UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Supplemental Effluent Limitations Guidelines and Standards for the Steam Electric Power Generating Point Source Category **88 Fed. Reg. 18,824 (Mar. 29, 2023)**	)	**Docket ID No. EPA-HQ-OW-2009-0819** *Submitted via regulations.gov*

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

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GLOSSARY LIST

2018 EPRI Report = EPRI, Closed-Loop Bottom Ash Transport Water: Costs and Benefits to Managing Purges, Docket ID No. EPA-HQ-OW-2009-0819-7346 (Sept. 2018) ("2018 EPRI Report").

2020 RTC = EPA, Response to Public Comments for Revisions to the Effluent Limitations Guidelines and Standards for the Steam Electric Power Generating Point Source Category, Docket ID No. EPA-HQ-OW-2009-0819-9015, at 2-37 (Aug. 2020) ("2020 RTC").

2020 TDD = 85 Fed. Reg. at 64,705; EPA, Supplemental Technical Development Document for Revisions to the Effluent Limitations Guidelines and Standards for the Steam Electric Power Generating Point Source Category, Docket ID No. EPA-HQ-OW-2009-0819-8935, at 8-23 to 8-24 ("2020 TDD").

BAT = best available technology

BATW = bottom ash transport water

BPJ = best professional judgment

BPT = best practicable control technology

CCR Rule = Coal Combustion Residuals Rule

CCS = carbon capture and sequestration

CEA Engineers Report = CEA Engineers, P.C., Technical Memorandum Re: Supplemental Effluent Limitations Guidelines for the Steam Electric Power Generating Point Source Category – 2023 Proposed Rule, at 12–13 (May 26, 2023) ("CEA Engineers Report").

CRL = Combustion Residual Leachate

CSC = compact submerged conveyor

csv = comma-separated value

Cumberland Plant = Cumberland Fossil Plant

CWA or the Act = Clean Water Act

DBP = disinfection byproducts

DOE = U.S. Department of Energy

E.O. = Executive Order

Earthjustice et al. 2020 Comments = Comments of Earthjustice et al., Docket ID No. EPA-HQ-OW-2009-0819-8473, at 26 (Jan. 21, 2020) ("Earthjustice et al. 2020 Comments").

EGU = Electric Generating Unit

EJA = Environmental Justice Analysis

ELG = Effluent Limitation Guideline

ELI = Environmental Law Institute

EPA Memo on CRL in Groundwater = EPA, Evaluation of Potential CRL in Groundwater, Docket ID No. EPA-HQ-OW-2009-0819-9678, at 58, App. B (Mar. 2, 2023) ("EPA Memo on CRL in Groundwater").

EPA Memo on Legacy Wastewater = EPA, Legacy Wastewater at CCR Surface Impoundments, Docket ID No. EPA-HQ-OW-2009-0819-9679, at 8, Tbl. 5 (Mar. 2, 2023) ("EPA Memo on Legacy Wastewater").

EPA Memo on Membrane Wastewater Treatment = EPA, Preliminary Technology Review: Membrane Wastewater Treatment, Docket ID No. EPA-HQ-OW-2021-0547-0172, at 5, Tbl. 2 (Sept. 2021) ("EPA Memo on Membrane Wastewater Treatment").

EPA Memo on Unit-Level Costs and Loadings = EPA, Generating Unit-Level Costs and Loadings Estimates by Regulatory Option for the 2023 Proposed Rule, Docket ID No. EPA-HQ-OW-2009-0819-9686, at Tbl. 2 (Feb. 28, 2023) ("EPA Memo on Unit-Level Costs and Loadings").

EPA or the Agency = U.S. Environmental Protection Agency

EPRI = Electric Power Research Institute

ERG = Eastern Research Group

ESA = Endangered Species Act

FA = fly ash

FDF = Fundamentally Different Factors

FGD = flue gas desulfurization

FWS = U.S. Fish and Wildlife Service

FY = fiscal year

GHG = greenhouse gas

GW = gigawatts

High Flow Subcategory = high flow flue gas desulfurization subcategory

IDEM = Indiana Department of Environmental Management

IPI = Institute for Policy Integrity

IPI 2021 Report = B.A. Davis Noll & R. Rothschild, An Evaluation of the Benefit-Cost Analysis in the 2020 Steam Electric Reconsideration Rule, 85 Fed. Reg. 64,650 (Oct. 13, 2020) (Mar. 25, 2021), https://policyintegrity.org/files/publications/Benefit-Cost_Analysis_in_the_2020_Steam_Electric_Reconsideration_Rule.pdf ("IPI 2021 Report").

IPI 2023 Comments = IPI, Comments on Supplemental Effluent Limitations Guidelines and Standards for the Steam Electric Power Generating Point Source Category, at 2 (May 30, 2023) ("IPI 2023 Comments").

IQ = intelligence quotient

IRA = Inflation Reduction Act

ISO-NE = New England Independent System Operator

January 2020 Sahu Expert Report = Sahu, Ranajit, 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), Attachment 2 to Docket ID No. EPA-HQ-OW-2009-0819-8474, at 10 (Jan. 21, 2020) ("January 2020 Sahu Expert Report").

LUEGU = Low Utilization EGU

MY = model year

NOPP = Notices of Planned Partition

NPDES = National Pollutant Discharge Elimination System

O&M = operating and maintenance

Proposed BCA = EPA, Benefit and Cost Analysis for Proposed Supplemental Effluent Limitations Guidelines and Standards for the Steam Electric Power Generating Point Source Category, EPA-821-R-23-003, Docket ID No. EPA-HQ-OW-2009-0819-10042, at 12-1 (Feb. 28, 2023) ("Proposed BCA").

Proposed EA = EPA, Environmental Assessment for Proposed Supplemental Effluent Limitations Guidelines and Standards for the Steam Electric Power Generating Point Source Category, Docket ID No. EPA-HQ-OW-2009-0819-9932, at 16-17 ("Proposed EA").

Proposed EJA = EPA, Environmental Justice Analysis for Proposed Supplemental Effluent Limitations Guidelines and Standards for the Steam Electric Power Generating Point Source Category, Docket ID No. EPA-HQ-OW-2009-0819-9974, at 94-100, (Mar. 2023) ("Proposed EJA").

Proposed TDD = EPA, Technical Development Document for Proposed Supplemental Effluent Limitations Guidelines and Standards for the Steam Electric Power Generating Point Source Category, EPA-821-R-23-005, EPA-HQ-OW-2009-0819-9950, at 17, Tbl.4 (Feb. 2023) ("Proposed TDD").

REE = rare earth elements

S. Regli et al. (2015) = S. Regli et al., Estimating Potential Increased Bladder Cancer Risk Due to Increase Bromide Concentrations in Sources of Disinfected Drinking Waters, 49 (22) Env't Sci. and Technology, 13094–13102 (2015) ("S. Regli et al. (2015)").

SDE = spray dry evaporator

SIP = state implementation plan

SSR = System Summary Report

the 2021 comments of Dr. Ranajit Sahu = R. Sahu, Technical Comments on EPA's Final Effluent Limitations Guidelines (ELG) Steam Electric Reconsideration Rule for Coal-Fired Units (Mar. 26, 2021) ("the 2021 comments of Dr. Ranajit Sahu").

THM = trihalomethanes

TVA = Tennessee Valley Authority

TWhs = Terawatt Hours

VIP = Voluntary Incentives Program

VSEP = Vibratory Shear Enhancing Processing

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.

The Environmental Protection Agency's ("EPA" or "the Agency") 2023 Proposal[1] would strengthen the wastewater treatment standards for steam electric power plants by prohibiting the dumping of flue gas desulfurization ("FGD") wastewater and bottom ash transport water ("BATW") into U.S. waters. If finalized, EPA's proposed revisions would prevent more than half 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. The record before EPA plainly demonstrates that the technologies to eliminate both wastestreams are available, achievable, and affordable. Thus, EPA should act swiftly to finalize these requirements.

However, for the legal and technical reasons set forth in detail below, EPA must also adopt zero-discharge standards for Combustion Residual Leachate ("CRL") and legacy wastewater. CRL and legacy wastewater are both similar to FGD wastewater, are just as capable of being treated, and therefore the technology to eliminate both discharges is available and achievable to the same extent that it is for FGD wastewater. Moreover, zero-discharge treatment is far more cost-effective than treatment with chemical precipitation and thus more efficiently advances the goals of the Clean Water Act.

In light of the clear technical record before EPA, the Clean Water Act requires EPA to eliminate these wastestreams and set strong, national standards to curb dangerous coal plant water pollution and protect public health and our waters. Our organizations – Earthjustice, Environmental Integrity Project, Sierra Club, Clean Water Action, the Center for Biological Diversity, Natural Resources Defense Council, Waterkeeper Alliance, and the Southern Environmental Law Center (collectively "Commenters") – urge EPA to adopt these recommendations and finalize the 2023 Proposal as expeditiously as possible.

II. LEGAL BACKGROUND

In the 1972 Clean Water Act ("CWA" or "the 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."[2] Pre-1972 versions of the

[1] EPA, Proposed Rule: Supplemental Effluent Limitations Guidelines and Standards for the Steam Electric Power Generating Point Source Category, 88 Fed. Reg. 18,824 (Mar. 29, 2023).
[2] *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

Clean Water Act attempted to control water pollution by determining "which polluter caused what pollution," a mandate that "proved over the years to be an impractical task."[3]

The modern Clean Water Act represents a "wholly new approach" to protecting our country's waterways.[4] 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.[5] Technology-based effluent limitations are the centerpiece of the Act.[6]

The Clean Water Act sets a national goal of eliminating water pollution.[7] 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"),[8] followed by the more stringent best available technology ("BAT").[9] New sources are subject to the most stringent standards, new source performance standards ("NSPS").[10] The effluent limitations must be based on effluent guidelines ("ELGs"), which are nation-wide, minimum standards for categories of sources.[11] These national standards set a federal floor for environmental protection, in order to avoid a "race to the bottom" by state regulators.[12] 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 effluent reduction, non-water quality environmental impact (including energy requirements), and such other factors as the Administrator deems appropriate."[13] In the absence of applicable ELGs,

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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).

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

[4] *Id.*

[5] *See id.* at 115–16; *see also Columbus & Franklin Cnty. 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).

[6] *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").

[7] 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.

[8] *Id.* § 1311(b)(1)(A).

[9] *Id.* § 1311(b)(2)(A).

[10] *Id.* § 1316(a)(1).

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

[12] *See Nat. 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'").

[13] 33 U.S.C. § 1314(b)(2)(B).

permitting agencies are required to use their best professional judgment ("BPJ") to set site-specific technology-based limits based on BAT.[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] 40 C.F.R. § 125.3(a), (c)(2)–(3); *see also* 33 U.S.C. § 1311(b)(2)(A)(i) (point sources "shall" achieve "effluent limitations" that "shall require application of" BAT to reduce pollutant discharges to the maximum extent "technologically and economically achievable," including "elimination of discharges of all pollutants" if it is achievable); *id.* § 1342(a)(1) (requiring that National Pollutant Discharge Elimination System ("NPDES") permits may only be issued "upon condition that" they ensure that, *inter alia*, the requirements in 33 U.S.C. § 1311 are met).

[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 at 226 ("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

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

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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).

[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 v. EPA*, 870 F.2d at 207–08.

[25] *Nat. Res. Def. Council v. EPA*, 822 F.2d at 123.

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

[27] *Waterkeeper All., Inc.*, 399 F.3d at 516; *Rybachek*, 904 F.2d at 1290–91 (discussing this standard).

[28] *Nat'l Crushed Stone Ass'n*, 449 U.S. at 74.

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

[30] *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").

[31] 33 U.S.C. § 1314(b)(2)(B).

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

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 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

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[33] *Compare* 33 U.S.C. § 1314(b)(1)(B) *with* 33 U.S.C. § 1314(b)(2)(B).
[34] *Nat'l Crushed Stone*, 449 U.S. at 71; *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*, 590 F.2d at 1046.
[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*, 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.*, 760 F.2d at 565 ("no balancing is required" for BAT); *Rybachek*, 904 F.2d at 1290–91 (EPA "need not compare [control] cost with the benefits of effluent reduction"); *BP Expl. & 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*, 161 F.3d at 928 (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., Inc.*, 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 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] *Entergy Corp.*, 556 U.S. at 219–222.
[39] *See id.* at 222.

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.

B. The Fifth Circuit's 2019 Decision in *Southwestern Electric Power Company* Reaffirmed that this Well-Established Law Applies to the Steam Electric ELGs.

In April 2019, the U.S. Court of Appeals for the Fifth Circuit in *Southwestern Electric Power Co. v. U.S. Environmental Protection Agency*, 920 F.3d 999 (5th Cir. 2019), ruled in favor of environmental petitioners' legal challenges to the legacy wastewater and leachate provisions of the 2015 ELG Rule and vacated those provisions, because EPA had purported to determine that surface impoundments were BAT for those waste streams. 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."[41] 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."[42]

In holding that EPA's BAT determinations for legacy wastewater and leachate were unlawful, the court reaffirmed the well-established law discussed above that ELGs are required to be technology-forcing and establish effluent limitations for all waste streams based on the

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[40] S. Rep. No. 92-414 (1972), in 1972 U.S.C.C.A.N. 3668, 3713–14.

[41] *Sw. Elec. Power Co.*, 920 F.3d 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.").

[42] *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].").

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.[43]

III. EPA CORRECTLY DETERMINED THAT THE BEST AVAILABLE TREATMENT TECHNOLOGY FOR FLUE GAS DESULFURIZATION WASTEWATER CAN ACHIEVE ZERO DISCHARGE.

A. The Record Shows that Zero-Discharge Technologies Are Available and Economically Achievable.

Membrane filtration is plainly available and economically achievable for treating FGD wastewater. This technology is available because it is being used in "different subcategor[ies] or categor[ies], bench scale or pilot studies, [and] foreign plants,"[44] and also being used to treat FGD wastewater at domestic coal-fired power plants:

- EPA recently completed a "Preliminary Technology Review" of membrane treatment and listed twenty-three industrial categories that use membrane filtration as part of a treatment train.[45]

- EPA is aware of at least twenty-two domestic pilot applications.[46]

- Membrane filtration is routinely used to treat FGD wastewater in other countries, has been for up to seven years,[47] and EPA notes that all twelve foreign installations that it was aware of in 2020 were designed to be zero-discharge systems.[48] The fact that these systems are available in the United States is bolstered by the fact that they are "American-made systems."[49]

- Finally, we know that membrane filtration is being used at domestic coal-fired power plants because EPA lists the steam electric industry among the twenty-three industrial categories using membrane filtration[50] and, as discussed in more detail below, because the record for the current rulemaking strongly suggests that this is the case.

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[43] *See generally Sw. Elec. Power Co.*, 920 F.3d at 1004–07, 1015–33.
[44] 88 Fed. Reg. at 18,829 (citing *Sw. Elec. Power Co.*, 920 F.3d at 1006); *Am. Frozen Foods Inst.*, 539 F.2d at 132.
[45] EPA, Preliminary Technology Review: Membrane Wastewater Treatment, Docket ID No. EPA-HQ-OW-2021-0547-0172, at 5, Tbl. 2 (Sept. 2021) ("EPA Memo on Membrane Wastewater Treatment") (attached). See also R. Sahu, Technical Comments on EPA's Final Effluent Limitations Guidelines (ELG) Steam Electric Reconsideration Rule for Coal-Fired Units (Mar. 26, 2021) ("the 2021 comments of Dr. Ranajit Sahu") (attached).
[46] 88 Fed. Reg. at 18,840 (citing nineteen domestic pilots that EPA knew about in 2020 and three additional pilots that the Agency became aware of after 2020).
[47] *Id.* Further discussion of the experience with membrane treatment systems at plants in China, Korea, and Finland is available in the 2021 comments of Dr. Ranajit Sahu attached hereto.
[48] *Id.* at 18,839.
[49] *Id.*
[50] EPA Memo on Membrane Wastewater Treatment at 5, Tbl. 2 (attached).

Reading EPA's proposal might give the impression that there are no full-scale installations of membrane filtration systems for FGD wastewater in the United States.[51] The record suggests otherwise. Four years ago, Greg Johnson of New Logic Research said the following:

> Regarding our [Vibratory Shear Enhanced Processing ("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.[52]

We assume that this happened, because New Logic representatives stated in a 2021 meeting with EPA that they now have at least one full-scale installation.[53] The record elsewhere suggests that there are multiple plants in the United States that already have membrane filtration systems (with chemical pretreatment) in place. In EPA's "Unit-Level Costs and Loadings" memorandum, Table 2 shows the FGD wastewater treatment technology and associated costs required to comply with Option 1.[54] Option 1 only requires chemical precipitation and biological treatment. Yet EPA shows three plants – Cross Generating Station, Monroe Power Plant and Plant Scherer – as having "CP+Memb," and estimates that the costs of compliance with Option 1 would be zero. In other words, these plants have already installed membrane filtration systems capable of meeting the limits in Option 1. Options 2 and 3 would require zero discharge. In order to meet this standard, Cross Generating Station would incur capital and operating and maintenance ("O&M") costs, which suggests that they may not yet be capable of achieving zero discharge.[55] However, Monroe Power Plant and Plant Scherer would not incur any capital or O&M costs.[56] This table suggests that there are at least three plants that have already purchased

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[51] EPA does imply that there *might* be a full-scale installation, but "defers to the company's characterization of this system as a pilot." 88 Fed. Reg. at 18,840, n.29. EPA should not allow the regulated industry to manipulate the record. Instead, the Agency should weigh the evidence and draw its own conclusions. The record evidence suggests that this is a full-scale installation. For further discussion of this evidence, please see the 2021 comments of Dr. Ranajit Sahu attached hereto.

[52] G. Johnson, New Logic Research, Email to P. Flanders, R. Jordan, and E. Gentile, Re: Implementation Timelines for Membranes, Docket ID No. EPA-HQ-OW-2009-0819-8179 (June 22, 2019). Indeed, a 2014 document describing New Logic's system includes photographs of "full-scale units," though it is unclear whether they were operational or being used for FGD wastewater. Electric Power Research Institute, Performance Evaluation of a Vibratory Shear Enhanced Processing Membrane System for FGD Wastewater Treatment (Jul. 10, 2014), https://www.epri.com/research/products/3002002144 (attached).

[53] EPA, Notes from Vendor Call with New Logic on October 1, 2021, Docket ID No. EPA-HQ-OW-2009-0819-9380, at 2 (Sept. 26, 2022).

[54] EPA, Generating Unit-Level Costs and Loadings Estimates by Regulatory Option for the 2023 Proposed Rule, Docket ID No. EPA-HQ-OW-2009-0819-9686, at Tbl. 2 (Feb. 28, 2023) ("EPA Memo on Unit-Level Costs and Loadings").

[55] *Id.* at Tbl. 3.

[56] *Id. See also id.* at Tbl. 4, which shows compliance costs for Option 3. For reasons that are unclear, Table 3 shows Monroe as having "CP+Memb," with no associated compliance costs, while Table 4 shows

and presumably installed membrane filtration systems, two of which are able to meet a zero-discharge standard without any additional investment.

In the 2020 Rule, EPA expressed concerns that the use of membrane filtration would interfere with the beneficial use of fly ash.[57] At the time, Commenters noted that there was likely to be enough fly ash to meet both needs (encapsulation of FGD brine and beneficial use).[58] In the current proposal, EPA agrees, stating that "there is sufficient FA [(fly ash)] to accommodate both FGD brine encapsulation needs . . . and the beneficial use market."[59] Needless to say, we agree with the Agency on this point – the use of fly ash for encapsulating brine is not an impediment to identifying membrane filtration as BAT.

The availability of a zero-discharge standard is further supported by the affordable use of other technologies to achieve the same result. EPA notes that thirty-six or thirty-seven coal-fired power plants in the United States with wet FGD systems have already achieved zero discharge using practices including thermal evaporation, spray-dry evaporation, complete recycle, and evaporation ponds.[60] The costs of these other options are sometimes less than the cost of membrane filtration, and overall EPA has determined that they are "economically achievable."[61] This means that even without membrane filtration, the industry would have zero-discharge options that meet the BAT standard. Furthermore, as noted by EPA, multiple technological options can be used in combination to achieve zero discharge.[62]

A zero-discharge standard is "economically achievable" because the "costs can be reasonably borne by the industry."[63] This should be self-evident from the fact that over thirty coal-fired power plants have already achieved zero discharge.[64] Additional evidence of achievability comes from EPA's rulemaking record. EPA confirmed with new information that membrane filtration is often cheaper than the technology required by the 2020 revisions to the ELG rule.[65] EPA also determined that other zero-discharge technologies are economically achievable and are in some cases the cheapest options.[66] Finally, EPA found that the rule as a whole – including not only the zero-discharge standard for FGD wastewater, but also bottom ash transport water and leachate treatment costs – is affordable. According to the Agency, it "usually determines economic achievability on the basis of the effect of the cost of compliance with BAT limitations on overall industry and subcategory financial conditions,"[67] and a cost-to-revenue

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Monroe as having "ZLD" and incurring small one-time costs (but still no capital or O&M costs). Similarly, Plant Scherer has no compliance costs in Table 3, but small one-time costs in Table 4.

[57] 88 Fed. Reg. at 18,841.

[58] Comments of Earthjustice et al., Docket ID No. EPA-HQ-OW-2009-0819-8473, at 26 (Jan. 21, 2020) ("Earthjustice et al. 2020 Comments"). See also the 2021 comments of Dr. Ranajit Sahu attached hereto.

[59] 88 Fed. Reg. at 18,841.

[60] *Id.* at 18,835, 18,843, 18,843 n.51.

[61] *Id.* at 18,843.

[62] *Id.* at 18,834.

[63] *Waterkeeper All., Inc.*, 399 F.3d at 516; *Rybachek*, 904 F.2d at 1290–91 (discussing this standard).

[64] 88 Fed. Reg. at 18,835, 18,843, 18,843 n.51.

[65] *Id.* at 18,841 n.43.

[66] *See, e.g.*, *id.* at 18,843 (stating that the cost of thermal or SDE treatment is "economically achievable"); *id*. at 18,843 n.60.

[67] *Id.* at 18,829.

ratio of less than one percent suggest that a plant or plant owner is "unlikely to face economic impacts."[68] In this case, EPA identified between 229 and 427 entities owning regulated energy-generating units, and of these only four would incur costs that exceed one percent of revenue.[69] The record shows that the costs of eliminating FGD wastewater can be "reasonably borne by the industry."[70]

In sum, there are multiple available, economically achievable options for eliminating FGD wastewater. In this situation, allowing any amount of FGD wastewater would contravene the Clean Water Act, which requires the elimination of a waste stream if doing so is "technologically and economically achievable."[71]

B. Leasing Could Reduce the Cost and Time to Come into Compliance.

The ability to lease, rather than buy, a treatment system reduces capital costs and makes short-term pollution controls more affordable. Plants that only have a few years of operating life left, and plants facing short-term treatment needs for ash pond dewatering, are both good candidates for leased treatment systems. Yet EPA only makes passing references to this option. The Agency should have more carefully considered leasing in its estimates of compliance costs, and it should finalize more ambitious implementation targets that reflect what is economically achievable through leasing.

The record for the 2020 ELG revision showed that several vendors of FGD wastewater treatment technologies provide customers with the ability to lease equipment rather than purchasing it.[72] Indeed, EPA recognized that "this option is available in the marketplace and some plants could choose to lease equipment in order to meet the requirements of the final rule."[73] EPA also evaluated leasing costs, and determined that the ratio of leasing costs to purchasing costs would be less than one for twelve years.[74] In other words, for treatment over any period of twelve years or less, leasing a treatment system is cheaper than buying one. To be fair, EPA also concluded at the time that it did not have enough information to establish BAT limits based on leasing costs.[75] However, EPA has now had two additional years to collect that information, and it should be evaluating how leasing affects not only the technology basis for various BAT limits, but also the timeframe for implementation.

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[68] *Id.* at 18,864.
[69] *Id.* at 18,865.
[70] *Waterkeeper All., Inc.*, 399 F.3d at 516; *Rybachek*, 904 F.2d at 1290–91 (discussing this standard).
[71] 33 U.S.C. § 1311(b)(2)(A).
[72] *See* ERG, Technologies for the Treatment of Flue Gas Desulfurization Wastewater, Docket ID No. EPA-HQ-OW-2009-0819-8155, at M-2 (Oct. 22, 2019) (notes potential to lease Purestream AVARA mechanical vapor recompression modules); ERG, Notes from Meeting with Pall Water, Docket ID No. EPA-HQ-OW-2009-0819-7613, at 3 (Aug. 9, 2019) (noting availability of mobile membrane systems for lease).
[73] ERG, Costs to Lease Flue Gas Desulfurization Wastewater Treatment, Docket ID No. EPA-HQ-OW-2009-0819-8932, at 1 (Aug. 31, 2020).
[74] *Id.* at A-2.
[75] *Id.* at 1.

The current proposal and record hint at new information about leasing options. For example, EPA states that wastewater from impoundment dewatering (water "already accumulated in closing surface impoundments") is "typically treated with modular, leased systems for a shorter period, making treatment more affordable."[76] This is directly relevant to EPA's BAT determination for legacy wastewater, discussed in Section VI - Legacy Wastewater. If plants are already leasing systems for dewatering, then they are presumably available and economically achievable. These treatment systems should be the minimum basis for BAT.

EPA also solicits comment on "the ability of utilities to lease the additional treatment stages necessary to meet any new limitations [for the early adopter subcategory]."[77] The details about the cost and availability of leased treatment systems is information that EPA should have solicited from industry before now. However, as discussed above, the information in the record suggests that leasing is an affordable and available option for the early adopters to expeditiously achieve zero discharge. This is one reason why EPA should not finalize the early adopter subcategory and should instead hold those plants to a zero-discharge standard. Commenters discuss the early adopter subcategory further in Section VIII – Subcategories.

IV. EPA'S PROPOSED ZERO-DISCHARGE STANDARD FOR BOTTOM ASH TRANSPORT WATER IS COMPELLED BY THE LONGSTANDING RECORD.

EPA is proposing to restore a zero-discharge standard for BATW to the Steam Electric ELGs. EPA had first established such a standard in the 2015 ELG Rule but then unjustifiably weakened it in the 2020 Rule by inserting an allowance for discharging an up to 10% purge from "high recycle rate" systems. This purge allowance was arbitrary, capricious, and unlawful when it was created in 2020, and EPA's closing of this unjustified loophole is compelled by the record.

The 2023 Proposal correctly finds that zero discharge is BAT for BATW. Commenters strongly urge EPA to require compliance with this zero-discharge standard at all sites no later than three years from the date of a final rule, for the reasons set forth below and in Section VII – Compliance Deadlines. Further, given EPA's findings that the vast majority of sites have already complied with at least the 2020 Rule requirement that plants eliminate 90% or more of their BATW discharges using high-recycle rate systems by December 2025, Commenters urge EPA to maintain that requirement as an interim limit in any final rule on the way to meeting the zero-discharge standard, unless a plant makes a specific election by December 2025 committing it to install a new dry-handling system within three years of the effective date of the final rule.[78]

[76] 88 Fed. Reg. at 18,851.
[77] *Id.* at 18,860.
[78] In addition, for plants that already have 2020 BATW requirements incorporated into their permits, anti-backsliding requirements would also require those limits to be maintained in those plants' permits as interim limits in advance of new, more stringent BAT limits being met. *See* 33 U.S.C. § 1342(o); 40 C.F.R. § 122.44(*l*).

A. The 2020 Rule's Purge Allowance for BATW Should Never Have Been Created in the First Place.

The purge allowance that EPA is now proposing to eliminate from the Steam Electric ELGs should never have been created in the first place. In 2015, EPA determined that BAT for BATW was zero discharge based on the use of either a dry handling system or a closed-loop wet handling system where the transport water is entirely recycled.[79] At that time, EPA determined that more than fifty percent of plants were already using (or had announced plans to install) either a dry or closed-loop system for their BATW.[80] In 2020, EPA found that more than seventy-five percent of plants were using those zero-discharge technologies.[81] Yet despite industry's widespread adoption of the BAT that EPA had established in 2015, EPA's 2020 Rule substantially weakened its BAT determination by redefining systems that it had previously found could meet zero-discharge standards as "high recycle rate" (or "partially closed") systems that would be permitted to periodically purge BATW.[82] Specifically, the 2020 Rule "establishes that the NPDES permitting authority will determine on a case-by-case basis" plant purge allowances not to exceed "10 percent of the system volume per day on a 30-day rolling average."[83] In other words, the 2020 Rule allows bottom ash recycling systems to discharge up to three times their daily total system volume in any given monthly period.

The 2020 Rule's substantial weakening of BAT bottom ash standards was without merit and contrary to the Clean Water Act. Nothing in EPA's record for the 2020 Rule supported the need for a ten percent purge limit. EPA's principal basis for the purge allowance was a 2018 report from the Electric Power Research Institute ("EPRI").[84] However, that report (1) addressed only a small number of plants that were unrepresentative of the industry as a whole, let alone the best-performing plants, and (2) even taken at face value at most supported allowing for a 0–2% purge. Further, in adopting the ten percent purge allowance, EPA failed to consider many ways in which potential purge discharges from bottom ash recycling systems could be reduced and eliminated.

