliance with BAT limits be achieved within three years is consistent with its overall goal to eliminate all discharges of pollution into navigable waters[591] and its framework for achieving that goal. The Act requires that EPA set effluent limits based on BAT for pollutants including toxic metals.[592] To facilitate the adoption and revision of effluent limitations, the Act also requires that EPA develop and publish ELGs that characterize the effluent discharges from a given industry, identify the level of pollution control that is possible in light of available technologies, and specify the relevant factors for determining what constitutes BAT.[593] To ensure that governing regulations reflect advances in control technology, the Clean Water Act requires EPA to review and, if appropriate, revise these effluent limitations and underlying ELGs at regular intervals.[594] Section 301(d) of the Clean Water Act requires that all effluent limitations "*shall* be reviewed at least every five years, and, if appropriate, revised."[595] Similarly, with respect to ELGs, Section 304(b) of the Clean Water Act requires that "the Administrator *shall* . . . publish . . . regulations, providing guidelines for effluent limitations, and, at least annually thereafter, revise, if appropriate, such regulations."[596]

EPA is planning to finalize the FGD wastewater limitations by December 31, 2020. Three years from issuance of the BAT determinations would be no later than December 31, 2023. A three-year timeframe for compliance with FGD wastewater limitations is consistent with the congressional goals of the Clean Water Act. Congress' goal in enacting the Clean Water Act was to produce progressively cleaner waters – and ultimately eliminate all pollution – through the ratcheting down of effluent limits over time as technology advances.[597] Mandatory revisions to standards would be meaningless without mandatory deadlines for compliance with the revised standards. Furthermore, as EPA has acknowledged, the agency has previously required no longer than a three-year timeframe for compliance with ELGs.[598]

In summary, EPA should not delay the compliance deadlines for FGD wastewater and, instead, should require compliance with the effluent limitations for FGD wastewater by no later than December 31, 2023. This three-year timeframe for compliance would be in line with the data and information in the administrative record and in accordance with the requirements of the Clean Water Act.

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[590] 47 Fed. Reg. 52,290, 52,291 (Nov. 19, 1982).
[591] 33 U.S.C. § 1251(a)(1).
[592] *See id.* §§ 1311(b)(2)(A)-(F), 1314(a)(4).
[593] *Id.* § 1314(b).
[594] *See id.* §§ 1311(d), 1314(b).
[595] *Id.* § 1311(d) (emphasis added).
[596] *Id.* § 1314(b) (emphasis added).
[597] *Id.* §§ 1251(a)(1), (2), (6).
[598] EPA "has used the reference to three years in the provisions to allow three years to come into compliance for ELGs after 1989." EPA, Postponement of ELG Compliance Deadlines Comment Response Document, Docket ID No. EPA-HQ-OW-2009-0819-7088 (Sept. 2017), at pdf p. 9.

## XII. EPA SHOULD MAKE CLEAR IN ANY FINAL RULE THAT COMPLIANCE MUST BE ACHIEVED AS SOON AS POSSIBLE.

The 2015 ELG Rule provided that plants must comply with BAT limitations set forth in the rule "as soon as possible after November 1, 2018, and no later than December 31, 2023." In the 2019 Proposal, EPA has proposed that plants must comply with any new BAT limitations "as soon as possible on or after November 1, 2020" and "no later than" December 31, 2023 for bottom ash transport water or December 31, 2025 for FGD wastewater.[599]

Both the 2015 ELG Rule and 2019 Proposal require state permitting authorities to set deadlines for achieving compliance with BAT limitations based on consideration of plant-specific factors.[600] Those factors, which have been in place since the 2015 ELG Rule and remain the same in the 2019 Proposal, are: (a) time to expeditiously plan, design, procure, and install equipment; (b) changes the facility is undertaking to comply with regulations of greenhouse gases and coal combustion residuals; (c) optimization periods for pollution-control technology installed for FGD; (d) and other factors as appropriate.[601]

Although the 2015 ELG Rule made clear that state permitting authorities must use plant-specific information when considering these factors, EPA acknowledges in its 2019 Proposal that permit writers have not always determined a plant's earliest possible compliance date based on the requisite plant-specific information.[602] Commenters support EPA's proposal to "clarify that the discharger must provide *relevant, site-specific information*" to permitting authorities in order to seek a compliance date later than November 1, 2020.[603] EPA's statement simply reiterates the requirement set forth in the 2015 ELG Rule.[604] We agree with EPA that permitting authorities must "provide a well-documented justification of how [they] determined the 'as soon as possible' date in the fact sheet or administrative record for the permit" and that "[i]f the permitting authority determines a date later than November 1, 2020, the justification should explain why allowing additional time to meet the proposed limitations is appropriate, and why the discharger cannot meet the effluent limitations as of November 1, 2020."[605]

Commenters also agree with EPA's statement in the 2019 Proposal that in setting plant-specific compliance dates, permitting authorities must "determine the *earliest possible date* that

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[599] 84 Fed. Reg. at 64,664.
[600] *Id.* at 64,624, 64,664-65.
[601] *Id.* at 64,664-65.
[602] *See id.* at 64,665 ("Environmental groups informed the EPA that facilities had filed permit applications for, and states had granted, delayed applicability dates based on information about a facility other than the one being permitted. *This was not the intent of the 2015 rule . . . .*") (emphasis added).
[603] 84 Fed. Reg. at 64,665 (emphasis added).
[604] *See* 80 Fed. Reg. at 67,883 (indicating that permitting authorities must determine a plant's compliance deadline based on information from the specific plant at issue. For example, EPA explains that with respect to the first factor, the permitting authority "should evaluate what operational changes are expected at *the* plant to meet the new BAT limitations." (emphasis added)). It is clear in the 2015 ELG Rule that EPA intended permitting authorities to determine a plant's compliance deadline based on information from *that particular plant* and not from *any* plant or the industry as a whole.
[605] 84 Fed. Reg. at 64,665.

the facility can meet the limitations . . . and apply the proposed limitations as of that date."[606] Here too, EPA's statement simply reiterates the requirement that EPA set forth in its 2015 ELG Rule that "the permitting authority should determine the earliest possible date that the plant can meet the limitations."[607] In both the 2015 ELG Rule and 2019 Proposal, EPA uses the phrase "earliest possible date" interchangeably with the requirement that dischargers achieve compliance "as soon as possible." EPA should make clear in any final rule that the two phrases have the same meaning with respect to compliance deadlines and impose the same timing requirement that was established in the 2015 ELG Rule.

Nevertheless, despite this clear requirement in the 2015 ELG Rule, state permitting authorities have failed to comply with their obligations to determine appropriate "as soon as possible" compliance deadlines for facilities.[608] For example: Pennsylvania's Department of Environmental Protection has accepted cursory and non-plant-specific rationales for 2023 compliance dates at multiple plants;[609] Indiana's Department of Environmental Management has set a 2018 compliance date for the Merom plant subject to broad reopener provisions that render that compliance date mostly meaningless;[610] Texas's Commission on Environmental Quality has issued a final permit for the Sandow plant that does not impose an ELG compliance date but instead allows the permittee one year to propose a compliance date and submit supporting materials;[611] and both Kentucky's Energy and Environment Cabinet and Ohio's Environmental Protection Agency have postponed plants' compliance with BAT limitations to 2023 based on nothing more than anticipation of the 2019 Proposal.[612] These examples reveal that state permitting authorities implementing the 2015 ELG Rule frequently defaulted to 2023 compliance dates in violation of their obligation to determine plants' earliest possible compliance dates, and have based their compliance determinations on generic industry information—or in the case of Kentucky and Ohio, on no information—rather than on plant-specific information as the ELG Rule requires.

The requirement that permitting authorities consider only plant-specific information in determining a plant's compliance deadline is integral to the requirement that plants achieve compliance as soon as possible. Unless a permitting authority uses site-specific information in considering the compliance-timing factors, the factors themselves are wholly irrelevant to the question of the earliest possible date by which a plant can achieve compliance with BAT. For

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[606] *Id.* at 64,664-65 (emphasis added).
[607] 80 Fed. Reg. at 67,883.
[608] *See* EPA-HQ-OW-2009-0819-7751, ERG Memorandum to Ron Jordan, EPA from Sara Bossenbroek, ERG, Notes from Meeting with Earthjustice *et al.*, at 3 (Aug. 23, 2019).
[609] *See, e.g.*, Sierra Club, Comments on Draft NPDES Permit No. PA0001627 for Cheswick Generating Station (Feb. 12, 2018) (attached); Sierra Club, Comments on Draft NPDES Permit No. PA0027481 for Bruce Mansfield Plant (Sept. 10, 2018) (attached); Sierra Club, Comments on Draft NPDES Permit No. PA0005037 for Homer City Generating Station (Sept. 4, 2018) (attached); Sierra Club *et. al.*, Comments on Draft NPDES Permit No. PA0002062 for Keystone Generating Station (Mar. 29, 2018) (attached).
[610] IDEM, Final Modification: Permit No. IN0050296 Hoosier Energy, Merom Generating Station, Sullivan, Indiana (Aug. 5, 2016) (attached).
[611] TCEQ, Permit to Discharge Wastes, TPDES Permit No. WQ0000395000, Alcoa Inc. (Oct. 26, 2016) (attached).
[612] *See, e.g.*, Kentucky Division of Water, KPDES No. KY0041971, Trimble County Generating Station (Jan. 19, 2018) (attached); Ohio EPA, Fact Sheet, NPDES Permit No. 0IB00009*WD (2018) (attached).

example, the second factor instructs permitting authorities to consider "changes being made or planned at the plant" in response to new regulations. But changes made at the Merom plant have no bearing on when the Sandow plant can achieve compliance with BAT limitations. By using generic industry information to determine a plant's compliance date, permitting authorities eviscerate the requirement that a plant achieve compliance with the rule as soon as it is possible for the plant to do so.

Because these problems are likely to persist without EPA action, EPA should strengthen language in any final rule that makes clear that November 1, 2018 is the default compliance date for BAT limitations established in the 2015 ELG Rule and November 1, 2020 is the default compliance date for any new BAT limitations established in the current rulemaking. EPA also should strengthen its oversight of state-permitting authorities' compliance date decisions to ensure that they are consistent with the requirement that plants achieve compliance as early as possible based on plant-specific information.

In addition, EPA should clarify existing language about the factors that permitting authorities must consider in determining plants' compliance dates. Specifically, EPA should make clear in any final rule that facilities must "plan, design, procure, and install" pollution-control technology concurrently to the greatest extent possible in order to reduce the time needed to achieve compliance. Commenters agree with EPA's statement in the 2019 Proposal that:

> Regardless of when a facility's NPDES permit is ready for renewal, the EPA recommends that each facility immediately begin evaluating how it intends to comply with the requirements of any final rule. In cases where significant changes in operation are appropriate, the EPA recommends that the facility discuss such changes with its permitting authority and evaluate appropriate steps and a timeline for the changes as soon as a final rule is issued, even prior to the permit renewal process.[613]

In furtherance of this requirement, EPA also should require state permitting authorities to consider the amount of time that has elapsed between promulgation of any final rule and a plant's permit renewal date in determining a plant's earliest possible compliance date. For example, if a permit is not renewed until 2023, that permittee should be required to come into compliance with the final rule immediately upon receiving its renewed permit. This factor would incentivize permitting authorities and plants to begin planning for compliance before the permit renewal process, which is consistent with the above-quoted language from the 2019 Proposal and with the requirement that plants achieve compliance "as soon as possible."

[613] 84 Fed. Reg. at 64,664. EPA also made this statement in the 2015 ELG Rule. *See* 80 Fed. Reg. at 67,882-83.

## XIII. THE PROPOSED RULE UNJUSTIFIABLY TRADES SMALL COST SAVINGS TO INDUSTRY FOR SIGNIFICANT LOSSES IN PUBLIC HEALTH AND ENVIRONMENTAL BENEFITS.

"EPA estimates that its proposed option (*i.e.*, Option 2) will save $136.3 million per year in social costs and result in between $14.8 million and $68.5 million in benefits, using a three percent discount [rate]. . . ."[614] However, as explained in detail below and in the attached report prepared by Synapse Energy Economics,[615] EPA's Proposed BCA is deeply flawed and severely underestimates lost benefits under EPA's preferred regulatory option. In reality, EPA unjustifiably trades small cost savings to industry for significant losses in public health and environmental benefits. EPA's proposed action will increase discharges of nearly all pollutants regulated under the rule with the exception of bromide.[616] Option 4 – as modified to (1) remove the proposed subcategories for high FGD flow plants, low-utilization boilers, and boilers retiring by 2028 and (2) maintain zero-discharge requirements for bottom ash transport water – is the strongest of the options that EPA analyzed.[617]

Even greater environmental benefits will be realized if EPA adopts – as the Clean Water Act requires – a zero-discharge standard for both bottom ash transport water and FGD wastewater. EPA's Integrated Planning Model ("IPM") analysis, and a supplemental IPM analysis performed by the Natural Resources Defense Council ("NRDC"), show that neither EPA's Option 4 nor a zero-discharge regulatory option would have noticeable effects on coal capacity, grid reliability, or electricity prices, while a zero-discharge option would have far superior environmental benefits.

### A. Structural Flaws in EPA's Analysis Conceal the True Costs of EPA's Proposed Action.

Structural flaws in EPA's Proposed BCA – including an improper baseline and a failure to clearly and transparently state costs and benefits associated with individual program components – obscure the true costs of EPA's proposed action and hinder public assessment of regulatory alternatives.

EPA's decision to effectively exempt[618] units either retiring or fuel switching by December 31, 2028 from compliance with the ELGs results in a significant loss of environmental benefits that should otherwise have been achieved under the 2015 ELG Rule. However, EPA did not calculate the pollution reductions that might have been achieved through pollution control

[614] 84 Fed. Reg. at 64,622; *see also* Proposed BCA at ES-2 to ES-3.
[615] Synapse Energy Economics, Inc., Review of Benefit-Cost Analysis for the EPA's Proposed Revisions to the 2015 Steam Electric Effluent Limitations Guidelines (Jan. 21, 2020) ("2020 Synapse BCA Analysis") (attached).
[616] *Id.* at 2, 19.
[617] *Id.* at iii, 20-21.
[618] "Under all four options, boilers retiring by December 31, 2028, would be subcategorized, and for this subcategory BAT limitations would be set equal to BPT limitations for TSS based on the use of surface impoundments." 84 Fed. Reg. at 64,630 (using substantially similar language for both the FGD wastewater and BA transport water wastestreams). *See also* Section X.B – Retirement Subcategory.

upgrades at the subject facilities and therefore did not monetize the loss of such benefits within the Proposed BCA. Instead, EPA removed such facilities from consideration entirely[619] – essentially subsuming the lost benefits within an improper and artificial regulatory baseline.[620]

EPA also failed to adequately and transparently break out impacts from proposal components, partially obscuring the true drivers of Option costs and benefits. For example, a careful review of the Proposed BCA clarifies that EPA's claim that Option 2 will both increase benefits and lower costs stems entirely from the Agency's assumptions concerning participation in the proposed Voluntary Incentives Program. EPA projects that 18 plants will join the VIP under Option 2, with 90% of bromide reduction benefits deriving from just 6 plants.[621] Absent those bromide reductions, net benefits from Option 2 would decrease relative to a 2015 baseline.[622] Under Option 4, meanwhile, net benefits would increase both with and without VIP program bromide reduction benefits.[623] EPA's failure to transparently break out impacts from individual program components is inconsistent with BCA best practices and hinders the public's ability to thoroughly assess the merits of EPA's proposed action.[624]

### B. EPA's Failure to Monetize and Quantify All Costs and Benefits Further Distorts the BCA in Favor of EPA's Preferred Alternative.

EPA's failure to monetize and quantify costs and benefits from significant environmental and human health impacts further distorts the Agency's Proposed BCA. EPA underestimates the human health benefits that could be achieved by reducing or eliminating the pollution loads associated with bottom ash transport water and FGD wastewater. The Agency limits its focus to a narrow subset of health effects, arbitrarily excludes much of the drinking water risk from its analysis, and fails to consider multiple pollutants' potential cumulative impact. EPA likewise failed to monetize significant impacts from anticipated changes in national air emissions rates. As a result, the Proposed BCA seriously distorts any comparison of compliance costs to health and environmental benefits, rendering the BCA meaningless and an arbitrary and invalid basis for any Agency decision-making. Cumulatively, the failure to monetize multiple reduced benefit streams skews the results of EPA's Proposed BCA toward EPA's preferred Option 2 and away from Options offering greater health and environmental protections.[625]

[619] "The EPA removed coal-fired generating units that will retire or convert fuel type prior to December 31, 2028, from the analyses supporting this proposed rule . . . ." Proposed TDD at 3-4.
[620] *See* 2020 Synapse BCA Analysis at 8, 11; *see generally* Section IV – Alternatives.
[621] 2020 Synapse BCA Analysis at 20.
[622] *Id.* at 19.
[623] *Id.*
[624] *Id.* at 13, 21.
[625] *See id.* at 13-16.

