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1200 Pennsylvania Avenue, NW
Washington, DC 20460

Comments on EPA's Proposed Supplemental Effluent Limitations Guidelines and Standards for the Steam Electric Power Generating Point Source Category

America's Power submits the following comments on the Environmental Protection Agency's (EPA or Agency) proposed rule to revise certain provisions of the effluent limitations guidelines (ELGs) for the steam electric power generating source category.¹ By way of background, America's Power is the only national trade organization whose sole mission is to advocate at the federal and state levels on behalf of coal-fired electricity and the nation's coal-fired generating fleet. Our membership is composed of electricity generators, coal producers, railroads, barge operators, and equipment manufacturers.

The Agency's proposed changes will increase compliance costs and could lead to additional retirements of coal-fired electric generating units (EGUs). Already, utilities have announced plans to retire 40% of the existing coal fleet by 2030. Other EPA rules, especially the recently proposed Carbon Rule, will accelerate coal retirements, even though grid experts have issued warnings about the potential for power shortages because of the retirement of coal-fired generation and other dispatchable resources.

For example, in April 2022, "[t]he Midcontinent Independent System Operator (MISO) released the results of its 2022-2023 annual Planning Resource Auction (PRA) indicating capacity shortfalls in both the north and central regions of MISO. This encompasses parts of 11 states in the Midwest."² In its press release announcing the results of the PRA, MISO's President and Chief Operating Officer further stated, "'The reality for the zones that do not have sufficient generation to cover their load plus their required reserves is that they will have increased risk of temporary, controlled

¹ Supplemental Effluent Limitations Guidelines and Standards for the Steam Electric Power Generating Point Source Category, 88 Fed. Reg. 18,824 (proposed Mar. 29, 2023) (to be codified at 40 C.F.R. pt. 423) [hereinafter "Proposed Rule"].

² MISO, *Some parts of the region fall short of their Resource Adequacy requirements* (Apr. 14, 2022), <https://www.misoenergy.org/about/media-center/misos-annual-planning-resource-auction-results-underscore-the-reliability-imperative/>.

outages to maintain system reliability,’ ‘From a consumer perspective, those zones may also face higher costs to procure power when it is scarce.’”³

Our comments below explain specific technical suggestions for improving the effectiveness and workability of EPA’s proposal in order to minimize further strain on the electric grid caused by coal retirements and ensure that electricity prices remain reasonable for consumers.

EPA Lacks the Technical Basis for Tightening the Effluent Discharge Limitations for Flue Gas Desulfurization Wastewater.

EPA seeks to significantly increase the stringency of the effluent discharge limitations for flue gas desulfurization (FGD) wastewater by revising its determination as to what is “best available technology economically achievable” (BAT) for this wastewater stream. In particular, the proposed rule would set a zero-liquid discharge (ZLD) limitation for FGD wastewater based on chemical precipitation plus membrane filtration. As explained below, the Agency lacks the technical basis to adopt this proposed ZLD limitation for FGD wastewater. EPA’s decision to reconsider its October 2020 BAT determination is neither justified under the statute and court precedent nor supported by the rulemaking record.

EPA Has Failed to Justify Its Decision to Suddenly Reverse Course on the Technical Basis for Regulating FGD Wastewater. The Clean Water Act directs EPA to review effluent limitations and revise those limitations only if it is “appropriate” based on significant advancements of the relevant control technology.⁴ In the case of the current ELG regulations that were adopted in October 2020 for the EGU source category, EPA waited less than one year (until August 1, 2021) to announce its plans to initiate an entirely new rulemaking to make substantial changes to those regulations. The announcement indicated the Agency’s intent to reverse course on its prior BAT determination that already had set stringent discharge limitations for FGD wastewater. The Agency’s explanation for reversing course was based on general claims that “membrane treatment systems continue to rapidly advance as an effective option for treating a wide variety of industrial wastewater” and that these technology advancements are expected to further “continue” for the foreseeable future.⁵

There are no compelling reasons for EPA to reverse course so soon after making its 2020 BAT determination regarding membrane treatment systems for which EPA concluded that “critical uncertainties remain” and those uncertainties supported a “conclusion that membrane filtration is not available for treatment of FGD wastewater at all plants” and therefore cannot serve as “the technology basis for BAT.”⁶

Moreover, courts require federal agencies to provide a “detailed justification” for the reversal in their positions when the new rules or regulations rest on contrary factual findings or the prior “rule has engendered serious reliance interest.”⁷

³ *Id.*

⁴ 33 U.S.C. §1311(d).