The 2018 EPRI Report documented "21 plants with existing or planned partially closed-loop systems" that reported challenges in achieving zero discharge using those systems.[85] EPRI did not explain how these 21 plants were chosen, but they were clearly not representative of the industry as a whole. The 2018 EPRI Report appears only to evaluate remote bottom ash recycling systems, meaning that no systems installed under the boiler were evaluated.[86] This

[79] 85 Fed. Reg. 64,650, 64,669 (Oct. 13, 2020).
[80] *Id.*
[81] *Id.*
[82] *Id.* at 64,671–72.
[83] *Id.* at 64,672.
[84] EPRI, Closed-Loop Bottom Ash Transport Water: Costs and Benefits to Managing Purges, Docket ID No. EPA-HQ-OW-2009-0819-7346 (Sept. 2018) ("2018 EPRI Report"); *see also* 85 Fed. Reg. at 64,704–05.
[85] 2018 EPRI Report at 1-2.
[86] *Id.* at v, vii.

provided an arbitrary basis for any EPA decision-making, as remote mechanical drag systems only accounted for 18% of bottom ash treatment systems.[87]

Further, although the 2018 EPRI Report incorporated interviews from operators at twenty-one plants, it only analyzed data concerning potential purge volumes from six plants.[88] For those six plants, the 2018 EPRI Report noted that the purge volumes were "based on estimates and calculations and were not measured . . . ."[89] Nor does EPA appear to have known the identities of the six plants discussed by EPRI, let alone done its own independent analysis of those six plants or whether they were representative of the industry as a whole (much less the best-performing plants), prior to adopting the 2020 Rule changes that relied on this report.[90]

Even taking the 2018 EPRI Report at face value, it did not support a 10% purge allowance. As EPA itself acknowledged, the 2018 EPRI Report at most supported a 0–2% monthly volumetric purge allowance in a typical month, and only identified 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.[91] Yet the 2020 Rule's up to 10% purge allowance was based on the possibility that both a major maintenance event and a major precipitation event – both of which are likely very infrequent, occurring less than once per year – would occur in the same month.[92] (Although the 2020 Rule technically allowed permitting agencies to set purge allowances at a much lower monthly percentage based on their best professional judgment, EPA acknowledges in the 2023 Proposal that in "[a]ll the instances that EPA is aware of" facilities sought the full 10% monthly allowance, and EPA does not identify any instances in which a permitting agency gave a facility less than that amount.)[93] And although the probability of both a major maintenance event and a major precipitation event occurring in the same month is extremely low, plants would be able to take advantage of their full purge allowance every single month that they operate, regardless of whether such events actually occur[94] and without being required to submit any certifications or documentation of any such events that would have purportedly necessitate such purges – which means that in practice, the 2020 Rule allows 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.

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[87] ERG, Pollutant Loadings Associated with Current Discharges of FGD Wastewater and Bottom Ash Transport Water, Docket ID No. EPA-HQ-OW-2009-0819-7836, at Tbl. A-1 (July 15, 2019).
[88] 2018 EPRI Report at 1-2, 1-7.
[89] *Id.* at 1-2.
[90] Sahu, Ranajit, 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), Attachment 2 to Docket ID No. EPA-HQ-OW-2009-0819-8474, at 10 (Jan. 21, 2020) ("January 2020 Sahu Expert Report").
[91] 85 Fed. Reg. at 64,705; EPA, Supplemental Technical Development Document for Revisions to the Effluent Limitations Guidelines and Standards for the Steam Electric Power Generating Point Source Category, Docket ID No. EPA-HQ-OW-2009-0819-8935, at 8-23 to 8-24 ("2020 TDD"); 2018 EPRI Report at 1-8 to 1-2.
[92] 85 Fed. Reg. at 64,705, Tbl. XIV-2; 2020 TDD at 8-23 to 8-24.
[93] 88 Fed. Reg. at 18,847–48.
[94] *See* January 2020 Sahu Expert Report at 12.

The 2020 purge allowance was also arbitrary and capricious because EPA failed to consider whether bottom ash system purges due to precipitation could 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.[95] 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.[96] Neither the 2020 Rule, nor the EPRI report upon which the purge allowance was based, addressed this issue at all. EPA's failure to do so in the 2020 Rule was arbitrary and capricious.

In addition, the 2020 purge allowance allows 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 stormwater in order to minimize pollutant discharges by either locating these industrial materials and activities inside or protecting them with storm resistant coverings."[97] Further, "[u]nless infeasible," facilities must "[u]se grading, berming or curbing to prevent discharges 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."[98] 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.[99] The 2020 Rule appears to have assumed, however, that power plants should not be required to follow these basic, longstanding principles of responsible stormwater management.

The 2020 Rule was also arbitrary and capricious with respect to purge discharges due to maintenance events. 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.[100] This is especially true for the vast majority of plants that have wet or

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[95] January 2020 Sahu Expert Report at 12–13.
[96] *See id.*
[97] EPA, National Pollutant Discharge Elimination System (NPDES) Multi-Sector General Permit (MSGP) for Stormwater Discharges Associated with Industrial Activity, § 2.1.2.1 (Mar. 1, 2021), https://www.epa.gov/npdes/stormwater-discharges-industrial-activities-epas-2021-msgp.
[98] *Id.*
[99] *Id.* at Part 8, Subpart O.
[100] *See* January 2020 Sahu Expert Report at 13. Under the 2020 Rule, sources seeking to discharge bottom ash transport water must submit an initial certification statement including "[a] list of all wastewater treatment systems at the facility currently, or otherwise required by a date certain under this section." 40 C.F.R. § 423.19(c)(1)(H). EPA suggested in 2020 that this language "will assist the permitting authority in determining whether such a system might be able to accept and treat the BA purge water at that plant." EPA, Response to Public Comments for Revisions to the Effluent Limitations Guidelines and Standards

dry FGD systems available to utilize the bottom ash purge stream, if managed using storage tanks.[101]

Similarly, the 2020 Rule was arbitrary and capricious because EPA did 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[102] 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.[103] In addition, "[t]o the extent that scaling or corrosion conditions can exacerbate leaks, simple treatments such as pH balancing and using of anti-scaling inhibitors can be used."[104]

In the 2020 Rule, EPA emphasized the "challenges" that some plants face in achieving zero discharge of bottom ash transport water, but at the same time conceded that the best-performing plants using wet bottom ash recycling systems "can likely eliminate such discharges with additional process changes and expenditures."[105] Notably, EPA did not find that the higher cost of fully closed-loop systems were economically unachievable and further conceded that they would not result in plant closures.[106]

In sum, EPA's record for the 2020 Rule did not demonstrate that a 10% bottom ash purge allowance would be needed at any plant, let alone the best-performing plants in the industry. EPA's decision to finalize its "site-specific alternative," wherein "the NPDES permitting authority will determine on a case-by-case basis the purge allowance (not to exceed 10 percent) necessary at a particular plant with a wet transport system,"[107] does not correct these deficiencies or render the final rule non-arbitrary. Because the record did not demonstrate that any purge discharges should be permitted, *a fortiori*, it did not demonstrate that site-specific permitting of any such 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 political and other pressures that make them unlikely in most circumstances to set more stringent effluent limitations than plant operators themselves propose.[108] Indeed, these concerns raised by Commenters in 2020 have in fact been borne out by

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for the Steam Electric Power Generating Point Source Category, Docket ID No. EPA-HQ-OW-2009-0819-9015, at 2-37 (Aug. 2020) ("2020 RTC"). However, the 2020 Rule did not explicitly require this and in any event did not address whether new tanks could be installed.

[101] January 2020 Sahu Expert Report at 13.

[102] The 2015 ELG Rule had excluded 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).

[103] *See* January 2020 Sahu Expert Report at 13–14.

[104] *Id.* at 14 (citing 84 Fed. Reg. at 64,636).

[105] 85 Fed. Reg. at 64,670.

[106] *Id.*; *see also* 2020 RTC at 2-142 ("EPA disagrees with commenters who asserted that that [sic] closed-loop BA systems are not economically achievable."); 84 Fed. Reg. at 64,635 (EPA "does not find this higher cost [of fully closing the loop of a wet bottom ash recycling system] to be economically unachievable.").

[107] 85 Fed. Reg. at 64,671.

[108] *See* January 2020 Sahu Expert Report at 14–15.

how the bottom ash purge allowance has been implemented. As EPA acknowledges in the 2023 Proposal, plants that requested a purge allowance generally always sought, and permitting authorities always granted, the maximum 10% allowance, without any rigorous site-specific review by the permitting authority of whether any purge allowance was even necessary.[109] In other words, "[i]n practice, this flexibility has resulted in a situation where BA handling systems either achieve zero discharge or purge the maximum 10 percent."[110]

B. The 2023 Proposal Correctly Finds That Zero Discharge Is BAT for BATW.

Plainly, the best-performing plants in the industry are already achieving zero discharge, and the zero-discharge standard proposed in the 2023 Proposal is compelled by this record. 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. There can be no doubt that these systems are both technologically available and economically achievable. As noted above, EPA found in 2020 that 75% of plants had already adopted dry handling or closed-loop systems, and in the 2023 Proposal EPA now finds that the vast majority of the remaining plants have now installed such systems, leaving only a small number of plants that are continuing to wet sluice their bottom ash without any form of recycling.[111]

With regard to cost, EPA had estimated in the 2020 Rule that for the subset of plants that needed additional investments to fully "close the loop" on their bottom ash recycling system, this could amount to as much as $63 million per year in additional costs,[112] but in the 2023 Proposal the Agency now acknowledges that this was not "a realistic costing assumption."[113] First, as EPA acknowledged in the 2020 TDD, it had assumed 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.[114] This assumption is unreasonable, because as EPA conceded, "most plants would not experience" the water quality issues that EPA believes would require use of reverse osmosis treatment.[115] Second, as EPA notes (and as is discussed above), the evidence from the 2020 Rule record was limited to plants with remote bottom ash systems, but EPA had further assumed unreasonably that these increased costs would apply to plants with

[109] 88 Fed. Reg. at 18,847.
[110] *Id.*
[111] *Id.* at 18,844. In the preamble to the 2023 Proposal, EPA states that "[o]ne vendor estimates that only seven ash conversions remain in the entire industry." *Id.* at 18,844 n.65. EPA further explains that these remaining bottom ash conversions are being driven in large part by compliance with the CCR Rule, and that "nearly every facility will have completed its conversion to a CCR rule-compliant BA handling method by 2024, the year in which EPA intends to promulgate any final ELG following this proposal." *Id.* at 18,846.
[112] 85 Fed. Reg. at 64,670.
[113] 88 Fed. Reg. at 18,846.
[114] 2020 TDD at 5-61 ("[S]ince EPA does not have sufficient plant-specific data to determine which plants may need RO treatment, EPA's cost methodology assumes that all new and current rMDS systems would install RO treatment to ensure the plant could manage the closed-loop recycle for the BA transport water.").
[115] *Id.*

different types of bottom ash recycling systems.[116] Third, this cost assumption was based on a purported need to treat up to the full 10% monthly purge allowance from bottom ash recycling systems, despite the fact that (as discussed above and now conceded by EPA in the 2023 Proposal), the record does not establish that *any* plant has a need for *any* bottom ash purge allowance, let alone the full 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.[117]

In other words, EPA's cost assumptions for fully "closing the loop" for recycling systems are irrationally inflated, for multiple reasons. There is no direct evidence in the record that *any* plant would actually need to install an expensive additional reverse osmosis treatment system to eliminate a bottom ash purge stream (particularly when conversion to dry handling is also an available and affordable option, as discussed below), and yet EPA assumes that *all* such plants would. Nor is there any evidence in the record that any plant would need the full 10% bottom ash purge allowance from the 2020 Rule – at most, EPA says, some plants might need a 2% purge allowance, but even those plants should be able to avoid purge discharges by taking reasonable steps[118] – and yet EPA based its cost assumption on a treatment system designed to treat a 10% purge.

Notably, however, in the 2023 Proposal EPA finds that even with these irrationally and arbitrarily high cost assumptions for fully closed-loop systems, a zero-discharge BAT for BATW is economically achievable and affordable to the industry as a whole.[119] It is well-settled law that affordability under the BAT standard must be determined based on a requirement that industry 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."[120] Any sort of balancing of costs against benefits is not permitted.[121] The over-arching goal of the BAT standard is to be "technology-forcing, meaning it should force agencies and permit applicants to adopt technologies that achieve the greatest reductions in pollution."[122]

Importantly, even as EPA finds that fully "closing the loop" for bottom ash recycling systems that are not currently operating as zero-discharge systems is an affordable option, it also finds that installing new dry handling systems is an available and affordable option for those

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[116] 88 Fed. Reg. at 18,846.
[117] *Id.* at 18,845–46 (finding that there is no evidence that the challenges identified as the basis for the 2020 purge allowance cannot be overcome with reasonable steps).
[118] *Id.*
[119] *Id.* at 18,846.
[120] *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)).
[121] *Id.* at 1007.
[122] *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 [CWA] statutory scheme, articulated time and again by its architects and embedded in the statutory language, is that it is technology-forcing").

plants.[123] In fact, EPA finds that the record evidence is sufficient to conclude that dry handling systems could be "the sole technology basis" for a zero-discharge BAT, even if fully closed-loop systems were not also available and affordable.[124]

Dry handling systems are currently in use at approximately 60% of power plants to achieve zero discharge.[125] In both the 2020 Rule and the 2023 Proposal, EPA has documented continued advances in dry handling systems, including pneumatic systems and compact submerged conveyors ("CSCs").[126] EPA now finds that "more dry handling systems are currently in place than EPA originally forecasted," including at one plant that had commented in 2020 that a dry handling system was not a feasible option.[127] In the 2020 rulemaking, EPA found that new dry handling systems would "at some plants . . . have costs similar to recirculating wet systems,"[128] and that "CSCs may be the least costly bottom ash conversion option" at some sites.[129] Conversion to dry handling may be cost-effective even for plants that have already installed bottom ash recycling systems: 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).[130]

The record evidence is overwhelming that zero-discharge systems are BAT for BATW, when judged by the legally required "best-performing plant" standard.

C. EPA Must Eliminate Monthly Purge Allowances from the Rule.

In the 2023 Proposal, EPA solicits comment on whether purge allowances should still be permitted for large precipitation or maintenance events, as well as whether the 2015 ELG Rule's definition of "minor maintenance event" should be expanded.[131] EPA must refuse to allow for any and all loopholes in the zero-discharge BAT for BATW.

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[123] 88 Fed. Reg. at 18,847 n.77 ("Although EPA estimates that fully closing the loop would be less expensive than converting to dry handling, nothing would preclude a facility with a high recycle rate system from installing one of the technologically available and economically achievable dry handling systems.").
[124] *Id.* at 18,844.
[125] *See* EPA, Technical Development Document for Proposed Supplemental Effluent Limitations Guidelines and Standards for the Steam Electric Power Generating Point Source Category, EPA-821-R-23-005, EPA-HQ-OW-2009-0819-9950, at 17, Tbl.4 (Feb. 2023) ("Proposed TDD").
[126] 88 Fed. Reg. at 18,844; 85 Fed. Reg. at 64,669.
[127] 88 Fed. Reg. at 18,844.
[128] 85 Fed. Reg. at 64,670 n.79.
[129] *Id.* at 64,669.
[130] Expert Report of Dr. Phyllis Fox, Docket ID No. EPA-HQ-OW-2009-0819-4704, at 15–22 (Sept. 19, 2013 ("[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.").
[131] 88 Fed. Reg. at 18,845.

Since 2015, EPA has consistently found that both dry handling and closed loop zero-discharge systems are a technologically available option, and even in 2020, "EPA never found that the additional costs to achieve zero discharge were not economically achievable."[132] However, even if zero discharge is achievable, the existence of regulatory loopholes that allow for purge discharges to continue will incentivize utilities to design their bottom ash systems to take advantage of those loopholes. As EPA notes in the 2023 Proposal, after the 2020 Rule created the possibility of an up to 10% bottom ash purge allowance, some plants (unsurprisingly) began designing their bottom ash recycling systems "to recycle only 90 percent" of their BATW rather than seeking to achieve zero discharge, even though EPA says that was not what was intended in the 2020 Rule.[133] Similarly, United Conveyor Corporation noted in a meeting with EPA that, "[w]hile the purge was not part of [their] early bottom ash handling system designs, it is now being incorporated as a provision."[134] In other words, because EPA had weakened the BAT standard for BATW in the 2020 Rule, utilities and vendors are now designing their systems to those weaker standards instead of continuing to design to a zero-discharge standard – which is directly contrary to the goals of the Clean Water Act and only further underscores why the 2020 Rule's purge allowance was unlawful.

Although allowing for loopholes in the regulations for some plants to purge under certain circumstances would certainly reduce costs for those plants, that is not a legally permissible justification to weaken the zero-discharge BAT standard. 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 there are numerous plants that are already achieving zero discharge of their BAT without any purge allowances or expanded maintenance exemptions, EPA must re-establish zero discharge as the standard for the entire industry, without any loopholes, as it did in the 2015 ELG Rule. Indeed, there is no evidence in the record that any of the proposed loopholes are necessary at *any* plant – particularly since, as noted above, during maintenance and other infrequent events, bottom ash transport water could be collected in storage tanks for later recycling or treatment rather than discharged.[135] Moreover, as EPA notes in the 2023 Proposal, to the extent that unforeseeable circumstances (such as unexpected storm events) result in discharges from BATW systems, such events can be accounted for by EPA and state permitting agencies through their enforcement discretion, rather than weakening the zero-discharge BAT standard.[136] EPA's suggested continuance of purge loopholes for maintenance or large precipitation events, and its proposed expansion of the exemption for maintenance events, are all unnecessary and would unlawfully weaken the zero-discharge BAT standard if adopted.

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[132] *Id.* at 18,846.
[133] *Id.* at 18,847–48.
[134] EPA, Notes from Meeting with EPA, UCC, and ERG on August 26, 2021, Docket ID No. EPA-HQ-OW-2009-0819-9696, at 6 (Jan. 14, 2022).
[135] *See* January 2020 Sahu Expert Report at 13. In the 2023 Proposal, EPA notes that where infrequent maintenance events may exceed the capacity of existing storage tanks, additional tanks could be leased for short-term use. 88 Fed. Reg. at 18,845. Additional storage tank capacity could also be installed at a plant on a permanent basis to avoid any purge discharges from unplanned events, such as large precipitation events, in order to avoid the need for any purge allowances under any circumstances.
[136] *See id.* ("[I]f the maintenance discharge is caused by an unforeseeable upset condition, the plant would have an affirmative defense to an enforcement action if the requirements of 40 CFR 122.41(n) are met.").

D. EPA Must Require Compliance with Zero-Discharge Standards No Later than Three Years from the Effective Date of the Final Rule and Also Maintain the 2020 Rule's Requirement That Plants Eliminate 90% of Their BATW Discharges by 2025 as an Interim Limit Unless a Plant Commits to Installing a New Dry-Handling System.

As further discussed below in Section VII – Compliance Deadlines, EPA must require compliance with the new zero-discharge BAT standards within three years of the effective date of the final rule. As noted above, the vast majority of sites have already complied with at least the 2020 Rule's requirement, and many plants are already achieving zero discharge. For the few remaining plants, available record evidence continues to show that new bottom ash systems can be installed in less than three years.[137]

In addition, because plants are already subject to the 2020 Rule's requirements that they eliminate 90% or more of their BATW discharges using high-recycle rate systems by December 2025, EPA emphasizes in the 2023 Proposal that permitting authorities must continue to require progress toward eliminating BATW discharges as soon as possible.[138] Commenters urge EPA to maintain these requirements in any final rule as an interim limit to maintain progress toward the ultimate goal of eliminating the discharges, unless a plant makes a specific election by December 2025 committing it to installing a new dry-handling system within three years of the effective date of the final rule.[139]

V. EPA MUST ADOPT A ZERO-DISCHARGE STANDARD FOR COMBUSTION RESIDUAL LEACHATE.

EPA must adopt a zero-discharge BAT standard for CRL for all of the same fundamental reasons that support a zero-discharge BAT standard for FGD wastewater – leachate is similar to FGD wastewater, is just as capable of being treated, and therefore the technology to eliminate leachate discharges is available and achievable to the same extent that it is for FGD wastewater. Moreover, zero-discharge treatment is far more cost-effective than treatment with chemical precipitation and thus more efficiently advances the goals of the Clean Water Act.

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[137] *See, e.g.*, EPA, Notes from Meeting with EPA, UCC, and ERG on August 26, 2021, at 2, Docket ID No. EPA-HQ-OW-2009-0819-9696 (Jan. 14, 2022) (indicating that United Conveyor Corporation's "general timeframes for projects" contemplated thirty-one months from the start of engineering work to delivery of a completed system).

[138] *See* 88 Fed. Reg. at 18,886 ("Limitations based on a high recycle rate system should still be included in a permit with a date that is 'as soon as possible'. . . .").

[139] *See id.* (Noting that even before the 2023 Proposal is finalized, utilities may choose to install dry handling systems instead of recycling systems). As noted above, however, for plants that already have 2020 BATW requirements incorporated into their permits, anti-backsliding requirements would also require those limits to be maintained in those plants' permits as interim limits in advance of new, more stringent BAT limits being met. *See* 33 U.S.C. § 1342(o); 40 C.F.R. § 122.44(*l*).

Since 2015, EPA has repeatedly observed that CRL is similar to FGD wastewater.[140] And EPA has also observed that "treatment technologies identified for FGD wastewater could also be used to treat leachate from landfills and impoundments containing combustion residuals."[141] The treatment technologies include membrane filtration and other zero-discharge options.[142] Variability in leachate quality should not be a concern because EPA has known since at least 2020 that other highly variable waste streams at coal plants (and in other industries) have been treated with membrane filtration.[143] The Agency observes that "membrane filtration can operate effectively on wastestreams that contain several characteristics of FGD wastewater, including high TDS, high gypsum scaling potential, and high variability."[144]

The record also shows that there has been "a successful pilot of a membrane filtration system on CRL," at least four pilots of thermal treatment systems on CRL, and one full-scale thermal system installation for treating CRL.[145] Again, as with FGD wastewater, pilot tests and full-scale installations of zero-discharge treatment options for CRL show that zero-discharge technologies are available.

Commenters retained independent consultant CEA Engineers, P.C. to evaluate CRL treatment options. As discussed in the attached report,[146] CEA Engineers concluded that membrane filtration plus pretreatment is the Best Available Technology for treating CRL, and that EPA should impose a zero-discharge standard for this wastestream, based on a number of considerations that are echoed in the following discussion, including:

- Chemical precipitation cannot be BAT because it is "entirely ineffective" at removing dissolved solids and "only marginally effective" at removing suspended solids;[147]

- Typical CRL flow rates are much lower than FGD wastewater flow rates, so CRL could easily be co-treated with FGD wastewater without overwhelming existing treatment capacity;[148] and

[140] *See, e.g.*, *id.* at 18,835 ("In promulgating the 2015 rule, EPA determined that combustion residual leachate from landfills and impoundments includes similar types of constituents as FGD wastewater, albeit at lower concentrations and smaller volumes."); *id*. at 18,848 ("[T]he record indicates that CRL wastewater is similar to FGD wastewater."); *id.* at 18,849 ("CRL has a similar wastewater characterization to FGD wastewater.").
[141] *Id.* at 18,835.
[142] *Id.* at 18,836.
[143] *Id.* at 18,841.
[144] *Id*.
[145] *Id.* at 18,849.
[146] CEA Engineers, P.C., Technical Memorandum Re: Supplemental Effluent Limitations Guidelines for the Steam Electric Power Generating Point Source Category – 2023 Proposed Rule, at 12–13 (May 26, 2023) ("CEA Engineers Report") (attached).
[147] *Id.* at 5.
[148] *Id.* at 5–6.

- CRL is similar to FGD wastewater, but typically has lower concentrations of total dissolved solids and boron, so CRL may be easier to treat with membrane filtration.[149]

As explained in more detail below and in the attached expert report, the EPA record supports a zero-discharge BAT standard for CRL.

A. Membrane Filtration Is the Most Cost-Effective Way to Meet the Goal of the Clean Water Act.

Chemical precipitation cannot be BAT for CRL because it removes far fewer pollutants than membrane filtration. Chemical precipitation also fails to remove dissolved pollutants according to EPA's rulemaking record – a flaw that was fatal to EPA's 2015 BAT determination before the Fifth Circuit Court of Appeals – and the record shows that membrane filtration would be roughly 100 times more cost-effective than chemical precipitation.

As context, EPA's logic in rejecting less stringent technologies as BAT for FGD wastewater bears repeating here:

> Under CWA section 301(b)(2)(A), BAT is supposed to result in 'reasonable further progress toward the national goal of eliminating the discharge of all pollutants' and 'shall require the elimination of discharges of all pollutants if the Administration finds . . . that such elimination is technologically and economically achievable . . .' The record shows that the 2020 rule industrywide BAT technology basis for FGD wastewater removes fewer pollutants than the [2022 proposed] BAT basis of chemical precipitation plus membrane filtration . . . . EPA is not identifying the less stringent (and previously rejected) technologies of surface impoundments or chemical precipitation, as these technologies too will remove fewer pollutants than the BAT in this proposal.[150]

The same reasoning requires EPA to identify membrane filtration as BAT for CRL. In a comparison of treatment technologies as applied to leachate in groundwater, EPA noted that membrane filtration would remove 100 percent of total dissolved and suspended pollutants, while chemical precipitation would remove less than one percent.[151] This stark difference is due to the fact that, according to EPA, chemical precipitation would not remove any dissolved pollutants at all.[152] When the Fifth Circuit Court of Appeals rejected EPA's attempt to establish BAT limits for leachate based on settling ponds, it did so largely because "gravity in surface impoundments fails to effectively or reliably remove pollutants . . . present mostly in soluble

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[149] *Id.* at 8.
[150] 88 Fed. Reg. at 18,843–44.
[151] EPA, Evaluation of Potential CRL in Groundwater, Docket ID No. EPA-HQ-OW-2009-0819-9678, at 58, App. B (Mar. 2, 2023) ("EPA Memo on CRL in Groundwater").
[152] *See id.* (showing the same values for total dissolved solids under baseline or chemical precipitation scenarios); *see also* Proposed TDD at 61, Tbl. 17 (showing no removal of total dissolved solids by chemical precipitation).

(dissolved) form."[153] Similarly, in 2015 EPA rejected surface impoundments as BAT for FGD wastewater because "gravity settling in surface impoundments does not effectively remove the dissolved fraction [of metals in the wastewater]."[154] The Fifth Circuit would presumably look at EPA's loadings estimates for leachate treatment and reach the same conclusion: A technology that fails to remove dissolved pollutants – which make up 99% of the pollutants in CRL – cannot be BAT.

It is also worth noting that zero-discharge options would be seventy to eighty-five times more cost-effective than chemical precipitation. We know this by looking at EPA's estimates of costs and loadings for treating CRL. That record includes the following annualized costs and pollutant removals, from which we calculated cost-effectiveness in terms of cost per pound removed:

Table V-1: Cost-effectiveness of treating CRL using various technologies.

Technology Option	Annualized Cost (2021$/yr)	Pollutants Removed (lb/yr)[155]	Annualized cost per pound removed (2021$)
Chemical Precipitation (CP)	$115,562,113[156]	496,000	$232.99
Membrane Filtration+CP	$224,582,268[157]	67,700,000	$3.32
Spray Dryer Evaporation	$185,957,680[158]	67,700,000	$2.75

This table shows that the industry could, by roughly doubling its investment in CRL treatment, increase pollutant reductions by well over 100-fold. To look at this another way, $100 invested in membrane filtration or chemical precipitation would remove between thirty and thirty-six pounds of pollutants, while $100 invested in chemical precipitation would remove less than one pound. Similar estimates of cost-effectiveness can be derived from EPA's memo on treating CRL in groundwater. [159]

Zero-discharge options remove far more pollutants from CRL at a lower cost per pound removed. The technology for doing so is available, as EPA's determination with respect to FGD

[153] *Sw. Elec. Power Co.*, 920 F.3d at 1015 (internal quotes omitted).
[154] 80 Fed. Reg. at 67,851.
[155] Proposed TDD at 63, Tbl. 20. We assumed that membrane filtration and SDE would each reduce loads by an amount equal to 100% of baseline loads.
[156] EPA Memo on Unit-Level Costs and Loadings at 60–66, Tbl. 13. Costs were annualized as [Annual O&M cost +((capital Costs*0.07)/(1-(1.07^-20)))+((6-year costs*0.07)/(1-(1.07^-6)))].
[157] EPA, Combustion Residual Leachate (CRL) Proposed Rule Cost Database, Docket ID No. EPA-HQ-OW-2009-0819-9958 (Mar. 29, 2023). This is a Microsoft Access database. Annualized unit-level costs were obtained from the table named "4_CP+Memb Total Costs (2021$) with Formatting."
[158] EPA, Spray Dryer Evaporator Cost Methodology, Docket ID No. EPA-HQ-OW-2009-0819-9684 (Dec. 13, 2022). Costs were annualized as [O&M cost + ((capital cost*0.07)/(1-(1.07^-20)))].
[159] *See* EPA Memo on CRL in Groundwater at Tbls. 6–9.

wastewater makes clear (see Section III – FGD Wastewater). There is nothing in the record to suggest that zero-discharge leachate treatment is economically unachievable. EPA therefore has a statutory obligation to set a zero-discharge BAT standard for leachate treatment.

B. Leasing Could Reduce the Cost and Time to Come into Compliance.

As described above (see Section III – FGD Wastewater), the record shows that FGD wastewater treatment systems can be leased, which reduces costs for plants with a limited remaining operating life and also reduces the amount of time required to install the systems. This is no less true for treating CRL. For plants that will be treating CRL for less than roughly twelve years, EPA should recalculate costs to account for the possibility of leasing. This would reduce the total cost to industry and increase the cost-effectiveness of more advanced treatment options.