1. *EPA omits many health benefits associated with reducing power plant discharges.*

EPA's Proposed BCA continues the flawed approach of the 2015 ELG Rule[626] by narrowly focusing on a subset of the health effects associated with a small handful of pollutants. Indeed, EPA acknowledges this fact:

> EPA's analysis omits the following health effects: low birth weight and neonatal mortality from in-utero exposure to lead, decreased postnatal growth in children ages one to 16, delayed puberty, immunological effects, decreased hearing and motor function; effects to adults from exposure to lead (*e.g.*, cardiovascular diseases, decreased kidney function, reproductive effects, immunological effects, cancer and nervous system disorders); effects to adults from exposure to mercury, including vision defects, hand-eye coordination, hearing loss, tremors, cerebellar changes, and others; and other cancer and non-cancer effects from exposure to other steam electric pollutants. Therefore, the total monetary value of changes in human health effects included in this analysis represent only a subset of the potential health benefits (or forgone benefits) that are expected to result from the regulatory options.[627]

This is only a partial list of EPA's omissions, which are discussed in more detail below, but even this partial list shows that EPA's Proposed BCA is fatally flawed. Given the dramatically incomplete accounting of health benefits, EPA's comparisons of benefits to costs are meaningless, and cannot be used as a justification for the 2019 Proposal.

Although the Agency analyzes some of the cancer risks associated with bromide byproducts and arsenic, and some of the neurotoxicity associated with exposure to lead and mercury, EPA arbitrarily limits its analysis to a subset of the relevant risks. For arsenic, EPA continues to use an outdated cancer potency estimate, despite knowing that the cancer risks are likely to be 17 times greater than the Proposed BCA assumes. According to EPA's proposed revision to the cancer assessment for arsenic, the best available science supports a cancer potency estimate for oral exposure of 25.7 cases per mg/kg-d, roughly 17 times higher than the potency estimate of 1.5 cases per mg/kg-d used in Proposed BCA.[628] This affects both drinking water risks and fish consumption risks.

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[626] Some of the authors of this comment letter contributed to a critique of the 2015 ELG Rule that bears directly on the current rulemaking. B. Gottlieb et al., Selling Our Health Down the River: Why EPA Needs to Finalize the Strongest Rule to Stop Water Pollution from Power Plants, Docket ID No. EPA-HQ-OW-2009-0819-5555 (June 17, 2015).

[627] Proposed BCA at 2-7 (internal citations omitted); *see also* 2020 Synapse BCA Analysis at 13-15.

[628] *Compare* EPA, Draft Toxicological Review of Inorganic Arsenic in Support of Summary Information on the Integrated Risk Information System (IRIS), EPA/635/R-10/001 (Feb. 2010) (attached) ("Draft Arsenic Review"), *with* Proposed BCA at 2-7 (citing EPA, Benefit and Cost Analysis for the Effluent

For lead, EPA limits its analysis of neurotoxicity to exposure between the ages of 1 and 7, ignoring exposures after age 7 or *in utero*,[629] even though these exposures also convey a risk of neurotoxicity.[630] For mercury, EPA only looks at exposure *in utero*,[631] ignoring exposures after birth, which again convey a risk of neurotoxicity.[632]

It is also important to note that EPA failed to consider cancer risk associated with any pollutant other than bromide byproducts and arsenic, and failed to consider neurotoxicity associated with any pollutant other than lead and mercury, despite the fact that many pollutants in power plant wastewater are known or possible carcinogens and known neurotoxins. These critical omissions are discussed in more detail below.

Beyond cancer and neurotoxicity, the pollutants listed above as well as other toxic pollutants in power plant discharges present a wide range of other health risks. For example, arsenic, boron, lead, and thallium are all associated with reproductive and developmental risks.[633] Cadmium can cause kidney, liver, and lung damage.[634] Hexavalent chromium can harm the liver and blood.[635] Adults exposed to lead have an increased risk of many health effects including hypertension, heart attacks, strokes, and anemia.[636]

2. *EPA's analysis of drinking water impacts is arbitrary, irrational, and incomplete.*

EPA acknowledges that there are many pollutants in steam electric discharges whose reduction or elimination could benefit human health.[637] EPA should have evaluated the potential reduction in drinking water concentrations, and the corresponding health benefits, for all of these

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Limitations Guidelines and Standards for the Steam Electric Power Generating Point Source Category, at 3-16, Docket ID No. EPA-HQ-OW-2009-0819-5856 (Sept. 2015) ("Final 2015 BCA")). Although EPA identified separate potency estimates for women (25.7 cases per mg/kg/d) and men (16.9 cases per mg/kg/d), it stated that the potency estimate for women should be used as the point of departure for the derivation of health criteria. Draft Arsenic Review at 131-32.

[629] Proposed BCA at 5-1, 5-6 to 5-7.

[630] *See, e.g.*, Agency for Toxic Substances & Disease Registry, Toxicological Profile for Lead, at 101-36 (Aug. 2007) (discussing neurological risks after exposure as adults or as children) (attached); J.M. Davis, Risk Assessment of the Developmental Neurotoxicity of Lead, 11 Neurotoxicology 285 (1990) ("Lead has long been recognized as a developmental neurotoxicant.").

[631] Proposed BCA at 5-1, 5-10 to 5-11.

[632] *See, e.g.*, P. Gradjean et al., Neurotoxicity from Prenatal and Postnatal Exposure to Methylmercury, 43 Neurotoxicology and Teratology 39 (2014) ("adverse effects on brain development should be considered a risk associated with postnatal exposures") (attached).

[633] EPA, Environmental Assessment for the Effluent Limitations Guidelines and Standards for the Steam Electric Power Generating Point Source Category, at 3-4 to 3-10, Docket ID No. EPA-HQ-OW-2009-0819-6427 (Sept. 2015) ("Final 2015 EA"); EPA, Integrated Risk Information System, Lead and Compounds, https://cfpub.epa.gov/ncea/iris/iris_documents/documents/subst/0277_summary.pdf.

[634] Final 2015 EA at 3-4 to 3-10.

[635] California EPA, Public Health Goal for Hexavalent Chromium (Cr VI) in Drinking Water, at 1 (July 2011) (attached).

[636] Final 2015 BCA at 2-4, 3-10.

[637] *See, e.g.*, Proposed BCA at 2-3 to 2-4, 4-21.

pollutants. Yet the Agency arbitrarily focused on bromide and its byproducts, total trihalomethanes ("TTHMs"), to the exclusion of almost everything else.[638] Although EPA mentions arsenic and lead, and alludes to the potential health benefit associated with reducing exposure to these pollutants, the Agency ultimately disregards these benefits based on an irrational and inconsistent logic.

As EPA acknowledges, TTHMs, arsenic, and lead share a common characteristic – they are 'non-threshold' pollutants with no safe level of exposure.[639] This means that "any reduction in exposure to these pollutants is expected to yield benefits."[640] Yet EPA fails to account for much of the potential reduction that would come with more stringent pollution controls. The Agency also introduces a substantial inconsistency into its analysis by arbitrarily treating TTHMs one way and treating arsenic and lead the opposite way. At the end of this muddled analysis EPA ends up underestimating the potential benefits of reducing exposure for all three pollutants.

For bromide, EPA only evaluates the health effects associated with reducing TTHM concentrations if those concentrations are already below the Maximum Contaminant Level ("MCL").[641] This ignores any benefit associated with reducing TTHM levels that currently exceed the MCL. If, for example, a drinking water system currently has TTHM concentrations 3 times higher than the MCL, and reducing power plant discharges could bring that concentration down to 1.1 times the MCL, there would be an enormous public health benefit. This is a scenario that EPA ignores entirely. Or consider a situation in which a drinking water system exceeds the TTHM MCL, but only by a small margin, and reducing power plant discharges could bring that concentration down to well below the MCL. Again, EPA apparently ignored this possibility. By ignoring TTHM concentrations above the MCL, EPA has arbitrarily underestimated the health effects of bromide reduction.

EPA's implicit reliance on drinking water utilities' independent obligation to comply with MCLs is misplaced. Although drinking water utilities are required to ensure that water meets MCLs for many individual pollutants, they do not always accomplish this goal. In 2011, for example, there were over 8,000 MCL violations, exposing nearly 15 million people to higher than authorized levels of toxic substances.[642] There is also an indefinite time lag between the moment when a pollutant exceeds an MCL and when the utility re-establishes compliance. This time lag is determined by the amount of time it takes for the exceedance to be noticed, recorded, and reported; the amount of time it takes the relevant regulatory agency to commence an enforcement action; and the amount of time it takes the utility to correct the problem, including any compliance schedule entered into by the utility and the regulatory agency. All of this means

[638] *See id.* at 4-1 to 4-25.
[639] *Id.* at 2-4, 4-22.
[640] *Id.* at 4-22.
[641] *Id.* at 4-3 ("EPA's analysis quantifies the human health effects associated with incremental changes between the MCL and the [MCL Goal].").
[642] EPA, Fiscal Year 2011 Drinking Water and Ground Water Statistics, EPA-816-R-13-003, at 18-19 (2013) (attached).

that MCL exceedances can expose people to egregiously unsafe levels of TTHMs for long periods of time; this is a risk that EPA must take seriously and analyze.

For arsenic and lead (and other pollutants), EPA's approach is arbitrarily and irrationally the opposite of its approach to bromide. For these pollutants, EPA only considered exposure concentrations that exceed the MCL.[643] This ignores any pollutant reductions between the MCLs for arsenic and lead and their respective MCL goals (zero, in both cases). EPA announces this absurd analytical approach immediately after conceding that "any reduction in exposure to these pollutants is expected to yield benefits."[644] Since any reduction – say, from 90% of the MCL to 10% of the MCL – will yield health benefits, there is simply no justification for EPA to ignore those benefits. This is in fact particularly true for concentrations below the MCL because drinking water utilities will have no legal obligation to reduce those concentrations. The only way to ameliorate this exposure and risk is to reduce pollution loads to source water. In other words, reductions in power plant discharges are guaranteed to have a health benefit, and EPA should analyze that benefit.

A further error in EPA's focus on pollutant levels that exceed MCLs is that EPA has not set MCLs for many of the most health-threatening pollutants in power plant discharges. For example, drinking water utilities are not required to remove manganese, which can cause damage to the developing nervous system, and which power plants discharge at a rate of more than 14 million pounds each year.

By only analyzing bromide byproduct levels <u>below</u> the MCL, while simultaneously limiting its analysis of other pollutants to levels <u>above</u> their MCLs, EPA has created a patently irrational and incomplete patchwork of exposure and risk. EPA must revise its analysis to include all potential pollutant reductions associated with each regulatory option and with a zero-discharge regulatory option. This is the only way to capture the true health impacts associated with cleaner drinking water.

3. *EPA fails to fully account for cancer risks, neurological risks, or the cumulative risks of exposure to multiple carcinogens or neurotoxins.*

Arsenic and TTHMs are not the only carcinogens in power plant wastewater. Hexavalent chromium is another potent carcinogen in power plant wastewater. Studies in humans show that hexavalent chromium in drinking water can cause stomach cancer, and this is consistent with evidence of digestive system cancers in animal studies.[645] EPA recently proposed a designation of "likely to be carcinogenic to humans" for oral exposure,[646] and the California EPA stated that hexavalent chromium is "carcinogenic by the oral route of exposure."[647] Lead and mercury, which are assessed for their neurological risks in EPA's rulemaking, may also cause cancer.

[643] Proposed BCA at 4-22.
[644] *Id.*
[645] EPA, Draft Toxicological Review of Hexavalent Chromium in Support of Summary Information on the Integrated Risk Information System (IRIS), EPA/635/R-10/004A, at 199-200 (Sept. 2010) (attached).
[646] *Id.*
[647] California EPA, Public Health Goal for Hexavalent Chromium (Cr VI) in Drinking Water, at 1 (July 2011) (attached).

Lead is currently categorized by EPA as a "probable" carcinogen, and methyl mercury is categorized as a "possible human carcinogen," based both on animal studies and evidence of damage to genetic material, a first step in cancer formation.[648]

Similarly, lead and mercury are not the only neurotoxins in power plant wastewater. Manganese is another known neurotoxin found in power plant wastewater.[649] There is growing concern in the scientific community over the effects of manganese, specifically in drinking water.[650] The effects of manganese exposure, even at levels that are commonly found in North American groundwater supplies, include reduced IQ and impaired memory and attention.[651] As with many neurotoxins, children are more sensitive than adults.[652] Arsenic, in addition to causing cancer, is also a neurotoxin.[653] As with manganese, there is growing concern over the risks associated with levels commonly found in drinking water. One recent study in Maine, for example, found significant reductions in IQ and other endpoints in children exposed to 5-10 micrograms of arsenic per liter, a level that is below the current safe drinking water standard for arsenic.[654] Another important neurotoxin is aluminum. EPA has stated that "[o]ne of the greatest health concerns regarding [aluminum] is its neurological effects."[655] As with many neurotoxins, the developing fetus and infants are especially vulnerable.[656]

EPA also fails to account for the combined risk of multiple pollutants that share a common mechanism of toxicity, affect the same body organ or system, or result in the same health endpoint. As discussed above, power plants discharge several cancer-causing pollutants

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[648] EPA, Integrated Risk Information System, Methyl Mercury, https://cfpub.epa.gov/ncea/iris/iris_documents/documents/subst/0073_summary.pdf; EPA, Integrated Risk Information System, Lead and Compounds, https://cfpub.epa.gov/ncea/iris/iris_documents/documents/subst/0277_summary.pdf.

[649] *See, e.g.*, Agency for Toxic Substances & Disease Registry, Toxicological Profile for Manganese (2012) (attached); P. Grandjean & P. Landrigan, Neurobehavioural Effects of Developmental Toxicity, 13 *Lancet Neurol.* 330 (2014) (attached).

[650] *See, e.g.*, K. Ljung & M. Vahter, Time to Re-Evaluate the Guideline Value for Manganese in Drinking Water? 115 *Envtl. Health Persp.* 1533 (2007) (attached); H.A. Roels et al., Manganese Exposure and Cognitive Deficits: A Growing Concern for Manganese Toxicity, 33(4) *Neurotoxicol.* 872 (2012) (attached).

[651] *See, e.g.*, Y. Oulhote et al., Neurobehavioral Function in School-Age Children Exposed to Manganese in Drinking Water, 122 *Envtl. Health Persp.* 1343 (2014) (attached); M. Bouchard et al., Intellectual Impairment in School-Age Children Exposed to Manganese from Drinking Water, 119 *Envtl. Health Persp.* 138 (2011) (attached).

[652] Agency for Toxic Substances & Disease Registry, Toxicological Profile for Manganese, at 332-33 (Sept. 2012) (attached).

[653] Agency for Toxic Substances & Disease Registry, Toxicological Profile for Arsenic, at 180-83 (Aug. 2007) (attached); P. Grandjean & P. Landrigan, Neurobehavioural Effects of Developmental Toxicity, 13 *Lancet Neurol.* 330 (2014) (attached).

[654] G. Wasserman et al., A Cross-Sectional Study of Well Water Arsenic and Child IQ in Maine Schoolchildren, 13 *Envtl. Health* 23-32 (2014) (attached).

[655] EPA, Provisional Peer-Reviewed Toxicity Values for Aluminum, at 6 (2006) (attached).

[656] *Id.* at 28.

and several neurotoxins, with potential cumulative risks for both endpoints. EPA must consider this potential in any credible BCA.

4. *EPA fails to monetize impacts from anticipated changes in air emissions.*

Finally, EPA fails to fully assess and monetize impacts from anticipated changes in air emissions. EPA examined changes in air pollution through three mechanisms: (1) changes in auxiliary electricity use by power plant pollution control trains; (2) changes in transportation-related air emissions from trucking of CCR waste, and most significantly (3) changes in the profile of electric generating units due to altered costs of compliance under the proposed regulatory options.[657] In so doing, EPA "quantified, but did not monetize, changes in emissions of $PM_{2.5}$ precursors $NO_x$ and $SO_2$."[658] Because $NO_x$ and $SO_2$ emissions are greater under Option 2,[659] this omission likewise distorts the BCA in favor of its preferred regulatory option.[660]

* * *

In summary, EPA's dramatically incomplete accounting of health and other benefits renders the agency's Proposed BCA fatally flawed. As EPA itself acknowledges, "the total monetary value of changes in human health effects included in this analysis represent only a subset of the potential health benefits (or forgone benefits) that are expected to result from the regulatory options."[661] Since EPA's evaluation of benefits is profoundly incomplete, its comparison of benefits to costs is meaningless, and the Proposed BCA is an invalid basis for any Agency decision-making.