⁵ 86 Fed. Reg. 41,801 (Aug. 3, 2021).

⁶ Fed. Reg. at 64,665-66.

⁷ *FCC v. Fox Television Stations, Inc.*, 556 U.S. 502 (2009).

Both of these considerations are satisfied in the case of FGD wastewater regulations. As just noted above and further discussed in the next section, EPA has reached substantially different conclusions on whether membrane filtration is a commercially available control system for FGD wastewater as well as the technical and economically feasibility of achieving such an extremely stringent ZLD limitation. Moreover, the Agency has failed to present an adequate detailed justification for its changed position on membrane technologies and the resulting proposed ZLD limitations for FGD wastewater. Similarly, there is no question regarding the power sector's reliance on the 2020 ELG regulations, including the considerable costs that electric utilities have incurred in implementing controls to comply with those regulations.

The rulemaking record is insufficient to support the proposed BAT determination. EPA's proposal to adopt membrane filtration technology as BAT for FGD wastewater is premature because the effectiveness of this technology has not been sufficiently established. The examples cited in the proposed rule as a basis for justifying this proposed BAT determination have not been rigorously peer-reviewed or successfully duplicated for enough time to support confidence in the technology's effectiveness.

The proposal relies heavily on a cursory analysis of membrane-based technologies that are reportedly used in other countries. The record does not indicate that EPA has visited these facilities or collected any performance information from the facility owners or operators who are purportedly using this technology. It appears that only technology vendors who sell these treatment systems provided information on international membrane operations. As EPA acknowledges in the proposal, "In the 2020 rule, EPA determined that membrane filtration was not available to control FGD wastewater industrywide, primarily due to the lack of a full-scale membrane filtration system in use to control FGD wastewater discharges at a U.S. facility."⁸ Based on the information in the docket, as well as discussions that America's Power members have had with wastewater engineering firms that specialize in FGD treatment, it is still the case that no full-scale membrane filtration system is in use to control FGD wastewater discharges at any U.S. facility.

In the proposal, EPA states that it has obtained new information since 2020 regarding projects in other countries and cites to three documents in support of its BAT proposal.⁹ But on a closer review of those three documents, two of them were from meetings that took place before the 2020 ELG Rule was finalized, and the third document is simply a summary of a follow-up meeting with one of the same technology vendors that the Agency had previously spoken too.

First, EPA points to a February 16, 2018, memorandum regarding an October 19, 2017, meeting with Oasys Water—a technology vendor that reportedly had designed a Membrane Brine Concentrator (MBC) technology used at a Chinese power plant.¹⁰ However, this is not "new" information. It was available previously as part of the 2020 ELG rulemaking and, in fact, was posted to the docket. Key portions of the

⁸ Proposed Rule at 18,839.

⁹ *Id.*

¹⁰ *Id.* (citing SE06915)

Oasys Water report are also designated as “Confidential Business Information” and thus not available in the record for commenters to evaluate.¹¹ Additionally, it is our understanding that Oasys Water has since gone out of business. For example, a trade press article noted, “the high-profile projects [from Oasys] attracted criticism from competitors claiming that energy consumption was too high, and the technology was not efficient enough. Later, a failed merger with Woteer lead [sic] to Oasys’ bankruptcy in 2017.”¹²