C. EPA Must Proactively Regulate CRL Discharging Through Groundwater.

EPA solicits comment on "the appropriateness of the Agency's proposed BAT findings and their application to any discharges of CRL via groundwater that permitting authorities ultimately determine are subject to NPDES permitting."[160] Commenters strongly support EPA's proposal that any discharge of CRL through groundwater that is the functional equivalent of a direct discharge must be subject to the same BAT standard as other CRL.[161] To find otherwise would be contrary to the Supreme Court's recent decision in *County of Maui v. Hawaii Wildlife Fund*, 140 S. Ct. 1462 (2020), in which the Court – in concluding that such discharges are subject to NPDES permitting requirements – predicated its holding in part on the risk that dischargers might use groundwater as a means to circumvent Clean Water Act requirements.[162] Specifically, the Court noted the risk that a discharger, "seeking to avoid the permit requirement, [might] simply move [its] pipe back, perhaps only a few yards, so that the pollution must travel through at least some groundwater before reaching" a receiving surface water body.[163] The Court stated that "[w]e do not see how Congress could have intended to create such a large and obvious loophole in one of the key regulatory innovations of the Clean Water Act," *i.e.*, the requirement that all point source dischargers be subject to NPDES requirements.[164] As the Supreme Court observed, excluding all discharges through groundwater from Clean Water Act jurisdiction "would open a loophole allowing easy evasion of the statutory provision's basic purposes."[165]

To apply that loophole to CRL, consider a landfill with a CRL collection system: If the landfill's owner uses the collection system, it must treat the leachate that it collects, but what if the owner simply disconnects the collection system and allows the CRL to drain into groundwater? According to the Supreme Court, if that CRL moves directly through groundwater to surface water in a way that is functionally equivalent to a direct discharge, it must be prohibited unless it is specifically authorized and limited by a NPDES permit.[166]

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[160] 88 Fed. Reg. at 18,850.
[161] *Id.* (citing *Cnty. of Maui v. Haw. Wildlife Fund*, 140 S. Ct. 1462 (2020)).
[162] *Cnty. of Maui*, 140 S.Ct. at 1473.
[163] *Id.*
[164] *Id.*
[165] *Id.* at 1474.
[166] *Id.* at 1472.

Among these NPDES requirements is the requirement that all point source discharges be subject to BAT and other technology-based effluent limits as "a uniform minimal level of control imposed on all sources within a category or class."[167] Although EPA has some limited authority to create subcategories when establishing industry-wide ELGs, as discussed below in Section VIII – Subcategories, there is no record here to support any subcategorization for leachate discharges through groundwater. It is quite common for power plants to collect leachate for treatment using collection systems, trenches, pumping systems, and other well-established methods. Accordingly, EPA should not treat these discharges as a separate wastestream or as a basis for subcategorization, but instead should require that they meet the same BAT limits as other leachate discharges, as EPA proposes.

Unfortunately, the 2023 Proposal is inconsistent about the applicability of the ELGs to CRL discharged through groundwater and is unlikely to affect these pollution loads without more proactive regulatory action. Although EPA states that some CRL discharged through groundwater will be subject to the ELGs, it assumes in its rulemaking record that none will. For example, in the Proposed TDD, EPA limited its analysis to "landfills containing combustion residuals that collect and discharge leachate," and placed its analysis of CRL discharged through groundwater in a "sensitivity analysis" (i.e., outside of the main analysis).[168] And EPA appears to be relying on self-reporting by industry to close this regulatory gap.[169]

In order to give meaning to the language in the preamble, EPA must be more proactive. Waiting for dischargers to self-identify and apply for coverage is unlikely to significantly increase regulatory oversight, as dischargers have a strong incentive to say nothing at all, or at best to interpret their discharges as not falling within the *County of Maui* test. For this reason, commenters strongly support EPA's alternative options of using its Clean Water Act Section 308 authority to directly obtain information about CRL discharges through groundwater, or adding permit application requirements that would generate the same information.[170] In either case, EPA should require all of the twenty-two types of information presented in the preamble under "EPA Recommended General Information" and "EPA Recommended Technical Information."[171] Each of these twenty-two pieces of information is necessary for determining whether CRL in groundwater is the functional equivalent of a direct discharge. For example, hydraulic gradients and estimated groundwater travel time are necessary to characterize the speed at which CRL travels from coal ash disposal units to surface water, and groundwater quality data are necessary to evaluate whether individual pollutants can be traced back to the disposal unit or are instead naturally occurring. If EPA does not require this information, it will not be able to determine which CRL discharges are subject to the ELGs.

Regardless of how EPA chooses to obtain the information necessary to evaluate CRL discharges through groundwater, it must make the information publicly available by requiring

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[167] *Natural Res. Def. Council, Inc. v. Train*, 510 F.2d 692, 709–10 (Dec. 5, 1974) (internal quotation marks omitted); *see also* Section II – Legal Background.
[168] Proposed TDD at 48–49.
[169] *See, e.g.*, 88 Fed. Reg. at 18,888 ("EPA Strongly recommends that the permittee expeditiously seek permit coverage").
[170] *Id.* at 18,890.
[171] *Id.* at 18,889.

owners to post the information on public websites, as discussed in more detail below in Section XIV – ELG Web Sites. This is the only way to ensure that the public is informed and able to enforce the Clean Water Act through its citizen suit provisions.

D. EPA Cannot Exempt CRL from Regulatory Coverage When a Power Plant Retires.

EPA also solicits comment "on whether CRL generated after retirement should continue to remain subject to 40 CFR Part 423."[172] The answer is clearly "yes." Section 423.10 provides that the Steam Electric ELGs apply to "discharges resulting from the operation of a generating unit."[173] Clearly, discharges of CRL – which are by definition discharges that have resulted from the *residuals* of *combustion* – fit within this definition, regardless of whether the EGUs at a power plant site are still operating at the time of the discharges. Any distinction between CRL generated before or after retirement would be arbitrary and, from a practical perspective, meaningless. Commenters note that EPA currently interprets the rule "to apply to legacy wastewater at inactive/retired steam electric power plants."[174] EPA's reasoning for this interpretation applies equally to CRL, which conveys and discharges pollutants from waste that was generated as a result of the generation of electricity and should therefore be subject to the Steam Electric ELGs regardless of when the EGUs retire.[175]

VI. EPA MUST SET A ZERO-DISCHARGE STANDARD FOR LEGACY WASTEWATER INSTEAD OF ITS PROPOSED BPJ APPROACH.

A. Summary of EPA's Preferred Option.

Under all four regulatory options, EPA proposes not to specify a nationwide BAT standard for legacy wastewater.[176] Instead, the Agency's preferred approach is for permitting authorities to set site-specific limitations for legacy wastewater using their "Best Professional Judgment" for what is "technologically available, economically achievable, and has acceptable non-water quality environmental impacts."[177]

According to EPA, a site-specific approach may be necessary because of "process changes" happening at plants as they close their surface impoundments pursuant to the federal Coal Combustion Residuals ("CCR") Rule.[178] The Agency says it "is not certain" that a nationwide standard is possible "without disrupting some plants' already commenced (and contracted for) closure process, thereby possibly jeopardizing the ability of those plants to meet

[172] 88 Fed. Reg. at 18,854.
[173] 40 C.F.R. § 423.10.
[174] 88 Fed. Reg. at 18,854.
[175] *Id.* (discussing wastewaters that "but for the operation of the generating unit, would not have been generated and discharged").
[176] 88 Fed. Reg. at 18,838. Legacy wastewater is defined as "FGD wastewater, fly ash transport water, bottom ash transport water, FGMC wastewater, or gasification wastewater generated prior to the date determined by the permitting authority that is as soon as possible . . . ." *Id*. at 18,851.
[177] *Id.* at 18,838.
[178] *Id.* at 18,850–51.

their closure deadlines under the CCR Rule."[179] EPA is proposing BPJ to accommodate these potential differences across sites.

EPA also proposes that permitting authorities segregate legacy wastewater into two categories depending upon when the wastewater was generated and make separate permitting decisions for each category. Those two categories are: (1) wastewater that is continuously or intermittently generated and discharged to surface impoundments after the issuance of the first permit implementing the 2015 or 2020 rule but before the compliance date specified in the permit; and (2) wastewater that was discharged to surface impoundments previously and will be discharged when the pond is dewatered for closure.[180] Within the second category, EPA further distinguishes between "decant" and "dewatering" wastewater. EPA proposes to define "decant" wastewater as "the layer of a closing surface impoundment's wastewater that is located from the water surface down to the level sufficiently above any coal combustion residuals that, when drained, does not resuspend the coal combustion residuals" and "dewatering" wastewater as "a closing surface impoundment's wastewater that is located below surface impoundment decant water due to its contact with either stationary or resuspended coal combustion residuals."[181]

EPA's rationale for segregating legacy wastewater into two categories is that permitting authorities "could justify more stringent BAT requirements" for one or both categories.[182] EPA notes that the first category "is continuously or intermittently generated and discharged and may be able to be more easily transmitted to other treatment systems at the facility," while the second category "is typically treated with modular, leased systems for a shorter period, making treatment more affordable."[183]

EPA seeks comment on its proposed site-specific, BPJ approach and whether it should instead set nationwide limitations for legacy wastewater. Specifically, EPA solicits comment on "limitations based on chemical precipitation, biological treatment, membrane filtration, thermal evaporation, and/or spray dryer evaporation or any other more stringent technologies that plants may be using to dewater their surface impoundments."[184] EPA also seeks comment "on whether the Agency could transfer limitations, specifically any of the 2015 or 2020 limitations for FGD wastewater (including subcategories or VIP [the Voluntary Incentives Program]) or the proposed zero-discharge limitations."[185]

B. EPA's "Best Professional Judgment" Proposal is Unlawful.

1. *EPA's proposal is inconsistent with the Fifth Circuit's decision in Southwestern Electric.*

In *Southwestern Electric*, the Fifth Circuit Court of Appeals vacated the legacy wastewater and leachate provisions of the 2015 ELG Rule and held that surface impoundments

[179] *Id.* at 18,853.
[180] *Id.* at 18,851.
[181] *Id.* at 18,851–52.
[182] *Id.* at 18,851.
[183] *Id.*
[184] *Id.* at 18,853.
[185] *Id.*

are not BAT for either wastestream.[186] Therefore, the final 2023 ELG Rule must make clear that surface impoundments are not, and cannot be, BAT for legacy wastewater. EPA's 2023 Proposal fails to do so, and it must be corrected.

As the *Southwestern Electric* court explained, "[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."[187] 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."[188] 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."[189] 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."[190]

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, explained in detail in Section II - Legal Background, that ELGs are required to be technology-forcing and establish effluent limitations for all wastestreams based on the most effective technologies at eliminating discharges of pollutants that are available and achievable for that industry.[191] 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."[192] Comparing surface impoundments to personal computers,

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[186] *Sw. Elec. Power Co.*, 920 F.3d 999.
[187] *Id.* at 1003.
[188] *Id.* (citing 80 Fed. Reg. 67,838 (Nov. 3, 2015)).
[189] *Id.* (citing 80 Fed. Reg. at 67,840, 67,851).
[190] *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.").
[191] *See generally Sw. Elec. Power Co.*, 920 F.3d at 1004–07, 1015–33.
[192] *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

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."[193]

Despite the Fifth Circuit's holding in *Southwestern Electric*, EPA's Proposed Rule signals to permitting authorities that they can continue selecting surface impoundments as BAT for legacy wastewater. EPA acknowledges this potential outcome by requesting that permitting authorities "*seriously consider* treatment beyond that afforded by surface impoundments."[194] The Agency also notes that its proposed BPJ approach would "*allow*" permitting authorities to set more stringent limits than ones based on surface impoundments – but does not say its proposal *requires* that result.[195]

Any final rule that purports to allow permitting authorities to continue selecting surface impoundments as BAT for legacy wastewater would be illegal. Such a rule would violate the court's holding in *Southwestern Electric*, which made clear that setting BAT limits based on surface impoundments – "an outdated and ineffective technology" – is "unlawful under the Act."[196] Any BPJ permitting approach that would allow permitting authorities to select unlawful options for site-specific BAT is fatally flawed.

2. *A BPJ approach does not guarantee "reasonable further progress" toward zero discharge.*

EPA claims that its BPJ proposal would "result in reasonable further progress toward the CWA's goal of eliminating the discharge of all pollutants."[197] However, that outcome depends entirely on the decisions that permitting authorities make, and thus it is far from guaranteed.[198]

First, as just discussed, EPA's BPJ proposal risks signaling to permitting authorities that they can set legacy wastewater limits based on surface impoundments. Whatever the phrase "will result in reasonable further progress" means, it cannot mean selecting surface impoundments as BAT for legacy wastewater. That has been the unacceptable status quo since 1982, as the Fifth

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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].").

[193] *Id.* at 1004.

[194] 88 Fed. Reg. at 18,851 (emphasis added).

[195] *Id.* at 18,853 (emphasis added).

[196] *Sw. Elec. Power Co.*, 920 F.3d at 1022.

[197] 88 Fed. Reg. at 18,853.

[198] Indeed, EPA itself recognizes this; in the Proposed BCA, EPA does not assume in its analysis that *any* pollution from legacy wastewater would be reduced under a BPJ regime. EPA, Benefit and Cost Analysis for Proposed Supplemental Effluent Limitations Guidelines and Standards for the Steam Electric Power Generating Point Source Category, EPA-821-R-23-003, Docket ID No. EPA-HQ-OW-2009-0819-10042, at 1-1 n.1 (Feb. 28, 2023) ("Proposed BCA").

Circuit confirmed in *Southwestern Electric*. Any final rule that allows for that outcome would be unlawful.

Second, BPJ analyses are often hollow. EPA itself acknowledges this fact when discussing its proposed BAT standard for BATW in the 2023 Proposal. The Agency is not proposing to retain the purge allowance for BATW that it created in the 2020 Rule, which enabled permitting authorities to use BPJ to establish purge allowances of up to 10% on a case-by-case basis.[199] In the 2023 Proposal, EPA explains that plants that requested a purge allowance generally always sought, and permitting authorities always granted, the maximum 10% allowance:

> All the instances EPA is aware of involving requests by plants to purge BA transport water under the 2020 rule have included a request for a full 10 percent purge. The limitation EPA established in the 2020 rule was, however, a site-specific purge allowance with a maximum 10 percent threshold. In practice, this flexibility has resulted in a situation where BA handling systems either achieve zero discharge or purge the maximum 10 percent.[200]

In other words, instead of making these site-specific determinations, both permittees and permitting authorities generally always opted for the most lenient and least protective pollution standards that EPA's rule allowed. EPA should know that if it now leaves legacy wastewater limits to permitting authorities' BPJ, it will very likely lead to the same result.

The same general picture of state permitting agencies requiring only the bare minimum has been true for other contexts where BPJ was required – that is, if they were willing to exercise their BPJ and set limits at all. As EPA should be well aware, prior to the adoption of the 2015 ELG Rule, permitting agencies generally did not set any BPJ limits on discharges of FGD wastewater or other coal combustion wastestreams, even after EPA released a guidance memo in 2010 directing EPA Regions to ensure that state permitting agencies were including required BPJ and water quality based effluent limits in power plant NPDES permits.[201] Even after this memo was issued, states largely ignored this responsibility, and in the few instances where they did exercise BPJ to include limits in a permit, those limits were generally only to incorporate treatment steps that plants were already undertaking voluntarily. For example, for the NPDES permit for the Clifty Creek Generating Station in Indiana, the Indiana Department of Environmental Management ("IDEM") issued a NPDES permit in 2011 that nominally required the plant to use a physical-chemical treatment system for FGD wastewater that the plant had voluntarily installed, but IDEM did not analyze whether more stringent treatment options should have been required as BAT and did not even include in the permit numeric limits based on the

[199] *Id.* at 18,847.
[200] *Id.*
[201] *See* EPA, National Pollutant Discharge Elimination System (NPDES) Permitting of Wastewater Discharges from Flue Gas Desulfurization (FGD) and Coal Combustion Residuals (CCR) Impoundments at Steam Electric Power Plants, Attachment 1 to Docket ID No. EPA-HQ-OW-2009-0819-4720 (June 7, 2010).

pollutant reductions that the plant's proposed treatment system could achieve.[202] Even EPA Regions themselves acting as permitting authorities have been guilty of issuing bare minimum BPJ permitting decisions, as evidenced by the U.S. Environmental Appeals Board's recent decision rejecting as unlawful EPA Region 1's BPJ finding that surface impoundments could be the basis for BAT for leachate even after the Fifth Circuit Court of Appeals' holding in *Southwestern Electric* striking that same conclusion down as unlawful on a nationwide basis.[203] EPA should be well aware of literally hundreds of similar examples of permitting agencies not exercising BPJ to make more stringent permitting decisions than the bare minimum that a plant owner requests, all of which strongly favor EPA not adopting the BPJ approach for legacy wastewater proposed in the 2023 Proposal.

Third, EPA's proposed case-by-case approach to setting BAT limits on toxic pollutants from legacy wastewater will likely impose significant administrative costs on EPA, state agencies, nongovernmental organizations, and industry, which could be reduced or eliminated altogether through a nationwide BAT standard. As several of the commenters here pointed out a decade ago in 2013 comments on the then-proposed 2015 ELG rule, it is fairer, more protective, and likely less expensive in the long run to set nationwide standards than to develop BAT limits on a permit-by-permit basis through a BPJ approach.[204]

Fourth, permitting authorities may interpret state laws to prevent them from selecting anything better than surface impoundments as BAT unless EPA expressly requires it. Several states have laws in place that prohibit permitting agencies from requiring more than the federal floor. In a fifty-state survey conducted in 2013, the Environmental Law Institute found twenty-eight states with laws or policies that limited permitting authorities' ability to protect waters more stringently than federal standards.[205] For example, Kentucky and South Dakota broadly

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[202] *See, e.g.*, Expert Report of Evan Hansen, Best Available Technology and Case-by-Case Technology-based Effluent Limitations for Flue Gas Desulfurization Wastewater Treatment at the Clifty Creek Generating Station, submitted in *In re: Objection to the Issuance of the National Pollutant Discharge System Permit No. IN0001759 to Indiana-Kentucky Electric Corporation Clifty Creek Plant* (Sept. 15, 2014) (attached).

[203] Remand Order, *In re GSP Merrimack L.L.C.*, 18 E.A.D. 524, 542–46 (E.A.B. 2021), https://yosemite.epa.gov/OA/EAB_WEB_Docket.nsf/Filings%20By%20Appeal%20Number/CB6DAB631E28A9A4852587260066B9C0?OpenDocument.

[204] *See* Comments from Earthjustice et al., Docket ID No. EPA-HQ-OW-2009-0819-4684, Section II (Sept. 20, 2013).

[205] ELI ("Environmental Law Institute"), State Constraints: State-Imposed Limitations on the Authority of Agencies to Regulate Waters Beyond the Scope of the Federal Clean Water Act, at 11 (May 2013) (attached). Those 28 states are Arkansas, Arizona, Colorado, Florida, Idaho, Indiana, Iowa, Kentucky, Maine, Maryland, Minnesota, Mississippi, Montana, Nevada, New Jersey, North Carolina, North Dakota, Ohio, Oklahoma, Oregon, Pennsylvania, South Dakota, Tennessee, Texas, Utah, Virginia, West Virginia, and Wisconsin. Although the ELI report focuses on state regulators' authority to regulate a broader scope of waters than those covered by the federal CWA, at least some of the state stringency laws discussed in Part I of the report also bear on state permitting authorities' ability to set stronger effluent limits than the federal floor.

restrict state agencies from promulgating regulations more stringent than the federal floor.[206] Arkansas and Iowa prohibit permitting authorities from setting effluent limitations that are more stringent than federal requirements unless more stringent limits are necessary to meet water quality criteria.[207] Other states, like Colorado, Florida, North Dakota, Oklahoma, and Utah, require permitting authorities to complete benefit cost analyses, participate in hearings, or comply with other potentially onerous requirements before setting stricter standards than the federal floor. [208]

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[206] Ky. Rev. Stat. Ann. § 13A.120(1)(a) ("An administrative body may promulgate administrative regulations to implement a statute only when the act of the General Assembly creating or amending the statute specifically authorizes the promulgation of administrative regulations or administrative regulations are required by federal law, in which case administrative regulations shall be no more stringent than the federal law or regulations."); S.D. Codified Laws § 1-41-3.4 ("No rule that has been promulgated pursuant to Title 34A [Environmental Protection], 45 [Mining, Oil, and Gas], 46 [Water Rights], or 46A [Water Management] may be more stringent than any corresponding federal law, rule, or regulation governing an essentially similar subject or issue.").

[207] Ark. Code Ann. § 8-4-207(1)(A) ("The director is authorized to require conditions in permits issued under this chapter regarding the achievement of effluent limitations based upon the application of such levels of treatment technology and processes as are required under the Federal Water Pollution Control Act, as amended, or any more stringent effluent limitations necessary to meet water quality criteria or toxic standards established pursuant to any state law or rule or federal law or regulation."); Iowa Code § 455B.173(2)(b) ("If the federal environmental protection agency has promulgated an effluent standard or pretreatment standard pursuant to section 301, 306, or 307 of the federal Water Pollution Control Act, a pretreatment or effluent standard adopted pursuant to this section shall not be more stringent than the federal effluent or pretreatment standard for such source. This section may not preclude the establishment of a more restrictive effluent limitation in the permit for a particular point source if the more restrictive effluent limitation is necessary to meet water quality standards . . . .").

[208] Colo. Rev. Stat. § 25-8-202(8)(a) ("The commission may adopt rules more stringent than corresponding enforceable federal requirements only if it is demonstrated at a public hearing, and the commission finds, based on sound scientific or technical evidence in the record, that state rules more stringent than the corresponding federal requirements are necessary to protect the public health, beneficial use of water, or the environment of the state."); Fla. Stat. § 403.804(2) ("The department shall have a study conducted of the economic and environmental impact which sets forth the benefits and costs to the public of any proposed standard that would be stricter or more stringent than one which has been set by federal agencies pursuant to federal law or regulation."); N.D. Cent. Code § 23.1-01-04(2) (amended and reenacted in 2023 by N.D. Laws H.B. 1423) ("The department may adopt rules more stringent than corresponding federal regulations . . . only if the department makes a written finding after public comment and hearing and based upon evidence in the record, that corresponding federal regulations are not adequate to protect the public health and the environment of the state."); Okla. Stat. tit. 27A, § 1-1-206(A) ("Each state environmental agency in promulgation of permanent rules within its areas of environmental jurisdiction, prior to the submittal to public comment and review of any rule that is more stringent than corresponding federal requirements, unless such stringency is specifically authorized by state statute, shall duly determine the economic impact and the environmental benefit of such rule on the people of the State of Oklahoma including those entities that will be subject to the rule."); W. Va. Code § 22-1-3a (Except for certain rules, "legislative rules . . . may include new or amended environmental provisions which are more stringent than the counterpart federal rule or program to the extent that the director first provides specific written reasons which demonstrate that such provisions are reasonably necessary to protect, preserve or enhance the quality of West Virginia's environment or human health or

These "no more stringent than federal" laws make it especially important for EPA to require clearly that BPJ legacy wastewater limits be based on better technology than surface impoundments. If EPA were to adopt a BPJ approach in a final rule that does not require a higher federal floor as a bare minimum, then it would be very likely that permitting authorities in states with these laws on the books would not require any treatment technology more stringent than surface impoundments – an ineffective, outdated, and unlawful form of treatment per *Southwestern Electric* – as BAT for legacy wastewater.

Even in states without such stringency laws, EPA's BPJ approach at best *encourages* permitting authorities to set stricter limits for legacy wastewater than ones based on surface impoundments. As discussed in detail below, EPA's rulemaking record demonstrates that zero-discharge treatment technologies are available and economically achievable for plants with legacy wastewater. However, by leaving these limits to permitting authorities' discretion instead of setting a national standard, EPA is essentially crossing its fingers and hoping for the best. The most that can be said for the Agency's BPJ proposal is that it *might* result in reasonable further progress toward the CWA's goals. It certainly does not *ensure* that permitting authorities' decisions result in reasonable further progress. Indeed, the most likely outcome is that EPA's proposal would result in no progress whatsoever at many sites, given state stringency laws and permitting authorities' often cursory approach to BPJ.

The only way to guarantee that the final rule results in reasonable further progress toward eliminating the discharge of legacy wastewater pollution is for EPA to set a nationwide standard based on what the record demonstrates is BAT for the wastestream, and to require compliance with that standard as soon as possible. As detailed below, and as with FGD wastewater and CRL, the record shows that membrane filtration or other zero-discharge technologies are BAT and could be operational by no later than three years after the effective date of the final rule.

3. *EPA's proposal improperly treats water quality-based limits as relevant.*

EPA also confuses technology-based considerations and water quality-based considerations in the explanation for its proposal, citing water quality-based limits on legacy wastewater discharges in North Carolina as "a potential basis for BAT."[209] EPA should know that water quality impacts are not relevant to the establishment of technology-based limits.[210] If the best available technology can eliminate a discharge completely, EPA must require the use of that technology, even if water quality would be adequately protected by a less effective option. EPA's discussion of water quality-based limits in the context of permit writers' best professional judgment is particularly troubling because it implies that permit writers could evaluate potential water quality impacts and then set water quality-based limits without conducting a robust analysis of available treatment technologies. This would contravene the Clean Water Act's

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safety. . . ".); Utah Code Ann. § 19-5-105(2) ("The board may make rules more stringent than corresponding federal regulations . . . only if it makes a written finding after public comment and hearing and based on evidence in the record that the corresponding federal regulations are not adequate to protect public health and the environment of the state.").

[209] 88 Fed. Reg. at 18,852.

[210] *Sw. Elec. Power Co.*, 920 F.3d at 1005 ("The Act requires ELGs to be based on technological feasibility rather than on water quality.") (citing *Tex. Oil & Gas Ass'n*, 161 F.3d at 927).

technology-forcing mandate,[211] and EPA should clarify that water quality-based effluent limits can never be a substitute for technology-based limits and should only be considered after the pollutant reductions (or, as here, elimination of pollutant discharges) achievable using best available technology are required.

C. EPA Must Adopt a Zero-Discharge Standard for Legacy Wastewater.

As with CRL, EPA must adopt a zero-discharge standard for legacy wastewater for the same reasons that EPA adopted a zero-discharge standard for FGD wastewater. Legacy wastewater is similar to FGD wastewater and just as capable of being treated, and therefore the technology to eliminate legacy wastewater discharges is available and achievable to the same extent as it is for FGD wastewater. Moreover, zero-discharge treatment is already being used in the industry to treat ash pond drainage and is far more cost-effective than treatment with chemical precipitation and thus more efficiently advances the goals of the CWA.

1. *The record demonstrates that legacy wastewater should be subject to a zero-discharge standard.*

First, EPA's own record makes clear that zero-discharge technologies are unquestionably "available" to treat legacy wastewater. The 2023 Proposal identifies at least one plant that has already implemented a zero-discharge treatment system to treat legacy wastewater. Specifically, EPA notes that a spray dry evaporator ("SDE") "is currently used to evaporate [surface impoundment] decant and dewatering wastewater" at Minnesota Power's Boswell Energy Center.[212] This record evidence alone resolves any doubt as to whether zero-discharge treatments are "available" to the industry.[213]

EPA's record further bolsters this conclusion by demonstrating that legacy wastewater and FGD wastewater are similar. In fact, they are often the same thing, for example where the "legacy" wastewater is simply impounded FGD wastewater.[214] More broadly, legacy wastewater consists of various mixtures of wastestreams that are similar to each other and equally amenable to membrane filtration, including FGD wastewater and CRL (discussed above) and ash transport water.[215] Since the individual sources of legacy wastewater are all amenable to membrane

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[211] 33 U.S.C. § 1311(b)(2)(A); *see also Nat. Res. Def. Council*, 808 F.3d at 563–64 ("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*, 822 F.2d at 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").
[212] 88 Fed. Reg. at 18,852.
[213] *See Chem. Mfrs. Ass'n v. EPA*, 870 F.2d at 226; *Am. Petroleum Inst.*, 858 F.2d at 265; *Kennecott*, 780 F.2d at 448.
[214] 88 Fed. Reg. at 18,836 ("Legacy wastewater can be comprised of FGD wastewater, BA transport water, FA transport water, CRL, gasification wastewater and/or FGMC wastewater generated before the "as soon as possible" date . . . .").
[215] *Id.*; *see also id.* at 18,848 ("The Agency also found that the pollutants of concern in CRL are the same pollutants that are present in, and in many cases are also pollutants of concern for, FGD wastewater, FA transport wastewater, BA transport water, and other CCR solids"); *id.* at 18,841 (stating that "there are

filtration or other zero-discharge technologies, so is the mixture. CEA Engineers reached the same conclusion in their analysis of BAT for legacy wastewater:

> In sum, based on the types and concentrations of pollutants present in SI [surface impoundment] Decant Water, SI Dewatering Water, and SI effluent from Production Legacy WW [wastewater] and their similarity to FGD WW, EPA is capable of establishing a nationwide categorical standard for Legacy WW and [should] not rely on BPJ, which can vary widely, for establishing BAT and ELGs for Legacy WW. Similar to its rationale for establishment of the FGD WW BAT of CP [chemical precipitation] followed by MF [membrane filtration] and a zero discharge ELG, EPA should establish CP followed by MF as BAT and an ELG of zero discharge for Legacy WW.[216]

In short, if membrane filtration is the best available technology for treating FGD wastewater and CRL, it is also the best available technology for treating legacy wastewater.