### C. A Corrected BCA Would Demonstrate that Regulatory Option 4, with Certain Revisions, Is the Only Option Offering a Justifiable Change in Environmental and Health Benefits.

To accurately assess benefits and costs of the proposed rule, EPA must correct the structural flaws in the BCA analysis structure and fully quantify and monetize the costs and benefits of its proposed action. Specifically, EPA should evaluate the impact of the proposed modifications against two new baselines: (1) a corrected existing rule baseline, modified to reflect costs and benefits resulting from ELG compliance with the 2015 rule (as modified by the 2017 postponement rule) as well as regulatory changes and updates to the profile of electric generating facilities announced between October 2018 and July 2019, and (2) a status quo baseline of current (2019) conditions.[662] EPA should also separately and transparently calculate and state the costs and benefits associated with each component of its preferred action and

[657] 84 Fed. Reg. at 64,658.
[658] Proposed BCA at 8-5.
[659] 84 Fed. Reg. at 64,659; *see also* Proposed BCA at 8-3 to 8-4.
[660] *See* 2020 Synapse BCA Analysis at 15.
[661] Proposed BCA at 2-7.
[662] 2020 Synapse BCA Analysis at 8, 12, 21.

alternatives, including all technology bases, subcategories, and assumptions concerning use of the Voluntary Incentives Program.[663]

Based on its own analysis, Synapse Energy Economics concludes that Option 4 – as modified to (1) remove the proposed subcategories for high FGD flow plants, low-utilization boilers, and boilers retiring by 2028 and (2) maintain zero-discharge requirements for bottom ash transport water – is the only regulatory compliance option offering an acceptable change in the level of environmental and health benefits relative to the 2015 rule.[664]

In addition, as discussed in Section VI – Zero Discharge FGD, EPA must also consider a regulatory option that not only maintains zero-discharge requirements for bottom ash transport water, but that also (unlike Option 4) requires zero discharge of FGD wastewater based on use of membrane treatment or other technologies. A zero-discharge rule would maximize environmental benefits at little additional cost over the effluent limitations for FGD wastewater that EPA evaluated under Option 4, given that it would be based on use of the same treatment technologies. EPA's failure to consider the costs and benefits of a regulatory option that completely eliminates discharges from both bottom ash transport water and FGD wastewater further undermines the legitimacy of its benefit-cost analysis.

### D. Integrated Planning Models Show That No Regulatory Option Would Have Meaningful Impacts on Coal Capacity, Coal Retirements, Reliability, or Electricity Prices, While a Zero-Discharge Rule Would Maximize Environmental Benefits.

Throughout the rulemaking record, EPA suggests that its decision-making process was guided by concerns over preventing coal plant retirements and protecting grid reliability.[665] As discussed elsewhere in this comment letter, not only are these invalid bases for deriving BAT limitations, but EPA has also failed to present sufficient record support to establish that the concerns are anything more than speculation.[666] On the contrary, the record shows that the impacts of the steam electric ELGs on coal capacity, grid reliability and electricity prices will be vanishingly small, even under regulatory options more aggressive than EPA is currently proposing.

The Integrated Planning Model ("IPM") results in the record show minimal impacts, even for the most stringent regulatory option considered by EPA (Option 4). Under EPA's baseline scenario, coal capacity will decline by 18% between 2021 and 2050.[667] Under Option 4, the

[663] *Id.* at 13, 22.
[664] *See id.* at iii, 20-22.
[665] *See, e.g.*, 84 Fed. Reg. at 64,639 ("Low utilization boilers tend to operate only during peak loading. Thus, their continued operation is useful, if not necessary, for ensuring electricity reliability in the near term"); *id*. at 64,638-39 (discussing the need for subcategories to prevent "competitive disadvantage" and "disparate costs"); *id*. at 64,640 (speculating about "significant reliability problems," and stating that "orderly retirement of older facilities [is] vital to ensuring electricity reliability").
[666] *See, e.g.*, Section X – Subcategories Unjustified.
[667] Proposed RIA at 5-6, Tbl. 5-2.

result is exactly the same – coal capacity will decline by 18% between 2021 and 2050.[668] Under EPA's baseline, electricity prices will increase by 36%.[669] Under Option 4, the result is exactly the same.[670] In short, Option 4 would have virtually no impact on coal capacity and electricity prices.[671]

The relative impacts of the various options compared to each other are even smaller. Coal capacity in 2050 under Options 2 and 4 would be 145.3 and 145.4 GW, respectively, a difference of 0.07%.[672] Electricity prices in 2050 under Options 2 or 4 would be exactly the same – 0.02% higher than baseline prices.[673] Again, there would be no impacts at all to coal capacity or electricity prices if EPA chose to adopt a more stringent regulatory option. For reasons discussed elsewhere, these results are fatal to EPA's speculative concerns about grid reliability, which depend on concerns about the impact of the Steam Electric ELGs on coal capacity.[674]

The same could be said of an even more stringent regulatory option that would require complete elimination of discharges of bottom ash transport water and FGD wastewater. NRDC – in collaboration with other commenters – contracted ICF to analyze an alternative ELG approach using their IPM model with assumptions specified by commenters. Commenters specifically developed assumptions for a more stringent, zero-discharge ELG option, described here as "Option 5," which was compared against NRDC's Base Case. NRDC's Base Case forecast differs from EPA's baseline in the 2019 proposal. Generally, NRDC's Base Case has less coal capacity, fewer carbon emissions, and lower total system costs than EPA's baseline between 2021 and 2046. This is likely driven, in part, by the use of more recent government projections for technology and fuel costs in NRDC's Base Case. EPA's baseline reflects electricity demand assumptions and fuel supply curves from U.S. Energy Information Administration's Annual Energy Outlook 2018 (AEO2018). NRDC's Base Case uses the most recent outlook, AEO2019, for both electric demand projects and fuel supply curves. These assumptions have a significant impact on the economics of coal plants under "business-as-usual" policy, with AEO2019 projecting much lower near- and mid-term gas prices than AEO2018: AEO2019's gas prices in 2020 are 19 percent lower and in 2030, 14 percent lower, than the forecasts in AEO2018. In addition, NRDC's base case includes more up-to-date state policies, reflecting recent revisions to state Renewable Portfolio Standards, technology carve-outs (e.g. offshore wind and battery storage targets), and Clean Energy Standards as of June 2019, with assumptions specified by NRDC primarily based on EIA and NREL.

"Option 5" zero-discharge compliance costs were obtained from the current rulemaking record.[675] For the units without zero-discharge compliance cost estimates in the above-cited

[668] *Id.* at 5-7, Tbl. 5-3.
[669] *Id.* at 5-6, Tbl. 5-2.
[670] *Id.* at 5-7, Tbl. 5-3.
[671] *Id.* at 5-6 to 5-7, Tbls. 5-2 & 5-3. The differences in coal capacity and electricity prices between baseline and Option 4 for any given year are vanishingly small (less than 1%).
[672] *Id.*
[673] *Id.*
[674] *See* Section X.E – Reliability.
[675] ERG, Generating Unit-Level Costs and Loadings Estimates by Regulatory Option – DCN SE07090, Docket ID No. EPA-HQ-OW-2009-0819-8220 (Sept. 25, 2019). For bottom ash transport water, zero-

document (including 5 units for bottom ash transport water and 3 units for FGD wastewater), commenters independently estimated compliance costs.[676] NRDC's IPM inputs, assumptions, and outputs are provided in detail in attachments to these comments.[677]

While Option 5 is based on a different base case than EPA's Option 2 and 4, we can compare the incremental impact of these options. Considering the incremental impact, or the effect that each option has on capacity, emissions, generation, and costs compared to their respective baselines, allows us to compare the options – and the impact of each option on the electricity system – even with slightly different baselines.

NRDC found the following. Compared to the NRDC base case, a zero-discharge Option 5 would result in a small additional reduction of coal capacity of 0.2 GW, or 0.1% of total coal capacity, by 2040. Coal generation would decline by an additional 1,130 GWh by 2040, a modest reduction with no impact on reliability or resiliency in the IPM model. Compliance costs would also be modest. Annual, nationwide incremental system cost under Option 5 in 2030 would be $57 million (2016$), falling to $48 million in 2040, as shown in the table below. This is less than EPA assumed for Option 4 ($68 million in incremental costs in 2040).[678] Fuel prices – for both gas and coal – are not substantially impacted by Option 5.

**Option 5 Changes Relative to NRDC Base Case**

| PRICES | 2020 | 2025 | 2030 | 2035 | 2040 |
|---|---|---|---|---|---|
| **Total Costs (billion $)** | **0.044** | **0.059** | **0.057** | **0.057** | **0.048** |
| **National Wholesale Electricity Price (mills/kWh)** | **-0.01** | **-0.01** | **0.02** | **-0.01** | **0.00** |
| **Natural Gas Prices (2016 $/MMBtu)** | | | | | |
| Henry Hub | 0.00 | 0.00 | 0.00 | **0.00** | 0.00 |
| Delivered | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** |
| **National Delivered Coal Prices (2016 $/MMBtu)** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** |

discharge compliance costs were obtained from EPA's "baseline" option. For FGD wastewater, zero-discharge compliance costs were obtained from EPA's Option 4.

[676] Bottom ash capital costs were estimated by regressing capital cost against nameplate capacity for all units that EPA assumes will have to convert from 'wet sluicing with discharge' to ZLD. Annual O&M and recurring costs for bottom ash appear to be independent of both capacity and generation, so we assumed that average O&M and recurring costs for all units converting from wet sluicing with discharge to ZLD would apply to the five units for which we derived cost estimates. For the three units for which we derived FGD compliance costs, we calculated capacity and O&M costs using the membrane filtration cost curves in the record, assuming pretreatment + membrane with onsite storage and disposal. ERG, Flue Gas Desulfurization Membrane Filtration Cost Methodology – DCN SE07096, Docket ID No. EPA-HQ-OW-2009-0819-7811 (Aug. 23, 2019). We did not have enough information to calculate recurring costs for these three units, so we assumed zero.

[677] NRDC, "NRDC Assumptions – ELG Runs" spreadsheet (attached); NRDC, "ELG Run IPM Outputs" spreadsheet (attached).

[678] Proposed RIA at 5-7.

On the other hand, Option 5 would generate substantial environmental benefits relative to EPA's Options 2 and 4. Compared to EPA's baseline, Option 2 (EPA's preferred option) would lead to higher emissions of all modeled pollutants in all years between 2021 and 2046. Over the next 25 years, this option would result in a cumulative increase of 69 million metric tons of $CO_2$, 93,000 tons of $SO_2$, and 77,000 tons of $NO_x$ emissions from the power sector.

| Option 2 Changes Relative to EPA baseline | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **NATIONWIDE EMISSIONS** | **2021** | **2023** | **2025** | **2030** | **2035** | **2040** | **2045** | **Cumulative (2021 - 2046)** |
| **$SO_2$ (million tons)** | **0.004** | **0.005** | **0.005** | **0.006** | **0.002** | **0.002** | **0.003** | **0.093** |
| **$NO_x$ (million tons)** | **0.003** | **0.005** | **0.005** | **0.004** | **0.003** | **0.001** | **0.002** | **0.077** |
| **$CO_2$ (million metric tons)** | **1.35** | **2.77** | **2.38** | **3.95** | **2.43** | **2.05** | **2.67** | **69.22** |

Even EPA's more stringent option, Option 4, finds cumulative pollution increases compared to baseline. Over the next 25 years, this option would result in a cumulative increase of 12 million metric tons of $CO_2$, 69,000 tons of $SO_2$, and 33,000 tons of $NO_x$ emissions from the power sector.

| Option 4 Changes Relative to EPA Base Case | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **NATIONWIDE EMISSIONS** | **2021** | **2023** | **2025** | **2030** | **2035** | **2040** | **2045** | **Cumulative (2021 - 2046)** |
| **$SO_2$ (million tons)** | **0.005** | **0.005** | **0.002** | **0.002** | **0.001** | **0.004** | **0.003** | **0.069** |
| **$NO_x$ (million tons)** | **0.003** | **0.004** | **0.003** | **0.001** | **0.000** | **0.000** | **0.002** | **0.033** |
| **$CO_2$ (million metric tons)** | **0.77** | **2.18** | **0.30** | **1.18** | **-0.69** | **-0.35** | **1.35** | **12.46** |

However, NRDC's modeling of Option 5 finds that a more stringent standard than Option 2 or Option 4 could result in measurable emissions reductions at modest compliance cost and with minimal impact on the energy system or energy prices. Compared to NRDC's more updated Base Case, Option 5 cuts cumulative climate- and health-harming pollution over the next 25 years (2021 – 2046), with a reduction of 7.3 million metric tons of $CO_2$, 25,000 tons of $SO_2$, and 37,000 tons of $NO_x$ emissions from the power sector.

| Option 5 Changes Relative to NRDC Base Case | | | | | | |
|---|---|---|---|---|---|---|
| **NATIONWIDE EMISSIONS** | **2020** | **2025** | **2030** | **2035** | **2040** | **Cumulative (2021 - 2046)** |
| **$SO_2$ (million tons)** | **0.002** | **0.000** | **0.000** | **-0.001** | **-0.003** | **-0.025** |
| **$NO_x$ (million tons)** | **-0.001** | **-0.001** | **-0.002** | **-0.001** | **-0.002** | **-0.037** |
| **$CO_2$ (million metric tons)** | **0.46** | **0.26** | **-0.42** | **-0.17** | **-0.82** | **-7.31** |

These reductions come from a small, additional reduction in coal capacity of 200 MW by 2030 and an associated reduction in coal generation of 479 gigawatt-hours ("GWhs") in 2030 and 1,130 GWhs in 2040. These small reductions in coal capacity and generation related to Option 5 should have no impact on grid reliability or resiliency and do not substantially impact energy or fuel prices. In fact, wholesale electricity prices, Henry Hub gas prices, and delivered gas and coal prices are lower on average under Option 5 than NRDC's Base Case between 2021 and 2046.

In short, if EPA were to eliminate the discharge of bottom ash transport water and FGD wastewater – as required by the CWA – it would create no meaningful impacts on coal capacity, grid reliability, or electricity prices, but it would generate substantial environmental improvements over all of the regulatory options that EPA has considered to date.

### E. EPA Drastically Underestimated the Environmental Impacts of Greenhouse Gas Emissions; a Proper Accounting Supports a Zero-Discharge Rule.

The Social Cost of Carbon ("SCC") is an estimate, in dollars, of the economic damages that would result from emitting one additional ton of greenhouse gases into the atmosphere. The SCC puts the effects of climate change into economic terms to help policymakers and other decisionmakers understand the economic impacts of decisions that would increase or decrease emissions. The SCC was developed based on extensive scientific and economic analysis from several agencies of the government, and included a public review and comment period. The SCC has two important characteristics. First, it accounts for the damage emissions from the United States cause in other countries, because carbon pollution does not remain within the borders of this country. Second, as carbon pollution lasts for centuries in the atmosphere and drives climate change impacts years from now, it gives weight to damages that our emissions will cause to future generations. In 2020 the costs of each ton of carbon pollution are estimated to be roughly $53/ton.[679] This value still excludes many climate damages, so scientists consider it to be an underestimate of the true cost. Indeed, EPA cites a range of global SCC values of $55 to $76 per metric ton.[680]

In 2017, President Trump signed Executive Order 13783, allowing agencies to disregard decades of in-depth and peer-reviewed scientific research and calculate only damages occurring within the United States and employ discount rates that devalue future generations for use in the primary analysis of regulations. For instance, the SCC for domestic economic impacts at a 7

[679] *See* Table SCC 1 below, with the 2020 value at 3% ($42) adjusted from $2007 to $2020.
[680] Proposed BCA at I-5.

percent discount rate would be $2 ($2019) in the year 2050, while the SCC for global economic impacts at a 2.5 percent discount rate would be approximately $121 ($2019), or more than 60 times the estimate the Trump administration relies on. These changes directly contradict the fundamental purpose of the SCC.

In the current rulemaking, EPA inappropriately applies a domestic SCC, and uses discount rates of both 3% and 7%.[681] The correct SCC to apply is the global SCC using 2.5 percent and 3 percent discount rates, as given in the table below.