Second, EPA cites to notes from a meeting with DuPont, another technology vendor, which took place on April 8, 2020.¹³ This is also not new information. It was available to EPA before the prior ELG rule was finalized on August 31, 2020. Third, EPA cites the notes from subsequent meetings with DuPont on October 29 and December 8, 2021.¹⁴ While these meetings did occur after the 2020 ELG Rule, there is minimal new information included in those meeting notes. More broadly, in the Technical Development Document for the Proposed Rule, EPA itself acknowledges the lack of information and premature nature of the technology by noting, “EPA has limited details on these full-scale membrane systems. Some references include only plant name or location. For this reason, some references may be describing the same installation, and EPA does not have enough information to determine where this may be the case.”¹⁵

Based on this inconclusive rulemaking record, EPA does not actually have any new, significant information from facilities in other countries to support its BAT decision. This means that EPA simply disagrees with the 2020 ELG Rule and has decided now to reach a different conclusion. This sort of regulatory whiplash makes it exceedingly difficult for facilities to make multi-million dollar compliance decisions that these regulations require.

Membrane pilot projects in the U.S. have raised similar concerns. For example, at Newman Station, an initial membrane technology reportedly did not perform well as a result of hardness and silica causing the reverse osmosis system to scale and require frequent cleaning and membrane replacement. It was determined that the process would need to be upgraded to a high pH reverse osmosis system, indicating that the technology still needs significant fine-tuning.¹⁶ At Cherokee Station, reverse osmosis membranes were reportedly installed in 2021. However, 90-92% recovery is reportedly the limit of the system currently. Up to 95% recovery has been apparently achieved, but not consistently, and the system has been unable to achieve the original

¹¹ Refer to SE06915A1, SE06915A3, SE06915A4, and SE06915A5, which are all designated as Confidential Business Information.

¹² GLOBAL WATER INTELLIGENCE, *Shifting tides in China make for challenges and opportunities for water technology* (Oct. 2018), <https://www.fluencecorp.com/wp-content/uploads/2018/11/GWI-October-2018.pdf>.

¹³ Proposed Rule at 18,839 (citing SE08618).

¹⁴ *Id.* (citing SE10245).

¹⁵ EPA, TECHNICAL DEVELOPMENT DOCUMENT FOR PROPOSED SUPPLEMENTAL EFFLUENT LIMITATION GUIDELINES & STANDARDS FOR THE STEAM ELECTRIC POWER GENERATING POINT SOURCE CATEGORY 25 n.15 (2023)

¹⁶ McBride & Onsurez, *Preparation for Conversion to Zero Liquid Discharge Operation*, International Water Conference, IWC 22-46 (2022).

98% recovery rate.¹⁷ If BAT is expected to reflect the highest performance in the industry, then these studies do not support that ZLD can be achieved with a membrane filtration system for FGD wastewater.

Furthermore, pilot studies cited by EPA differ from commercial operations and therefore cannot be used for demonstrating the full-scale commercial availability and technical feasibility of the technology or control system. Pilot studies are highly controlled, small-scale systems. Personnel monitoring the operation of a pilot system are typically available to make real-time adjustments, often before problems arise, unlike in a full-scale wastewater treatment system. Moreover, a commercial operating system has much less ability to adjust its feed rate than a pilot project and, therefore, less flexibility overall. Finally, the small scale of the pilot projects fails to demonstrate whether the membrane treatment system can handle the much higher typical FGD purge flows that are expected to occur on a plantwide basis during a full commercial-scale application.

Although in some cases BAT may be based on technologies that are not common to industry practice, this does not equate with requiring the use of technologies that have not been sufficiently and rigorously evaluated. Notably, one America’s Power member met with an engineering firm that specializes in FGD wastewater treatment technologies to inquire about the installation of a membrane filtration system at its plant. However, the engineering firm would not provide a vendor guarantee that a membrane filtration system will successfully achieve compliance with the proposed rule.

EPA has significantly underestimated the costs of membrane treatment systems.