2. *Leasing could reduce the cost and time to come into compliance.*

Power plant operators could utilize leasing options to reduce the cost and time of achieving compliance with zero-discharge limits on legacy wastewater. As discussed above in Section III – FGD Wastewater, the record shows that zero-discharge FGD wastewater treatment systems can be leased, which reduces costs for plants with a limited remaining operating life and also reduces the amount of time required to install the systems. This is no less true for legacy wastewater (or for CRL, as noted above). Indeed, EPA acknowledges that at least one component of legacy wastewater – the water accumulated in closing surface impoundments – "is typically treated with modular, leased systems for a shorter period, making treatment more affordable."[217] The fact that leasing options are available – and in some instances, already in place – for treating legacy wastewater supports a finding that zero-discharge standards are economically achievable for this wastestream by no later than three years after the effective date of the final rule.[218]

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many similarities between FGD and the non-FGD wastestreams where membranes have been utilized" and commenting on similarities between ash transport water and FGD wastewater including "high variability"); *id.* at 18,840–41 ("[M]embrane filtration is used in full-scale applications to other wastestreams in the steam electric power sector and other industrial sectors" including "ash transport water").

[216] CEA Engineers Report at 17.

[217] 88 Fed. Reg. at 18,851.

[218] EPA also identifies "the extent to which CWA requirements could interfere with closure timeframes required under the CCR rule" as one factor that purportedly justifies a BPJ approach to setting legacy wastewater limits. *Id.* However, a strong national treatment standard for legacy wastewater would not interfere with deadlines under the CCR Rule because that rule allows a facility to extend deadlines for completing closure when the facility "can demonstrate that it was not feasible to complete closure of the CCR unit within the required timeframes due to factors beyond the facility's control." 40 C.F.R. § 257.102(f)(2)(i).

3. *Zero-discharge treatment is the most cost-effective way to treat legacy wastewater.*

Finally, as with leachate, the record shows that zero-discharge treatment technologies are more cost-effective than chemical precipitation, in this case roughly twice as cost-effective, as shown in Table VI-1 below:

Table VI-1: Cost-effectiveness of treating legacy wastewater (decant and dewatering) using various technologies.

Technology Option	Annualized Cost (2021$/yr)[219]	Pollutants Removed (lb/yr)[220]	Annualized cost per pound removed (2021$)
Chemical Precipitation	288,050,000	473,000,000	$0.61
Membrane Filtration + Chemical Precipitation	594,150,000	1,840,000,000	$0.32
Spray Dryer Evaporation	501,300,000	1,840,000,000	$0.27

Table VI-1 shows two things. First, the differences in loadings reductions are dramatic. EPA assumed a baseline load of 1.84 billion pounds per year.[221] Chemical precipitation would only remove 26% of the baseline load. Membrane filtration or SDE treatment, on the other hand, would remove 100%. Second, the zero-discharge options are much more cost-effective, costing roughly half as much as chemical precipitation to remove each pound of pollution. To look at it another way, $100 spent on membrane filtration or SDE treatment would remove between 310 and 367 pounds of pollution, while $100 spent on chemical precipitation would only remove 164 pounds.

D. A Zero-Discharge Standard for Legacy Wastewater Could Provide Benefits from Rare Earth Element Extraction.

In addition to greatly reducing pollutant loadings, a zero-discharge standard for legacy wastewater could also facilitate future extraction of rare earth elements ("REEs") from coal ash. REEs are essential to our country's urgent transition to a clean energy economy. With current technologies, it is estimated that one would need a little over 4 tons of coal ash to produce 1 kg

[219] EPA, Legacy Wastewater at CCR Surface Impoundments, Docket ID No. EPA-HQ-OW-2009-0819-9679, at 8, Tbl. 5 (Mar. 2, 2023) ("EPA Memo on Legacy Wastewater"). EPA presents annualized costs for two time periods – years 0–7 and years 8–20. The numbers shown here represent the weighted average of the two periods [((annualized cost for years 1-7) * 7) + ((annualized cost for years 8-20) * 13)) / 20].
[220] *Id*. at 10, Tbl. 7.
[221] *Id*.

of REE, depending on the concentration of REEs in the specific coal ash source.[222] Although REE extraction from coal ash should not proceed until its environmental impacts are thoroughly analyzed and mitigated[223] – including ensuring each REE extraction project receives a full National Environmental Policy Act analysis and all relevant permits – the process of extracting REEs from coal ash has potential to be less energy and resource intensive than conventional ore extraction methods.

The Department of Energy ("DOE") has recently begun evaluating the extraction of REEs from legacy wastewater from historic coal plant operations like "flue gas scrubbers and waters associated with the management of the byproducts of combustion including fly ash and scrubber solids."[224] Although REE extraction from legacy wastewater is in the early stages of research and development, and important questions about the environmental impact of such extraction still must be answered, the first step toward any future extraction will likely be to concentrate all of the metals present in the wastestream. As explained in the CEA Engineers Report, treating coal combustion wastewater with reverse osmosis membrane filtration produces a highly concentrated, aqueous waste stream ("concentrate"), which "completes the first required step for REE extraction."[225] Therefore, setting zero-discharge requirements based on membrane filtration today could pay dividends in the future as DOE and others continue to evaluate legacy wastewater as a potential source of critically important REEs.

E. EPA Should Not Create a Subcategory for the Twenty-Two "Remaining Open" Units.

Because EPA should set a nationwide standard for all legacy wastewater stored in surface impoundments, EPA should not create a subcategory for the twenty-two units that it believes comply with CCR Rule criteria and could remain operational.

As explained in Section VIII - Subcategories, EPA has limited authority to create subcategories when promulgating industry-wide ELGs. The CWA does not explicitly authorize EPA's creation of industry subcategories, but 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.[226] 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

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[222] Dep't of Defense, Office of Industrial Policy, DoD Paves the Way for Critical Mineral Recovery from Coal Ash (Sept. 20, 2021), https://www.businessdefense.gov/news/2021/dod-paves-the-way-for-critical-mineral-recovery-from-coal-ash.html.

[223] *See, e.g.*, Comments of Earthjustice et al., Bipartisan Infrastructure Law - Rare Earth Element Demonstration Facility (Mar. 31, 2022) (attached).

[224] Dep't Of Energy, Request for Information, Water Research and Development for Produced Water and Legacy Wastewaters Associated with Thermal Power Plants (DE-FOA-0002795), at 4 (Aug. 25, 2022).

[225] CEA Engineers Report at 20.

[226] *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 at 214–15.

(including energy requirements), and such other factors as the Administrator deems appropriate."[227]

None of those factors justify creating a subcategory for the twenty-two units that EPA believes could remain open and operational. Membrane filtration is available and achievable for treating all legacy wastewater, regardless of "process changes" during closure, and plants could have those treatment systems in place in less than three years.[228] Therefore, all legacy impoundments that are subject to requirements under the final 2023 ELG Rule should be subject to the same zero-discharge standard as soon as possible and no later than three years from the effective date of the final rule.

If EPA nevertheless decides to retain its BPJ approach and create a subcategory for these twenty-two units, then EPA should require these units to achieve zero discharge within three years. Any concern that such a standard would be infeasible for legacy units due to "process changes," or could "jeopardize" compliance with CCR Rule closure requirements, would not exist for these twenty-two units. Therefore, EPA must set effluent limits based on the best available technology that is economically achievable for these units, and that is zero discharge based on membrane filtration or other zero-discharge treatment technologies.

F. If EPA Retains Its BPJ Standard, It Must Make that Standard as Strong as Possible and Set Guardrails Around Permitting Authorities' Discretion.

Similarly, if EPA decides to retain its BPJ approach for legacy wastewater – and it should not – then EPA must make that standard as strong as possible and set guardrails around permitting authorities' discretion. Anything less risks resulting in a do-nothing approach that achieves no progress toward the CWA's goal of zero discharge.

A stronger alternative BPJ approach would include a presumptive standard for permitting authorities' BPJ analysis. The presumption should be that permitting authorities will set the strictest possible limits based on the technology that would achieve the greatest pollution reduction, akin to the "top-down" approach that permitting authorities must follow when selecting the Best Available Control Technology for sources under the Clean Air Act. Here, the presumed strictest limit would be zero discharge based on membrane filtration or other zero-discharge technologies. The presumption should also be that permitting authorities will require compliance with a zero-discharge limit as soon as possible and no later than three years from the effective date of the final rule. This same presumptive standard should apply regardless of whether the permitting authority is setting limits for decant or dewatering wastewater since the same treatment technologies can be used for either type of legacy wastewater.[229]

Permitting authorities should only be able to overcome that presumption by documenting a specific justification for why a zero-discharge limit is not achievable for a particular site. As part of that process, permitting authorities should be required to evaluate each of the factors that EPA has identified: (1) technologies available at the site; (2) the characteristics of the legacy

[227] 33 U.S.C. § 1314(b)(2)(B).
[228] *See* discussion in Section VI.C above.
[229] *See, e.g.*, CEA Engineers Report at 14–17.

wastewater; (3) amount of remaining legacy wastewater; (4) the treatment option costs; (5) the extent to which CWA requirements would interfere with surface impoundment closure required under the CCR rule; (6) the completed stage of closure for each surface impoundment; and (7) the closure deadline under the CCR rule, in addition to the factors required under Section 304(b) of the CWA.[230] So that this process is a meaningful exercise and not mere box-checking, EPA must require permitting authorities to extensively document their analyses and make those analyses publicly available during public comment periods on draft NPDES permits.

Under no circumstances should permitting authorities be allowed to set limits weaker than those based on chemical precipitation plus biological treatment since the record clearly demonstrates that settling ponds or surface impoundments are not BAT for legacy wastewater, and that chemical precipitation is also not BAT for legacy wastewater. In other words, EPA should make clear that limits based on chemical precipitation plus biological treatment are the regulatory floor.

VII. EPA'S DELAYED COMPLIANCE TIMELINE IS UNJUSTIFIED AND UNLAWFUL.

The 2023 Proposal does not require compliance with more stringent BAT limitations for FGD wastewater, BATW, and CRL "until a date determined by the permitting authority that is as soon as possible" but no later than December 31, 2029.[231] The 2023 Proposal sets no compliance deadline for more stringent limits on legacy wastewater, leaving both the stringency of those limits and the implementation timeline entirely to permitting authorities' discretion.[232] EPA's generous deadline for complying with stronger limits on FGD wastewater, BA Transport water, and CRL – and no deadline for complying with stronger limits on legacy wastewater – are unjustified and unlawful. Based on the administrative record and the CWA, EPA should require compliance with zero-discharge limits on all waste streams by no later than three years after the effective date of the final rule.

A. Pushing Compliance Deadlines Past Three Years After the Rule's Finalization Is Unlawful.

The CWA requires compliance with the ELGs no later than three years after the limitations are promulgated.[233,234] Therefore, the 2023 Proposal violates the CWA by delaying

[230] 88 Fed. Reg. at 18,852.
[231] 88 Fed. Reg. 18,824, 18,826, 18,897–99 (Mar. 29, 2023).
[232] *Id.* at 18,850.
[233] 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.
[234] 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 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. §

compliance to December 31, 2029 for FGD wastewater, BA Transport water, and CRL, and setting no compliance deadline for legacy wastewater.

EPA may claim 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.[235] However, that decision was legally erroneous and, even if 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) of the CWA 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);[236] 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.[237]

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 at 242; *see also Rybachek*, 904 F.2d at 1300.

[235] *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).

[236] U.S.C. § 1311(d).

[237] 47 Fed. Reg. 52,290, 52,291 (Nov. 19, 1982).

The legislative history of the CWA 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.[238] Based on this legislative history, 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.[239]

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.[240] 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.[241]

B. EPA's Delayed Compliance Timeline Is Unjustified Because the Record Shows that Plants Can Achieve Compliance with Zero-Discharge Requirements by 2027 or Earlier.

The 2020 Rule record showed that membrane filtration systems could be installed within twenty-eight months, and in many cases more quickly than that.[242] EPA's contractor Eastern Research Group ("ERG") cited a "typical" timeline of twenty-eight months.[243] However, this was based on a single bid, and was in fact the longest timeline in the record. The New Logic VSEP system had a timeline of roughly twenty-five months from request for proposal to full operation.[244] The record contained a bid for a KLeeNwater membrane filtration system with a

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[238] *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.) ("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.").

[239] *Chem. Mfrs. Ass'n v. EPA*, 870 F.2d at 242.

[240] 33 U.S.C. § 1251(a)(1), (2), (6).

[241] 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.

[242] Comments of Earthjustice *et al.*, Docket ID No. EPA-HQ-OW-2009-0819-8473, at 25–27 (Jan. 21, 2020).

[243] *See, e.g.*, ERG, FGD and Bottom Ash Implementation Timing, Docket ID No. EPA-HQ-OW-2009-0819-8191, at 3 (Oct. 17, 2019) (showing a "typical timeline" for installing membrane filtration with brine encapsulation of twenty-eight months).

[244] G. Johnson, New Logic Research, Email to P. Flanders, R. Jordan, and E. Gentile, Re: Implementation Timelines for Membranes, Docket ID No. EPA-HQ-OW-2009-0819-8179 (June 22, 2019).

twelve-month timeline.[245] Purestream's AVARA system could "be built in 180 days and is deployable within two days of on-site delivery."[246]

Since 2020, EPA has gathered more information, and it confirms that membrane filtration systems or other zero-discharge pollution control systems can be installed in less than two years. For example, notes from a 2020 meeting with DuPont cite a maximum time frame of 1.5 years:

> From design through commissioning, the Hanchuan project installation timeline was approximately one year including 1 to 2 months for a pilot study. DuPont noted that in their experience, there is not generally a fixed timeline; however, most projects in China take between 1 to 1.5 years if the end user has enough funds. Several power plants have used a system design similar to the Hanchuan treatment train. These plants did not need to conduct a pilot study, reducing the overall timeline.[247]

Notes from a 2022 meeting with Mitsubishi cite a pandemic-era maximum time frame of two years for installing a wastewater spray dryer, with a pre-pandemic maximum time frame of one year:

> From contract award to completion of performance testing, the project duration was 19 months. Currently, the longest WSD procurement lead time is one year for a booster fan. Mitsubishi explained that prior to the COVID-19 pandemic disrupting supply chains, they could fully deliver projects in less than one year.[248]

EPA also notes that many foreign installations have been able to accelerate implementation by dispensing with pilot testing.[249]

Finally, in its discussion of pretreatment standards (which must be met within three years of promulgation), EPA proposed to find that "all existing indirect dischargers can meet the standards within three years of promulgation."[250] For direct dischargers, EPA notes that a "typical" timeframe to plan and implement a treatment system falls "well within" a five-year permit cycle.[251]

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[245] KLeeNwater, Budgetary Proposal – Wastewater Treatment & Water Reuse Systems, Attachment 18 to Docket ID No. EPA-HQ-OW-2009-0819-7617, at 13 (Nov. 16, 2017).
[246] ERG, Technologies for the Treatment of Flue Gas Desulfurization Wastewater, Docket ID No. EPA-HQ-OW-2009-0819-8155, at M-2, (Oct. 22, 2019).
[247] ERG, Notes from Meeting with DuPont, Docket ID No. EPA-HQ-OW-2009-0819-8887, at 4 (June 24, 2020).
[248] EPA, Notes from Vendor Call with Mitsubishi on October 31, 2022, Docket ID No. EPA-HQ-OW-2009-0819-9669, at 2 (Dec. 12, 2022).
[249] 88 Fed. Reg. at 18,840.
[250] *Id.* at 18,862.
[251] *Id.*

The same less-than-three-year timeframe for installation of BAT is true for BATW closed-loop or dry handling systems. This has been true for at least the last ten years, as Commenters noted in their 2013 comments on the first proposed rule to revise Steam Electric ELGs.[252] At that time, Commenters pointed to multiple record sources finding that the time to design, build, and install BATW systems was one to two years.[253] Now, in the 2023 Proposal, EPA finds that the vast majority of plants have already installed systems that are at least capable of meeting the "high-recycle rate" requirements of the 2020 Rule (and that EPA now finds can achieve zero discharge by "closing the loop"), if not already achieving zero discharge.[254] For those plants, compliance with a zero-discharge standard has either already been achieved or is readily achievable by taking reasonable steps to eliminate any need for BATW purge discharges.[255] For the few remaining plants that still need to install dry handling or closed-loop systems, the available record evidence continues to show that these systems can be installed in less than three years.[256]

The record is quite clear – the pollution control equipment necessary to eliminate FGD wastewater and bottom ash transport water can be up and running in less than three years (less than two years for FGD wastewater), and EPA should be building that fact into its compliance schedule for those two wastestreams. The same is true for CRL and legacy wastewater because, as Commenters explain in Sections V – Combustion Residual Leachate & VI – Legacy Wastewater, both of those wastestreams should be treated with the same zero-discharge technologies that are used for treating FGD wastewater.

C. Delaying Compliance with a Zero-Discharge Standard Would Result in Substantially More Environmental Harm.

The environmental impacts of power plant pollution are well-documented, far-reaching, and extreme, as evidenced by EPA's Environmental Assessment for its 2023 Proposal.[257] Delaying compliance with a zero-discharge standard would result in substantially more of this toxic pollution entering our waterways and causing ecological and human health impacts, especially from plants with surface impoundments closing between now and 2029 that are still only governed by the 1982 ELG standards.

Precisely because zero-discharge treatment technologies are available, achievable, and would remove 100% of this harmful pollutant load from all power plant wastestreams, EPA should require compliance with a zero-discharge standard as soon as possible. EPA itself

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[252] Comments of Environmental Integrity Project et al., Docket ID No. EPA-HQ-OW-2009-0819-4684, at 113, (Sept. 19, 2013).
[253] *Id.*
[254] 88 Fed. Reg. at 18,844.
[255] *See* Section IV – BATW.
[256] *See, e.g.*, EPA, Notes from Meeting with EPA, UCC, and ERG on August 26, 2021, Docket ID No. EPA-HQ-OW-2009-0819-9696, at 2 (Jan. 14, 2022) (indicating that United Conveyor Corporation's "general timeframes for projects" contemplated thirty-one months from the start of engineering work to delivery of a completed system).
[257] *See generally* EPA, Environmental Assessment for Proposed Supplemental Effluent Limitations Guidelines and Standards for the Steam Electric Power Generating Point Source Category, EPA 821-R-23-004, Docket ID No. EPA-HQ-OW-2009-0819-9932 (Feb. 2023).

acknowledges that its proposed Option 4 would eliminate all pollutant loadings from FGD wastewater and BA transport water,[258] and as Commenters have explained, zero-discharge standards are also available and achievable for CRL and legacy wastewater.[259] Each additional year of delaying compliance with these zero-discharge standards will result in significantly more pollution in our waterways, which is an unacceptable outcome that EPA should not allow.

The environmental impact of delaying compliance with zero-discharge limits for legacy wastewater is especially stark. EPA already assumes that the vast majority of legacy wastewater ponds in the U.S. will discharge their toxic wastewater before this rule is even finalized. According to EPA's memorandum *Legacy Wastewater at CCR Surface Impoundments*, EPA omitted an astonishing 393 surface impoundments from its assessment of pollutant loadings from legacy wastewater on grounds that they are already closed or "expected to close" prior to implementation of this rule.[260] In other words, of the total 529 legacy impoundments that EPA identified, it assumes roughly 75% will discharge their wastewater free from any requirements imposed under this rule.

Even the 25% of legacy impoundments that EPA *did* consider would dump substantial amounts of toxic pollution into our waterways, which could be avoided through a zero-discharge standard coupled with near-term compliance. EPA estimates that those 136 legacy impoundments hold 67,000,000 gallons of decant and dewatering wastewater.[261] EPA assumed that 37 of those ponds would finish discharging all of their wastewater by 2024, further shortening the list of legacy units subject to any treatment requirements under the final rule to 99 ponds. According to EPA's analysis, those ninety-nine ponds alone would be responsible for 1,840,000,000 pounds *per year* of pollutant loadings.[262]

EPA estimates that 100% of that pollution could be eliminated by using membrane filtration or SDEs. But instead of requiring that outcome, EPA has left it in the hands of permitting authorities. Neither EPA, nor the communities living near the waterways into which legacy ponds discharge, have any guarantee that permitting authorities will require membrane filtration or SDE. Indeed, the likeliest outcome is that permitting authorities will often require no treatment beyond the status quo, as explained above. With 1.84 billion pounds per year of pollution on the line – on top of the pollution from the 430 legacy ponds that EPA omitted from its loadings estimate – the environmental stakes are too high to require less than zero discharge as soon as possible and no later than three years after the effective date of the final rule.

[258] EPA, Technical Development Document for Proposed Supplemental Effluent Limitations Guidelines and Standards for the Steam Electric Power Generating Point Source Category, EPA-821-R-23-005, Docket ID No. EPA-HQ-OW-2009-0819-9950, at 63, Tbls. 18–19 (Feb. 2023).
[259] *See* Sections V – Combustion Residual Leachate & VI – Legacy Wastewater.
[260] EPA Memo on Legacy Wastewater at 2.
[261] *Id.* at 6.
[262] *Id.* at 10.

VIII. EPA SHOULD RETAIN WITHOUT WEAKENING THE 2028 SUBCATEGORIES, SHOULD NOT CREATE A NEW EARLY ADOPTER SUBCATEGORY, AND MUST ELIMINATE THE HIGH FLOW AND LOW UTILIZATION SUBCATEGORIES.

A. EPA Should Retain the Subcategories for EGUs Committed to the Cessation of Burning Coal, But It Is Imperative that EPA Does Not Extend the December 31, 2028 Deadline.

As explained above, and in our comments on EPA's 2020 Reconsideration Rule, EPA has an obligation to require that EGUs eliminate FGD and BATW discharges because zero-discharge control methods are technologically available and economically achievable.[263] Indeed, the record in this rulemaking (and in the 2020 rulemaking) make clear that technologies to eliminate both FGD and BATW discharges are readily available and affordable, and have been for years.[264] Accordingly, as discussed throughout these comments, EPA must move forward with the proposed supplemental rule revising the existing BATW and FGD effluent limitations, and requiring compliance with those revised limits *as soon as possible*. Although we continue to believe that it is (and has been) technologically and economically feasible for EGUs to eliminate BATW and FGD wastewater discharges by 2025 (and certainly before EPA's newly-proposed December 31, 2029 "no later than" deadline), we support EPA's proposal to retain the subcategory for EGUs that commit to permanently cease coal combustion, provided that the final rule continues to require the cessation of coal combustion *no later than* December 31, 2028.[265]

EPA established this subcategory in the 2020 Reconsideration Rule, in part, to address utility concerns about the ability of some older EGUs to recover the cost of compliance and to ensure electric system reliability.[266] In the 2020 Rule, EPA asserted 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. EPA also sought to harmonize the ELG Rule's requirements with the alternative closure provisions under the Coal Combustion Residuals Rule.

As Commenters explained in comments on EPA's 2020 Reconsideration Rule, we do not believe that EPA's numeric FGD or BATW limitations would *necessarily* result in system reliability or cost-recovery issues, thereby justifying a retirement subcategory. We are likewise

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[263] *See* Sections III – FGD Wastewater & IV – BATW.

[264] *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, 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.").

[265] *See* 88 Fed. Reg. at 18,857; *see also* 40 C.F.R. § 423.13.

[266] 85 Fed. Reg. at 64,640.

skeptical that the low, incremental costs of eliminating FGD and BATW wastewater under the 2023 Proposal will necessarily trigger additional retirements or raise *bona fide* reliability concerns. This is especially true when considering the significant additions of renewable energy and battery storage capacity and energy resources expected under the Inflation Reduction Act ("IRA"). Those zero-marginal cost renewable energy resources will likely push older and relatively expensive coal EGUs out of the energy market, while also supporting system reliability.[267]

Nevertheless, we recognize that many utilities have already started planning for the retirement of coal-burning EGUs under the 2028 subcategory, and that eliminating the subcategory could be disruptive.[268] Indeed, as EPA has noted, at least seventy-four EGUs (at thirty-three plants) requested participation in the permanent cessation of coal combustion subcategory under the 2020 Reconsideration Rule, and are now "several years into meeting the milestones for that path."[269] We therefore support EPA's proposal to retain the subcategory for EGUs that commit to cease coal combustion by 2028, subject to the following limitations and clarifications.

First, it is imperative that EPA does not further extend the December 31, 2028 deadline for the cessation of burning coal. As noted, many EGUs made decisions at the time of the 2020 Reconsideration Rule to opt into the retirement subcategory, and they are now several years into meeting the milestones for that path. Any further delay would create uncertainty and impermissibly weaken the ELG Rule by allowing those facilities an exemption to continue discharge BATW or FGD wastewater. Moreover, any extension of the deadline to cease burning coal would impede the Clean Water Act's mandate to make reasonable further progress toward the elimination of pollution discharges, and would be inconsistent with the Clean Water Act's anti-backsliding provisions.[270] And as discussed in further detail below, there is no evidence in the record supporting an extension of the 2028 deadline to cease burning coal.

Second, as EPA acknowledges in the 2023 Proposal,[271] if the Agency retains the 2028 coal cessation subcategory, EPA must make those retirement commitments federally enforceable by including mechanisms that would prevent power plant operators from delaying or withdrawing retirement plans that would no longer qualify the boilers for the subcategory.[272] The Clean Water Act requires effluent limitations established in ELGs to be federally enforceable.[273] Therefore, if a unit no longer qualifies for, or opts out of, the subcategory, EPA must include provisions that would automatically subject the unit to the generally applicable BAT effluent limits, immediately. For facilities that have included retirement subcategorization requests as

[267] *See* Section XIII – IPM Modeling.
[268] 88 Fed. Reg. at 18,857.
[269] *Id.* at 18,837.
[270] *See* 33 U.S.C. § 1342(o); 40 C.F.R. § 122.44(*l*).
[271] 88 Fed. Reg. at 18,858.
[272] 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).
[273] 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.

part of their permit renewal or re-opening, the permitting authority must include tiered limitations (similar to those established in 2020 for the low utilization subcategory), which ensure that boilers no longer planning to retire by 2028 are immediately subject to the new zero-discharge BAT limitations that will be established in this rulemaking.[274] Moreover, EPA should require that plant operators notify the relevant permitting authority that they no longer intend to retire the electric generating unit ("EGU") 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 BATW, 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.

Third, EPA must clarify the provisions of the ELGs allowing sources to convert from the retirement subcategory into the generally applicable provisions of the rule. The ELGs currently allow facilities to transfer from the retirement category back into the generally applicable category by December 31, 2025, provided that the facility has a permit that includes "generally applicable," "alternative limits."[275] EPA should make clear, however, that any "alternative limits" must ensure compliance with the then-current BAT limits for FGD and BATW. In other words, an EGU should not be allowed to opt out of the 2028 retirement subcategory by December 31, 2025, and comply only with outdated ELG limitations that may still be applicable in permits for sources that have not yet obtained permit renewals. Such an approach would allow an EGU to switch out of the 2028 retirement subcategory, delay compliance with BAT limits to its next permitting cycle, and thereby undermine the rule. We do not believe that was EPA's intent. As the proposal suggests,[276] EPA should make clear in the final rule that if a plant that had previously opted into the retirement subcategory subsequently fails to cease combustion by 2028, the zero-discharge limitations "would automatically apply." EPA should also clarify that every permit issued must contain the generally applicable, alternative limits consistent with the current ELG Rule, compliance dates, and make clear that those alternative limits become effective and enforceable automatically upon any election switching out of the retirement category.

Similarly, EPA must clarify that EGUs may not transfer out of the 2028 cessation of coal subcategory and into the Agency's newly-proposed December 31, 2029 deadline for general ELG compliance. As discussed above, we believe that EPA's proposal to delay ELG compliance for the elimination of both FGD and BATW to December 31, 2029, is unlawful, arbitrary, and capricious. But even if further extension of the ultimate compliance deadline for the ELGs was lawful (it is not), EPA must not allow sources that have already committed to cease burning coal to continue discharging FGD or BATW well past 2028. As EPA notes in the proposal, for utilities that have already committed to retiring in 2028, compliance is "costless."[277] To ensure that facilities benefitting from less stringent ELG requirements between now and 2028, EPA

[274] *See* 88 Fed. Reg. at 18,858.
[275] 40 C.F.R. § 423.13(o)(1)(ii)(B).
[276] 88 Fed. Reg. at 18,858.
[277] *Id.*

should include a requirement that those facilities actually retire in 2028, rather than extend their operation to the proposed December 31, 2029 compliance deadline. Any other result would contravene the Clean Water Act by allowing those sources (which have already committed to retire) to game the regulations, and obtain another year of uncontrolled discharge – an impermissible result.[278]

Finally, we urge EPA to require states or EGUs to make Notices of Planned Participation ("NOPPs") readily available to the public, including distribution to any mailing list established for a permit. Because the submission of a NOPP has automatic consequences for the interpretation of a permit, enforcement, and the public's understanding of a particular source's discharges, an EGU's decision to cease burning coal should be transparent. For that reason and others, we support EPA's proposal to require NOPPs and other compliance documents (along with additional information, as discussed below) on a publicly available website, as described further in Section XIV – ELG Web Sites.