**Table SCC 1: Social Cost of Carbon, 2010-2050 (in 2007 dollars per metric ton of $CO_2$).**[682]

| Year | 5% Average | **3% Average** | 2.5% Average |
|---|---|---|---|
| 2010 | 10 | **31** | 50 |
| 2015 | 11 | **36** | 56 |
| 2020 | 12 | **42** | 62 |
| 2025 | 14 | **46** | 68 |
| 2030 | 16 | **50** | 73 |
| 2035 | 18 | **55** | 78 |
| 2040 | 21 | **60** | 84 |
| 2045 | 23 | **64** | 89 |
| 2050 | 26 | **69** | 95 |

For these comments, NRDC calculated the $CO_2$ emissions implications of various regulatory scenarios using the IPM modeling described above.[683] NRDC then calculated the economic impacts of these emissions changes using the global SCC estimates shown in Table SCC 1.

The simulations show that Options 2 and 4 would both generate substantial economic costs associated with increased $CO_2$ emissions, while a zero-discharge "Option 5" would generate an economic benefit associated with reduced $CO_2$ emissions. The annualized benefits under Option 5 total $48-71 million ($2019) in 2046 compared with the NRDC business-as-usual case. By contrast, EPA's Option 2 and Option 4 would deliver annualized costs of $868-1,282 million and $361-533 million, respectively. Between EPA Option 4 and Option 5, the absolute difference between 2046 annualized costs and benefits is between $410-605 million, as shown in Table SCC 2. below. As shown in Table SCC 3, on a cumulative basis over the 2021-2046 time period, Option 5 is projected to deliver $677-1,000 million in *benefits*, compared with *costs* of $5,476-8,084 million under EPA Option 2 and $665-981 million under EPA Option 4.

[681] Proposed BCA at 8-7.
[682] EPA, Technical Support Document – Technical Update of the Social Cost of Carbon for Regulatory Impact Analysis Under Executive Order 12866, at 4 (Aug. 2016), https://19january2017snapshot.epa.gov/sites/production/files/2016-12/documents/sc_co2_tsd_august_2016.pdf.
[683] *See* Section XIII.D – IPM Modeling.

**Table SCC 2. 2046 Annualized Costs of $CO_2$ Emissions Due to Changes in Electricity Generation, Incremental to Respective Baseline Scenarios**

| | 3% | 2.50% |
|---|---|---|
| EPA O4 | 361,112,333 | 533,070,587 |
| EPA O2 | 868,526,419 | 1,282,110,428 |
| NRDC O5 | (48,389,248) | (71,431,747) |

**Table SCC 3. 2021 – 2046 Cumulative Costs of $CO_2$ Emissions Due to Changes in Electricity Generation, Incremental to Respective Baseline Scenarios**

| | 3% | 2.50% |
|---|---|---|
| EPA O4 | 664,873,285 | 981,479,612 |
| EPA O2 | 5,476,374,221 | 8,084,171,469 |
| NRDC O5 | (677,449,471) | (1,000,044,457) |

EPA's inappropriate application of the domestic SCC devaluing future generations pursuant to the Trump administration's executive order substantially understates the costs of increased pollution driven by its proposed approaches.

Using the correct SCC estimates would radically change EPA's "net benefit analysis," in which EPA determined that its Option 2 had the highest net value. Using a 3 percent discount rate, EPA derived an annualized, mid-range net value of $155.9 million for Option 2.[684] By contrast, using the correct SCC, the costs of increased $CO_2$ emissions under Options 2 and 4 dominate other costs and benefits and result in a large net *cost*, as shown in Table SCC 4 below, with Option 2 having the highest net cost. Option 5, on the other hand, produces a large net benefit.

**Table SCC 4: Annualized Benefits, Costs, and "Net Benefits" (millions of $2018)**

| | $CO_2$ Benefits[685] | Other Benefits[686] | Total Benefits | Costs[687] | Net |
|---|---|---|---|---|---|
| Option 2 | $ (851.86) | $ 51.20 | $ (800.66) | $ (136.30) | $ (936.96) |
| Option 4 | $ (354.83) | $ 110.70 | $ (244.13) | $ 11.90 | $ (232.23) |
| Option 5 | $ 47.48 | $ 110.70[688] | $ 158.18 | $ 30.80 | $ 188.98 |

Table SCC 4 shows two important things. First, use of the correct SCC value would result in Option 2 having a much lower net value (higher net cost) than Option 4. In other words, EPA can only find that Option 2 has the highest net value by distorting the science and failing to adequately account for the economic costs of $CO_2$ emissions.

[684] Proposed BCA at 13-2, Tbl. 13-2.
[685] *See* Table SCC 2, adjusted to $2018.
[686] Proposed BCA at 11-2, Tbl. 11-1.
[687] *Id*. at 13-1, Tbl. 13-1.
[688] We could not calculate the other benefits of a zero-discharge regulatory option, so we conservatively assumed that they would be equal to those under Option 4.

Second, the most economically defensible regulatory option – and the only one that produces a net benefit – is a zero-discharge rule.

EPA must accurately account for the economic consequences of its decision-making, and that means that the Agency must use a defensible SCC. Doing so would show that a zero-discharge rule, eliminating the discharge of both bottom ash transport water and FGD wastewater, is the most economically defensible regulatory option. This, combined with the fact that a zero-discharge rule is required by the CWA because zero-discharge technologies are BAT for both wastestreams,[689] confirms that EPA has no justification for any regulatory option other than a zero-discharge rule.

## XIV. THE ENDANGERED SPECIES ACT REQUIRES EPA TO CONSULT WITH THE FISH AND WILDLIFE SERVICE AND NATIONAL MARINE FISHERIES SERVICE BEFORE FINALIZING THE RULE.

Section 2(c) of the Endangered Species Act ("ESA") establishes that "all Federal departments and agencies shall seek to conserve endangered species and threatened species and shall utilize their authorities in furtherance of the purposes of this Act."[690] The ESA defines "conservation" to mean "the use of all methods and procedures which are necessary to bring any endangered species or threatened species to the point at which the measures provided pursuant to this Act are no longer necessary."[691] As the Supreme Court has unequivocally summarized, the ESA's "language, history, and structure" make clear "beyond a doubt" that "Congress intended endangered species to be afforded the highest of priorities" and endangered species should be given "priority over the 'primary missions' of federal agencies."[692] Simply put, "the plain intent of Congress in enacting this statute was to halt and reverse the trend toward species extinction, *whatever the cost*."[693]

To fulfill the substantive purposes of the ESA, each federal agency is required under Section 7 of the Act to engage in consultation with the U.S. Fish and Wildlife Service ("FWS") and/or the National Marine Fisheries Service ("NMFS" or, collectively, the "Services") to "insure that any action authorized, funded, or carried out by such agency . . . is not likely to jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of habitat of such species . . . determined . . . to be critical."[694]

EPA's duty to engage in the Section 7 consultation process prior to taking any action that "may affect" a threatened or endangered species or their habitats is firmly established by the unambiguous text of the ESA.[695] Section 7 consultation is required for every *discretionary*

[689] *See* Sections V- Bottom Ash and VI – Zero Discharge FGD.
[690] 16 U.S.C. § 1531(c)(1).
[691] *Id.* § 1532(3).
[692] *Tenn. Valley Auth. v. Hill*, 437 U.S. 153, 174-75 (1978).
[693] *Id*. at 184 (emphasis added).
[694] 16 U.S.C. § 1536(a)(2).
[695] *See, e.g., Tenn. Valley Auth.*, 437 U.S. at 188 (In describing the "broad sweep" of the statute's authority, the Court established that "[i]n passing the Endangered Species Act of 1973, Congress was also

agency action that "may affect listed species or critical habitat."[696] Agency "action" is broadly defined in the ESA's implementing regulations to include "(a) actions intended to conserve listed species or their habitat; (b) *the promulgation of regulations*; (c) the granting of licenses, contracts, leases, easements, rights-of-way, permits, or grants-in-aid; or (d) actions directly or indirectly causing modifications to the land, water, or air."[697] The Services' joint regulations further clearly require programmatic consultations on federal, nationwide rulemakings that impact listed species. [698]

Under these unambiguous terms and in light of the facts of the current rulemaking, the ESA requires that EPA consult with the Services and prepare a biological opinion prior to taking action on the 2019 Proposal.

### A. The Impacts of Toxic Heavy Metals Such as Cadmium, Mercury, and Selenium on Aquatic Life and Species Health are Significant

#### 1. *Cadmium*

Cadmium pollution is toxic to many aquatic species and can be toxic to mammals and birds. It can cause toxicity through both chronic exposure and consumption of prey in which the metal has bioaccumulated. Specifically, cadmium can negatively impact the survival, growth, reproduction, development, behavior, and metabolism of fresh water-dependent, endangered, and threatened species, especially during early life stages. Synergistic and additive effects may also occur when heavy metals are mixed with other toxic chemicals.

Cadmium pollution from mining activities in southern Arizona near the habitat of the endangered Chiricahua leopard frog, for example, was identified by FWS as one of the main contributing factors to the decline of this species.[699] Likewise, cadmium is known to disrupt the endocrine functions of Atlantic salmon and other listed salmonids in the Pacific Northwest and is negatively impacting the reproductive capabilities of these endangered species.[700] Cadmium pollution negatively impacts the shortnose sturgeon's physiological processes and ability to swim.[701]

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aware of certain instances in which exceptions to the statute's broad sweep would be necessary. Thus, § 10, [ . . . ] creates a number of limited 'hardship exemptions,' none of which would even remotely apply to the Tellico Project. In fact, there are no exemptions in the Endangered Species Act for federal agencies, meaning that under the maxim *expressio unius est exclusio alterius,* we must presume that these were the only 'hardship cases' Congress intended to exempt").

[696] *See Nat'l Ass'n of Home Builders v. Defs. of Wildlife*, 551 U.S. 644 (2007); 50 C.F.R. § 402.14(a).

[697] *Id.* § 402.02 (emphasis added).

[698] *See, e.g.*, Interagency Cooperation – Endangered Species Act of 1973, as Amended; Incidental Take Statements, 80 Fed. Reg. 26,832 (May 11, 2015) (attached).

[699] U.S. Fish & Wildlife Serv., *Chiricahua Leopard Frog: Final Recovery Plan*, at 23 (2007) (attached).

[700] NOAA's Nat'l Marine Fisheries Serv. & Ne. Region, U.S. Fish & Wildlife Serv., *Final Recovery Plan for the Gulf of Maine Distinct Population Segment of Atlantic Salmon*, at 1-38, 1-39 (2005) (attached).

[701] U.S. Dep't of Commerce, Nat'l Oceanic & Atmospheric Admin., Nat'l Marine Fisheries Serv., *Final Recovery Plan for the Shortnose Sturgeon*, at 49 (1998) (attached).

Further, as the recovery plan for the Cumberland and Tennessee River mussels explain, many endangered freshwater mussels are "among the most intolerant organisms to heavy metals," and "[c]admium appears to be the heavy metal most toxic to mussels."[702] Cadmium has been directly correlated with the decline of the dwarf wedgemussel,[703] and FWS has identified cadmium as "acutely toxic" to the winged mapleleaf mussel.[704] Alarmingly, FWS has noted in another recovery plan that "[v]irtually nothing is known about the sublethal impacts in mussels to long-term exposure to metals at low concentration" and that "[s]ublethal effects are frequently observed at concentrations only one-half the lethal concentrations, which indicates freshwater mussels become stressed at metal concentrations much lower than those reported in acute toxicity tests."[705] Thus, even small amounts of cadmium may have disproportionately adverse effects for endangered species – effects that are especially pronounced in aquatic species.[706]

2. *Mercury*

Mercury, particularly in the chemical form methylmercury, is a toxic pollutant that poses a substantial threat to human health and the health of water-based ecosystems. Danger from mercury exposure has increased rapidly in recent history, especially in oceans and other aquatic environments. In surface ocean water, mercury concentrations have, for example, increased two-fold over the last century, correlating with increases in industrialization and energy production.[707]

Mercury-based damage has been documented in a variety of species, spanning several water-based ecosystems across the United States. Generally, mercury damages wildlife by causing deformities in developing animals, lessening reproductive capacity, causing abnormal behavior that can hinder survival, rendering protective enzymes less effective, and even causing mortality.[708] Studies confirm, for example, that "mercury is adversely affecting diving ducks

[702] U.S. Fish & Wildlife Serv., *Recovery Plan for Cumberland Elktoe, Oyster Mussel, Cumberlandian Combshell, Purple Bean, and Rough Rabbitsfoot*, at 37 (2004) (attached); *see also* U.S. Fish & Wildlife Serv. et al., *Scaleshell Mussel Recovery Plan*, at 19, 26 (2010) (attached); *see also* U.S. Fish & Wildlife Serv., *Recovery Plan for Endangered Fat Threeridge, Shinyrayed Pocketbook, Gulf Moccasinshell, Ochlockonee Moccasinshell, Oval Pigtoe, and Threatened Chipola Slabshell, and Purple Bankclimber*, at 33-35 (2003) (attached).
[703] U.S. Fish & Wildlife Serv., *Dwarf Wedge Mussel Recovery Plan*, at 14 (1993) (attached).
[704] U.S. Fish & Wildlife Serv., *Winged Mapleleaf Mussel Recovery Plan*, at 9 (1997) (attached).
[705] U.S. Fish & Wildlife Serv., *Higgins Eye Pearlymussel Recovery Plan: First Revision*, at 12 (2004) (attached).
[706] U.S. Fish & Wildlife Serv., *Alabama Cave Shrimp Recovery Plan*, at 11 (1997) (attached).
[707] Celia Y. Chen et al., *Sources to Seafood: Mercury Pollution in the Marine Environment*, 64 Me. Sea Grant Publ'ns (2012) (attached).
[708] EPA, EPA-452/R-97-005, *Mercury Study Report to Congress, Vol. III: Fate and Transport of Mercury in the Environment* (1997) (attached); Charles T. Driscoll et al., *Mercury as a Global Pollutant: Sources, Pathways, and Effects*, 47 Envtl. Sci. & Tech. (2013) (attached); U.S. Geological Survey, Fact Sheet FS-216-95, *Mercury Contamination of Aquatic Ecosystems* (1995) (attached); U.S. Geological Survey, Fact Sheet FS-016-03, *Mercury in Stream Ecosystems – New Studies Initiated by the U.S. Geological Survey* (2003) (attached).

from the San Francisco Bay, herons and egrets from the Carson River in Nevada, and heron embryos from colonies along the Mississippi River."[709]

Mercury pollution in the Gulf of Maine is also known to affect populations of whales, porpoises, seals, and birds as well as some of the world's most productive fisheries.[710] In some cases, mercury concentrations in species of marine birds in the Gulf of Maine exceeded reproductive effect thresholds, preventing these species from sustaining healthy populations.[711]

Importantly, mercury's toxic dangers do not exist in isolation. Mercury's harm to species health can be amplified when combined with other contaminants, including those present in the wastestreams at many steam electric facilities, particularly coal-fired facilities. For example, methylmercury can be more harmful to bird embryos when selenium, another potentially toxic element, is present in the bird's diets.[712]

3. *Selenium*

Selenium is a nonmetallic element that can produce toxic effects on animals in water-based ecosystems, as well as to humans. Like mercury and cadmium, selenium is bioaccumulative, making it a great source of concern for not only directly exposed species but also for organisms higher up on the food web.[713] Unlike mercury, however, some amount of selenium is essential for proper nutrition in living systems (approximately 0.04 to 0.1 parts per million for humans), though toxicity may occur if amounts in food are even slightly higher than that; for humans, toxicity may occur at amounts in food as low as four parts per million.[714]

Effects of selenium on fish and other water-based wildlife include: physical malformations during embryonic development; sterility; exophthalmos (popeye); pathological alterations in the kidney, liver, heart, and ovaries; anemia; cataracts; and death.[715] Selenium

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[709] *Id.*
[710] Celia Y. Chen et al., *Sources to Seafood: Mercury Pollution in the Marine Environment*, 64 Me. Sea Grant Publ'ns (2012) (attached).
[711] *Id.*
[712] EPA, EPA-452/R-97-005, *Mercury Study Report to Congress, Vol. III: Fate and Transport of Mercury in the Environment* (1997) (attached); Driscoll et al., *Mercury as a Global Pollutant: Sources, Pathways, and Effects*, 47 Envtl. Sci. & Tech. (2013) (attached); U.S. Geological Survey, *Mercury Contamination of Aquatic Ecosystems*, Fact Sheet FS-216-95(1995); U.S. Geological Survey, *Mercury in Stream Ecosystems – New Studies Initiated by the U.S. Geological Survey*, Fact Sheet FS-016-03 (2003) (attached).
[713] Steven J. Hamilton, *Review of Selenium Toxicity in the Aquatic Food Chain*, 326 Sci. of the Total Env't 1-31, at 1 (2004) (attached).
[714] U.S. Geologic Survey, Biological Res. Div. Info. & Tech. Rep. 1999–001, *Field Manual of Wildlife Diseases*, at 335-36 (1999) (attached); Patuxent Wildlife Research Ctr. & U.S. Fish & Wildlife Serv., *Selenium Hazards To Fish, Wildlife, and Invertebrates: A Synoptic Review*, at 6 (1985) (attached).
[715] U.S. Fish & Wildlife Service, *Aquatic Cycling of Selenium: Implications for Fish and Wildlife*, at 6-9 (1987) (attached); Dennis A. Lemly, *Symptoms and Implications of Selenium Toxicity in Fish: The Belews Lake Case Example*, 57 J. Aquatic Toxicology 1-2, at 39-49 (2002) (attached); U.S. Geologic Survey, Biological Res. Div. Info. & Tech. Rep. 1999–001, *Field Manual of Wildlife Diseases* at 335-36 (1999) (attached).

contamination can cause mutations in fish and other aquatic organisms,[716] and its bioaccumulative properties are known to cause very severe embryonic deformities and death in birds.[717] Selenium can also harm lower level organisms in water-based ecosystems, such as algae and plankton – organisms that are essential food sources for many aquatic species and without which can lead to starvation and death.[718]

### B. EPA Retains Considerable Discretion in Setting Effluent Limitation Guidelines and Standards for the Steam Electric Power Generating Point Source Category

The Supreme Court in *National Ass'n of Home Builders v. Defenders of Wildlife* identified a narrow exception to the Section 7 consultation requirement when the federal agency has no statutory discretion to act.[719] That exception does not apply here.