It appears that EPA has significantly underestimated the costs of installing and operating a membrane filtration treatment system. This underestimation is clearly evidenced by the cost comparison that was submitted to the Office of Management and Budget during interagency review of the proposed rule.¹⁸ The table below provides a comparison of EPA’s 2020 estimated costs for a specific plant to the plant’s actual estimated costs:

Cost Comparison for Membrane Filtration Treatment

	EPA Estimated Costs (Pre-tax 2018 \$) ¹⁹		UWAG Member Estimated Costs (\$)	
	Capital	O&M	Capital	O&M
Plant 1A	~31,000,000	~10,000,000	81,650,000	6,251,000
Plant 1B	~17,000,000	~5,000,000	72,187,000	4,216,000

¹⁷ Brandt et al., *Xcel Cherokee Near ZLD Wastewater Treatment System Design Considerations*, International Water Conference, IWC 21-33 (2021).

¹⁸ This table is available at the White House OMB website [here](#).

¹⁹ Eastern Research Group, Inc., *Generating Unit-Level Costs and Loadings Estimates by Regulatory Option – DCN SE08638*, Table 6 (FGD Wastewater Regulatory Option C), at 38-45 (Aug. 31, 2020). EPA’s estimated capital and O&M costs for membrane filtration treatment have been conservatively adjusted upwards (by no more than \$15 million) to preserve the anonymity of the company.

The industry member's estimated capital costs for Plant 1A are more than 2.5 times EPA's estimate; for Plant 1B, they are more than 4 times EPA's estimate. It is also important to note that EPA's O&M costs (for both plants combined) are about one-third higher than the industry's estimates.

EPA should not require ZLD treatment for Combustion Residual Leachate (CRL).

EPA requests comments on the selection of the reference control technology for controlling CRL, including whether its determination of BAT for CRL control should potentially include ZLD technologies. EPA should not require ZLD treatment for CRL because of the inefficiency such a rule would create in overall wastewater controls. EPA has itself noted that CRL is a "very small portion" of industry discharges.²⁰ Because of this, the resources needed to implement this technology would not be economically efficient given the small size of the wastewater stream to be controlled. Instead, facilities can use resources to more effectively treat more significant wastewater streams.

In addition, America's Power has concerns with EPA's proposal to select chemical precipitation as the technology basis for establishing BAT limitations to for CRL for all coal-fired EGUs on a nationwide basis. Such a uniform national approach reflects a lack of understanding regarding the technological challenges of designing a system that can operate effectively for an intermittent wastestream that reduces over time. For example, the volumes of flow are unpredictable due to, among other things, dewatering and precipitation. Designing a system for treating leachate is extremely difficult because of its variable flow. Another problem with EPA establishing a national standard for all affected units is that this approach fails to adequately evaluate the age of equipment and facilities involved, engineering aspects of requiring chemical precipitation equipment for CRL, and the costs of achieving effluent reductions, as required by the statute.²¹

Instead of a one-size-fits-all national standard, EPA should find that no single technology is technologically available and economically achievable on a nationwide basis and allow state permitting authorities to apply their best professional judgment (BPJ) on a case-by-case basis in order to account for the variability in leachate due to reducing flow rates over time, co-mingling with contact stormwater, and closed facilities.

The following are several additional considerations that should guide EPA in the regulation of CRL from affected EGUs.

EPA should not impose BAT limits for CRL after landfill closure has occurred.

In its proposal, EPA solicits comments on whether there are differences in pre- and post-closure landfill operations that would impact the proposed CRL limits.²² EPA correctly points out that "post-closure, the CCR rule requires landfills and surface impoundments closing with waste in place to have a cap that is graded to minimize

²⁰ Effluent Limitations Guidelines and Standards for the Steam Electric Power Generating Point Source Category, 80 Fed. Reg. 67,838, 67,854 (Nov. 3, 2015) (codified at 40 C.F.R. pt. 432) ("approximately 3 percent of baseline loading, on a toxic-weighted basis").

²¹ 33 U.S.C. § 1314(b)(2)(B).

²² Proposed Rule at 18,850.

infiltration into the CCR solids. This will result in volumes of CRL decreasing significantly post closure.”²³ Accordingly, the cost/benefit analysis for CRL treatment before and after landfill closure is materially different because of the minimal leachate that is generated post-closure, meaning technology that could theoretically be considered “economically achievable” for a larger CRL wastewater stream prior to closure may no longer be economically achievable after closure.