B. EPA Should Retain the Subcategory for Voluntary Incentives Program, Provided It Also Retains the December 31, 2028 Deadline for Compliance.

EPA also proposes to retain a VIP for plants that opted into meeting the more stringent VIP effluent limitations for FGD wastewater established by the 2020 Rule, as well as the December 31, 2028 deadline for meeting those limits.[279] Under the 2020 Rule, an operator could delay compliance with FGD wastewater standards, provided that the source voluntarily comply with zero-discharge effluent limitations for FGD wastewater based on membrane filtration technology by December 31, 2028.[280] Although we believe the 2020 Rule failed to justify extending the deadline for VIP compliance to 2028, instead of requiring the same technologies be required as BAT for FGD wastewater within three years,[281] in the current rulemaking the Agency must retain the subcategory and the December 31, 2028 deadline, for several reasons.

First, the Clean Water Act's anti-backsliding and ELG provisions prohibit EPA from further delaying the deadline for compliance with the VIP provisions.[282] Many EGUs made decisions after the 2020 Rule was finalized to opt into the VIP, and they should now be several years into working to comply with the December 31, 2028 compliance deadline. No legitimate purpose would be served by further delaying their compliance. In fact, it would impede the Clean Water Act's mandate to make reasonable further progress toward the elimination of pollution discharges and would constitute unlawful backsliding. Moreover, any extension of the deadline for VIP compliance would be inconsistent with the technology-forcing purposes of the Act, as evidenced by the Act's requirement that toxic pollutant dischargers meet BAT limits that are achieved "as expeditiously as practicable."[283]

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[278] *See generally* 33 U.S.C. § 1311; 40 C.F.R. §§ 122.44, 122.62.
[279] 88 Fed. Reg. at 18,887.
[280] 40 C.F.R. § 423.13(g)(3)(i).
[281] Earthjustice et al. 2020 Comments, Section VIII.
[282] *See* 33 U.S.C. § 1342(o); 40 C.F.R. § 122.44(*l*).
[283] 33 U.S.C. § 1311(b)(2)(C).

Second, any extension of the VIP compliance deadline would be contrary to the evidence before the Agency. In its proposal, EPA proposes to require EGUs to eliminate FGD and bottom ash wastewater discharges under the "general applicability" provisions of the rule "as soon as possible" but no later than December 31, 2029, potentially allowing for this additional time in part, to allow time to raise capital, plan, and design pollution control systems.[284] Even if the record supported EPA's 2029 general applicability deadline (and it does not, as discussed in Section VII – Compliance Deadlines), there is no evidence that EGUs that have already opted into the VIP need additional time for compliance. Indeed, those facilities were required to provide notice of their participation in the VIP by October 13, 2021.[285] Thus, by the time EPA finalizes its ELG revisions, those facilities should already be two years or more into the process of planning for, and complying with, zero-discharge limits. No purpose would be served by further delaying the existing 2028 VIP deadline. Indeed, the EGUs that opted into the VIP have already obtained (and will still realize) a benefit because they were able to delay the costs of compliance with the 2015 and 2020 ELG limitations. EPA should not further delay the elimination of discharges from those units.

Third, as with the retirement subcategory, EPA must clarify the ELG provisions that could allow sources to convert from the VIP into the generally applicable provisions of the rule, and thereby unreasonably delay their compliance deadlines. The ELGs currently allow facilities to, on or before December 31, 2025, transfer from the VIP to limitations for EGUs permanently ceasing coal combustion.[286] Under the current regulations, that source could transfer again, from the retirement subcategory to the "generally applicable limitations" of the rule.[287] For the reasons discussed above, EPA must make clear that any such transfer to the "generally applicable limitations" must incorporate the current regulations' December 31, 2025 compliance deadline with the 2020 Rule's BAT limits for FGD and BATW. In other words, EPA must add language to any final rule issued in this rulemaking that makes clear that a discharger may not transfer out of the VIP as a way to seek later compliance deadlines than would have been allowable under the 2020 Rule. Any final rule allowing VIP participants to switch out of the program and thereby seek to delay BAT compliance until December 2029 would be contrary to the Clean Water Act's anti-backsliding prohibition and the Act's mandate to make reasonable further progress towards eliminating pollution discharges.[288]

C. EPA Has Not Justified its Proposed Subcategory for Early Adopters Retiring by 2032.

1. *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. Creating the proposed subcategory for so-called "early adopters" retiring by 2032

[284] 88 Fed. Reg. at 18,862.
[285] 40 C.F.R. § 423.19(h).
[286] *Id.* § 423.13(o)(1)(ii)(A).
[287] *Id*. § 423.13(o)(1)(ii)(B).
[288] 33 U.S.C. § 1342(o); 40 C.F.R. §§ 122.44(*l*).

would exceed that authority. Accordingly, EPA must eliminate the proposed subcategory from the final rule.

The Clean Water Act requires EPA to determine BAT for controlling pollution from "categories or classes" of industries.[289] Although the Act does not explicitly authorize the Agency to create of industry subcategories, courts have upheld EPA's decision to do so when based on consideration of the same statutory factors that the Agency must consider in determining BAT.[290] 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."[291] In determining BAT for a given category or subcategory of industry dischargers, EPA must consider all of these factors; the Agency "is not free to ignore any individual factor entirely."[292]

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.[293] 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."[294] This presumption against subcategorization is consistent with the Clean Water Act's emphasis on uniformity.[295] To this point, EPA cannot, as it proposes to do here, create an industry subcategory for plants based primarily on their compliance costs. It is well-established that "Congress clearly contemplated that cleaning up the nation's waters might necessitate the closing of some marginal plants."[296]

Further, EPA cannot create subcategories unless those subcategorization decisions are supported by the rulemaking record. EPA's decision to create a subcategory is unlawful if its

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[289] 33 U.S.C. § 1314(b)(2).
[290] *See, e.g.*, *Chem. Mfrs. Ass'n v. Nat. Res. Def. Council, Inc.*, 470 U.S. at 130-31; *Chem. Mfrs. Ass'n v. EPA*, 870 F.2d 177, 214–15 (5th Cir. 1989).
[291] 33 U.S.C. § 1314(b)(2)(B).
[292] *Tex. Oil & Gas Ass'n v. EPA*, 161 F.3d at 934.
[293] *Chem. Mfrs. Ass'n v. EPA*, 870 F.2d at 214–15.
[294] *Id*.
[295] *See, e.g.*, *E. I. du Pont de Nemours & Co. v. Train*, 430 U.S. at 112 (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).
[296] *See Am. Iron & Steel Inst. v. EPA*, 526 F.2d at 1051–52; *see also Weyerhaeuser*, 590 F.2d at 1036–37 ("[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 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."); *see also Chem. Mfrs. Ass'n v. EPA*, 870 F.2d at 251 (internal citations omitted) ("Congress clearly understood that achieving the [Clean Water Act]'s goal of eliminating all discharges would cause some disruption in our economy, including plant closures and job losses.").

explanation for that decision "runs counter to the evidence before [it]" or lacks factual support in the record.[297] Here, as explained below, the record does not support the creation of the proposed subcategory for "early adopters" retiring by 2032.

2. *EPA's Proposed Subcategory for Early Adopters Retiring by 2032 Is Not Legally Permissible.*

EPA asserts that in proposing to establish 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] However, it appears that the Agency's primary reason for establishing this subcategory is cost. EPA identified approximately fifteen EGUs that would qualify for the subcategory, and asserted that such units would face approximately $59 million in additional costs if this proposed subcategory is not incorporated into the final rule.[299] According to the Agency, these costs would be felt more acutely because many (though not all) of these units are scheduled to retire by 2035 or earlier, so the amortization periods associated with the systems these facilities would need to install in order to comply with the proposed rule should the subcategory not be included in the final rule would be shorter than the 20-year expected life of the equipment.[300]

The Agency is not permitted to make cost "a paramount consideration" in setting BAT requirements (and creating subcategory-exemptions thereto), as it has proposed to do here.[301] It is especially inappropriate to give overriding weight to cost considerations where, as here, the costs do not reflect differences in plants' product type, process type, raw material, or wastewater characteristics, which are the most common bases on which EPA has previously established

[297] *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").
[298] 88 Fed. Reg. at 18,859–18,860.
[299] *Id*.
[300] *Id*.
[301] *ASF 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 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.").

subcategories.[302] Doing so contravenes the key purpose of the Clean Water Act itself: to reduce water pollution to the *maximum extent economically achievable* by the industry as a whole.[303]

Likewise, nothing in the record suggests that that the few facilities EPA identified as qualifying for the proposed "early adopter" subcategory cannot comfortably absorb the costs associated with complying with the 2023 Proposal. The Clean Water Act recognizes that some units may need to retire as a result of technology-based standards: "If plants can meet the same limitation, they need not be subcategorized simply because they are different." [304] Here, EPA has not shown that the few facilities it identified as qualifying for the proposed "early adopter" subcategory cannot economically absorb the costs attendant to complying with the 2023 Proposal. Instead, in proposing the subcategory for so-called "early adopters" retiring by 2032, EPA simply rewards these facilities for having met the past ELG rules' requirements. In actuality, these facilities have done the bare minimum required of them under the law: comply with their NPDES permits.

Even if it was appropriate for EPA to place such immense weight on the compliance costs for these few plants (which it is not), the Agency exaggerates those costs. EPA's concern regarding these plants' compliance costs stems primarily from the fact that, presuming these plants retire by 2032 (or soon thereafter), the amortization period qualifying plants' owners would have to recover the costs associated with the pollution controls needed to comply with the proposed rule (absent the availability of this proposed subcategory) would be less than the expected twenty-year lifecycle of such systems.[305] Yet, the Agency acknowledges that these plants can "lease the additional treatment stages necessary to meet any new limitations."[306] Accordingly, the compliance costs associated with the proposed rule for these plants (absent access to the proposed subcategory) should not include the costs to purchase the technology needed to comply outright, and should instead be based on the costs associated with leasing the required technology. Had the Agency taken that approach, the shorter-than-usual amortization period these plants would have to recoup their compliance costs (presuming they do in fact retire by around 2032) would not be as substantial, as they would not be purchasing the required technology. Plus, as the Agency acknowledges, several of the relevant facilities are highly

[302] A review of past ELGs reveals that EPA has historically created subcategories based primarily on plants' fixed characteristics and has rejected subcategories based on cost. *Compare* Nonferrous Metals Manufacturing Point Source Category Effluent Limitations Guidelines, Pretreatment Standards and New Source Performance Standards, 55 Fed. Reg. 31,692 (Aug. 3, 1990) (10 subcategories based on raw materials) *and* Electrical and Electronic Components Point Source Category Effluent Limitations Guidelines, Pretreatment Standards, and New Source Performance Standards, 48 Fed. Reg. 15,382 (Apr. 8, 1983) (21 subcategories based on product type) *with* Effluent Limitations Guidelines, Pretreatment Standards, and New Source Performance Standards for the Centralized Waste Treatment Point Source Category, 65 Fed. Reg. 81,242 (Dec. 22, 2000) (rejecting subcategorization based on costs because costs will vary and are dependent on wastestream variables).
[303] *Am. Iron & Steel Inst. v. EPA*, 526 F.2d at 1051–52.
[304] *Sw. Elec. Power Co. v. EPA*, 920 F.3d at 1030 (quoting *EPA v. Nat'l Crushed Stone Ass'n*, 449 U.S. 64, 74 (1980)).
[305] 88 Fed. Reg. at 18,859–60.
[306] *Id*. at 18,860.

utilized and therefore better equipped to absorb the compliance costs associated with the 2023 Proposal.[307]

Further, EPA gives short shrift to each of the other statutory factors it must consider when establishing subcategories in the ELG context. In fact, the Agency *never* even considers the age of the facilities at issue, the processes employed by these facilities, or engineering considerations regarding the application of various types of control techniques to these facilities, as the Clean Water Act requires.[308] The Agency "is not free to ignore any individual factor entirely"[309] as it has done here. In failing to evaluate those factors, EPA fails to demonstrate that plants in the proposed subcategory are "so fundamentally different from other plants" in the source category that they cannot achieve the same effluent limitations.[310]

The only factor other than cost that EPA substantively analyzes is non-water-quality environmental impacts. The Agency asserts that, by allowing facilities that already plan to retire an off-ramp to do so, the proposed "early adopter" subcategory would provide non-water-quality environmental benefits by accelerating the replacement of coal-fired generation with gas and renewables, which would reduce air pollution, including greenhouse gas emissions.[311] However, for most of the plants EPA identified, it is unclear whether access to the proposed subcategory would actually lead to early retirement. Southern Company, the owner of the James Miller Jr. plant, for example, has made no indication that it intends to retire the facility any time soon, and, given the size of the facility, it appears unlikely the added costs associated with complying with the more stringent effluent limitations in the 2023 Proposal absent access to the proposed subcategory (approximately $20 million) would tip the scales toward early retirement. Likewise, the added costs of complying with the proposed rule absent access to the proposed subcategory for the Gallatin plant ($6,380,000) are unlikely to push the Tennessee Valley Authority ("TVA") to retire the plant any earlier, given the facility's importance to TVA's generation infrastructure. Similarly, the owner of the Mountaineer plant (Appalachian Power) has represented to the Virginia Public Service Commission that it intends to operate that plant until at least 2040[312] and, in a 2021 order, the West Virginia Public Service Commission ordered Appalachian Power to, among other things, "take all necessary steps to operate the [plant] beyond 2028 and extend [its] operations to at least 2040."[313] Plus, some of these plants (*e.g.*, James Miller Jr.) are highly utilized and therefore more capable of absorbing compliance costs than would lower utilization facilities.

In addition, and importantly, even for plants that opt into the proposed subcategory and promise to retire by 2032, nothing in the 2023 Proposal prevents facility owners from doubling back later on their commitments and delaying retirement should circumstances warrant it and

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[307] *Id.*
[308] 33 U.S.C. § 1314(b)(2)(B). Notably, it could be argued that EPA considered the age of the equipment at qualifying facilities insofar as such facilities will necessarily have installed new pollution control systems to comply with the past ELG rules, but the agency never states that it is doing so expressly.
[309] *Tex. Oil & Gas Ass'n*, 161 F.3d at 934.
[310] *Chem. Mfrs. Ass'n*, 870 F.2d at 214–15.
[311] 88 Fed. Reg. at 18,860.
[312] *See In re: Appalachian Power Co.'s Integrated Resource Plan Filing*, Case No. PUR-2022-00051 (Va. P.S.C. Apr. 29, 2022), https://rga.lis.virginia.gov/Published/2022/RD206/PDF (attached).
[313] Order, Case No. 20-1040-E-CN, at *15 (W.Va. P.S.C. Oct. 12, 2021) (attached).

their regulating entities approve. EPA has the authority to require plants' retirement commitments to be enforceable. The Agency could, for example, require such retirement commitments to be enumerated (and made enforceable) in plants' NPDES permits, and require such permitting as a prerequisite to qualifying for the proposed subcategory. Indeed, in the Clean Air Act Section 111(d) greenhouse gas regulations that the Agency recently proposed, the Agency will require retirement commitments to be federally enforceable (via state implementation plans, or "SIPs") in order for EGUs to qualify for a subcategory exemption for plants committed to retiring by the end of 2031.[314] The Clean Water Act's drafters intended for effluent limitations to be as uniform and enforceable as possible,[315] and the Agency here is directly and consciously deviating from that intention. Instead, in the 2023 Proposal, the only backstop EPA provides to ensure plants' compliance is a requirement for plants that opt into the proposed subcategory but later decide to continue operating instead of retiring by 2032 that would hold such units in violation of the ELGs as of January 1, 2033.[316] As discussed below, this proposed backstop provides little incentive for facility operators to hold true on their retirement commitments. If EPA decides to retain its early adopter subcategory (and it should not), then it must at least adjust this proposed backstop to hold such facilities (that later opt out of their retirement commitments) in violation of the 2023 Proposal as of January 1, 2030.

The Agency therefore has failed to carry its burden of considering each of the statutory factors.[317] Had EPA done so, it should have found that, on balance, these factors do not outweigh the negative water quality impacts associated with allowing these plants to avoid technologically and economically feasible zero-discharge BAT limitations, even setting aside that it is unlawful to exempt a subcategory of plants from BAT requirements based primarily on cost considerations (as discussed above). Indeed, because the 2023 Proposal would require more stringent BAT effluent limitations than did the 2015 and 2020 ELG rules, allowing qualifying plants to continue discharging at rates permissible under the older rules would result in more significant discharges from qualifying facilities. For example, EPA estimates that there would be an additional 55 million pounds/year of pollutants discharged from these facilities, including 16

[314] EPA, Proposed Rule: New Source Performance Standards for Greenhouse Gas Emissions from New, Modified, and Reconstructed Fossil Fuel-Fired Electric Generating Units; Emission Guidelines for Greenhouse Gas Emissions from Existing Fossil Fuel-Fired Electric Generating Units; and Repeal of the Affordable Clean Energy Rule, 88 Fed. Reg. 33,240, 33,245 (May 23, 2023).
[315] *Am. Frozen Food Inst. v. Train*, 539 F.2d 107, 115 (D.C. Cir. 1976) (quoting Senator Muskie in the Clean Water Act's legislative history) ("Senators will recall from the November debate on the Senate bill that there were three essential elements to it: Uniformity, finality, and enforceability. Without these elements a new law would not constitute any improvement on the old; we would not bring a conference agreement to the floor without them.").
[316] The proposed rule currently reads, "After December 31, 2032, there shall be no discharge of pollutants in FGD wastewater [from early adopter plants]. Any permit issued beginning [DATE 60 DAYS AFTERDATE OF PUBLICATION OF FINAL RULE] must contain this no discharge requirement applicable as of January 1, 2033." 88 Fed. Reg. at 18,897.
[317] *Tex. Oil & Gas Ass'n*, 161 F.3d at 934.

million pounds/year of chloride, 7 million pounds/year of magnesium, and up to 1.2 million pounds/year of bromide.[318]

As discussed below in Section XII – Endangered Species Act, this added pollution is likely to have significant adverse impacts on surrounding water systems and the species that rely on them.

3. *Nothing in the Record Supports the 2032 Retirement Date Incorporated Into the Proposed "Early Adopter" Subcategory.*

It appears that EPA picked the year 2032 as the optimal retirement date for the proposed "early adopter" subcategory arbitrarily, as nothing in the record discusses why the year 2032, as opposed to 2031 or 2030 (or even 2029), best suits the proposed subcategory. EPA cannot create subcategories unless its decision to do so is supported by evidence in the record.[319] Yet, here, the Agency seems to have pulled this date out of whole cloth. EPA notes that it collected publicly available data regarding when plants planned to retire and found that several EGUs were *already* slated to retire by 2032,[320] but the Agency at no point explains why 2032 makes the most sense for this proposed subcategory. The fact that some units were already slated to retire by a certain date does not mean that it makes sense to exempt those plants from complying with the effluent limitations they would otherwise be obligated to meet. Absent such a reasoned justification, the proposed subcategory violates the Administrative Procedure Act.

4. *Should the Agency Choose to Move Forward with the Proposed "Early Adopter" Subcategory, It Must Ensure that the Subcategory is as Stringent as Possible.*

Although Commenters oppose the creation of the proposed subcategory for the reasons explained above, should the Agency disagree and adopt the proposed subcategory, Commenters urge the Agency to make the subcategory as exacting as possible. Holding otherwise would only further contravene the intent of the Clean Water Act to reduce water pollution to the *maximum extent economically achievable*.[321]

For example, EPA should make the cutoff date earlier than publication of the 2023 Proposal, and instead set the cutoff date to require full compliance by the announcement of this rulemaking in 2021.[322] Doing so would prevent plants that have yet to comply with the previous two iterations of the ELG rules from now, years later, opting to comply with those outdated, unlawfully lenient standards instead of the more stringent standards in the 2023 Proposal.[323] Likewise, EPA should not expand the proposed subcategory to include plants that have

[318] EPA, Environmental Assessment for Proposed Supplemental Effluent Limitations Guidelines and Standards for the Steam Electric Power Generating Point Source Category, Docket ID No. EPA-HQ-OW-2009-0819-9932, at 16-17 ("Proposed EA").
[319] *Motor Vehicle Mfrs. Ass'n of U.S., Inc.*., 463 U.S. at 43.
[320] 88 Fed. Reg. at 18,860.
[321] *Am. Iron & Steel Inst. v. EPA*, 526 F.2d at 1051–52.
[322] 88 Fed. Reg. at 18,860 (requesting comment regarding earlier cutoff dates).
[323] *Sw. Elec. Power Co.*, 920 F.3d at 1000 (invalidating the Agency's BAT determination from the 2015 ELG rule).

contracted for, but not yet installed biological treatment systems for FGD wastewater.[324] Since these facilities have not installed biological treatment effluent reduction systems, adding membrane filtration systems would not be as difficult or expensive. As a result, the main thrust of the Agency's justification for the proposed subcategory – cost – would not apply as acutely to such units.[325]

In addition, EPA should decline to amend the proposed subcategory to not require retirement at all.[326] Without the retirement obligation, there is no straight-faced justification for the proposed subcategory other than to reward plants for having complied with their current NPDES permits, which happen to require compliance with the previous ELG rules and water quality-based effluent limitations. As noted, the Agency justifies the proposed subcategory based on two primary considerations. First, the Agency considered the higher-than-normal compliance costs some plants would face as a result of the shorter-than-usual timelines they would have to amortize their compliance costs as a result of their retirement plans.[327] Second, it considered the significant non-water-quality environmental benefits that flow from coal-fired power plants' early retirement and replacement with gas and renewable generation.[328] Absent the retirement mandate, neither of these considerations apply. Instead, the proposed subcategory would offer *no* non-water-quality environmental benefits and would be based exclusively on the compliance costs some of these plants would face, in violation of the Clean Water Act.[329] Further, absent the retirement mandate, the higher-than-normal compliance costs these plants would face could be amortized over a longer period closer to the twenty-year expected lifespan of the pollution control technology.

Similarly, should the Agency include the proposed subcategory in the final rule, EPA must add language making clear that if a plant that opts into the proposed subcategory later decides to continue operating instead of retiring by 2032, it is in violation of the ELGs as of January 1, 2030, not January 1, 2033, as the 2023 Proposal currently suggests.[330] In the alternative, the Agency should require qualifying plants' retirement obligations to be federally enforceable, as the Agency has proposed in its recently announced Clean Air Act Section 111(d) greenhouse gas regulations.[331] Otherwise, plants opting into the proposed subcategory would have no incentive at all to follow through on their promises to retire by 2032. Again, absent the

[324] 88 Fed. Reg. at 18,860 (requesting comment regarding earlier cutoff dates).
[325] As noted above, it is legally impermissible for cost to be the primary justification for subcategorization.
[326] *Id*. (requesting comment regarding whether retirement should be mandated as a prerequisite to qualifying for the proposed subcategory).
[327] *Id*.
[328] *Id*.
[329] *Tex. Oil & Gas Ass'n*, 161 F.3d at 934.
[330] The proposed rule currently reads, "After December 31, 2032, there shall be no discharge of pollutants in FGD wastewater [from early adopter plants]. Any permit issued beginning [DATE 60 DAYS AFTERDATE OF PUBLICATION OF FINAL RULE] must contain this no discharge requirement applicable as of January 1, 2033." 88 Fed. Reg. at 18,897.
[331] *See generally* 88 Fed. Reg. at 33,240–420.

retirement mandate and the non-water-quality environmental benefits that flow from it, the only justification for the proposed subcategory is cost, in violation of the Clean Water Act.[332]

a. A retirement deadline earlier than 2032 is warranted.

If EPA moves forward with the "early adopter" subcategory, it should impose a retirement deadline no later than 2030. As discussed above, nothing in the record supports the 2032 retirement deadline; at no point does EPA explain why 2032, as opposed to 2030 (or sooner) is the optimum retirement deadline. Particularly given the water quality impacts associated with the proposed subcategory, imposing an earlier retirement deadline is necessary. The only benefits of the proposed subcategory would derive from plants' decisions to retire *earlier* than they otherwise would. Given the fact that EPA has no evidence to suggest that the proposed subcategory will drive early retirements for several of the plants at issue (e.g., James Miller Jr., Gallatin, and Mountaineer), mandating a retirement deadline comparable to what some plants are already planning does little to justify exempting them from the more stringent BAT being proposed under this rule. Doing so merely rewards these plants for simply behaving as they otherwise would; it is a windfall benefit for these few plants without justification in the record except the fact that they may have shorter-than-usual amortization periods to recoup their compliance costs absent access to the proposed subcategory.

Several of these plants could feasibly retire earlier, by 2030, without compromising grid reliability. Indeed, in its recently proposed Clean Air Act Section 111(d) regulations, EPA is proposing to exempt facilities from otherwise stringent greenhouse gas emissions reduction requirements if they commit to retire by December 31, 2031.[333] Given that the Agency there thinks that a retirement mandate one year earlier than that required under the proposed subcategory is justified, it is clear that the Agency does not think the industry needs until the end of 2032 to plan for replacement generation.

Pushing qualifying units to retire as early as possible maximizes the non-water-quality benefits associated with the proposed subcategory. Indeed, as discussed above, the proposed subcategory achieves no non-water-quality environmental benefits if it only rewards plants for retiring when they otherwise would do so anyway. Imposing as early a retirement deadline as possible is therefore the only way to justify the proposed subcategory, given the likely significant water quality impacts exempting qualifying facilities would have.

b. If the subcategory is incorporated into the final rule, it should not include plants that plan to repower by 2032.

Should the Agency go forward with the proposed subcategory, it should limit access to the subcategory to "early adopter" plants that commit to retire by 2032 and should exclude "early adopter" plants that plan to repower by 2032.[334] A key justification for the proposed subcategory is the potential non-water-quality benefits associated with replacing coal-fired generation with other generation sources, like gas or renewables. Such benefits are greatly reduced when coal-

[332] *Tex. Oil & Gas Ass'n*, 161 F.3d at 934.
[333] 88 Fed. Reg. at 33,245.
[334] *Id.* at 18,860 (requesting comments on whether EPA should require plants to retire or instead allow repowering units to qualify for the proposed subcategory).

fired generation is replaced by gas-fired generation, as compared to renewables. Gas plants emit massive amounts of greenhouse gases and other harmful air pollutants, while renewables are completely pollution free. Moreover, repowered coal plants tend to be extremely inefficient, so the attendant air quality benefits are even less than when compared to gas-fired replacement generation in general.[335] As a result, such facilities are often poorly utilized, and many retire soon after repowering.[336] Consequently, allowing qualifying plants to repower instead of retire would do little to offset any grid reliability concerns that may emanate from qualifying plants' early retirement. Absent these non-water-quality benefits, the proposed subcategory would be justified almost entirely on the relatively high compliance costs some of these plants would face, in violation of the Clean Water Act.[337]

D. The High Flow Subcategory Must Be Eliminated.

As EPA is proposing in the 2023 Proposal,[338] EPA must remove the high flow flue gas desulfurization subcategory ("High Flow Subcategory"), a single-plant, cost-based exemption that violates the Clean Water Act. The High Flow Subcategory applies only to the Cumberland Fossil Plant ("Cumberland Plant"),[339] a coal plant owned and operated by the TVA, the nation's largest publicly owned utility. The largest coal-fired plant in TVA's fleet, the Cumberland Plant sits upstream of cherished recreational and wildlife areas as well as several drinking water intakes.[340] In 1994, TVA chose to install a high-flow, "once-through" scrubber, in part, because of "the lack of any wastewater treatment effluent limitations for metals."[341] Due to its outdated high-flow, "once-through" scrubber, the Cumberland Plant is the single largest source of FGD wastewater in the country, responsible for "approximately one-seventh to one-sixth of all industry FGD wastewater flows."[342] A 2016 report by the Environmental Integrity Project identified the Cumberland Plant as the worst mercury polluter and second worst selenium polluter among coal plants nationwide.[343] TVA spent years lobbying EPA for special treatment

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[335] *See* K. Clark, Coal-To-Gas Plant Conversions in the U.S., Power Engineering (June 18, 2015), https://www.power-eng.com/emissions/coal-to-gas-plant-conversions-in-the-u-s/#gref.
[336] Energy Information Administration, Table 8.2: Average Tested Heat Rates by Prime Mover and Energy Source, 2011–2021, https://www.eia.gov/electricity/annual/html/epa_08_02.html (showing that coal steam generation had a lower heat rate, and was therefore more efficient, than gas steam generation in 2021).
[337] *Tex. Oil & Gas Ass'n*, 161 F.3d at 934.
[338] 88 Fed. Reg. at 18,855.
[339] In the preamble to the 2020 Rule, EPA stated it was "currently aware of only one plant that" would qualify for the subcategory, and EPA's rationale focused exclusively on the Cumberland Plant. 85 Fed. Reg. at 64,676.
[340] See Earthjustice et al. 2020 Comments, Section X.F. and attachments.
[341] 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), at 5 (Apr. 28, 2016), attached to Earthjustice et al. 2020 Comments.
[342] 85 Fed. Reg. at 64,675 n.98.
[343] Environmental Integrity Project, Toxic Wastewater from Coal Plants, at 16 (Aug., 2016), http://environmentalintegrity.org/wp-content/uploads/Toxic-Wastewater-from-Coal-Plants-2016.08.11-1.pdf (attached to Earthjustice et al. 2020 Comments).

for Cumberland, presenting its case through the 2015 rulemaking[344] and a 2016 Fundamentally Different Factors ("FDF") variance application.[345] EPA refused to create a special subcategory for the Cumberland Plant in the 2015 Rule and did not decide whether to grant the FDF variance. Instead, in 2020, EPA reversed course, acceding to TVA's demands by creating the High Flow Subcategory.