In *Home Builders*, the Court held that Section 402(b) of the CWA does not require ESA consultations because EPA action under Section 402(b) is nondiscretionary: once a state has "met nine specified criteria" under the law, EPA "shall approve" and transfer the NPDES permitting authority to a state.[720] Nevertheless, EPA boldly attempts to stretch the Court's holding here to claim that the 2019 Proposal is non-discretionary.[721]

This rulemaking, however, is not similar to *Home Builders* as a matter of law or of fact. First, as EPA has consistently demonstrated throughout the variety of changes between the 2015 ELG Rule and the 2019 Proposal (as well as through past ELG rulemakings), it possesses substantial discretion to decide what to include in its ELG rulemakings and ultimately what course of action to take.[722] Indeed, EPA itself agrees, arguing within its own preamble that, "[t]he Agency retains *considerable discretion* in assigning the weight to be accorded [to] each of these required consideration factors."[723] And then again that, "[t]he EPA's proposal is based on *its discretion* to give particular weight to the CWA Section 304(b)."[724] The decision to rollback

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[716] Leslie Kaufman, *Mutated Trout Raise New Concerns Near Mine Sites*, N.Y. Times, Feb. 22, 2012 (attached).
[717] Patuxent Wildlife Research Ctr. & U.S. Fish & Wildlife Serv., *Selenium Hazards To Fish, Wildlife, and Invertebrates: A Synoptic Review*, at 6 (1985) (attached).
[718] *Id*.
[719] *Nat'l Ass'n of Home Builders v. Defs. of Wildlife*, 551 U.S. 644 (2007); 50 C.F.R. § 402.14(a).
[720] *Id*. at 650.
[721] Email from Richard J. Benware, Team Leader, U.S. EPA-Office of Water Steam Elec. ELG, to Brett Hartl, Gov't Affairs Dir., Ctr. for Biology Diversity (Nov. 27, 2019) ("re: Question regarding ELGs for the Steam Electric Power Generating Point Source Category") ("The EPA has not prepared a Biological Evaluation at this time, and due to the lack of discretion to consider such information, does not currently intend to do so. However, this is only a proposed rule, and to the extent that you have comments on this issue, I encourage you to submit them to the docket within the public comment period so that we may appropriately consider them.") (attached).
[722] Commenters note that the mere fact that an agency possesses discretion does not shield or insulate them when an action is taken in a lawless, arbitrary, or capricious manner.
[723] 2019 Proposal at 64,624 (emphasis added) (citation omitted).
[724] *Id*. at 64,635 (emphasis added).

and weaken standards for ELGs is clearly a discretionary policy decision and not a ministerial or nondiscretionary action where EPA is compelled to act by a clear statutory command.

The D.C. Circuit has consistently held since as early as 1978 that EPA possesses discretion when setting effluent limitation guidelines.[725] In describing this discretion in *Weyerhaeuser Co. v. Costle*, the D.C. Circuit noted that among the "consideration factors" that EPA shall weigh include "non-water quality environmental impact" and "other factors as the Administrator deems appropriate."[726] Similarly in a very recent 2019 case, the D.C. Circuit also held that EPA retained discretion when setting annual biomass-based fuel standards because it must consider six factors, one of which is based "on environmental considerations, such as concerns about wetland conversion, wildlife habitat, and water quality."[727] Here, the situation is comparable. Because EPA possesses significant discretion in setting a standard such as the ELGs, it cannot attempt to merely avoid its obligations under the ESA by labeling the rule non-discretionary without being able to point to any statutory command making it so. The ESA and the endangered and threatened species that rely on its consistent, lawful application demand more.

Beyond the discretion obviously provided to EPA through the four corners of the law, the 2019 Proposal also reeks of discretion in its implementation. For example, in addition to the discretionary act of assigning the relative weights for each consideration factor, EPA developed an optional, voluntary incentives program that extends the deadlines for compliance if facilities implement certain process changes and controls to achieve other pollution reduction targets.[728] The CWA is silent on whether such "voluntary programs" are permissible, let alone mandatory. Nothing in the law states that EPA *shall* establish these types of programs. Yet, EPA's discretionary choice to develop this voluntary program will have real-world impacts on many endangered species because the program extends the period of time that those species will potentially be exposed to toxic pollutants.

EPA must, therefore, comply with the procedural and substantive requirements of the ESA before moving forward with the 2019 Proposal.

### C. EPA Must Engage in Formal Section 7 Consultation on the 2019 Proposal Because the Action "May Effect" ESA-Listed Species

Given EPA's considerable discretion in this action, it must lawfully comply with its obligations under the ESA. To comply with the requirements of the ESA, EPA must first make a threshold determination as to whether its actions will either have "no effect" or "may affect" any threatened or endangered species. As discussed by the D.C. Circuit in *American Fuel & Petrochemical Manufacturers,*

[725] *Weyerhaeuser Co. v. Costle*, 590 F.2d 1011, 1045 (D.C. Cir. 1978) ("In contrast, Congress did not mandate any particular structure or weight for the many consideration factors. Rather, it left EPA with discretion to decide how to account for the consideration factors, and how much weight to give each factor.").
[726] *Id.*
[727] *Am. Fuel & Petrochemical Mfrs. v. EPA*, 937 F.3d 559, 597 (D.C. Cir. 2019).
[728] 84 Fed. Reg. at 64,622.

> As the first step in this process, the agency must make an "effects determination," *i.e.*, the agency must assess whether a proposed action "may affect" listed species or critical habitat. 50 C.F.R. § 402.14(a). If so, the agency must engage in formal consultation with the Services. But if the agency makes a "no effect" determination by finding that its proposed action "will not affect any listed species or critical habitat," then "it is not required to consult" with the Services.[729]

Additional cases reinforce the simple proposition that a regulation that may affect endangered species must be the subject of consultation.[730] And indeed, in this instance the analysis as to whether this action "may effect" species, and therefore require EPA to consult with the Services and prepare a Biological Opinion,[731] is a simple one because the 2019 Proposal already concedes that the changes here will certainly result in adverse effects on endangered species and their critical habitats, as discussed more specifically below.

During the formal consultation process, the Services assess the environmental baseline, which is defined as "the past and present impacts of all Federal, State, or private actions and other human activities in an action area, the anticipated impacts of all proposed Federal projects in an action area that have already undergone formal or early [S]ection 7 consultation, and the impact of State or private actions that are contemporaneous with the consultation in process."[732] In addition, the Services assess the cumulative effects to the species – which are defined as "those effects of future State or private activities, not involving Federal activities, that are reasonably certain to occur within the action area of the Federal action subject to consultation" – and determine if the agency action jeopardizes the continued existence of each species impacted by the agency action.[733] As Commenters note here, the proper legal baseline is the 2015 ELG

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[729] *Am. Fuel & Petrochemical Mfrs.*, 937 F.3d at 597.
[730] *See, e.g., W. Watersheds Project v. Kraayenbrink*, 632 F.3d 472, 495 (9th Cir. 2011); *Nat'l Parks Conservation Ass'n v. Jewell*, 62 F. Supp. 3d 7 (D.D.C. 2014); *Citizens for Better Forestry v. USDA*, 481 F. Supp. 2d 1059 (N.D. Cal. 2007); *Wash. Toxics Coal. v. U.S. Dep't of Interior*, 457 F. Supp. 2d 1158 (W.D. Wash. 2006).
[731] Under the joint regulations implementing the ESA, if an impact on a listed species is predicted to occur, then EPA must complete consultations with the Services. If EPA elects to first complete an informal consultation, it must first determine whether its action is "not likely to adversely affect" (NLAA) a listed species or is "likely to adversely affect" (LAA) a listed species. The Services define "NLAA" determination to encompass those situations where effects on listed species are expected to be "discountable, insignificant, or completely beneficial." Discountable effects are very rare, and limited to situations where it is not possible to "meaningfully measure, detect, or evaluate" harmful impacts. Any harm or take of an individual member of a listed species crosses the LAA threshold and requires formal consultations with the Services. For additional information, *see* U.S. Fish & Wildlife Serv. & Nat'l Marine Fisheries Serv., *Endangered Species Consultation Handbook: Procedures for Conducting Consultation and Conference Activities Under Section 7 of the Endangered Species Act* (1998), https://www.fws.gov/endangered/esa-library/pdf/esa_section7_handbook.pdf (attached).
[732] *Id.* at E-10.
[733] *Id.* at xiii.

Rule, despite EPA's attempts in the preamble to confuse the issue and manipulate the baseline in its favor.

EPA's cursory and incomplete "assessment" – only conducted as part of its "Benefit and Cost Analysis" – of the harms to endangered species contains numerous and substantial flaws and clearly understates the impacts on listed species. While any adverse effects to listed species trigger the consultation requirements of the ESA, EPA demonstrates its inability and lack of expertise on the impacts on endangered species through this deficient assessment.

First, it appears that the *Benefit and Cost Analysis for Proposed Revisions to the Steam Electric Power Generating ELGs* only "identified" threatened and endangered species information from sources prior to 2014.[734] All but one of the sources EPA relied upon were drawn from dated information in 2010. Since 2014, FWS listed approximately 148 additional species as threatened or endangered, and designated numerous critical habitats.[735] If EPA did not review listed species information since 2010, the number of species excluded is much higher. Regardless, it is clear that EPA did not attempt to incorporate significant information and numerous species into its "analysis" at all. Instead, EPA engaged in arbitrary and capricious "further analyses" to unilaterally determine which species to review.[736]

Second, EPA excluded species that it "presumed to be extinct, including those not collected for a minimum of 30 years."[737] EPA simply has no expertise or knowledge regarding endangered species to make such arrogant determinations, which is in part why the ESA provides for consultation with the expert agencies on these matters. Further, EPA does not identify why its analysis is scientifically acceptable or in accordance with the ESA's clear requirement to "give the benefit of the doubt to the species."[738]

Third, EPA excluded "endemic species living in waterbodies . . . unlikely to be affected by steam electric power plant discharges."[739] EPA has no expertise to make such determinations, which should properly occur in consultation with the expert wildlife agencies. The life history and mobility of species are often complex, and because many of the toxic pollutants EPA is allowing to be discharged at higher levels bioaccumulate, species impaired by these pollutants can travel both upstream and downstream from the point of discharge. The result is that the zone of influence of power plant discharges is going to be larger than the artificially narrowed scope EPA has identified. EPA ignores real world complexities and employs unsupported assumptions in order to obfuscate the real harms caused to endangered species across the United States from this rulemaking.

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[734] Proposed BCA at 5-3.
[735] *See* FWS, Species Reports, Listed Species Count by Year, https://ecos.fws.gov/ecp0/reports/species-listings-count-by-year-report (attached).
[736] Proposed BCA at 5-3.
[737] *Id*. at 5-4.
[738] *Conner v. Burford*, 848 F. 2d 1441, 1454 (9th Cir. 1988); H.R. Conf. Rep. No. 96-697, 96th Cong., 1st Sess. 12, reprinted in 1979 U.S. Code Cong. & Admin. News 2572, 2576.
[739] Proposed BCA at 5-3.

Next, EPA excluded species "whose recovery plans i) do not include pollution or water quality issues as factors preventing recovery, and ii) identify habitat destruction (due to damming, stream channelization, water impoundments, wetland drainage, etc.) as a primary factor preventing recovery."[740] The legal standard of the ESA, however, is whether or not an agency action "may affect" listed species – period. Just because a recovery plan does not identify a threat does not mean that the threat is not relevant. EPA can point to no scientific literature that suggests that any living species benefits from exposure to mercury or cadmium, and that is because no such information exists. EPA also cannot claim that because a species is harmed by another threat (*e.g.*, habitat destruction) that it gets a free pass to poison an endangered species or pollute its habitat.

Additionally, EPA excluded listed species "where water quality issues are identified as the primary issue preventing recovery, but where a specific industry or entity not within the scope of the regulatory options is identified as the culprit."[741] In other words, if a species is poisoned by mercury but the purported "culprit" is another industry, then EPA simply ignored those species. This is arbitrary and capricious, and EPA must provide information to the public explaining which species and "culprits" it believes allows EPA to avoid complying with its ESA obligations.

EPA then arbitrarily and without justification excluded "[l]istings due to non-native species introductions and/or hybridization with native or non-native congeners."[742] At a minimum, EPA must explain which species it excluded based on this criterion. To the extent that EPA used this criterion to exclude salmonids, this approach is legally invalid and unprecedented.

Finally, EPA excluded species about which "very little is known, including geographic distribution."[743] This decision fully encapsulates the absurdity of EPA's approach to endangered species conservation and its requirements under the ESA, more generally. The purpose of the consultation process is to involve the expert wildlife agencies because they possess more information about the biology, geographic distribution, and life history than the action agency. If an action agency is simply allowed to claim ignorance and throw up its hands, the Section 7 consultation process becomes meaningless.

Despite all of this, EPA's own heavily confined "analysis" still identifies twenty-four listed species that will be harmed by the 2019 Proposal. By analyzing the information EPA provided on the rulemaking docket regarding specific power plants that are expected to remain online past 2025, and by using publicly available information provided by the expert wildlife agencies, commenters have identified almost seventy species that are likely to be harmed by the 2019 Proposal. These species include:

| **Common Name** | **Scientific Name** | **Listing Status** |
|---|---|---|
| Alabama moccasinshell | *Medionidus acutissimus* | Threatened |
| Arkansas River shiner | *Notropis Girardi* | Threatened |