Additionally, CCR landfills have a 30-year end date for post-closure care.²⁴ Thus, it would conflict with the CCR Rule to require landfill operators to continue operation of expensive wastewater treatment systems for CRL treatment after post-closure is complete.

EPA should not impose additional limits on CRL for those pollutants identified in Table XIV-1 because the record lacks sufficient information to inform what such limits might be.

For CRL, EPA requests comment on whether the Agency should calculate daily and monthly limitations for the additional metals listed in Table XIV-1, specifically in the context of CRL “discharges” to groundwater.²⁵ But because of the number of variables that could impact measured concentrations of the listed metals in such cases, calculating limits at this time would not be purposeful without more information on the effects of these variables. The chemical composition, magnitude of electric charge, and physical characteristics of different subsurface soils in various regions could impact detections of these constituents. Moreover, certain soils already have background levels of these metals that would need to be considered in interpreting limits.

In any event, EPA should not place limits on these metals in this rulemaking because EPA has not provided sufficient details for the public to know what these proposed limits would be. Without these details, the public cannot comment on the issue in an informed way because different limits may necessitate different levels of action. As a result, it would be procedurally irresponsible to implement limits in the final rulemaking without providing public notice of these limits and an opportunity to comment on them. If limitations are calculated in this rulemaking for the metals listed in Table XIV-1, then EPA must provide the public with additional time to review these calculations and additional time to provide comment on such new limits.

EPA should not mandate submittal of information to permitting authorities for potential discharges of CRL through groundwater but should instead allow permitting authorities to determine what information is most beneficial for permit drafting.

On September 16, 2021, EPA rescinded a guidance document titled “Applying the Supreme Court’s *County of Maui v. Hawaii Wildlife Fund* Decision in the Clean Water Act Section 402 National Pollutant Discharge Elimination System Permit Program,”²⁶

²³ *Id.*

²⁴ 40 C.F.R. 257.104.

²⁵ Proposed Rule at 18,885.

²⁶ EPA, RESCISSION OF THE JANUARY 2021 GUIDANCE DOCUMENT, “APPLYING THE SUPREME COURT’S *COUNTY OF MAUI V. HAWAII WILDLIFE FUND* DECISION IN THE CLEAN WATER ACT SECTION 402 NATIONAL POLLUTANT DISCHARGE

which EPA had previously issued on January 14, 2021. EPA has yet to replace that guidance document with new guidance on how EPA interprets the *County of Maui* Supreme Court decision.

The *County of Maui* decision potentially affects numerous industries, not just steam electric power plants. And while EPA has yet to address this issue holistically, in the proposed rule, EPA singles out CRL “discharges” to groundwater and requests comment on whether permitting authorities should obtain detailed information to evaluate whether such infiltration into groundwater should be permitted.²⁷ This proposed rule targeting a specific industry and focusing on one specific type of discharge is not an appropriate way to establish national policy on how permitting authorities should implement the Supreme Court’s decision. Instead of creating clarity, this would create confusion among industries regarding proper regulatory compliance per *County of Maui*.

In any event, as EPA notes, discretion should be left with the permitting authority to meet with applicants about obtaining additional information on potential infiltration of CRL through groundwater.²⁸ Mandating submittal of all the general and technical information delineated by EPA in the proposed rule would not only be a heavy burden for facilities, but it would also overwhelm permitting authorities responsible for reviewing the superfluous information.

Additionally, EPA suggests that it might issue a series of CWA 308(a) information request letters to all plants subject to 40 C.F.R. part 423 regarding the presence and nature of CRL discharges through groundwater.²⁹ This would be a significant cost burden on industry to respond to and is unnecessary in light of other information that industry is already required to collect and report under the CCR Rule. EPA should also not add a requirement to the permit application regulations of part 122 that a facility must provide the general and technical information delineated in the proposed rule to the permitting authority as part of the permit application process. Nor should the requirements be placed directly in a regulation that would require this information under CWA 308 authority. Once again, such extensive requirements would be burdensome to both facilities and permitting authorities required to review the information. Such requirements would also unreasonably elongate permitting timelines.