The High Flow Subcategory violates the Clean Water Act, which does not allow cost-based, single-plant categories. The Act requires EPA to establish "effluent limitations *for categories and classes* of point sources," applying the "best available technology achievable *for such category or class*."[346] As courts have long recognized, "Congress intended BAT limitations to be based on the performance of the single best-performing plant in an industrial field."[347] A subcategory of one, like the High Flow Subcategory, turns BAT on its head. Rather than forcing all facilities to operate as cleanly as the single best facility, EPA set BAT for the High Flow Subcategory based on the single worst-polluting facility.

Disregarding the Clean Water Act's plain language, EPA created the class of one based on the Cumberland Plant's anticipated compliance costs. A single facility's costs are irrelevant, as BAT must be "economically achievable *for a category or class of point sources*."[348] 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."[349] Congress created mechanisms within the Act to accommodate unique challenges at individual plants, but notably, Congress prohibited cost-based variances for toxic effluent standards.

EPA cannot issue a FDF variance based on cost.[350] While 301(c) modifications do allow consideration of single-facility costs, they are unavailable for toxic pollutants.[351] The Clean Water Act simply does not allow EPA to set effluent limitations for toxic pollution based on a single facility's compliance costs.

In addition to the Clean Water Act violations, EPA's promulgation of the High Flow Subcategory was arbitrary and capricious in violation of the Administrative Procedure Act. EPA's decision was an unjustified reversal of its prior policy and was based on an impermissible

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[344] 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).
[345] 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), attached to Earthjustice et al. 2020 Comments.
[346] 33 U.S.C. § 1311(b)(2)(A) (emphasis added).
[347] *Sw. Elec. Power Co.*, 920 F.3d at 1018 (quoting *Chem. Mfrs. Ass'n*, 870 F.2d at 226); *see also 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.").
[348] 33 U.S.C. § 1311(b)(2)(A) (emphasis added).
[349] S. Rep. No. 92-1236, at 121 (1972) (Conf. Rep.).
[350] *See* 33 U.S.C. § 1311(n)(1).
[351] *See id.* § 1311(c).

factor (individual compliance costs) and inaccurate data (overestimating those costs).[352] Nothing in EPA's response to Commenters' 2020 comments opposing creation of this subcategory proved otherwise, as EPA persisted in justifying the rule based solely on the Cumberland Plant's "disparate costs," which it again overestimated.[353]

Not only is the High Flow Subcategory unlawful, but it is also unnecessary. While individual facility costs are irrelevant to BAT, EPA substantially overestimated the Cumberland Plant's likely compliance costs and ignored simple options TVA has to reduce those costs, such as increasing wastewater recycling and switching to lower-chlorine coal.[354] In addition, as EPA notes in the 2023 Proposal, TVA has now filed a NOPP to participate in the 2020 Rule's subcategory for plants that commit to ceasing combustion of coal by 2028.[355]

EPA's 2020 promulgation of the High Flow Subcategory violated the Clean Water Act, which prohibits cost-based, single-facility subcategories, and the Administrative Procedure Act, which requires reasoned decision-making.[356] EPA must eliminate it as part of any final rule.

E. The Low Utilization Subcategory Must Be Eliminated.

For similar reasons, Commenters also support EPA's proposal to eliminate the Low Utilization EGU ("LUEGU") subcategory.[357] Like the high flow subcategory, this subcategory was based primarily (and unlawfully) on compliance costs and not justified by the record, as Commenters noted in their comments on the 2020 Rule.[358] And as EPA now finds, only two plants in the entire country elected to participate in the subcategory, and the circumstances surrounding those plants demonstrate that the subcategory is unnecessary.[359]

The only directly discharging plant to propose using the LUEGU subcategory, Merrimack Station in Bow, New Hampshire, demonstrably has the ability not only to meet the discharge limits in the ELGs that would be applicable absent the LUEGU subcategory, but is also capable of achieving zero liquid discharges at all. In addition, the assumptions undergirding the LUEGU subcategory in terms of cost and reliability are, for multiple reasons, not applicable to Merrimack. Accordingly, it would be inappropriate to allow Merrimack to increase discharges and bypass existing control technology as a method of "compliance" with the ELGs.

In the 2020 rulemaking, EPA considered that a subcategory for facilities that operate relatively infrequently might be justified on the theory that while operation and maintenance costs of operating controls would merely scale with the capacity factor of the EGU, the capital

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[352] *See generally* Earthjustice et al. 2020 Comments, Section X.F.3.
[353] 85 Fed. Reg. at 64676. In particular, EPA assumed that Cumberland Plant would run at full capacity – an increasingly rare occurrence – and that Cumberland Plant could not reduce wastewater – it can substantially reduce wastewater by, for example, switching to low-chloride Powder River Basin coal to recycle more wastewater without risk of corrosion.
[354] *See* Earthjustice et al. 2020 Comments, Section X.F.3.
[355] 88 Fed. Reg. at 18,855.
[356] 5 U.S.C. §§ 553(c), 706(2)(A).
[357] 88 Fed. Reg. at 18,855–57, 18,861.
[358] Earthjustice et al. 2020 Comments, Sections X.D & X.E.
[359] 88 Fed. Reg. at 18,855–57, 18,861.

costs would not, possibly increasing compliance difficulty for uncontrolled, infrequently-operated EGUs.[360] Similarly, EPA was concerned with the possibility that marginal plants might have difficulty complying with ELG requirements and that their subsequent retirement could "potentially impact grid reliability."[361] Commenters disagree that these rationales were ever a lawful or reasonable basis to create this subcategory, as explained in our 2020 comments, but even if they could form a lawful or reasonable basis for subcategorization under some circumstances (which they do not), such concerns simply do not apply to Merrimack.

First, as EPA notes in its proposal, Merrimack "has already installed an advanced FGD wastewater treatment system capable of meeting the limitations in this proposed rule, and thus is not expected to incur any capital costs, let alone disparate costs, to meet the proposed FGD wastewater limitations."[362] Indeed, the control technology was in place and operating in 2012: well before the original 2015 ELG Rule, before current operator Granite Shore Power, LLC purchased Merrimack in 2017,[363] and before Merrimack's NOPP filed in response to the 2020 Rule.[364] Accordingly, concerns that capital costs for ELG controls might be out of proportion with Merrimack's future operations are misplaced: the capital costs are already sunk, and have been for over a decade.

Second, EPA is correct in observing that Merrimack participates in the New England Independent System Operator's ("ISO-NE") forward capacity market, and thus has enjoyed capacity revenues for being available to generate despite relatively low utilization in actuality. As EPA notes, those capacity revenues are very significant: "approximately $189 million" for just the span "between 2018 and 2023."[365] Indeed, for just the period from June 2023 to May 2024, Merrimack "will receive roughly $676,000 for each month," or about $8.1 million in

[360] *See* 85 Fed. Reg. at 64,677 (while '[t]he more an EGU runs . . . the more residuals it generates and must pay to dispose of . . . capital costs do not vary with generation").
[361] 88 Fed. Reg. at 18,856.
[362] *Id.* at 18,855.
[363] *See* New Hampshire Public Utilities Commission, Order Approving Sale of Thermal Generating Facilities, Order No. 26,078 (Nov. 28, 2017) ("NH PSC Order Approving Sale of Thermal Generating Facilities"), https://www.puc.nh.gov/regulatory/Docketbk/2017/17-124/ORDERS/17-124_2017-11-28_ORDER_26078.PDF.
[364] *See, e.g.*, EPA, Responses to Comments: Public Review of Merrimack Station NPDES Permit No. NH0001465, at VIII-3–4 (2020) (Merrimack "had installed and, in June of 2012, begun operating . . . treatment technology to treat and reduce the volume of FGD wastewater at Merrimack Station so that direct discharge of the wastewater to the Merrimack River was not necessary."), https://www3.epa.gov/region1/npdes/merrimackstation/pdfs/final/merrimack-final-rtc-ch-8.pdf. *See also id.* at VIII-4 (noting that EPA "Region 1 completed a new BPJ, case-by-case analysis of BAT for Merrimack Station and 'determined that the Facility's existing primary FGD wastewater treatment system (which includes physical/chemical treatment components and the EMARS absorber), combined with its [now] existing secondary FGD wastewater treatment (which includes the two-stage evaporation system which can be operated to achieve [zero liquid discharge] ZLD) are the [new proposed] BAT.'").
[365] 88 Fed. Reg. at 18,856.

total,[366] and another $785,000 per month for the 2025–2026 period.[367] By comparison, Granite Shore Power purchased Merrimack – along with multiple other generating units – for significantly less than those Merrimack capacity revenues it has received thus far.[368] Relatively low utilization of Merrimack has certainly not rendered ELG controls unaffordable, even if counterfactually Merrimack had not already installed such controls in 2012. Even installation of new bottom ash controls at the costs EPA estimates[369] are relatively trivial in the context of Merrimack's received and future capacity revenues.

Finally, concerns about ELG compliance resulting in reliability issues are demonstrably misplaced as regards Merrimack. It is true that Merrimack failed to "clear" the most recent ISO-NE forward capacity market, and thus will cease receiving capacity revenues in the second half of 2026.[370] However, this does not suggest a risk to grid reliability – indeed, to the contrary, it indicates that Merrimack *is not necessary for system reliability* and accordingly ISO-NE need not provide capacity payments to Merrimack to ensure its availability. Instead, the 2026–2027 forward capacity auction "closed with sufficient power system resources to meet peak demand," with the clearing price "among the lowest in the auction's history," meaning that reserve capacity on the ISO-NE system is plentiful even without Merrimack.[371] As such, neither the cost nor grid reliability concerns behind the LUEGU subcategory are applicable to Merrimack, and do not provide any justification for the continued existence of the subcategory.[372]

The Whitewater Valley Station in Indiana similarly does not provide any justification for maintaining the LUEGU subcategory. As EPA notes, Whitewater Valley is an indirect discharger that does not generate FGD wastewater and sends its BATW to a municipal wastewater treatment plant.[373] EPA notes that only one of the two units at Whitewater Valley is subject to the ELGs, because the other is less than 50 MW in capacity.[374] EPA also notes that the plant has already installed a new BATW system, albeit one that does not recycle the BATW, let alone

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[366] D. Brooks, Bow power plant wins funding through 2024, Concord Monitor (Feb. 18, 2020), https://www.concordmonitor.com/capacity-auction-merrimack-station-coal-power-plant-nh-32767023.
[367] B. Mohl, New England's last coal-fired power plant loses key revenue source, CommonWealth (Mar. 21, 2023) ("CommonWealth article"), https://commonwealthmagazine.org/energy/new-englands-last-coal-fired-power-plant-loses-key-revenue-source/.
[368] NH PSC Order Approving Sale of Thermal Generating Facilities at 1 (approving "the sale of the Eversource thermal generating facilities, which include Newington Station, Schiller Station, Merrimack Station, and two combustion turbines, to Granite Shore Power for $175 million").
[369] *See* 88 Fed. Reg. at 18,856.
[370] *See, e.g.*, CommonWealth article.
[371] ISO-NE, New England's Forward Capacity Auction Closes with Adequate Power System Resources for 2026/2027 (Mar. 10, 2023), https://www.iso-ne.com/static-assets/documents/2023/03/20230310_pr_fca17_initial_results_final.pdf.
[372] It is worth noting that in its NOPP, Merrimack explicitly requested the ability "to transition to the 2020 rule subcategory for permanent cessation of coal combustion by 2028" as well as the option of "the 2020 rule VIP." 88 Fed. Reg. at 18,855. Not participating in the LUEGU subcategory is something Merrimack has considered for years, and Merrimack has the ability to meet the 2020 VIP limits using its already-installed FGD wastewater treatment system.
[373] 88 Fed. Reg. at 18,861.
[374] *Id.*

achieve zero discharge.[375] Nevertheless, there is nothing in the record suggesting that it would not be technically feasible for this plant to meet the zero-discharge BAT for BATW, and as noted above the costs facing a single plant are an impermissible basis for exempting it from a BAT that is economically achievable for the industry as a whole. Accordingly, the Whitewater Valley Station's circumstances do not justify maintaining the LUEGU subcategory. The LUEGU subcategory should accordingly be eliminated.

IX. EPA'S BENEFIT-COST ANALYSIS ALREADY SHOWS THAT THE BENEFITS OF THE 2023 PROPOSAL FAR OUTWEIGH ITS COSTS, AND THE SCALES WOULD TIP EVEN FURTHER IF EPA IMPROVED THE ACCURACY OF ITS ANALYSIS.

EPA correctly concludes in its Benefit-Cost Analysis for the 2023 Proposal ("Proposed BCA") that the benefits of stronger limits on power plant discharges would far outweigh the costs. According to the Proposed BCA, the benefits of EPA's preferred Option 3 would exceed its costs by $1,073.5 million to $1,356.7 million using 7% and 3% discount rates, respectively.[376] EPA's analysis makes clear that stronger ELGs for power plants will be a substantial net benefit to society.

The Proposed BCA improves upon the 2020 BCA in several important ways. For example, EPA monetizes the human health benefits of reducing bromides in drinking water instead of treating those benefits as valueless, like the Agency did in 2020. The BCA also applies the social cost estimates developed by the Interagency Working Group on the Social Cost of Greenhouse Gases instead of relying on the erroneous interim domestic value used in the 2020 BCA.

However, EPA could further improve the accuracy and completeness of its Proposed BCA by augmenting its analysis of drinking water impacts, including by adding a discussion of the benefits of reducing nutrients and chlorides in drinking water sources, and by adopting the recommendations detailed in comments from the Institute for Policy Integrity ("IPI"), which Commenters endorse. IPI's recommendations, discussed below, are to: (1) emphasize the importance of water quality benefits that the Proposed BCA does not monetize; (2) monetize additional categories of benefits based on available research; and (3) consider performing additional analysis using the Agency's draft updated estimates for the social cost of greenhouse gases. Some of these recommendations draw on IPI's two prior reports regarding the 2020 ELG Rule, which Commenters incorporate by reference.[377]

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[375] *Id.*

[376] Proposed BCA at 12-1.

[377] B.A. Davis Noll & R. Rothschild, An Evaluation of the Benefit-Cost Analysis in the 2020 Steam Electric Reconsideration Rule, 85 Fed. Reg. 64,650 (Oct. 13, 2020) (Mar. 25, 2021), https://policyintegrity.org/files/publications/Benefit-Cost_Analysis_in_the_2020_Steam_Electric_Reconsideration_Rule.pdf ("IPI 2021 Report") (attached); D. A. Keiser et al., Measuring the Benefits of Power Plant Effluent Regulation: The 2020 Steam Electric Reconsideration Rule and Potential Future Methods (June 2022), https://policyintegrity.org/files/publications/Steam_Electric_Analysis_Report_v2.pdf ("IPI 2022 Report") (attached).

Critically, EPA could make the improvements described in this section without delaying finalization of the rule. Commenters do not suggest, and would not support, delaying finalization of the rule in order to augment the Proposed BCA.

A. Reducing Halogens and Other Drinking Water Contaminants Has Tremendous Public Health Benefits

Coal-fired power plants discharge a significant amount of halogens like bromide and iodide into surface waters every year. Bromine and iodine are both naturally present in coal, but some plant operators burn coal refined with bromide or iodide compounds and/or inject these compounds during combustion to enhance reduction of mercury air emissions. Even low concentrations of halogens in drinking water can create treatment challenges for drinking water systems because their presence is a precursor for the formation of carcinogenic disinfection byproducts ("DBPs") such as trihalomethanes ("THMs").[378] DBPs can form when halogens react with common drinking water disinfectants used to control microbial pathogens. A recent study estimated that 10 percent of all bladder cancer cases in the United States can be attributed to the exposure to DBPs in drinking water.[379]

EPA's review of the literature on bromide, summarized in the Proposed EA, identified numerous studies that have documented elevated bromide levels in surface waters downstream of coal plants.[380] EPA's literature review found that levels of bromide in FGD wastewater vary but can exceed 175 mg/L and that average bromide concentrations in BATW are around 5.1 mg/L.[381] Estimated average bromide concentrations in FGD wastewater and in BATW are much higher than estimated average background levels in fresh surface waters, which range from 0.014 mg/L to 0.2 mg/L.[382] 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.[383]

EPA estimates that 27.8 million people served by 722 Public Water Systems depend on drinking water sources that are contaminated with FGD wastewater and BATW containing bromide.[384] Leachate and legacy pond wastewaters also contain bromide, though EPA did not estimate bromide loadings from those two wastewater streams in its analysis, so the total population impacted by bromide discharges in coal plant wastewater effluent is likely an underestimate.

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[378] S. Regli et al., Estimating Potential Increased Bladder Cancer Risk Due to Increase Bromide Concentrations in Sources of Disinfected Drinking Waters, 49 (22) Env't Sci. and Technology, 13094–13102 (2015) ("S. Regli et al. (2015)") (attached).
[379] R. Weisman, et al., Estimating National Exposures and Potential Bladder Cancer Cases Associated with Chlorination DBPs in U.S. Drinking Water, 130 (8) Env't Health Perspectives, Docket ID No. EPA-HQ-OW-2009-0819-9608 (Aug. 1, 2022), https://ehp.niehs.nih.gov/doi/10.1289/EHP9985.
[380] Proposed EA at 7.
[381] *Id.*
[382] *Id.*
[383] S. Regli et al. at F (2015).
[384] Proposed BCA at 4-5.

1. *EPA should quantify avoided drinking water treatment costs only if it does not delay the final rule.*

Commenters commend EPA for monetizing the human health benefits of reducing bromides in drinking water and including a discussion in the Proposed BCA on the treatment challenges and potential capital and operational cost increases that drinking water systems may face when there are halogens present in source water.[385] EPA states it did not have the information needed to quantify avoided drinking water treatment costs and encourages stakeholders to provide this information during the public comment period.[386] Sixty days is not enough time for drinking water systems or other stakeholders to gather the information necessary for this type of analysis, especially when faced with multiple competing comment deadlines on proposed EPA regulations (e.g., the Proposed Drinking Water Standards for PFAS). Instead, the agency should have solicited this information from drinking water systems and other interested stakeholders during the scoping period for this proposed rule. While Commenters support EPA's interest in "evaluating the application of engineering models or a halogen treatment cost elasticity approach to quantify avoided treatment costs from reduced source water halogens," the Agency should only carry out this analysis if it does not delay the finalization of this proposed rule.[387]

Regardless of whether EPA is able to quantify the avoided drinking water treatment costs of reducing halogens or other pollutants in the final Benefit Cost Analysis, the record before EPA clearly demonstrates the significant impact bromide and other halogens in coal plant wastewater discharges have on downstream drinking water systems and the tremendous human health benefits of controlling these pollutants. The greatest human health water quality benefit quantified in this proposal is the number of bladder cancer cases that would be avoided from reducing bromide discharges, between $9.6 (Option 3) and $12.7 (Option 4) million annually, at a 3% discount rate.[388]

2. *EPA should include a discussion of the public health benefits of reducing chloride and nutrient discharges in drinking water sources.*

Most of EPA's proposed regulatory options would result in significant reduction of chlorides and nutrients, which can create treatment challenges and human health risks when present in drinking water, yet EPA does not discuss or monetize any of the benefits of reducing these pollutants in coal plant wastewater effluent. In the final Benefit Cost Analysis EPA should at the very least include a robust qualitative discussion of the human health benefits of reducing these pollutants.

EPA briefly mentions that an overabundance of nutrients like nitrogen and phosphorous are "one of the main causes of taste and odor impairments in drinking water and can have a major negative impact on public perception of drinking water safety," but the Agency fails to mention that excess nutrients in water can also lead to toxic algal outbreaks, which can be quite

[385] *Id.* at 2-12.
[386] *Id.* at 2-13.
[387] *Id.* at 2-13.
[388] *Id.* at 10-2.

harmful when present in drinking water.[389] In 2014, a toxic algal outbreak of the cyanobacteria microcystin in Lake Erie left more than 500,000 people in Toledo, Ohio without drinking water for two days, at an estimated cost of $65 million in lost property values, tourism, recreation, and other benefits.[390]

EPA estimates that coal plants discharge 195,000,000 pounds of chloride every year,[391] yet the Agency barely mentions the significant public health and environmental benefits of reducing this pollutant. Chloride can make drinking water more corrosive, which can increase the leaching of lead in drinking water distribution systems.[392] The Agency briefly discussed some of the impacts that chloride discharges have on water in its Final Environmental Assessment for the 2015 Steam Electric ELG rule,[393] and Commenters recommend EPA build on that discussion to make it clear in the final BCA that there are significant benefits to reducing discharges of chloride.

3. *Eliminating the proposed "early adopter" subcategory for plants retiring by 2032 would benefit drinking water and public health.*

EPA's own analysis demonstrates that eliminating the so-called "early adopter" subcategory for coal plants retiring by 2032 would reduce bromide discharges by an additional estimated 211,000-1.2 million pounds per year.[394] According to EPA estimates, this significant increase in bromide reductions would result in an additional thirty-seven bladder cancer cases avoided and an additional ten bladder cancer deaths avoided.[395] Because the majority of drinking water systems impacted by bromide discharges serve populations that are disproportionately low income and/or communities of color, these populations would receive important health benefits in the form of additional avoided bladder cancer cases and bladder cancer deaths if EPA were to eliminate this proposed subcategory.[396]

Eliminating this proposed subcategory would further benefit public health by decreasing the annual loading of other pollutants that negatively impact drinking water sources, including chloride and nutrients. For example, an additional sixteen million pounds per year of chloride

[389] *Id.* at 2-11–2-12.
[390] M. Bingham et al., Economic Benefits of Reducing Harmful Algal Blooms in Lake Erie, Env't Consulting and Tech., Inc. submitted to the Int'l Joint Comm'n, at 3, 53 (Oct. 2015) (attached).
[391] Proposed EA at 16.
[392] E.G. Stets et al., Increasing chloride in rivers of the conterminous U.S. and linkages to potential corrosivity and lead action level exceedances in drinking water, 613-614 Sci. of the Total Env't, 1498–1509 (Feb. 2018) (attached).
[393] 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 3-12, 7-6 (Sept. 2015).
[394] Proposed EA at 16.
[395] Proposed BCA at 4-20.
[396] EPA, Environmental Justice Analysis for Proposed Supplemental Effluent Limitations Guidelines and Standards for the Steam Electric Power Generating Point Source Category, Docket ID No. EPA-HQ-OW-2009-0819-9974, at 94-100, (Mar. 2023) ("Proposed EJA").

discharges would no longer contaminate drinking water sources if EPA were to remove this proposed subcategory.[397]

EPA should eliminate this subcategory from the final rule to better protect public health and to better align with the Biden Administration's commitment to advance environmental justice.

B. EPA Should Adopt the Recommendations from IPI.

1. *EPA should emphasize the importance of nonmonetized water quality benefits.*

Commenters agree with IPI that EPA could improve its Proposed BCA by emphasizing the substantial water quality benefits of the 2023 Proposal and describing why many of those benefits are difficult to measure and monetize. As IPI explains, EPA consistently undervalues the true benefits of water quality improvements due to gaps in available data and erroneous assumptions, among other reasons.[398] The Proposed BCA is no different. As the below table demonstrates, EPA's calculation of the total benefits of the 2023 Proposal omits many significant water quality benefits:

Table IX-1: Nonmonetized Benefits

Benefit Category	Quantified but Not Monetized	Neither Quantified nor Monetized
Changes in incidence of cancer from arsenic exposure via consumption of self-caught fish	X	
Changes in incidence of cardiovascular disease from lead exposure via consumption of self-caught fish		X
Changes in incidence of other adverse health effects due to exposure to toxic pollutants from consumption of self-caught fish or drinking water	X	
Changes in specialized education needs for children from lead exposure via fish consumption of self-caught fish	X	
Changes in incidence of adverse health effects from exposure to pollutants in waters used recreationally		X
Changes in threatened and endangered species population and habitat	X	

[397] Proposed EA at 16.
[398] IPI, Comments on Supplemental Effluent Limitations Guidelines and Standards for the Steam Electric Power Generating Point Source Category, at 2 (May 30, 2023) ("IPI 2023 Comments").

Changes in deposition of toxic pollutants to sediment		X
Changes in water treatment costs for municipal drinking water, irrigation water, and industrial processes		X
Changes in commercial fisheries yield and harvest quality due to aquatic habitat changes		X
Changes in tourism and participation in water-based recreation		X
Changes in property values from water quality changes		X
Changes in air quality due to changes in storing and handling coal at steam electric power plants		X
Changes in ecosystem effects, visibility impairment, and human health due to changes in direct exposure to NO_2, SO_2, and hazardous air pollutants		X

The Agency should revise its Proposed BCA to include robust descriptions of these nonmonetized water quality benefits and to explain why it could not monetize them. One improvement that EPA could make especially quickly and easily is to include all nonmonetized benefits in the Proposed BCA's summary tables of benefits and costs. As IPI points out, omitting nonmonetized benefits from those tables could lead readers to wrongly assume that those benefits are not significant.

2. *EPA should monetize additional benefit categories and could do so quickly and easily.*

EPA could also improve its Proposed BCA by drawing on available research – some of which is already in the rulemaking record – to monetize four additional benefits categories: (1) reduced cardiovascular disease from fish consumption; (2) human health benefits of reduced exposure to toxic pollutants; (3) housing price increases; and (4) reductions in averting behaviors.

a. Reduced cardiovascular disease from fish consumption.

Commenters agree with IPI that EPA should implement its 2015 methodology for monetizing cardiovascular disease from fish consumption or explain why it cannot do so. It is well understood that power plants discharge lead-laden water, fish consume that lead, and people consume those lead-contaminated fish, which in turn exposes them to increased risk of cardiovascular disease.[399]

In its BCA for the 2015 ELG rule, EPA monetized the human health benefits of less cardiovascular disease from eating lead-contaminated fish.[400] The Agency used a population life model that estimated the gains in years due to decreased risk of cardiovascular disease from lead

[399] *See, e.g.*, *id.* at 3–4 (citing IPI 2021 Report at 10).
[400] *Id*. at 4.

in fish, finding annual benefits of $12.8 million at a 3% discount rate.[401] EPA characterized cardiovascular health effects as "relatively well understood" such that they could "be quantified in a benefits analysis."[402]

Yet the Proposed BCA fails to monetize this beneficial reduction in cardiovascular disease and rejects, without explanation, the methodology it used to do so in 2015.[403] As IPI recommends, EPA should consider implementing its 2015 methodology to monetize the benefits of reduced cardiovascular disease, or at a minimum, explain why that methodology is no longer applicable.[404]

b. Human health benefits of reduced exposure to toxic pollutants.

Commenters agree with IPI that EPA should monetize additional benefits from reduced exposure to toxic pollutants or explain why it cannot do so. The Proposed BCA appropriately monetizes changes in children's intelligence quotient ("IQ") loss from lead exposure but fails to monetize the reduced incidence of lead-related diseases, despite citing numerous studies that quantify lead's effects on the renal, nervous, immune, and reproductive systems.[405] The Proposed BCA also fails to monetize the human health benefits of reduced exposure to aluminum, boron, cadmium, hexavalent chromium, manganese, selenium, thallium, and zinc, citing data limitations.[406] However, as IPI explains, EPA could use information in its own Integrated Risk Information System database,[407] or other existing scholarship,[408] to monetize those benefits. EPA should do so in a revised version of its Proposed BCA or further explain why it cannot.

c. Housing price increases.

EPA acknowledges that decreasing water pollution from power plants will likely increase property values near impacted waters, and the Proposed BCA should monetize this benefit. The Agency could accomplish this by drawing on ample existing literature that attempts to isolate the impacts of water pollution on home values.[409] Any potential overlap between a housing price analysis and EPA's existing willingness-to-pay analysis is likely to be minimal and still would likely result in an underestimate of the rule's water quality benefits, as IPI explains.[410]

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[401] *Id.*
[402] *Id*.
[403] *See, e.g.*, Proposed BCA at 2-7.
[404] IPI 2023 Comments at 4.
[405] *Id.* at 5 (citing Proposed BCA at 2-7).
[406] *Id.* (citing Proposed BCA at 2-6).
[407] *Id.* at 5 (citing IPI 2022 Report).
[408] *Id.* (citing G. Ginsberg, *Cadmium risk assessment in relation to background risk of chronic kidney disease*, 75 J. Toxicology & Env't. Health, Part A 374 (2012)).
[409] *Id.* at 6.
[410] *Id.*

d. Reduced averting behaviors.

EPA should monetize the actions that people take to avoid exposure to water pollution – so-called "averting behaviors" – like buying bottled water when drinking water supplies are contaminated. IPI's comments identify economic research that EPA could use to monetize the reduced incidence of these costly behaviors.[411] EPA should revise its BCA to either monetize these benefits or describe how their omission leads to an underestimate in water quality benefits.

3. *EPA should consider additional analysis using its updated draft climate-damage estimates.*

Finally, EPA should consider conducting an additional sensitivity analysis using draft climate-damage valuations that it published in November 2022, consistent with IPI's recommendation.[412] Although Commenters support EPA's use of the Interagency Working Group's social cost of greenhouse gas ("GHG") estimate, EPA's own climate-damage valuations more fully account for the costs of climate change by incorporating the latest available climate research.[413] Therefore, EPA could improve its BCA by adding an analysis based on its climate-damage valuations.