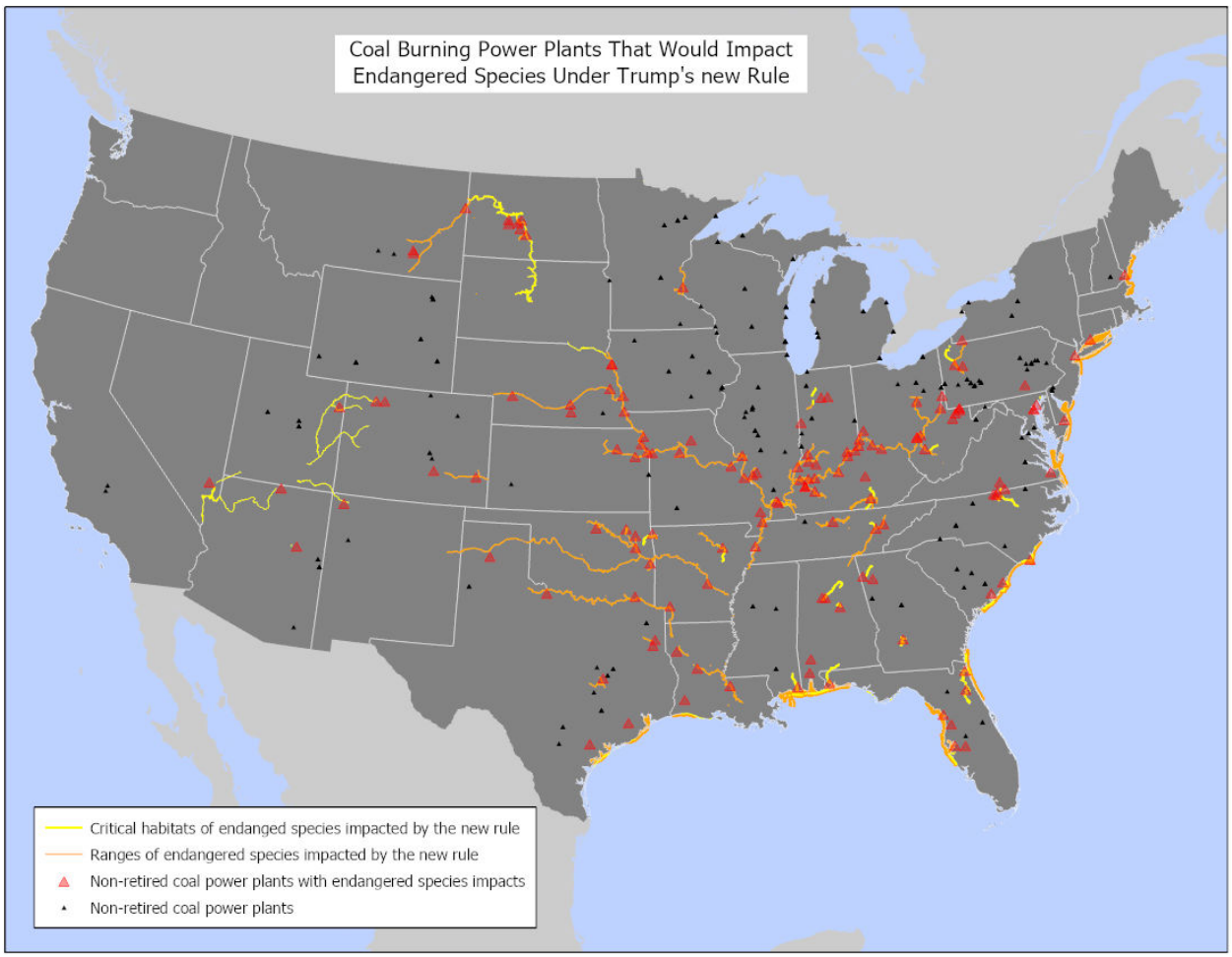
[740] *Id.*
[741] *Id.*
[742] *Id.*
[743] *Id.*

| | | |
|---|---|---|
| Atlantic pigtoe | *Fusconaia masoni* | Threatened |
| Black Warrior waterdog | *Necturus alabamensis* | Endangered |
| Choctaw bean | *Villosa choctawensis* | Endangered |
| Coosa moccasinshell | *Medionidus parvulus* | Endangered |
| Colorado pikeminnow | *Ptychocheilus Lucius* | Endangered |
| Cumberlandian combshell | *Epioblasma brevidens* | Endangered |
| Cumberland darter | *Etheostoma susanae* | Endangered |
| Cumberland elktoe | *Alasmidonta atropurpurea* | Endangered |
| Dark pigtoe | *Pleurobema furvum* | Endangered |
| Diamond darter | *Crystallaria cincotta* | Endangered |
| Fat threeridge | *Amblema neislerii* | Endangered |
| Finelined pocketbook | *Lampsilis altilis* | Threatened |
| Fluted kidneyshell | *Ptychobranchus subtentum* | Endangered |
| Georgia pigtoe | *Pleurobema hanleyianum* | Endangered |
| Gulf moccasinshell | *Medionidus penicillatus* | Endangered |
| Atlantic sturgeon (Gulf subspecies) | *Acipenser oxyrinchus* | Threatened |
| Interrupted rocksnail | *Leptoxis foreman* | Endangered |
| Little Colorado spinedace | *Lepidomeda vittata* | Threatened |
| Loggerhead sea turtle | *Caretta caretta* | Endangered |
| Laurel dace | *Chrosomus saylori* | Endangered |
| West Indian manatee | *Trichechus manatus* | Threatened |
| Narrow pigtoe | *Fusconaia Escambia* | Threatened |
| Neosho mucket | *Lampsilis rafinesqueana* | Endangered |
| Orangenacre mucket | *Lampsilis perovalis* | Threatened |
| Oval pigtoe | *Pleurobema pyriforme* | Endangered |
| Ovate clubshell | *Pleurobema perovatum* | Endangered |
| Oyster mussel | *Epioblasma capsaeformis* | Endangered |
| Purple bean | *Villosa perpurpurea* | Endangered |
| Purple bankclimber | *Elliptoideus sloatianus* | Threatened |
| Rabbitsfoot | *Quadrula cylindrical cylindrical* | Threatened |
| Razorback sucker | *Xyrauchen texanus* | Endangered |
| Rough hornsnail | *Pleurocera foreman* | Endangered |
| Round ebonyshell | *Fusconaia rotulata* | Endangered |
| Rush darter | *Etheostoma phytophilum* | Endangered |
| Southern clubshell | *Pleurobema decisum* | Endangered |
| Southern pigtoe | *Pleurobema georgianum* | Endangered |
| Shinyrayed pocketbook | *Lampsilis subangulata* | Endangered |
| Southern kidneyshell | *Ptychobranchus jonesi* | Endangered |
| Southern sandshell | *Hamiota australis* | Threatened |
| Spotfin chub | *Erimonax monachus* | Threatened |
| Triangular kidneyshell | *Ptychobranchus greenii* | Endangered |
| Trispot darter | *Etheostoma trisella* | Threatened |
| Piping plover | *Charadrius melodus* | Endangered |

| | | |
|---|---|---|
| Vermilion darter | *Etheostoma chermocki* | Endangered |
| Virgin River chub | *Gila seminude* | Endangered |
| Woundfin | *Plagopterus argentissimus* | Endangered |
| Hawksbill sea turtle | *Eretmochelys imbricate* | Endangered |
| Least tern | *Sterna antillarum* | Endangered |
| Ozark hellbender | *Cryptobranchus alleganiensis bishop* | Endangered |
| Pallid sturgeon | *Scaphirhynchus albus* | Endangered |
| Purple Cat's paw | *Epioblasma obliguata obliquata* | Endangered |
| Dromedary pearlymussel | *Dromus dromas* | Endangered |
| Shiny pigtoe | *Fusconaia cor* | Endangered |
| Finerayed pigtoe | *Fusconaia cuneolus* | Endangered |
| Cracking pearlymussel | *Hemistena lata* | Endangered |
| Pink mucket | *Lampsilis abrupta* | Endangered |
| Alabama lampmussel | *Lampsilis virescens* | Endangered |
| Birdwing pearlymussel | *Lemiox rimosus* | Endangered |
| Ring Pink | *Obvaria retusa* | Endangered |
| White wartyback | *Plethobasus cicatricosus* | Endangered |
| Orangefoot pimpleback | *Plethobasus cooperianus* | Endangered |
| Clubshell | *Pleurobema clava* | Endangered |
| Rough pigtoe | *Pleurobema plenum* | Endangered |
| Winged mapleleaf | *Quadrula fragosa* | Endangered |
| Anthony's riversnail | *Athearnia anthonyi* | Endangered |
| Fanshell | *Cyprogenia stegaria* | Endangered |
| Bog turtle | *Clemmys muhlenbergii* | Threatened |

Indeed, as the following map illustrates, the overlap between the ranges and critical habitats for these federally-listed species and existing coal-fired power plants are significant and clearly trigger EPA's Section 7 consultation obligations.[744]

[744] Commenters are additionally submitting with these comments a spreadsheet (entitled "PowerPlantsvsListedSpecies3.xlsx") with the underlying information used to generate this map (attached).




### D. Section 7(d) of the ESA Prohibits a Federal Agency from Making Any Irreversible or Irretrievable Commitments of Resources Prior to Completing the Section 7 Consultation Process

In addition to EPA's specific Section 7 consultation obligations, Section 7(d) of the ESA prohibits a federal agency from "[making] 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 . . . ."[745] By failing to consult with the Services, EPA will be taking action that will push more endangered species toward extinction while denying the possibility that a reasonable and prudent measure could ever be implemented to protect a listed species or its critical habitat. Accordingly, EPA would be in violation of Section 7(d) of the ESA should it finalize the 2019 Proposal without first consulting with the Services.

In sum: in recent years, Commenters have experienced numerous instances in which EPA appears to deliberately misconstrue the purpose of ESA consultations in an attempt to avoid those obligations. By skirting the procedural requirements of the ESA, EPA exacerbates the

[745] 16 U.S.C. § 1536(d).

substantive violations of the law's command not to jeopardize the existence of any endangered or threatened species.[746] The procedural and substantive goals of the ESA consultation process do not compel EPA – or any agency for that matter – to take *only* those actions that are the most beneficial imaginable for listed species.

With respect to this rulemaking, the ESA does not compel EPA to only set ELGs that are the best for endangered species. Instead, it requires that EPA consider and analyze the impacts on listed species in consultation with the Services and, through that analysis, determine whether its choices and actions might cause harm to listed species. If the consultation process finds that the 2019 Proposal jeopardizes a particular threatened or endangered species, EPA still retains discretion on how to proceed, but it must do so after participating in formal consultation and will need to implement reasonable and prudent alternatives, as recommended by the Services, or other equally protective conservation measures. If it does not, its actions here will doom countless species to preventable and unlawful further imperilment and jeopardy under the ESA.

## XV. THE PROPOSED RULE VIOLATES EXECUTIVE ORDER 12898 ON ENVIRONMENTAL JUSTICE.

Executive Order ("E.O.") 12898 requires that "each Federal agency shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations in the United States and its territories and possessions, the District of Columbia, the Commonwealth of Puerto Rico, and the Commonwealth of the Mariana Islands." This obligation was recently affirmed in *Standing Rock Sioux Tribe v. U.S. Army Corps of Engineers*,[747] and has been applied by the U.S. Environmental Appeals Board. Specifically, "[t]he purpose of an environmental justice analysis is to determine whether a project will have a disproportionately adverse effect on minority and low income populations."[748] This proposed rule violates E.O. 12898 by failing to take all lawful and practicable steps to identify and address the disproportionate and adverse impacts of coal ash wastewater on communities of color and low-income communities.

### A. EPA Failed To Meaningfully Evaluate All Regulatory Options To Determine Whether There Are Differing Effects On Communities Of Color And Low-Income Communities.

In its E.O. 12898 review, EPA did not identify and analyze the different impacts that the relevant regulatory options would have on environmental justice communities. The four options and three bromide-specific sub-options proposed in this rulemaking lead to different pollutant-

[746] *Thomas v. Peterson*, 753 F. 2d 754, 765 (9th Cir. 1985) ("If anything, the strict substantive provisions of the ESA justify *more* stringent enforcement of its procedural requirements, because the procedural requirements are designed to ensure compliance with the substantive provisions. The ESA's procedural requirements call for a systematic determination of the effects of a federal project on endangered species. If a project is allowed to proceed without substantial compliance with those procedural requirements, there can be no assurance that a violation of the ESA's substantive provisions will not result.").
[747] 255 F. Supp. 3d 101, 141 (D.D.C. 2017) (cursory environmental justice analysis insufficient to discharge environmental justice responsibilities under NEPA).
[748] *Id.*

loadings and create different outcomes in protections of health and the environment for environmental justice communities. Additionally, as elaborated in Sections IV - Alternatives and IX - Bromide of these comments, these options do not represent a meaningful comparison of potential actions by the Agency. As part of its E.O.12898 review, EPA must not only identify the populations likely to be impacted but also identify and compare the impacts that will result from changes in pollutant loadings and other health and environmental outcomes from the options. At a minimum, EPA should identify and compare the impacts of all four options and three bromide-specific sub-options, as well as the impacts of no action.

1. *EPA failed to meaningfully analyze the effects of anticipated changes in pollutant loadings from the proposed regulatory options.*

EPA's E.O. 12898 review fails to meaningfully identify how differences in the anticipated changes in pollutant loadings from the proposed regulatory options would impact environmental justice communities. Chapter 14 of the Proposed BCA includes just one table that compares the four options as they pertain to children's exposure to lead and infants' exposure to mercury from fish consumption, with no meaningful discussion of the table's contents and what implications it had for environmental justice communities.[749] EPA's E.O. 12898 review concludes with the wholly inconclusive statement: "Because communities at the census block, county, and tribal area levels are poorer and more minority than state averages, the regulatory options could benefit or harm populations with [environmental justice] concerns depending on the direction of changes in pollutant loadings for the regulatory options and the resulting change in potential exposure."[750]

Therefore, in its E.O. 12898 review, EPA appears to have concluded that proposed rule may or may not have disproportionate impacts on environmental justice populations, depending how the rule impacts coal ash wastewater pollution levels. However, EPA does not go any further to clearly identify the pollutant loadings impacts anticipated by the proposed regulatory options and identify whether these may disproportionately impact environmental justice populations. Without a more detailed review that identifies and applies the anticipated changes in pollutant loadings, the Agency's E.O. 12898 review is meaningless. It provides no useful information on how the Agency's preferred regulatory option will actually impact environmental justice communities or on how the preferred regulatory option compares to other regulatory options in terms of environmental justice impacts.

2. *EPA failed to account for the possibility that the proposed VIP will not result in significant pollution reduction.*

EPA appears to approach its E.O. 12898 review with the assumption that there will be net environmental and public health benefits from the proposed rule. For example, the Agency describes its review as examining "whether the benefits from the regulatory options may be differently distributed among population subgroups in the affected areas."[751] EPA's claims that the proposed rule will lead to reductions in pollutant loadings are based largely on the Agency's

[749] Proposed BCA at 14-9, tbl. 14-7.
[750] *Id.* at 14-13.
[751] *Id.* at 14-1.

projection that the proposed voluntary incentive program ("VIP") will lead to significant reductions. As elaborated in Section VIII - VIP of these comments, EPA has provided no evidence to support the Agency's assumption the proposed VIP will be widely adopted enough to result in significant reductions of pollution.

Due to EPA's failure to fully and transparently factor in anticipated changes in pollutant loadings in its E.O. 12898 analysis, it is difficult to determine how EPA's assumptions regarding the success of the proposed VIP impact the Agency's conclusions on the impacts of the proposed rule on environmental justice populations. However, it appears that the Agency's E.O. review failed to take into account the likely possibility that the VIP program will not have as high of a level of participating as EPA has predicted. EPA's E.O. 12898 review should include an analysis that takes into account anticipated pollutant loadings that will result if there is little to no participation in the proposed VIP.

3. *EPA failed to identify the disparate impact on communities of color and low-income populations of regulatory options that allow the continued use of coal ash surface impoundments.*

EPA's proposed low-utilization subcategory would allow coal units that generate less than 876,000 MWh per year to continue using surface impoundments to treat bottom ash wastewater.[752] Additionally, EPA proposes to allow coal plants that plan to retire by 2028 to continue using surface impoundments to treat both FGD wastewater and bottom ash wastewater, with no numeric limitations on any toxic pollutants. EPA's E.O. 12898 review is insufficient because it fails to identify the communities of color and low-income communities that would be impacted by the continued use of surface impoundments at these sites. This omission is particularly glaring in light of the ample evidence previously provided to EPA demonstrating that low-income communities and communities of color are disproportionately impacted by coal ash surface impoundments.

In the Regulatory Impact Analysis for the 2015 Coal Combustion Residuals rule, EPA estimated that at least 1.5 million people of color live in the "catchment areas" of coal ash surface impoundments at 277 power plants throughout the United States.[753] In catchment areas[754] downstream of coal ash impoundments, residents are threatened by leaks, discharges and spills of toxic chemicals, as well as potentially deadly catastrophic failures. EPA found that the minority population in catchment areas is higher than both national and state averages.[755]

[752] *See* Section X.D – Low Utilization.
[753] EPA, Regulatory Impact Analysis (RIA) for EPA's 2015 Coal Combustion Residuals (CCR) Final Rule, Docket ID No. EPA-HQ-RCRA-2009-0640-12034, at 8-10.
[754] EPA defines "catchment area" as the downstream area that receives surface water runoff and releases from CCR impoundments, and incurs risks from CCR impoundment discharges (e.g., unintentional overflows, structural failures, and intentional periodic discharges). Catchment areas are measured in terms of runoff travel time. This analysis considers populations in all catchments within 24 hours of downstream travel time from the plant under mean surface water flow conditions, to estimate populations potentially affected by impoundment failures. *Id.* at 8-9.
[755] *Id.* at 8-12.