Rather, America’s Power recommends that the information be obtained on a case-by-case basis so the permitting authority may determine what and exactly how much information is needed to assess this issue. Furthermore, allowing the permitting authority to determine what information it needs will expedite the permitting authority’s review of applications addressing this issue. The permitting authority can request supplemental information at any time throughout the application process.

ELIMINATION SYSTEM PERMIT PROGRAM” (2021), https://www.epa.gov/system/files/documents/2021-09/maui-rescission-memo_final-09.15.2021.pdf.

²⁷ Proposed Rule at 18,889.

²⁸ *Id.*

²⁹ *Id.*

If EPA decides to eliminate the allowance for bottom ash purge water discharges, the Agency should expand the “minor maintenance event” exemption in 40 C.F.R. 423.11(p).

EPA requests “comment on whether the Agency should expand the existing ‘minor maintenance event’ exemption from the definition of BA transport water in § 423.11(p).”³⁰ Within the request, EPA lists several options for how the definition could be changed and also requests comments on any appropriate recordkeeping and reporting.

America’s Power recommends that the definition be modified to include both “planned and unplanned discharges due to maintenance events.” America’s Power also supports eliminating the word “minor.” While EPA points out that facilities can in some cases plan around maintenance events to prevent discharges, what is more concerning to facilities are those maintenance events that could result in unplanned discharges. Obviously in such cases, it would not be possible to report the discharge prior to its occurrence. Additionally, EPA should make clear that discharges from such events are not considered “bypasses” of the treatment system.

EPA should reopen the Voluntary Incentives Program option for FGD wastewater treatment.

In the 2020 revisions to the Steam Electric ELGs, EPA provided an option for facilities to file a “Notice of Planned Participation” (NOPP) to either permanently cease the combustion of coal by December 31, 2028, or to implement necessary technology to comply with the Voluntary Incentives Program (VIP) by December 31, 2028.³¹ In either case, a NOPP must have been submitted to the state permitting authority by no later than October 13, 2021.

More recently, EPA by Direct Final Rule created another opportunity for facilities to file a NOPP to permanently cease combustion of coal by December 31, 2028.³² However, in that Direct Final Rule EPA did not reopen the option for facilities to participate in the VIP by December 31, 2028. America’s Power requests that EPA reopen the option for facilities to participate in the VIP and file a new NOPP. First, the new proposed rule is a potential game changer for facilities that had previously been considering investment in FGD treatment technology to meet the current limits. For facilities that are presently working toward implementation of biological treatment systems, the proposed rule, if finalized, would render such systems superfluous. It would be a waste of resources for facilities to continue the implementation or construction of those systems when EPA has now proposed to change the goal line to membrane treatment.

EPA should allow facilities that have been working toward implementation of new biological treatment systems on or before December 31, 2025, to instead put their resources toward meeting the VIP option limits by December 31, 2028, if those

³⁰ *Id.* at 18,845.

³¹ Steam Electric Reconsideration Rule, 85 Fed. Reg. 64,650, 64,711 (Oct. 13, 2020) (codified at 40 C.F.R. 423).

³² Effluent Limitations Guidelines and Standards for the Steam Electric Power Generating Point Source Category—Initial Notification Date Extension, 88 Fed. Reg. 18440 (Mar. 29, 2023) (to be codified at 40 C.F.R. 423).

facilities choose to do so. The water quality and environmental benefits of allowing for this additional flexibility would be significant as it would create an opportunity for facilities to move toward more restrictive effluent limits on a faster timeline when compared to the new BAT limits of the proposed rule. At the same time, it would allow facilities to deploy their limited financial resources in a manner that would avoid the wasted cost and effort of installing treatment systems that EPA proposes would no longer represent BAT.

Please contact me at mbloodworth@americas.org or Paul Bailey at pbailey@americaspower.org if you have any questions.

Sincerely,

A handwritten signature in black ink, appearing to read "Michelle A. Bloodworth". The signature is written in a cursive style with a light blue highlight behind it.

Michelle Bloodworth
President and CEO