EPA could and should revise its Proposed BCA to incorporate each of these recommendations without delaying finalization of the rule. The result would be a more comprehensive BCA that accurately demonstrates that the benefits of a strong rule are even greater than EPA's initial calculation.

X. EPA'S ENVIRONMENTAL JUSTICE ANALYSIS SHOULD IDENTIFY THE DISPARATE IMPACT THAT THE CONTINUED USE OF COAL ASH SURFACE IMPOUNDMENTS WILL HAVE ON LOW-INCOME COMMUNITIES AND COMMUNITIES OF COLOR.

To fulfill the Agency's obligations under Executive Orders ("E.O.") 12898, 13985, 14008, and 12866, EPA prepared the Proposed EJA.[414] As noted in the Proposed EJA, E.O. 12898 requires federal agencies to make achieving environmental justice part of their mission by identifying and addressing the disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations.[415] In addition, E.O. 14008 directs agencies to "make achieving environmental justice part of their missions by developing programs, policies, and activities to address the disproportionately high and adverse human health, environmental, climate-related and other cumulative impacts on disadvantaged communities, as well as the accompanying economic challenges of such impacts."[416]

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[411] *Id.* at 7.
[412] IPI 2023 Comments at 7–8
[413] *Id.*
[414] Proposed EJA at 24–35.
[415] Exec. Order No. 12898, 59 Fed. Reg. 7629 (Feb. 11, 1994).
[416] Exec. Order No. 14008, 86 Fed. Reg. 7619 (Feb. 1, 2021).

EPA's Proposed EJA is a significant improvement from the E.O. 12898 review that the Agency included as a chapter in the 2020 BCA. In the Proposed EJA, EPA conducted a literature review of academic research and articles on environmental justice concerns, a national-level proximity analysis to assess the socioeconomic characteristics of affected communities living in proximity to plants and affected surface waters and drinking water systems, and identified and engaged with communities with potential environmental justice concerns. In addition, EPA identified and analyzed the different impacts that the relevant regulatory options would have on low-income communities and communities of color.

However, EPA failed to take all lawful and practicable steps to identify and address the disproportionate and adverse impacts of the 2023 Proposal on these same communities. Specifically, EPA failed to adequately identify the disparate impact that the continued use of coal ash surface impoundments by plants participating in the 2028 retirement subcategory will have on low-income communities and communities of color. EPA could further improve the Proposed EJA by acknowledging and analyzing these impacts in the final rule. Moreover, the Agency can make this improvement to the Proposed EJA without delaying finalization of the rule. Commenters do not suggest, and would not support, delaying finalization of the rule in order to augment the Proposed EJA.

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 Proposed EJA is insufficient because it fails to identify the low-income communities and communities of color 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 CCR 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.[417] In catchment areas[418] 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.[419]

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

[417] EPA, Regulatory Impact Analysis: EPA's 2015 RCRA Final Rule Regulating Coal Combustion Residual (CCR) Landfills and Surface Impoundments At Coal-Fired Electric Utility Power Plants, Docket ID No. EPA-HQ-RCRA-2009-0640-12034, at 8-10 (Dec. 2014).
[418] 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.
[419] *Id.* at 8-12.

operating coal ash impoundments are located in catchment areas where the percentage of residents who live below the Federal Poverty Level exceeds statewide percentages.[420] 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.[421]

Of the 181 ZIP codes nationally that contain coal ash ponds, 118 (65.19%) have above-average percentages of low-income families.[422] 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."[423]

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.[424]

Although EPA focuses its Proposed EJA on the aspects of the ELGs that the Agency is proposing to strengthen, it does not include in much of its analysis the continuing impacts of surface impoundments that will continue to operate for five more years. Commenters request that EPA acknowledge and analyze the disproportionate human health and environmental effects that

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[420] *Id*.
[421] 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)".
[422] 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); 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).
[423] U.S. Commission on Civil Rights, Environmental Justice: Examining the Environmental Protection Agency's Compliance and Enforcement of Title VI and Executive Order 12,898, at 4, PDF p. 6 (Sept. 2016) (finding that "EPA's Final Coal Ash Rule negatively impacts low-income and communities of color disproportionately."); *see also* D. Ludder, Letter to V. Simmons, EPA – Off. of Civil Rights, 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) (May 30, 2013).
[424] 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).

the continued use of surface impoundments will have on low-income communities and communities of color in the Agency's final rule.

XI. EPA SHOULD IMPLEMENT COMMENTERS' RECOMMENDATIONS ON COMMUNITY OUTREACH AND PUBLIC PARTICIPATION.

In response to EPA's request for early comments on community outreach and public participation related to the 2023 Proposal,[425] Commenters submitted detailed comments on May 12, 2023.[426] Commenters incorporate their first set of comments on the 2023 Proposal as if fully set forth herein. These comments were submitted separately at the request of EPA, who asked that any comments suggesting additional outreach activities be provided "early in the comment period to allow the Agency sufficient time to plan and execute any outreach."[427] Commenters' recommendations are intended to improve EPA's environmental justice outreach process and fulfill the policies expressed in the Biden Administration's Executive Order on Revitalizing Our Nation's Commitment to Environmental Justice for All, which supplements and builds upon the Administration's ongoing efforts to advance environmental justice and equity consistent with E.O.s 12898, 13985, 14008, and 12866.[428]

As detailed in Commenters' first set of comments, EPA should hold follow-up meetings with the communities that the Agency identified for "initial outreach" as a part of the Proposed EJA.[429] In these meetings, EPA should provide an overview of the proposed rule and explain how the 2023 Proposal will affect the specific steam electric power plants located in or near the community; explain how the requirements of the proposed rule will be implemented at the specific sites through their NPDES permitting process; provide staff outside of the Office of Water to ensure that the Agency is better prepared to respond to community concerns that are raised; and provide additional resources and sufficient advanced notice of the meetings to better ensure that the meetings are adequately accessible.

EPA should also hold at least two more hybrid virtual and in-person public hearings, including at least one hearing outside of Washington, D.C. and at least one hearing scheduled during the evening after normal business hours. In addition, for the virtual component of the public hearings, EPA should ensure that all Agency staff attending the hearings identify themselves and are visibly on screen during the hearings. EPA should also allow members of the public to turn their screens on when providing their public remarks.

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[425] 88 Fed. Reg. at 18,884.
[426] Comment submitted by Diné C.A.R.E., Air Alliance Houston, Fort Bend County Environmental et al., Docket ID No. EPA-HQ-OW-2009-0819-10038 (May 12, 2023).
[427] 88 Fed. Reg. at 18,884.
[428] The White House, Executive Order on Revitalizing Our Nation's Commitment to Environmental Justice for All (Apr. 21, 2023), https://www.whitehouse.gov/briefing-room/presidential-actions/2023/04/21/executive-order-on-revitalizing-our-nations-commitment-to-environmental-justice-for-all/.
[429] Proposed EJA at 24–35.

These recommendations would help fulfill the directives of E.O.s 12898, 13985, 14008, and 12866 as well as the requirements of the Clean Water Act and provide the public with meaningful time and opportunity to comment on the 2023 Proposal.

XII. THE FAILURE TO CONSIDER HARMS TO ENDANGERED SPECIES AND CRITICAL HABITATS VIOLATES THE CLEAN WATER ACT AND THE ENDANGERED SPECIES ACT.

A. EPA failed to properly assess impacts to endangered species under the Clean Water Act.

While EPA purports to analyze the "benefits" of the 2023 Proposal to threatened and endangered species, its superficial analysis of benefits as well as its failure to meaningfully assess impacts and harms to specific species is arbitrary and capricious and in violation of the Clean Water Act. EPA's failure to meaningfully assess such impacts and costs is especially egregious with respect to the "early adopters" subcategory, which would unlawfully expand the amount of time threatened and endangered species are exposed to higher levels of toxic pollution.

1. *EPA's analysis of species impacts in the benefit and cost analysis is fatally flawed.*

Despite the clear and self-evident fact that virtually every species of fish is capable of swimming both *upstream and* downstream of a power plant, EPA limited its analysis to only species found "downstream from steam electric power plants,"[430] which potentially ignores upstream species (such as mussels) that may be impacted by species exposed to toxic pollution downstream from power plants. From that baseline, EPA claims to have (1) identified approximately 199 species that potentially overlap with facilities at issue in the 2023 Proposal, and then (2) narrowed that list to 118 species with "higher vulnerability"[431] based on its own simplistic categorization of each species' life history. Finally, EPA claims it assessed those "higher vulnerability" species against predicted water quality exceedances that would occur under different regulatory options and determined that:

> thirty-six reaches intersecting habitat ranges of twenty-eight T&E species exceed NRWQC under the baseline conditions in Period 1 and thirty-four reaches intersecting habitat ranges of twenty-three T&E species exceed NRWQC under the baseline conditions in Period 2. In Period 1 (2025-2029), no baseline exceedances are eliminated under Options 1 and 2, whereas under Options 3 and 4 exceedances are eliminated in three reaches, potentially benefitting five T&E fish species (Canada lynx (T), Colorado pikeminnow (E), Razorback sucker (E), Southwestern willow flycatcher (E), and Yellow-billed cuckoo (T)). In Period 2 (2030-2049), NRWQC

[430] Proposed BCA at 2-10, 7-2.

[431] "Higher vulnerability" was defined as "species living in aquatic habitats for several life history stages and/or species that obtain a majority of their food from aquatic sources." Proposed BCA at 7-3.

> exceedances are eliminated or reduced in five reaches, potentially benefitting three species (Northern Long-Eared Bat (T), Piping Plover (E), and Topeka Shiner (E)).[432]

Even if EPA's cost-benefit analysis is appropriate under the Clean Water Act (it is not), it does not reflect real world conditions for these species or best available science, is not internally consistent in its results compared to "Appendix 0" (we assume EPA meant to write Appendix H), is arbitrary and capricious compared to EPA's own analysis from the 2015 ELG Rule, and, again, does not weigh these purported "benefits" against harm to species that might occur as a result of the 2023 Proposal.

Putting aside for a moment EPA's description of the benefits that might accrue during Period One to "five T&E *fish* species,"[433] even though three of those species are not fish, EPA's own Appendix does not even remotely track against EPA's narrative summary in the Proposed BCA.

First, in Appendix H of the Proposed BCA, EPA determined that Canada lynx (*Lynx canadensis*) would have zero reaches impacted under *any* scenario. This is not a surprising conclusion since Canadian lynx are dependent on highly intact, coniferous forests with snowshoe hare prey, and have virtually no life history connection to any type of water body. Therefore, it is hard to understand how Canada lynx would be one of the primary beneficiaries of this rule among the 1,700 listed threatened and endangered species nationwide, over 200 of which are aquatic.[434] Indeed, it is hard to understand how this rule would affect Canada lynx at all, and how it can be reconciled with EPA's conclusion in Appendix H at App. page 6.

Even further, while there *might* be benefits to yellow-billed cuckoo (*Coccyzus americanus*) and southwest willow flycatcher (*Empidonax traillii extimus*) – two riparian obligate bird species –here again Appendix H states for *each* species that zero reaches are affected under any scenario.[435] EPA does identify four bird species that are impacted under all scenarios: wood stork (proposed for delisting), red-cockaded woodpecker (not dependent on aquatic environments at all), piping plover (multiple listed populations, EPA fails to specify which one it believes is impacted), and the red knot (a coastal shorebird unlikely to be found anywhere near any power plant), but none of them make any sense in light of the population and ecosystem needs of these species.

The depth of the error here is profound in that virtually nothing in Appendix H correlates to the summary in Chapter 7 of the Benefit and Cost Analysis in the narrative summary provided by EPA, which discusses the "impacts and benefits to threatened and endangered species," including EPA's review of threatened and endangered species potentially affected by the regulatory options and a baseline status of freshwater fish species. Accordingly, such a clear set of consistent errors necessarily undermines any value in EPA's analysis, rendering that analysis meaningless and an arbitrary and capricious basis for the Agency's decision making.

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[432] Proposed BCA at 7-4.
[433] *Id.*
[434] *See id.* at 4.
[435] *Id.*, App. H at App. page 2.

Second, as it relates to the handful of fish species that EPA believes will benefit from some of the regulatory options, it focuses its analysis on three threatened and endangered species: Colorado pikeminnow (E), Razorback sucker (E), and Topeka shiner (E). Yet this list and analysis conflicts, without any explanation, with EPA's own findings from just a few years earlier for the 2015 ELG Rule. As an example, let us review the Topeka shiner (*Notropis topeka (=tristis)*). In 2015, EPA derived a list of species (then found in Appendix I) it believed would be impacted. In that list, EPA did not even include the Topeka shiner, meaning it did not believe there would be any benefits or impacts to that species. Now, it is one of only three species of fish that the agency believes will benefit from the new 2023 Proposal. Because there are no actual data included in the record to support Appendix H, we can only ask that EPA explain this drastically different and apparently more precarious situation facing the Topeka shiner. Quite to the opposite, our understanding from the U.S. Fish and Wildlife Service ("FWS") is that things are getting better for the Topeka shiner and it is likely to propose downlisting for this species in fiscal year ("FY") 2023.[436]

At a minimum, EPA should include in the public record through *regulations.gov* the analyses and data it utilized in preparing Chapter 7 and Appendix H in the BCA for this rulemaking, as well as the data and analysis used to prepare the BCA for the 2015 ELG Rule, so the public can fully understand EPA's conclusions and analysis regarding the potential benefits or impacts to threatened and endangered species.

2. *EPA's approach to analyzing species effects fails to reflect or support the biological integrity objectives of the Clean Water Act.*

More generally, the approach EPA takes in its Proposed BCA with regards to species and ecosystem health fails to reflect one of the core purposes of the Clean Water Act: to restore the biological integrity of the nation's waters. Instead, EPA appears to reduce its analysis to little more than a paperwork exercise designed to check a box, missing an important opportunity to ensure meaningful benefits are afforded to the biological health, diversity, and integrity of our nation's waters and the species that rely on them.

First, EPA fails to explain at the outset why it relies on changes in the number of reaches of streams and rivers that will or will not achieve predicted nationally recommended water quality criteria before or after 2028 as an appropriate analytical methodology for estimating the costs or benefits to endangered species. Given that the EPA generally does not consult on the establishment of any nationally recommended water quality criteria,[437] nor does it consistently consult on the approval of state water quality standards,[438] the EPA has no basis for believing that either water quality criteria or water quality standards are protective for endangered species.

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[436] FWS, National Workplan to Address Downlisting and Delisting Recommendations: 3-Year Workplan, at 3, (Sept. 2022), https://www.fws.gov/sites/default/files/documents/downlisting-delisting-workplan-september-2022.pdf.

[437] *See generally*, *Ctr. for Biological Diversity v. EPA*, Case No. 4:22-cv-00138-JCH (D. Ariz. 2022) (challenging EPA's failure to consult on national water quality criteria).

[438] *See Ctr. for Biological Diversity v., EPA*, Case No. 1:22-cv-00486 (D.D.C. 2022) (challenging EPA's failure to consult on approval of state-level water quality standards for cyanide).

Rather, the best, and most legally defensible, way to ensure that water-quality and technology-based limits on water pollutants are protective of threatened and endangered species is to first consult under the Endangered Species Act ("ESA"), as discussed further below.

Indeed, even if EPA's approach to using water quality criteria and standards is valid for some aspects of its Benefit and Cost Analysis, EPA does not explain the basis for adopting the same for endangered species. For example, even if EPA were able to correctly assess the benefits of its proposal in a particular river, watershed, or reach of a waterbody using its current approach, that does not mean those water quality impacts would translate in the same manner to each threatened or endangered species found in the waterway. That is because each endangered species' conservation status is different, and the impacts or benefits of pollution reductions do not translate the same way for each species, variability that would be evaluated by the expert wildlife agencies during ESA consultation.[439] Thus, for a highly endangered species on the brink of extinction, existing (and potentially inadequate) water quality criteria could very well push that species over the edge towards extinction, while for a threatened species whose conservation trend is positive, higher pollution levels might not represent as significant of a threat to its recovery.

Second, EPA's analysis and approach overlooks numerous, publicly accessible federal documents that provide detailed accountings of the likely impacts to threatened and endangered species from the heavy metals and other toxic contaminants at issue in this 2023 Proposal, as well as insight into the risk of parallel harm to species recovery efforts from a perpetuation of the threats these species face as a result of the 2023 Proposal's weak and inadequate standards for CRL and legacy wastewater, and the proposed delayed compliance timeline and early adopter subcategory. For example, over forty recovery plans for threatened and endangered species discuss the impacts to species of power plants, while seventy recovery plans discuss the same with regards to mercury pollution.[440] There are many other species recovery plans that touch on impacts from cadmium, selenium, and the other heavy metals and pollutants in the steam electric

[439] *Northwest Env't Advocates v. EPA*, 855 F. Supp. 2d 1199 (D. Or. 2012).

[440] The Center for Biological Diversity is submitting to the docket for this rulemaking the recovery plans for the Dromedary Pearly Mussel, Brown Pelican, Fine-rayed Pigtoe Pearly Mussel, Shiny Pigtoe Pearly Mussel, Tan Riffle Shell Mussel, Dismal Swamp Shrew, American Burying Beetle, Atlantic Salmon, Bald Eagle, Barton Springs Salamander, Bonytail, California Red-legged Frog, Chiricahau Leopard Frog, Colorado Pikeminnow, Cui-ui, Cumberland Elktoe, Oyster Mussel, Cumberlandian Combshell, Purple Bean, Rough Rabbitsfoot, Desert Pupfish, Desert Tortoise, Devils River Minnow, Scaleshell Mussel, Dwarf Wedge Mussel, Southern Sea Otter, Florida Manatee, Gulf Sturgeon, Higgins Eye Pearlymussel, Illinois Cave Amphipod, Indiana Bat, Killer Whale, Kootenai River population of the White Sturgeon, Lake Erie Water Snake, Marbled Murrelet, Alabama Sturgeon, Cherokee Darter, Etowah Darter, Goldline Darter, Alabama Moccasinshell, Coosa Moccasinshell, Dark Pigtoe, Fine-lined Pocketbook, Orange-nacre Mucket, Ovate Clubshell, Southern Acornshell, Southern Clubshell, Southern Pigtoe, Triangular Kidneyshell, Upland Combshell, Cylindrical Lioplax, Flat Pebblesnail, Lacy Elimia, Painted Rocksnail, Plicate Rocksnail, Round Rocksnail, Tulotoma Snail, Olive Ridley Turtle, Green Turtle (multiple populations), Hawksbill Turtle, Leatherback Turtle, Loggerhead Turtle, Pallid Sturgeon, Pecos Bluntnose Shiner, Puget Sound Salmon, Razorback Sucker, River Minnow, Longfin Smelt, green sturgeon, Chinook Salmon (multiple populations), San Marcos Gambusia, Fountain Darter, San Marcos Salamander, Texas Blind Salamander, Scaleshell Mussel, Seven Mussels, Shortnose Sturgeon, Southern Sea Otter, Stellers Sea Lion, Tidewater Goby, and Winged Mapleleaf Mussel, among others.

wastewater stream. Included in those recovery plans, especially for species that are most likely to be the most harmed by the proposed early adopter subcategory (see below), are also cost estimates for recovery actions, and anything that the EPA does that protracts the recovery of those species – through the extension of the lifespan of polluting facilities – serves to increase the overall costs borne by federal and state agencies to achieve recovery; costs that do not appear to have been captured in EPA's Benefit and Cost Analysis. This obscures the true costs of EPA's 2023 Proposal, severely restricts EPA's analysis of harms to species from this proposal, and hinders public assessment of regulatory alternatives.

Third, while EPA superficially acknowledges the bioaccumulative nature of the pollutants at issue in the 2023 Proposal, EPA fails to make any attempt to assess or analyze the cumulative impact of such pollutants on endangered species. Endangered species identified in these comments as the ones most likely to be harmed by the proposed 2032 early adopter category – for example, freshwater mussels such as the Cumberlandian Combshell and the Oyster Mussel, as well as the Dark Pigtoe and the Ovate Clubshell and many others – are actually very long-lived species. As detailed in the recovery plan for the Cumberlandian Combshell and the Oyster Mussel, individual freshwater mussels can live for decades, and some may even be a century old.[441] Because these endangered species are so long-lived, "direct effects of some anthropogenic factors on mussels may not be evident for years and, in some cases, not until the species has disappeared or experienced significant range reduction."[442] Indeed, "[s]tudies suggest that although individual impacts may be minor, cumulative effects may become lethal over time."[443] Pervasive effects of low-level contamination and resultant cumulative effects include widespread decreases in density and diversity, with patterns of imperilment connected to reduced reproduction and recruitment, juvenile survivability, adult spawning stocks, and host fish abundance.[444]

Of course, these long-lasting cumulative effects accumulate on top of the additional acute harms that may befall endangered freshwater mussels (and other species) as a result of exposure to effluent from this point source category. For example, as it relates to heavy metal pollution, "[m]ussels appear to be among the most intolerant organisms to heavy metals, several of which are lethal, even at relatively low levels," with cadmium being most toxic to mussels followed by chromium, copper, mercury, and zinc.[445] As a result, continued chronic pollutant exposure can have extremely long-lasting impacts on such species. Thus, even if some of the pollution that species are exposed to as a result of this industry may be characterized initially as sublethal, these pollution effects must be considered cumulatively with harms to species as a result of acute pollution exposures. EPA makes no effort to address any nuance or complexities regarding the impacts of their action on the biological environment, and instead only offers the most simplistic

[441] R.S. Butler, Recovery Plan for the Cumberland Elktoe (Alasmidonta atropurpurea), Oyster Mussel (Epioblasma capsaeformis), Cumberlandian Combshell (Epioblasma brevidens), Purple Bean (Villosa perpurpurea), and Rough Rabbitsfoot (Quadrula cylindrica strigillata), FWS, at 20 (Jan. 2004) (explaining that "[a]s a group, mussels are extremely long-lived, with maximum life spans of 100 to 200-plus years for certain species").
[442] *Id*.
[443] *Id*. at 50.
[444] *Id*. at 54.
[445] *Id*. at 37.

(and error-ridden) accounting of benefits based on little more than flimsy conjecture about the benefits to a few reaches of a few bodies of water.

B. EPA failed to properly consult on impacts to endangered species and critical habitats from the 2032 early adopter proposal as required by the ESA.

Section 2(c) of the ESA establishes that it is "the policy of Congress 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."[446] 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."[447] The Supreme Court has unequivocally stated that the ESA's "language, history, and structure" made 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."[448] Simply put, "the plain intent of Congress in enacting this statute was to halt and reverse the trend toward species extinction, *whatever the cost*."[449]

To fulfill the substantive purposes of the ESA, each federal agency is required under Section 7 of the ESA to engage in consultation with the FWS and/or the National Marine Fisheries Service ("NMFS") (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 adverse modification of habitat of such species . . . determined . . . to be critical . . . ."[450]

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 and has been reiterated by the Supreme Court.[451] Indeed, a Section 7 consultation is required for every *discretionary* agency action that "may affect listed species or critical habitat."[452] 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

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[446] 16 U.S.C. § 1531(c)(1).
[447] *Id.* § 1532(3).
[448] *Tenn. Valley Auth. v. Hill*, 437 U.S. 153, 174 (1978).
[449] *Id*. (emphasis added).
[450] 16 U.S.C. § 1536(a)(2).
[451] *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 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").
[452] *See Nat'l Ass'n of Home Builders v. Defenders of Wildlife*, 551 U.S. 644 (2007); 50 C.F.R. § 402.14 (2019).

air."[453] The Services' joint regulations clearly envision the necessity of a "programmatic" consultation on federal, nationwide rulemakings that impact listed species, such as the rulemaking EPA is conducting here.[454]

The only narrow exception identified by the Supreme Court in *National Association of Home Builders v. Defenders of Wildlife* for when Section 7 consultations are not required is when the federal agency has no discretion to act. In *Home Builders*, the Court held that Section 402(b) of the CWA does not require consultations because once a state has satisfied the nine criteria explicitly specified in that section under the law, the EPA "shall approve" and transfer the NPDES permitting authority to a state.[455] The situation here, where EPA is making numerous discretionary choices, is nothing like that in the *Home Builders* narrow exception to the consultation requirement.

1. *The proposed early adopter subcategory represents a discretionary policy choice.*

The proposed "early adopter" category represents a clearly discretionary choice by EPA to allow a subset of power plants to operate for an extended period set by EPA using technology that is weaker than what EPA is proposing as BAT. Even if one were to accept the incorrect position that EPA does not possess discretion to comply with the ESA in establishing what is BAT, EPA itself concedes that it has "considerable discretion" in establishing if and when facilities must adopt BAT. That discretion is typified by the "early adopter" category, which will allow plants to side-step BAT for years because of a policy choice made by the Agency. Thus, if EPA were to retain this subcategory in the final rule, that discretionary choice would represent an action within the scope of the ESA's consultation requirement.

2. *The early adopter subcategory crosses both the "may affect" and "likely to adversely affect" thresholds.*

Based on the data provided by EPA in the 2023 Proposal about the facilities that are likely to be eligible for the early adopter subcategory , Commenters compared the location of such facilities against both the range maps and the critical habitat of aquatic threatened and endangered species found both upstream and downstream of these facilities (as fish and other aquatic species are able to travel in either direction of a river during their life cycles, even if pollution itself only moves downstream).[456]

Based on comparison, Commenters identified a subset of threatened and endangered species that may be affected, and are likely to be adversely affected, by being exposed to the

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[453] 50 C.F.R. § 402.02 (emphasis added).
[454] *See*, *e.g.*, Interagency–Endangered Species Act of 1973, as Amended; Incidental Take Statements, 80 Fed. Reg. 26,832 (May 11, 2015).
[455] *Nat'l Ass'n of Home Builders*, 551 U.S. at 661.
[456] In addition to the effects to species analyzed in this subsection for the early adopter subcategory as currently proposed, Commenters note that EPA has also indicated that it may significantly expand the early adopter subcategory in the final rule. *See S*ection VIII – Subcategories. Any expansion to that subcategory is likely to cause a further, parallel expansion of harms to species that will further cross the "may affect" and "likely to adversely affect" thresholds and must be analyzed through ESA consultation.

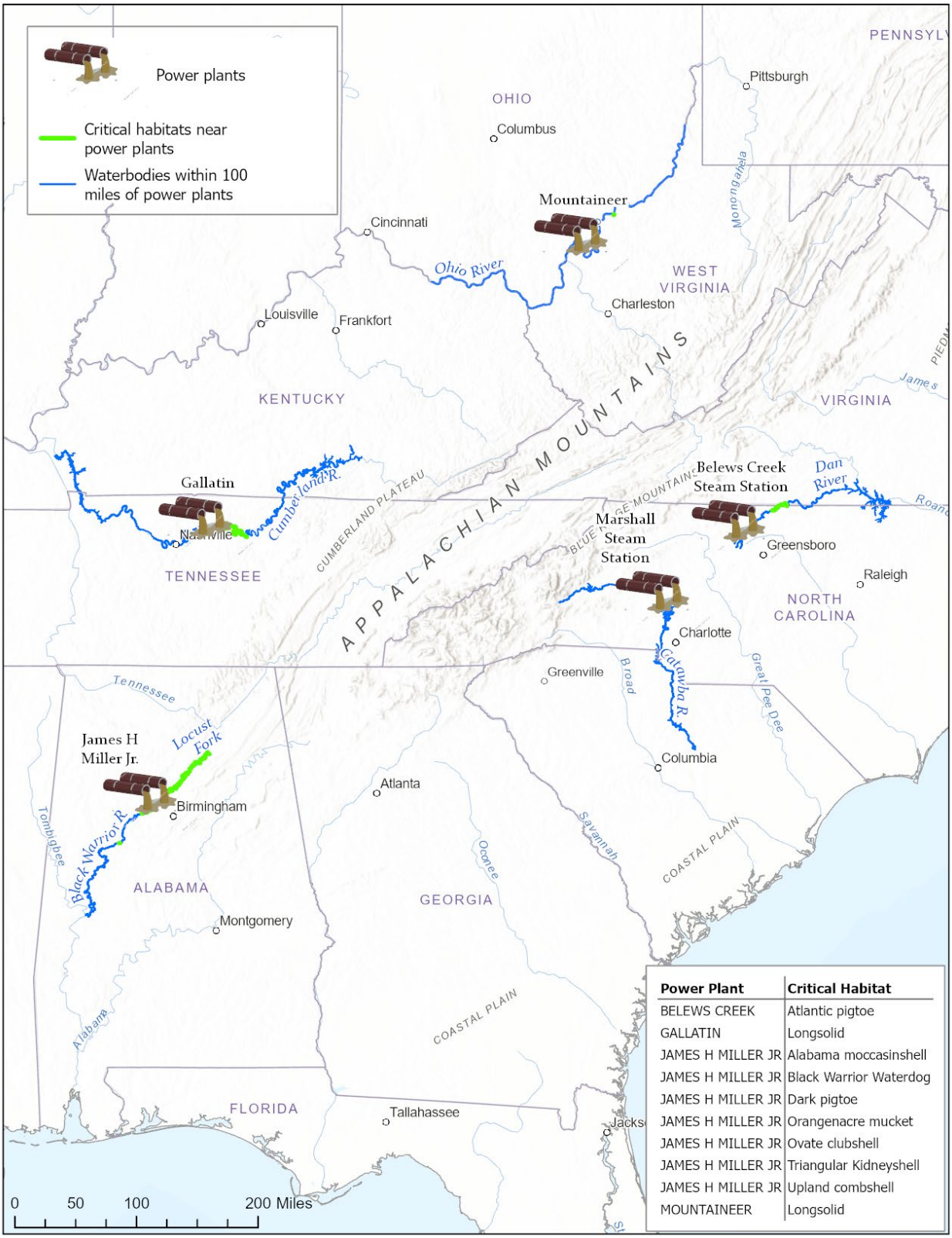
significant pollution that will be discharged for an additional nine or more years by facilities not required to implement BAT because of EPA's policy decision that they can take advantage of early adopter exemptions. The species impacted are listed below. Those with asterisks additionally have designated critical habitat units that are likely to be adversely modified by continued exposure to the pollutants discharged by these facilities.