EPA also estimates nearly 900,000 low-income residents live in catchment areas, which is also higher than state and national averages. In fact, more than 60% of the power plants operating coal ash impoundments are located in catchment areas where the percentage of residents who live below the Federal Poverty Level exceeds statewide percentages.756 In other words, the population living below the poverty level near these coal ash impoundments is about 40% larger than would be expected based on statewide averages, and the minority population is approximately 20% greater. Almost 70% of ash ponds in the United States are in areas where household income is lower than the national median.[757]

Of the 181 ZIP codes nationally that contain coal ash ponds, 118 (65.19%) have above-average percentages of low-income families.[758] Given the serious health threats posed by coal ash, it is particularly troublesome that coal ash impoundments are disproportionately located in low-income communities, where residents are more likely to rely on groundwater supplies and less likely to have access to medical insurance and healthcare. As the United States Civil Rights Commission noted, "[r]acial minorities and low income communities are disproportionately affected by the siting of waste disposal facilities and often lack political and financial clout to properly bargain with polluters when fighting a decision or seeking redress."[759]

The disparate health impacts from coal ash impoundments are not evenly distributed across the United States. Certain states face worse disproportionate impacts than others. For example, more than half of residents living near coal plants in New Mexico—and more than forty percent in Alabama, Arizona, Georgia, and Illinois—are non-white. Further, coal ash impoundments are more numerous in the southeastern United States, and the populations near the dumps tend to be poorer and less white.[760] In addition, in the absence of federal regulation of

[756] *Id.* at 8-12.
[757] U.S. Census Bureau, Census 2000 Summary File 3 (SF 3) - Sample Data, All 5-Digit ZIP Code Tabulation Areas (860), Table P53 "Median Household Income in 1999 (Dollars)".
[758] U.S. Census Bureau, Census 2000 Summary File 3 (SF 3) - Sample Data, All 5-Digit ZIP Code Tabulation Areas (860), Table P76 "Family Income in 1999" (downloaded June 23, 2009). "Low-income" defined as earning less than $20,000 annually. ZIP codes containing coal ash ponds compared to a national mean percent "low-income" of 12.61%, calculated based on the "Family Income in 1999" dataset; United States Environmental Protection Agency (U.S. EPA). Database of coal combustion waste surface impoundments (2009). Information collected by EPA from industry responses to Information Collection Request letters issued to the companies on March 9, 2009.
[759] U.S. Commission on Civil Rights, 2016 Environmental Justice: Examining the Environmental Protection Agency's Compliance and Enforcement of Title VI and Executive Order 12,898 at pdf p. 14 (Sept. 2016). (finding that "EPA's Final Coal Ash Rule negatively impacts low-income and communities of color disproportionately."); *See also* Title VI Civil Rights Complaint and Petition for Relief or Sanction – Alabama Department of Environmental Management Permitting of Arrowhead Landfill in Perry County, Alabama (EPA OCR File No. 01R-12-R4).
[760] U.S. Census Bureau, Census 2000 Summary File 3 (SF 3) - Sample Data, All Census Tracts, "Individual Poverty in 1999," received via email from Professor Paul Mohai, University of Michigan, on Jun. 4, 2010.

coal ash, state regulations created a patchwork of inadequate controls, with many states having no regulation of the disposal of coal ash, particularly of wet impoundments.[761]

### B. EPA Failed To Adequately Identify The Disproportionate And Adverse Impacts Of Coal Ash Wastewater On Communities Of Color And Low-Income Communities Because The Agency Focused On Only Two Adverse Impacts Of Coal Ash Wastewater Discharges.

EPA's E.O. 12898 review ignored numerous environmental and health impacts of coal ash wastewater that could disproportionately impact communities of color and low-income communities. The Agency only focused on the health impacts from the consumption of fish contaminated with lead and mercury and from drinking water contaminated by bromide discharges.[762] The pollutants in coal ash wastewater have far-reaching environmental, health, and financial implications, many which disproportionately impact environmental justice communities.[763] At a bare minimum, EPA should expand its E.O. 12898 review for the proposed rule to encompass the environmental and health impacts of pollutants expected to be released in higher quantities as a result of this rule, including arsenic, selenium, and nitrate/nitrite as nitrogen.

### C. EPA Failed To Take All Lawful And Practicable Steps To Address The Disproportionate Impacts Of The Proposed Rulemaking.

EPA took no meaningful steps to address any anticipated disproportionate impacts on low-income communities and communities of color. The Agency's E.O. 12898 review includes no attempt to fulfill the entire mandate of E.O. 12898 – that agencies not just identify, but also ***address*** disproportionately high and adverse human health or environmental effects of the proposed rule on minority populations and low-income populations.

As elaborated above in this section, there is extensive evidence that this proposed rule will have a disproportionate impact on low-income communities and communities of color. Additionally, EPA identified potential environmental justice impacts from lead and mercury exposure from fish consumption.[764] However, the Agency simply noted these possible impacts, and made no attempt to elaborate on the findings or provide explanations on why any potential negative impacts may be warranted. To fulfill its duties under E.O. 12898, EPA must concretely identify the potential environmental justice impacts of the proposed rule, and then address these impacts, or explain why they cannot be addressed.

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[761] *See, e.g.*, Comments of Earthjustice, et. al., on Hazardous and Solid Waste Management System: Disposal of Coal Combustion Residuals from Electric Utilities; Amendments to the National Minimum Criteria (Phase One); Proposed Rule, (Apr. 30, 2018) at 95-110.
[762] Proposed BCA at 14-1.
[763] *See, e.g.*, Closing the Floodgates: How the Coal Industry is Poisoning Our Water and How We Can Stop It – DCN SE04073, at 2-7, Docket ID No. EPA-HQ-OW-2009-0819-5643 (2013).
[764] Proposed BCA at 14-10.

## XVI. THE PROPOSED RULE VIOLATES EXECUTIVE ORDER 13045 ON PROTECTING CHILDREN FROM ENVIRONMENTAL HEALTH AND SAFETY RISKS.

Executive Order 13045 provides that:

> to the extent permitted by law and appropriate, and consistent with the agency's mission, each Federal agency . . . (a) shall make it a high priority to identify and assess environmental health risks and safety risks that may disproportionately affect children; and (b) shall ensure that its policies, programs, activities, and standards address disproportionate risks to children that result from environmental health risks or safety risks.[765]

The 2019 Proposal does not address the disproportionate risks to children that will result from increased levels of highly toxic substances like mercury and lead that have no safe exposure level. To the contrary, as described in these comments, the 2019 Proposal would exacerbate environmental health risks to children by weakening many of the elements of the 2015 ELG Rule.

EPA harshly concludes that this proposal to roll back the protections in the 2015 ELG Rule and increase the amounts of lead, mercury, selenium and cancer-causing trihalomethanes discharged into U.S. waterways is not subject to Executive Order 13045 because the options presented in the proposed rule "would have a small, and not disproportionate, impact on children."[766] EPA's conclusion disregards the devastating health impacts that very trace amounts of these toxic pollutants have on children.

EPA did not "identify and address" all health and safety risks and did not ensure that the rule addresses the disproportionate impacts to children. Both lead and mercury have life-altering and disproportionate impacts on children that are well-known, but EPA failed to assess all the risks of these pollutants and underestimated the costs associated with impacts that it did address. EPA also did not address the cumulative impacts of multiple toxic pollutants on children.

### A. EPA Underestimated Costs Caused by Mercury's Impacts on Children.

Mercury is well-known neurotoxin with no safe level of exposure that disproportionately impacts children. EPA acknowledges that "[f]etuses, infants, and children are particularly susceptible to impaired neurological development from methylmercury exposure (ATSDR, 1999; Evers et al., 2011)."[767]

EPA underestimated the foregone benefits associated with EPA's proposed option to allow increased amounts of mercury discharges compared to the baseline. EPA acknowledges

[765] E.O. 13045, § 1-101, 62 Fed. Reg. 19,885 (Apr. 21, 1997).
[766] 84 Fed. Reg. at 64,670.
[767] Proposed EA at A-5.

that it quantified "only a subset of the potential health benefits (or foregone benefits) that are expected to result from the regulatory options."[768]

EPA underestimated economic costs associated with increased emissions of mercury in Options 2, 3 and 4 by assuming a low potency of IQ effect. EPA assumed that a 1 ppm increase in maternal hair mercury would result in a 0.18 IQ loss in the child, and acknowledged that this assumption was uncertain and may under- (or over-) estimate IQ impacts of mercury exposure.[769] In fact, EPA underestimated IQ effect and should have assumed a higher IQ loss. A recent European publication estimated that mercury has a 2.5 times stronger effect on IQ.[770] This study relied on an oft-cited 2006 study from the New York Academy of Sciences, and used a linear function that assumes that each doubling of exposure above the background causes a deficit of 1.5 IQ points.[771]

EPA also underestimated economic costs by not considering the effect of exposure to mercury after birth. Mercury can damage children in multiple ways that EPA did not assess.

### B. EPA Failed to Assess All Impacts of Lead Exposure.

EPA acknowledges that there is no safe level of exposure to lead and that lead exposure is particularly devastating to children. EPA also acknowledges that its proposal would increase human exposure to lead. Because lead exposure has a disproportionate impact on children, the increased exposure due the proposed rule will unquestionably have a disproportionate impact on our nation's children. Yet EPA does not address the disproportionate impact.

Lead poisoning poses an enormous public health concern. The toxicity of lead in children has a greater impact than in adults because "their tissues, internal as well as external, are softer than in adults" and because their organs are developing.[772] And "[i]nfants and young children are especially sensitive to even low levels of lead."[773] The absorption of lead occurs more quickly in children than adults.[774] EPA acknowledges the devastating impacts that exposure to lead has on children:

> Human exposure to high concentrations of lead in drinking water (and other exposure pathways) can result in adverse impacts to almost every organ and body system. Lead impacts include neurological effects, with long-term exposure resulting in children

[768] Proposed BCA at 2-7.
[769] *Id.* at 5-15.
[770] Martine Bellanger et al., Economic benefits of methylmercury exposure control in Europe: Monetary value of neurotoxicity prevention. Environ Health 12, 3 (2013), https://ehjournal.biomedcentral.com/articles/10.1186/1476-069X-12-3 (attached).
[771] *Id.* (citing Trasande L, Schechter C, Haynes KA, Landrigan PJ: Applying cost analyses to drive policy that protects children: mercury as a case study. Ann. N. Y. Acad Sci. 2006, 1076: 911-923).
[772] Ab Latif Wani et al, Lead Toxicity: a review, Interdiscip Toxic. 2015 Jun; 8(2): 55-64, https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4961898/ (attached).
[773] *Id.*
[774] *Id.*

> (e.g., decreased cognitive function, IQ loss, altered behavior and mood, and weakness in fingers, wrists, or ankles), renal damage and reduced renal function, cardiovascular impacts (e.g., increased blood pressure), reproductive impacts, and developmental impacts. Developmental impacts include premature births and decreased child growth (ATSDR, 2019b).[775]

EPA, however, did not evaluate all the impacts of lead on children. EPA evaluated non-cancer and cancer human health impacts through the IRW Human Health Module and oral reference doses (RfDs). EPA states that it did not develop RfDs for lead because "adverse health effects 'may occur at blood levels so low as to be essentially without a threshold.'"[776] Yet EPA also acknowledges "Option 2 increases the annual loadings of lead to the environment by 693 pounds compared to baseline."[777]

To its credit, EPA did quantify the IQ losses from lead exposure among preschool children. However, EPA acknowledges that it monetized only a subset of the potential foregone health benefits, and did not consider, among other things, "low birth weight and neonatal mortality from in-utero exposure to lead, decreased postnatal growth in children ages one to 16, delayed puberty, immunological effects, decreased hearing and motor function (U.S. EPA, 2009a; 2019h)."[778] EPA also did not consider the effects of children's exposure to lead after age seven.

### C. EPA Did Not Address the Disproportionate Impacts on Children of Consuming Contaminated Fish.

EPA evaluated the non-cancer and cancer human health impacts from consuming fish from contaminated wastewaters in the Proposed EA and found that all of its proposed options increase the number of receiving waters contributing to oral RfD (non-cancer) exceedances over the baseline.[779] Although EPA's results show disproportionate impacts on children, EPA makes no mention of these results in the proposed rule, and does not take them into consideration when weighing the various options. Table 4-7 of the Proposed EA compares how each of the four options increases the number of receiving waters contributing to oral RfD exceedances.[780] The table shows that the impacts of Option 2 on children are disproportionately greater than on adults (*e.g.*, for selenium subsistence, there is a 2.25 times greater impact on children (9/4), and for mercury subsistence, there is a 1.4 times greater impact on children (17/12). Additionally the table shows that the increased impact of Option 2 versus Option 4 is disproportionately more harmful to children (*e.g.*, for subsistence child 1.7 (19/11) times greater for any pollutant under Option 2 versus under Option 4, versus only 1.5 times greater (12/9 ) for subsistence adults for any pollutant under Option 2 versus Option 4).[781]

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[775] Proposed EA at A-4.
[776] *Id.* at 4-11, n.29.
[777] *Id.* at 4-11.
[778] Proposed BCA at 2-7.
[779] Proposed EA at 4-11.
[780] *Id.* at 4-12, Tbl. 4-7.
[781] *Id.*

### D. EPA Does Not Account for Cumulative Impacts of Multiple Pollutants on Children.

EPA's assessment of the potential impacts to children is narrowly focused on a few impacts of individual pollutants. EPA did not assess the cumulative impacts of the pollutants that have disproportionate impacts on children. For example, EPA notes that it did not consider the impact of mercury on the uptake or toxicity of selenium. "There is evidence in the literature (Chapman et al., 2009) that these two compounds interact in the environment to decrease each other's impact on a receptor. Conversely, the interaction of other pollutants may increase the impact to a receptor."[782]

EPA's current proposal does nothing to address these risks to children's health. To the contrary, as described in these comments, the proposed rule would exacerbate the environmental health risks to children by weakening many of the elements of the 2015 ELG Rule.

## XVII. BY FAILING TO CONSULT WITH TRIBAL GOVERNMENTS, EPA HAS VIOLATED EXECUTIVE ORDER 13175 AND ITS POLICY IMPLEMENTING THE ORDER.

Pursuant to Executive Order 13175, it is federal policy "to establish regular and meaningful consultation and collaboration with tribal officials in the development of Federal policies that have tribal implications."[783] A 2009 presidential memorandum reaffirmed the principles in Executive Order 13175, namely, that "consultation is a critical ingredient of a sound and productive Federal-tribal relationship."[784] To implement Executive Order 13175, EPA's policy is to "ensure[] the close involvement of tribal governments and gives special consideration to their interests whenever EPA's actions may affect . . . tribal interests."[785] EPA's policy "takes an expansive view of the need for consultation in line with the 1984 Policy's directive to consider tribal interests whenever EPA takes an action that 'may affect' tribal interests."[786]

EPA acknowledges that it failed to consult with tribal governments regarding the 2019 Proposal pursuant to Executive Order 13175 ("Order").[787] This is contrary to both the plain language of the Order and EPA's own policy for implementing the Order. The Order directs federal agencies such as EPA to consult with tribal officials regarding "the development of Federal policies that have tribal implications," and EPA takes an expansive view of the need for consultation. At minimum, EPA should have consulted with tribes and tribal entities that it consulted during the 2015 rulemaking process, or offered a reasoned explanation for why it did

[782] *Id.* at D-8.
[783] E.O. 13,175, Consultation and Coordination With Indian Tribal Governments, 65 Fed. Reg. 67,249, 67,249 (Nov. 6, 2000).
[784] Presidential Memorandum on Tribal Consultation, 74 Fed. Reg. 57,881 (Nov. 5, 2009).
[785] EPA, EPA Policy on Consultation and Cooperation with Indian Tribes, at 4, https://www.epa.gov/sites/production/files/2013-08/documents/cons-and-coord-with-indian-tribes-policy.pdf (May 4, 2011).
[786] *Id.* at 2.
[787] 84 Fed. Reg. at 64,669-70.

not. Power plants on or nearby tribal lands discharging increased pollution under the proposal will affect tribes, and the Order as well as EPA policy require consultation under such circumstances.

During the rulemaking for the 2015 ELG rule, although EPA also found that the Order did not apply, EPA consulted with federally recognized tribal officials early in the process of developing the rule under EPA's Policy on Consultation and Coordination with Indian Tribes to "enable them to have meaningful and timely input into its development."[788] EPA shared information about the proposed rule with the National Tribal Caucus and the National Tribal Water Council and continued "government-to-government" dialogue by mail correspondence and a conference call.[789]

In 2011, EPA identified 15 plants located on or near tribal lands that are implicated by the 2015 ELG rulemaking and initiated consultation with the tribal officials.[790] Many of the plants on the EPA's 2011 list are still operating and would be subject to the changes in the proposed rule. The list of power plants within or nearby tribal lands affected by the rulemaking includes:

- Hugo Plant, Choctaw OTSA
- Flint Creek, Cherokee OTSA
- Mayo Electric Generating Station, Sappony SDTSA
- George Neal North, Winnebago Reservation
- Lansing Generating Station, Ho-Chunk Nation Off-Reservation Trust Land
- Brame Energy Center, Clifton Choctaw SDTSA
- Roxboro Steam Plant, Sappony SDTSA
- San Juan Generation Plant Station, Navajo Nation Off-Reservation Trust Land

EPA's rationale for failing to apply the Order in the 2019 Proposal is flawed because it failed to consider whether the action would have "substantial direct effects on one or more Indian tribes."[791] EPA considered only the 2019 Proposal's potential effect on tribal government and did not consider that the Order applies because the rule could have a direct effect on the tribe and tribal members.[792] EPA ignored its Policy and did not reference it or its actions in the previous rulemaking in the proposal.

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[788] 80 Fed. Reg. at 67,890.
[789] *Id.*
[790] *See* Letter from Robert Wood, EPA, Re: Notification of Consultation and Coordination on Steam Electric Power Generating Effluent Limitations Guidelines and Standards Proposed Rulemaking – DCN SE03816, Docket ID No. EPA-HQ-OW-2009-0819-1768 (Mar. 6, 2012).
[791] 65 Fed. Reg. at 67,249 ("Policies that have tribal implications" refers to regulations, legislative comments or proposed legislation, and other policy statements or actions that have substantial direct effects on one or more Indian tribes, on the relationship between the Federal Government and Indian tribes, or on the distribution of power and responsibilities between the Federal Government and Indian tribes.)
[792] *Cf. id.* at 67,248. EPA states that the action does not have tribal implications for three reasons: "It will not have substantial direct effects on tribal governments, on the relationship between the federal

## XVIII. EPA FAILED TO ENSURE ADEQUATE PUBLIC PARTICIPATION.

### A. Both the Clean Water Act and the Administrative Procedure Act Require Meaningful Public Participation.

EPA must provide meaningful time and opportunity to comment on proposed rules. The Administrative Procedure Act directs that agencies undertaking rulemaking allow "interested persons an opportunity to participate," and empowers courts to invalidate agency decisions, including those concerning the public comment opportunity, if such choices are arbitrary" or "capricious," or the agency commits "an abuse of discretion" in establishing the comment opportunity.[793] The Clean Water Act similarly provides that "[p]ublic participation in the development, revision, and enforcement of any regulation, standard, effluent limitation, plan, or program established by the Administrator or any State under this Act shall be provided for, encouraged, and assisted by the Administrator and the States."[794] And the presumptive minimum comment period for run-of-the-mill rulemakings pursuant to Executive Order 12,866 is sixty days.[795]

### B. EPA Refused To Provide In-Person Public Hearings.

EPA did not provide members of the public an opportunity to appear in person to testify before the agency and share concerns about the proposal. Instead, the agency held a "virtual" public hearing on December 19, during which participants were limited to brief, three-minute remarks. Furthermore, EPA discouraged public input during the hearing on the bulk of the proposal, as the agency sought to limit the subject matter of the hearing to the proposed changes to the pretreatment standards only.[796]

EPA denied the public a requested in-person public hearing. EPA apparently concluded that an online input session is a meaningful opportunity for comment, but that is mistaken. As eighty-seven groups that joined to request an in-person hearing stressed:

> A genuine public hearing serves many critical functions. It offers any member of the public the opportunity to speak directly to

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government and the Indian tribes, or on the distribution of power and responsibilities between the federal government and Indian tribes, as specified in E.O. 13175." *Id.*

[793] 5 U.S.C. §§ 553(c), 706(2)(A); *see also Fund for Animals, Inc. v. Rice*, 85 F.3d 535, 545 (11th Cir. 1996) (evaluating agency's refusal to hold public hearing to determine if action was arbitrary or capricious or abuse of discretion).

[794] Clean Water Act § 101(e); 33 U.S.C. § 1251(e).

[795] E.O. 12,866, 58 Fed. Reg. 51,735, § 6(a)(1) (Sept. 30, 1993) ("[E]ach agency should afford the public a meaningful opportunity to comment on any proposed regulation, which in most cases should include a comment period of not less than 60 days.").

[796] EPA, Steam Electric Power Generating Effluent Guidelines – 2019 Proposed Revisions: Public Hearing, https://www.epa.gov/eg/steam-electric-power-generating-effluent-guidelines-2019-proposed-revisions#public-hearing (visited Dec. 18, 2019) ("The EPA will conduct a public hearing on the proposed pretreatment standards on Thursday, December 19, 2019, at 1:00 PM EST. The hearing will be conducted online only.").

> agency representatives, who are physically present in the room. It provides the public with opportunities to bring visual aids, such as maps, photos, contaminated water and soil, etc. The speaker also has the opportunity to have family members or other representatives from the impacted community present as support. The agency, in turn, has the immeasurable and irreplaceable benefit of seeing the speakers and hearing their testimonies directly, which may be filled with emotion and urgency that cannot be conveyed in a phone call. Members of government agencies, elected officials, the press, and the general public similarly have the opportunity to gain such knowledge during a genuine public hearing. A call session is not an appropriate or legal substitute for in-person public hearings.[797]

Consequently, EPA's refusal to hold an in-person public hearing on the full range of issues deprived people concerned about this rulemaking all of these important values.

EPA's longstanding interpretation is that a public hearing is an in-person event. EPA's public participation regulations applicable to Clean Water Act rulemakings commit the Agency to "provide for, encourage, and assist the participation of the public,"[798] and "to foster a spirit of openness and mutual trust among EPA . . . and the public" and "use all feasible means to create opportunities for public participation, and to stimulate and support participation."[799]

Furthermore, EPA defines "public participation" as "providing ample opportunity for interested and affected parties to communicate their views" and "providing access to the decision-making process, seeking input from and conducting dialogue with the public."[800] As noted by the former EPA official responsible for promulgating the Agency's public participation regulations: "Part 25 Public Participation regulation expected hearings to be in-person hearings and that was the common understanding at EPA."[801]

EPA guidance documents reinforce the point that additional means of encouraging public input should only supplement, but not replace, in-person hearings, which are the bedrock of public participation. When EPA updated its program-wide Public Involvement Policy in 2003 to "reflect[] . . . new options for public involvement through the internet," it stated that the new Policy "is meant to encourage development of new tools for public involvement and should not

[797] Letter from L. Evans & T. Cmar, Earthjustice *et al*., to P. Wright & D. Ross, EPA, Re: Request for Public Hearings and 120-Day Comment Periods for Proposed Rules regarding Coal Combustion Residuals Closure Deadlines (Part A) and Revision of Steam Electric Power Generating Effluent Limitations Guidelines, Docket ID No. EPA-HQ-OW-2019-0172-0025 (Dec. 4, 2019).
[798] 40 C.F.R. § 25.3(a).
[799] *Id.* § 25.3(c).
[800] *Id.* § 25.3(b).
[801] Lee Daneker, Comment Letter submitted to Docket No. EPA-HQ-OLEM-2019-0172-0027 (Jan. 7, 2020) (attached). EPA has not amended its Public Participation Regulations, 40 C.F.R. Part 25, since promulgating them under Mr. Daneker's stewardship in 1979.

limit the degree or types of public involvement already in use at EPA."[802] Similarly, the policy says, "[w]henever feasible, Agency officials should strive to provide increased opportunities for public involvement above and beyond the minimum regulatory requirements."[803]

Underscoring the fact that online engagement should supplement, but not replace, in-person hearings is a report prepared for EPA regarding a two-week, interactive, online dialogue it conducted "to complement the formal notice-and-comment process" for input on the draft 2003 Public Involvement Policy.[804] While highlighting the potential benefits of using online tools to reach "a much larger and diverse population," the report found that such tools should not replace traditional in-person events.

> Broad support for future use of on-line dialogues at EPA came with an important condition: that they be used only in conjunction with traditional approaches to participation. According to respondents, too many people lack computer access for EPA to replace traditional public participation with on-line dialogues. Some respondents also said that the dynamics of on-line interaction were simply not as rich and productive as face-to-face participation.[805]

EPA's National Environmental Justice Advisory Council ("NEJAC") makes this same point. "Social media and technology . . . should not take the place of face-to-face engagement with community members."[806] Indeed, limiting public participation opportunities to those with internet access has serious environmental justice impacts. Approximately 10% of American adults lack internet access, with a disproportionate share of that population being black, Hispanic, and/or low-income.[807]

Long-time EPA personnel who were directly involved in the Agency's public participation efforts have made it clear that hearing directly, in-person, from affected citizens is a

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[802] 68 Fed. Reg. 33,946, 33,946-47 (June 6, 2003). *See also* EPA, Public Involvement Policy and Related Documents, https://archive.epa.gov/publicinvolvement/web/html/index-6.html.
[803] *Id.*
[804] 68 Fed. Reg. 33,946 (June 6, 2003). *See also* Thomas C. Beierle, RFF Report, *Democracy On-Line: An Evaluation of the National Dialogue on Public Involvement in EPA Decisions* (Jan. 2002) at 8, https://archive.epa.gov/publicinvolvement/web/html/index-6.html (attached).
[805] Thomas C. Beierle, RFF Report, *Democracy On-Line: An Evaluation of the National Dialogue on Public Involvement in EPA Decisions* (Jan. 2002) at 32, https://archive.epa.gov/publicinvolvement/web/html/index-6.html (attached).
[806] NEJAC, *Model Guidelines for Public Participation: An Update to the 1996 NEJAC Model Plan for Public Participation* (Jan. 25, 2013) at 5, https://www.epa.gov/environmentaljustice/model-guidelines-public-participation (attached).
[807] Monica Anderson et al., *10% of American's don't use the internet. Who are they?* Pew Research Center (Apr. 22, 2019), https://www.pewresearch.org/fact-tank/2019/04/22/some-americans-dont-use-the-internet-who-are-they/ (attached).

crucial part of the decision-making process. The following two statements have been provided by former EPA staffers to the docket of the related CCR "Part A" proposal:

> I served as a hearing panelist and auditor for many EPA public hearings, and assure you that it makes a difference to actually see and interact with members of the public who give hearing testimony. It is not just the opportunity to see witnesses and assess body language. Having a live presence can promote dialogue, and encourage questioning that elicits useful information. This is much harder to do when contact is a disembodied voice. It is also moving for EPA panelists to see ordinary citizens coming to testify, many taking time off from jobs to do so. . . . There is also the important gain in perspective from getting out of headquarters to see people in the rest of the country. This perspective is lost in the virtual context, when EPA personnel participate from headquarters.[808]

> The agency would receive better information as part of this rulemaking process if it were to include face-to-face communications as part of its process to receive feedback on the proposed regulations from the public.[809]

EPA's current failure to provide an in-person opportunity to weigh in on changes to the effluent limitations applicable to power plants contrasts with the agency's approach in developing the requirements that EPA now proposes to change. In 2013, during the public comment period on the proposed rules, EPA held an in-person hearing in Washington, DC.[810]

The agency's actions denying a meaningful public hearing on the proposal thus contravenes the Clean Water Act's instruction to EPA to facilitate public participation in its rulemakings. Moreover, EPA's failure to explain its deviation from the robust policy of public dialogue reflected in its preexisting regulations, policy guidance, and the observations of former agency staff is arbitrary and capricious.

### C. A Sixty-Day Public Comment Period, Including Several Holidays, Was Manifestly Inadequate for This Rulemaking.

EPA established January 21 as the end of the public comment period, which began on November 22. Four federal holidays were observed during this period – Thanksgiving Day, Christmas Day, New Year's Day, and Martin Luther King, Jr.'s Birthday. People interested in this rulemaking also celebrated Hanukkah and Kwanzaa during this time and many of these holidays commonly involve extended family vacations and days away from work. Practically

[808] Steven Silverman, Comment Letter submitted to Docket No. EPA-HQ-OLEM-2019-0172-0026 (Jan. 6, 2020) (attached).
[809] Lee Daneker, Comment Letter submitted to Docket No. EPA-HQ-OLEM-2019-0172-0027 (Jan. 7, 2020) (attached).
[810] 78 Fed. Reg. 34,432 (June 7, 2013).

speaking, the comment period EPA has afforded to the public is substantially shorter than sixty days.

The docket for this proposed rule contains 1146 entries of supporting materials that were added on November 22, the date the proposal was published in the Federal Register. Many of these materials are highly technical in nature,[811] others are unavailable online because they contain copyrighted information,[812] and others are unavailable altogether because they have been deemed to contain confidential business information.[813] Additional materials were added after the proposal was published.[814] Adequately analyzing the available material and determining how it bears on application of the Clean Water Act to the power plant sector will be practically impossible in the short time EPA has permitted the public to comment.

The regulations that EPA seeks to amend were finalized following a robust public comment period. Specifically, "EPA published the proposed rule on June 7, 2013, and took public comments until September 20, 2013,"[815] a total of 112 days. In keeping with that approach, nearly ninety organizations asked EPA to establish a 120-day comment period for the proposed revisions. However, EPA denied that request.

EPA's constrained opportunity for public comment contradicted the Clean Water Act's instruction to facilitate such participation. EPA also violated the Administrative Procedure Act. Because EPA established a period that, considering holidays, was effectively much shorter than sixty days, because it did not consider the time that would be necessary for commenters to adequately analyze new record materials, and because this rulemaking involves detailed technical and economic information, the agency utterly failed to consider a critical aspect of the issue in determining the comment period. As such, the chosen period was arbitrary and capricious.[816]

[811] *See, e.g.*, PacifiCorp, *2017 Integrated Resource Plan: Volume I*, Docket ID No. EPA-HQ-OW-2009-0819-7243 (Apr. 4, 2017).
[812] *See, e.g.*, A. Lewis and D. Mayfield, EPRI, *Ecological Effects of Coal Combustion Products – A Literature Review – DCN SE08171*, Docket ID No. EPA-HQ-OW-2009-0819-8228 (Dec. 1, 2011).
[813] *See, e.g.*, EPRI, *Thermal Evaporation Technologies for Treating Power Plant Wastewater: A Review of Six Technologies*, Docket ID No. EPA-HQ-OW-2009-0819-7370 (Sept. 1, 2017).
[814] *See, e.g.*, Email from N. Dernick, NiSource, Inc. to R. Benware, EPA, *Re: NIPSCO Follow-Up from ELG Submission Meeting*, Docket ID No. EPA-HQ-OW-2009-0819-8275 (June 8, 2018) (posted to docket Dec. 3, 2019).
[815] 80 Fed. Reg. at 67,844.
[816] *Motor Vehicle Mfrs. Ass'n v. State Farm Mut. Auto. Ins. Co.*, 463 US 29, 43 (1983) (agency rule is arbitrary and capricious if, among other things, "the agency has relied on factors which Congress has not intended it to consider, entirely failed to consider an important aspect of the problem, offered an explanation for its decision that runs counter to the evidence before the agency, or is so implausible that it could not be ascribed to a difference in view or the product of agency expertise").

## XIX. CONCLUSION

For all of the reasons set forth above, and in the attachments submitted with this letter, the undersigned Commenters strongly urge EPA to abandon the 2019 Proposal to gut the 2015 ELG Rule and instead act swiftly to strengthen it.

Thank you.

Sincerely,

Thomas Cmar
Lisa Perfetto
Mychal Ozaeta
Lauren Piette
EARTHJUSTICE
311 S. Wacker Dr., Ste. 1400
(312) 500-2191
tcmar@earthjustice.org
lperfetto@earthjustice.org
mozaeta@earthjustice.org
lpiette@earthjustice.org

Abel Russ
ENVIRONMENTAL INTEGRITY PROJECT
1000 Vermont Ave. NW
Washington DC 20005
(802) 482-5379
aruss@environmentalintegrity.org

Casey Roberts
Joshua Smith
SIERRA CLUB ENVIRONMENTAL LAW PROGRAM
1536 Wynkoop Street, Suite 200
Denver, CO 80202
(303) 454-3355
casey.roberts@sierraclub.org
joshua.smith@sierraclub.org

Jennifer Peters
CLEAN WATER ACTION
1444 Eye Street NW, Suite 400
Washington, DC 20005

(202) 895.0420 ext. 105
jpeters@cleanwater.org

Jon Devine
NATURAL RESOURCES DEFENSE COUNCIL
1152 15th Street NW, Suite 300
Washington, DC 20005
(202) 289-2361
jdevine@nrdc.org

Larissa Liebmann
WATERKEEPER ALLIANCE
180 Maiden Lane, Suite 603
New York, NY 10038
(212) 747-0622
lliebmann@waterkeeper.org

Frank Holleman
Amanda Garcia
Nick Torrey
Megan Kimball
Trey Bussey
SOUTHERN ENVIRONMENTAL LAW CENTER
601 West Rosemary Street, Suite 220
Chapel Hill, NC 27516-2356
(919) 967-1450
fholleman@selcnc.org
agarcia@selctn.org
ntorrey@selcnc.org
mkimball@selcnc.org
tbussey@selctn.org

Hannah Connor
CENTER FOR BIOLOGICAL DIVERSITY
1411 K St. NW, Suite 1300
Washington, D.C. 20005
(202) 681-1676
hconnor@biologicaldiversity.org