Table XII-1: Species Likely Impacted by Early Adopter Subcategory

Belews Creek Power Plant	Marshall Power Plant	Gallatin Power Plant	James Miller Power Plant	Mountaineer Power Plant
Green Floater	Brook Floater	Fanshell	Heavy Pigtoe	Purple Cat's Paw Mussel
Atlantic Pigtoe*	Robust Redhorse	Palezone Shiner	Cahaba Shiner	Rabbitsfoot
Brook Floater	Carolina Heelsplitter	Dromedary Pearlymussel	Triangular Kidneyshell*	Rough Pigtoe
James Spinymussel	Carolina Pygmy Sunfish	Purple Lilliput	Black Warrior Waterdog*	Sheepnose Mussel
Orangefin Madtom		Spectaclecase	Southern Clubshell	Eastern Hellbender
Roanoke Logperch		Longsolid*	Ovate Clubshell*	Ring Pink
Cumberlandian Combshell		Oyster Mussel	Alabama Moccasinshell*	Fanshell
		Clubshell	Orangenacre Mucket*	Snuffbox Mussel
		Fluted Kidneyshell	Dark Pigtoe*	Clubshell
		Yellow Blossom	Inflated Heelsplitter	Pink Mucket Mussel
		Pink Mucket	Rush Darter	Orangefoot Pimpleback
		Rough Pigtoe	Upland Combshell*	Longsolid*
		Rabbitsfoot		Round Hickorynut
		Tubercled Blossom		
		Orangefoot Pimpleback		
		Ring Pink		

Designated critical habitats are likely to be impacted by four of the five early adopters are mapped below:

Figure XII-1: Designated Critical Habitats Likely Impacted by Early Adopter Subcategory



Because harms to listed species and their critical habitats will likely occur, EPA must comply with the procedural and substantive requirements of the ESA before moving forward

with the early adopter subcategory. Numerous court decisions reinforce the simple proposition that a regulation, or aspects thereof, that may affect endangered species must be the subject of consultation.[457]

3. *EPA's possible extension of other deadlines is also likely to cross both the "may affect" and "likely to adversely affect" thresholds.*

Commenters note that numerous additional aspects of the 2023 Proposal would potentially extend deadlines for compliance, and therefore extend the amount of time that toxic pollutants enter aquatic environments. Based on the data provided by EPA, Commenters identify approximately seventy threatened and endangered species that will likely be exposed, and therefore harmed, by the 2023 Proposal should such deadlines become protracted. Should such deadlines be delayed, these aspects of the 2023 Proposal would also require consultations under the ESA. The full list of species includes:

Table XII-2: Species Likely Impacted by Delayed Compliance Deadlines

Alabama Moccasinshell	Orangeacre Mucket	Least Tern
Arkansas River Shiner	Oval Pigtoe	Loggerhead Sea Turtle
Atlantic Pigtoe	Ovate Clubshell	Ozark Hellbender
Black Warrrior Waterdog	Oyster Mussel	Pallid Sturgeon
Choctaw Bean	Purple Bean	Purple Cats Paw
Coosa Moccasinshell	Purple Bankclimber	Dromedary Perlymussel
Colorado Pikeminnow	Rabbitsfoot	Shiny Pigtoe
Cumberland Combshell	Razorback Sucker	Finerayed Pigtoe
Cumberland Darter	Rough Hornsnail	Cracking Pearlymussel
Cumberland Elktoe	Round Ebonyshell	Pink Mucket
Dark Pigtoe	Rush Darter	Alabama Lampmussel
Diamond Darter	Southern Clubshell	Birdwing Pearlymussel
Fat Three Ridge	Southern Pigtoe	Ring Pink
Finelined Pocketbook	Shinyrayed Pocketbook	White Wartyback
Fluted Kidneyshell	Southern Kidneyshell	Orangefoot Pimpleback
Georgia Pigtoe	Southern Sandshell	Clubshell
Gulf Moccasinshell	Spotfin Chub	Rough Pigtoe
Gulf Sturgeon	Triangular Kidneyshell	Winged Mapleleaf
Interrrupted Rocksnail	Trispot Darter	Anthonys Riversnail
Little Colorado Spinedace	Piping Plover	Fanshell
Loggerhead Sea Turtle	Vermillion Darter	Bog Turtle
Laurel Dace	Virgin River Chub	
Manatee	Woundfin	
Narrow Pigtoe	Green Sea Turtle	
Neosho Mucket	Hawksbill Sea Turtle	

[457] *See*, *e.g.*, *W. Watersheds Project v. Kraayenbrink*, 632 F.3d 472, 495 (9th Cir. 2010); *Nat'l Parks Conservation Ass'n v. Jewell*, 62 F.Supp.3d 7 (D.D.C. 2014); *Citizens for Better Forestry v. U.S. Dep't of Agric.*, 481 F. Supp. 2d 1059 (N.D. Cal 2007); *Wash. Toxics Coal. v. U.S. Dep't of Interior, FWS*, 457 F. Supp. 2d 1158 (W.D. Wash. 2006).

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 which would not violate subsection (a)(2) of this section." By failing to consult with the Services, EPA will be taking action that will push more endangered species towards 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 aspects of the 2023 Proposal that would result in harm to listed species without first consulting with the Services.

XIII. EPA SHOULD USE ITS RECENT MODELING OF THE IRA TO ASSESS THE IMPACTS OF THIS PROPOSAL.

EPA's 2023 Proposal relies on a baseline that does not include the IRA of 2022 (referred to as "Pre-IRA 2022 Reference Case" or "Pre-IRA baseline").[458] EPA is seeking comment on how the Agency could model the impacts of the IRA for the final rule.[459]

We recommend that EPA model the IRA for the finalized ELGs using the approach it took in its "Post-IRA 2022 Reference Case" (referred to here as Post-IRA baseline), released April 5, 2023.[460] This updated baseline was used by the EPA as the baseline for the proposed Greenhouse Gas Standards and Guidelines for Fossil Fuel-Fired Power Plants, published May 23, 2023.[461]

This Post-IRA baseline includes the IRA, as well as updates to other assumptions and the inclusion of additional finalized rules since the development of the Pre-IRA baseline used in the proposed ELGs. This includes the inclusion of the Good Neighbor Plan, a revised power demand forecast that includes the incremental demand related to the finalized Light-Duty Vehicle GHG standards through model year ("MY") 2026, adjustments to the turndown assumptions for select coal plants, updated carbon capture and sequestration ("CCS") costs, and revised capacity values for energy storage.[462]

The Post-IRA baseline used by the Agency in more recent proposals incorporates key tax credit provisions that affect power sector operations. Including these provisions in both the baseline and policy scenarios is critical to accurately assess the costs and benefits of these proposed ELGs on coal plant operators and the broader energy system. For the analysis of the

[458] EPA, Results Using Pre-IRA 2022 Reference Case: EPA's Power Sector Modeling Platform v6 Using IPM, https://www.epa.gov/power-sector-modeling/results-using-pre-ira-2022-reference-case (last visited May 23, 2023).
[459] 88 Fed. Reg. at 18,827.
[460] EPA, Post-IRA 2022 Reference Case: EPA's Power Sector Modeling Platform v6 Using IPM, https://www.epa.gov/power-sector-modeling/post-ira-2022-reference-case (last visited May 23, 2023).
[461] 88 Fed. Reg. 33,240 (May 23, 2023).
[462] EPA, Documentation for EPA's Power Sector Modeling Platform v6 Using the Integrated Planning Model Post-IRA 2022 Reference Case (March 2023), https://www.epa.gov/system/files/documents/2023-03/EPA%20Platform%20v6%20Post-IRA%202022%20Reference%20Case.pdf (see Table 1-1).

finalized ELGs, we support modeling the impacts of the IRA as EPA has done in its recent Post-IRA baseline.

The changes made in EPA's Post-IRA baseline to represent the IRA include:[463]

- Incorporating the Clean Electricity Investment and Production Tax Credits (48E, 45Y) for new zero-emission resources and energy storage.[464]
    - These tax credits last until the later of 2032 or when emissions are 75% below 2022 levels, with EPA using 2021 levels (1,551 million metric tons or MMT) as a proxy in their post-IRA baseline. This emissions limit is not reached in the Post-IRA baseline and thus these credits are applied to all investments made in all run years during the 2028–2055 period.
    - Depending on the timing of the final proposal, we would support EPA updating its treatment of the 48E and 45Y tax credits to be based on the now-available 2022 emissions data, rather than the 2021 levels used as a proxy for this provision in earlier modeling.
- Modeling the energy community tax credit on top Clean Electricity Investment and Production Tax Credits (48E, 45Y) for wind, solar, and storage investments. This energy community tax credit provides a 10% bonus credit for these eligible investments based on the percent of land in each Integrated Planning Model ("IPM") region that qualifies as an energy community.[465] Given the geographic detail of IPM and the value in understanding the distributional impacts of this provision, we support EPA's approach for modeling the energy community tax credits in its Post-IRA baseline.
- Modifying the short-term capital adder steps for renewable technologies between the 2028 and 2035 run years to reflect the impact of the Advanced Manufacturing Production Tax Credit (45X).[466]
- Updating 45Q, or the Credit for Carbon Dioxide Sequestration, to represent the increased monetary incentives for capture and geological storage of CO2. A credit of $85/metric ton for geological sequestration and $60/ton for enhanced oil recovery is provided for any plants that start construction or retrofit with CCS before January 1, 2033, and applied for the first twelve years of operation. This credit is applied as a reduction to the individual

[463] *Id.* at Section 3.10.1.
[464] *Id*. at Section 4.5.
[465] Note: The treatment for different technologies is slightly different. In the Post-IRA baseline, EPA applies the 10% energy community tax credit to all new energy storage technologies (effectively assuming that developers will locate all storage in energy communities) and prorate the credit for wind and solar based on the share of total IPM regional land that qualifies as an energy community. *Id*. at Section 4.5.
[466] *Id*. at Section 4.4.3.

step prices in the CO2 storage cost curves for plants that begin operating in the 2028, 2030, and 2035 run years.[467]

- Allowing for the use of hydrogen as a fuel for the power sector, at a cost of $1/kg and inclusive of the tax credits for clean hydrogen production (45V).[468]

- Modifying the operation of and assumed retirement limits for nuclear plants as a proxy for the impacts form the Zero-Emission Nuclear Power Production Credit (45U).[469]

A. EPA's Modeling Underscores the Importance of Incorporating the IRA to Assess the Likely Costs and Benefits of this Proposal.

The Post-IRA baseline has a considerably cleaner generation and capacity mix, lower system costs and prices, and significant reductions in air pollution than the Pre-IRA baseline used for the 2023 Proposal. Given the projected changes in the future power grid due to the IRA, especially to the coal fleet and energy markets, it is critical that the EPA assess the impact of this rule on a baseline that reflects this key legislation.

To understand how modeling the IRA could affect the costs and benefits of this proposed rule, we compared the Pre-IRA baseline and Post-IRA baseline released by EPA to assess the changes in capacity, generation, emissions, and costs to the power system between the two baselines.

1. *EPA's modeling finds that the IRA will alter the operation of coal plants over the coming decade.*

The inclusion of the IRA has a significant impact on the operational decisions for coal plant owners. In EPA's Post-IRA baseline, we see an additional 31 gigawatts ("GW") of coal retire by 2028, an additional 43 GW retire by 2030, and an incremental 35 GW of coal retire by 2040 compared to the Pre-IRA baseline used in this proposal. This is a 38% reduction in coal capacity in 2030 in the Post-IRA baseline compared to the Pre-IRA baseline. (Table XIII-1)

[467] *Id*. at Section 3.12.
[468] *Id*. at Section 9.5.
[469] *Id*. at Section 4.6.1.

Table XIII-1.Key Coal Statistics in EPA's Pre- and Post-IRA Baselines

Total Coal (w/ and w/o CCS)	Case	2028	2030	2035	2040	2045
Coal Capacity (GW)	**Pre-IRA**	131.7	111.8	88.3	70.4	62.2
	Post-IRA	100.5	68.9	44.0	35.4	21.7
	Difference	**-31.2**	**-42.9**	**-44.3**	**-35.0**	**-40.5**
Coal Generation (TWh)	**Pre-IRA**	634	558	470	337	280
	Post-IRA	484	309	120	79	22
	Difference	**-150**	**-249**	**-350**	**-258**	**-258**
Avg. Coal Capacity Factor	**Pre-IRA**	55%	57%	61%	55%	51%
	Post-IRA	55%	51%	31%	25%	12%
	Difference	**0%**	**-6%**	**-30%**	**-29%**	**-40%**

Source: NRDC Analysis of the published System Summary Report (SSR) for the Pre-IRA 2022 Reference Case and Post-IRA Reference Case.

In addition to the accelerated retirement of the coal fleet given the new and enhanced incentives for clean electricity resources, the coal remaining on the system also starts to run significantly less by 2035. This reduction in utilization coincides with stronger deployment of new renewable and storage capacity, which reduces the need to dispatch higher marginal cost resources like coal. By 2035, the remaining coal fleet is running about 31% of the time, compared to 61% of the time in the Pre-IRA baseline. By 2045, this drops to just a 12% capacity factor in the Post-IRA baseline – compared to 51% in the Pre-IRA baseline. In total, coal generation in the Post-IRA baseline declines by 24% in 2028, 45% in 2030, 74% in 2035, and 77% in 2040 compared to the Pre-IRA baseline.

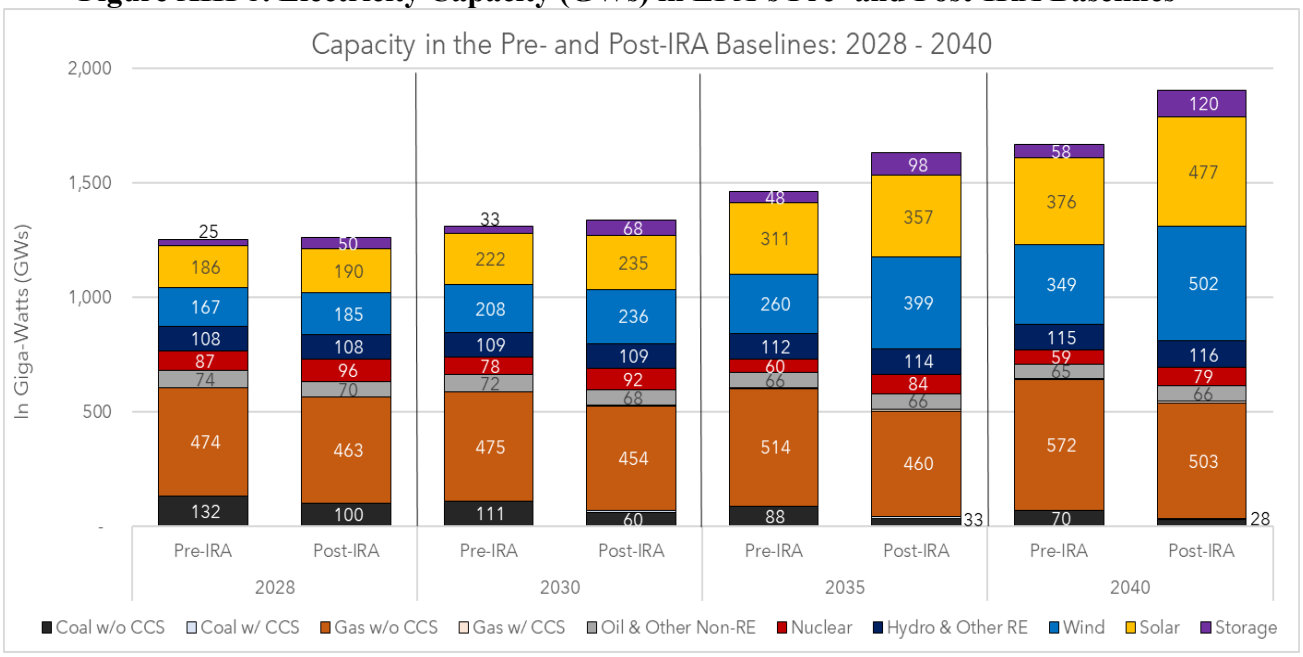
Given the IRA's impact on the retirement and operational decision-making for coal plant operators, it is important to assess the impact of this proposal – which would result in relatively small additional incremental costs for a portion of the fleet – on this updated baseline. It is likely that the reported costs of compliance for the fleet in this proposal (which were based on the Pre-IRA baseline) is overstated. This is because the IRA alters the economics of the coal fleet and results in a much smaller fleet remaining online by 2030 under even baseline conditions, which should lower the total costs incurred by the operating coal fleet to meet this proposed rule. The IRA also makes alternatives to coal generation lower cost – providing long-lasting tax credits for new investments in clean energy – likely further reducing the impact to the broader energy system and consumers.

2. *EPA's modeling finds that the IRA will spur much greater investment in clean energy alternatives.*

Compared to the Pre-IRA baseline, EPA's Post-IRA baseline sees lower levels of capacity, generation, and new investment in all forms of fossil-fueled power plants (coal, gas, and oil). Instead, the Post-IRA baseline has a greater retention of existing nuclear and stronger

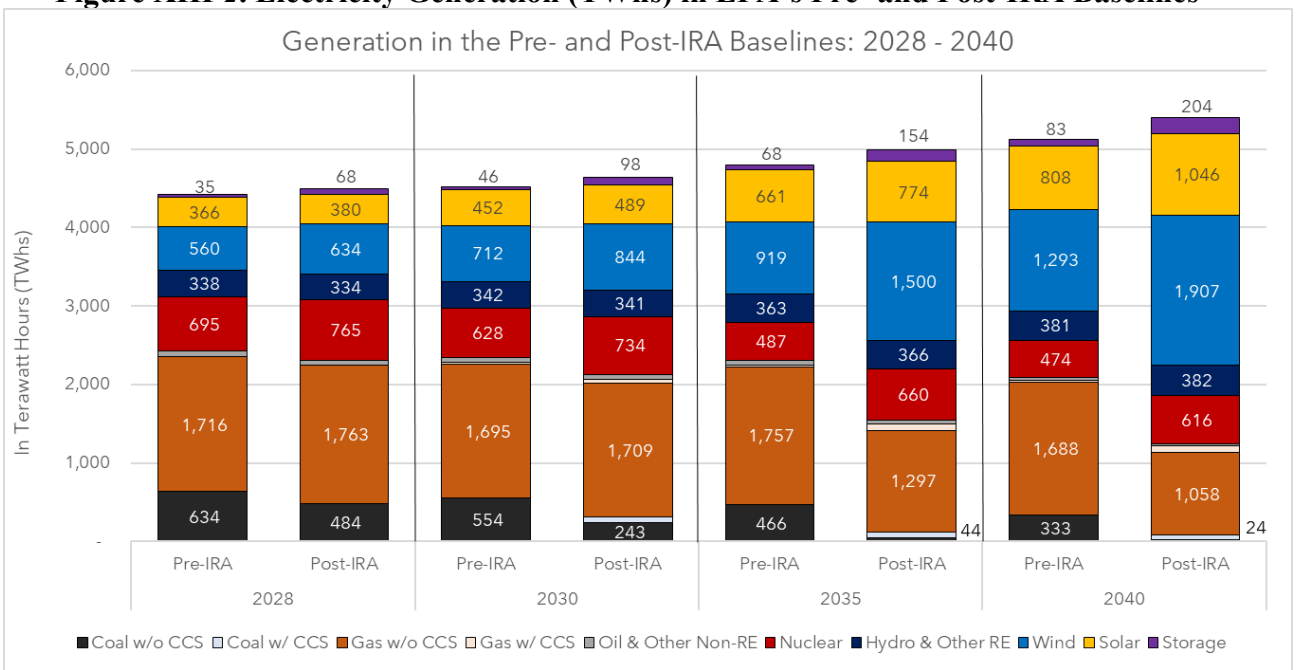
deployment of new wind, solar, and storage in all run years. This shift is especially pronounced for coal without CCS. (Figure XIII-1 and XIII-2)

Figure XIII-*1*. Electricity Capacity (GWs) in EPA's Pre- and Post-IRA Baselines



Source: NRDC Analysis of the published System Summary Report (SSR) for the Pre-IRA 2022 Reference Case and Post-IRA Reference Case.

Figure XIII-*2*. Electricity Generation (TWhs) in EPA's Pre- and Post-IRA Baselines



Source: NRDC Analysis of the published System Summary Report (SSR) for the Pre-IRA 2022 Reference Case and Post-IRA Reference Case.

In 2030, coal generation (with and without CCS) falls to just 6% of the electricity mix, as compared to 12% in the Pre-IRA baseline. This reduction in market share is replaced largely by renewables (37% of the mix Post-IRA versus 34% Pre-IRA) and nuclear (16% in the Post-IRA baseline compared to 14% Pre-IRA).

By 2035, coal generation falls to 3% of the mix, with renewables at 55%, nuclear at 14%, and gas at 29%. This is a seven percentage point decline in coal's market share and a nine percentage point decline in gas' market share compared to the Pre-IRA baseline – with the market share of renewables and nuclear increasing by eighteen percentage points.

The market share of coal in the U.S. has already declined significantly over the last decade – from 39% in 2013 to 20% in 2022 – due to a combination of economics, aging coal units, and state and federal policies.[470] The passage of the IRA will accelerate these forces and the shift away from coal power in the U.S. in the next few years. The EPA should assess the impact of this rule based on the best-available data and expectations of what the likely future holds. As highlighted by EPA's own modeling of a Post-IRA future, the now-likely future looks substantially different given recent legislative action by U.S. Congress – and EPA's analysis must reflect this shift.

3. *EPA's modeling finds that the IRA will reduce system costs and wholesale prices.*

The Post-IRA baseline shows lower system costs and wholesale prices than the Pre-IRA baseline (Table XIII-2). With the additional incentives for and extension of federal tax credits for clean electricity investments, system costs are lower in the Post-IRA baseline. In total, system costs are $17.5 billion lower by 2030 (twelve percent reduction) and $39.8 billion lower by 2040 (twenty-three percent reduction). Cumulatively, system costs fall by $714 billion over the first twenty years of the model compared to the Pre-IRA baseline.

With reduced dispatch of higher marginal cost resources, like coal and gas, due to a greater deployment and retention of lower marginal cost resources like renewables and nuclear, wholesale prices decline in the Post-IRA baseline. The average annual wholesale price is $4.80 per MWh lower by 2030 and $11 per MWh lower by 2040 in the Post-IRA baseline as compared to the Pre-IRA baseline. This is a 13% reduction in wholesale prices by 2030 and 30% reduction by 2040.

The Post-IRA baseline shows markedly lower costs and prices than in the Pre-IRA baseline. Understanding the likely economic impact of the proposed rule on affected sources, energy consumers, and the power grid is a key component of assessing the net benefits or costs of the rule. Given the large difference between the Pre- and Post-IRA baselines on system costs and energy prices, it will be important to assess the impacts of the finalized rule on a baseline

[470] U.S. Energy Information Administration, Table 1.1. Net Generation by Energy Source: Total (All Sectors) 2013–February 2023, Electric Power Monthly, https://www.eia.gov/electricity/monthly/epm_table_grapher.php?t=table_1_01 (last visited May 23, 2023).

that is inclusive of the IRA to better represent the likely economic impacts of the rule and determine the anticipated costs of the rule in light of recent legislative incentives.

Table XIII-*2*. Total System Costs and Wholesale Prices in EPA's Pre- and Post-IRA Baselines

In Billions $	Case	2028	2030	2035	2040	2045	Cumulative (2028 - 2047)
Total System Costs	**Pre-IRA**	$139.5	$142.7	$161.8	$176.6	$188.6	3,364.2
	Post-IRA	$131.5	$125.2	$127.6	$136.8	$138.5	$2,649.5
	Difference	**$(7.9)**	**$(17.5)**	**$(34.2)**	**$(39.8)**	**$(50.1)**	**$(714.8)**

In $/MWh	Case	2028	2030	2035	2040	2045
Wholesale Prices	**Pre-IRA**	$40.0	$37.6	$37.5	$37.0	$37.1
	Post-IRA	$39.6	$32.8	$26.7	$26.0	$23.4
	Difference	**$(0.4)**	**$(4.8)**	**$(10.9)**	**$(11.0)**	**$(13.7)**

Source: NRDC Analysis of the published System Summary Report (SSR) for the Pre-IRA 2022 Reference Case and Post-IRA Reference Case.

XIV. EPA SHOULD EXPAND THE PROPOSED REQUIREMENT TO POST INFORMATION TO A PUBLICLY AVAILABLE WEBSITE.

EPA is proposing to require that regulated entities post all reporting and recordkeeping information, including NOPPs and other filings that have occurred since the 2020 rule, to a public website for ten years, or the length of the facility's NPDES permit plus five years, whichever is longer.[471] EPA is also proposing to allow regulated entities to post this required information on an existing CCR Rule compliance website.[472] In addition, this required information "must be clearly identifiable and must be able to be immediately downloaded by anyone accessing the site in a format that enables additional analysis (e.g., comma-separated values text file format)."[473] According to EPA, this proposed requirement is modeled after a similar requirement in the CCR Rule and based on feedback from communities that the Agency engaged with as part of the EJA that shared a lack of trust of utilities and state regulators as well as an interest in more accessible information.[474]

Overall, EPA's proposed requirements for establishing an ELG Rule Compliance Data and Information website are a significant improvement and will improve transparency and make important information more accessible to the public. It is currently difficult for the public to obtain NPDES permit information, such as NOPPs, and other ELG compliance documents because there is no one place to access this information and these documents are either usually difficult to find on a state agency's website or entirely unavailable online.

[471] 88 Fed. Reg. at 18,891.
[472] *Id.*
[473] *Id.* at 18,900; proposed 40 C.F.R. 423.19(c)(1).
[474] 88 Fed. Reg. at 18,891.

In response to EPA's request for comments on these new requirements,[475] Commenters have the following suggestions for augmenting the reporting and recordkeeping requirements within the 2023 Proposal. Our suggestions fall into three categories: (1) website organization guidance; (2) monitoring data guidance; and (3) additional reporting requirements.

First, for all ELG Rule Compliance Data and Information websites, EPA should provide specific guidance on page layout that will facilitate usability and consistency. EPA should require that documents be organized by report type rather than by year published. Each page should have subsections for their Certification Statement, Notice of Planned Participation and any associated reports, and Monitoring Reports. Within these groups, documents should be organized chronologically by year published. We expect these documents will cover the whole site rather than different sub-sections of the site. To the extent sites are divided into sub-areas, documents should be grouped accordingly. Such standard organization will help users more easily navigate different utilities' websites when looking for similar documents across websites.

Secondly, EPA should specify that all water monitoring data required to be posted to web pages must be available both as appendices to associated monitoring reports and as comma-separated value ("csv") files. Having monitoring data available as csv files will promote the "immediate downloading" for "additional analysis" that EPA expresses preference for in the rule.[476] Additionally, EPA should clarify the type and format of information that should be contained in these csv files to ensure that the same types of information are consistently reported across years and across utilities. Such consistency should ensure that users can readily merge data across years to evaluate trends. EPA should consider specifying that the following fields at minimum be included and standardly named in all csv files containing monitoring data:

- site name
- state
- disposal area
- disposal area type
- well or outfall ID
- well or outfall coordinates (expressed in decimal degrees)
- well gradient
- date (expressed in Coordinated Universal Time (UTC), using ISO-8601)
- analyte
- concentration
- measurement qualifiers
- units
- detection limit
- detection limit units

[475] *Id.*
[476] *Id.* at 18,900.

A separate csv file should be published that contains the monthly summary statistics contained in the Monitoring Reports. All associated structural and reference metadata should also be published to allow users to assess the contexts and quality of data collection.

Finally, EPA should augment its requirements for what is posted to ELG Rule Compliance Data and Information websites. EPA should require that all NPDES permits – including draft permits, permit applications, and correspondence between the agency and permittee concerning the permitting process– be posted to these websites in addition to the reporting requirements in the 2023 Proposal. All monitoring or sampling data reported pursuant to these permits and/or provided in support of their modification or renewal should also be posted and made available in csv format that meets the specifications outlined above. In addition, EPA should specify that all effluent monitoring data reported pursuant to 40 CFR part 127 be posted online for all sites on a monthly basis as opposed to only being included in the Annual Combustion Residual Leachate Monitoring Report for sites that have a coal combustion residual landfill or surface impoundment. As mentioned above, NPDES permit information and documentation can be difficult to access from state agencies so these recommendations would make most, if not all, information publicly accessible in one place.

EPA should expand the online posting requirements to incorporate Commenters' recommendations, which would further improve transparency and better ensure that all NPDES permit information and other ELG documentation required to be made publicly available are more accessible to the public.

XV. CONCLUSION

For all of the reasons set forth above, and in the attachments submitted with this letter and other information in this docket, the undersigned Commenters strongly urge EPA to adopt the recommendations above for strengthening the 2023 Proposal and to finalize the 2023 Proposal as expeditiously as possible.

Sincerely,

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