March 25, 2024

To: U.S. Environmental Protection Agency
Re: Standards of Performance for New Stationary Sources and Emission Guidelines for Existing Sources: Large Municipal Waste Combustors Voluntary Remand Response and 5-Year Review, 89 Fed. Reg. 4243 (proposed Jan. 23, 2024) (EPA–HQ–OAR–2017–0183)

The Institute for Policy Integrity at New York University School of Law (Policy Integrity)[1] respectfully submits this comment letter to the Environmental Protection Agency (EPA) regarding its proposal to set new source performance standards and emissions guidelines for large municipal waste combustors (Proposed Rule).[2] Policy Integrity is a non-partisan think tank dedicated to improving the quality of government decision-making through advocacy and scholarship in the fields of administrative law, economics, and public policy.

The Proposed Rule marks an important, and overdue, step in reducing harmful pollutants from municipal waste combustion. To ensure that EPA regulates in a manner that maximizes social welfare, without leaving potential net benefits on the table, EPA should conduct additional analysis. Specifically, we offer the following recommendations:

- **EPA should rely on benefit-cost analysis, rather than cost-effectiveness analysis, when selecting among regulatory alternatives.** Benefit-cost analysis is the more rigorous analytic approach and better enables selection of the regulatory option that maximizes net benefits. **In selecting among regulatory alternatives, EPA should also assess the stringency of each pollutant (or pollutant grouping) distinctly**, rather than tying the stringency of all but one pollutant together.

- **EPA should conduct a more robust benefit-cost analysis to better identify the welfare-maximizing alternative.** Specifically, EPA should make the following adjustments:
    - **Monetize the benefits of incremental mercury emissions reductions** using its existing practices, or explain why it cannot.
    - **Apply a 2% discount rate** reflecting current guidance and best practices.
    - More robustly assess the **relative distributional impacts of each alternative**, including baseline environmental and health conditions in affected communities.

[1] This document does not purport to represent the views, if any, of New York University School of Law.
[2] Standards of Performance for New Stationary Sources and Emission Guidelines for Existing Sources: Large Municipal Waste Combustors Voluntary Remand Response and 5-Year Review, 89 Fed. Reg. 4243 (proposed Jan. 23, 2024) [hereinafter Proposed Rule].

- Consider remaining unmonetized benefits using **breakeven analysis**, and identify whether all benefits—both monetized and unmonetized—of more stringent standards justify the incremental costs.

Background

In January 2024, EPA published the Proposed Rule to amend the new source performance standards and emissions guidelines for large municipal waste combustion (MWC) units. Under the Clean Air Act, EPA must promulgate regulations limiting emissions of nine air pollutants from municipal solid waste units.[3] These emissions standards must reflect "the maximum degree of reduction in emissions of air pollutants … that the Administrator, taking into consideration the cost of achieving such emission reduction, and any non-air quality health and environmental impacts and energy requirements, determines is achievable for new or existing units in each category."[4] This level of control is known as a maximum achievable control technology (MACT) standard.[5]

The proposed amendments reflect EPA's reevaluation of the MACT floor and beyond-the-floor standards including a five-year review. The MACT floor represents the minimum stringency levels for new and existing large MWC units, based on levels of emissions control achieved in practice by the best-performing 12% of units in the category.[6] Each regulatory option EPA considers must be at least as stringent as the MACT floor.[7] EPA also must examine a more stringent beyond-the-floor regulatory option and consider the various impacts of the more stringent option in determining whether MACT standards should reflect beyond-the-floor requirements.[8] For each regulated pollutant, EPA considers both 1) the MACT floor, and 2) a more stringent option reflecting beyond-the-floor standards and the five-year review.[9]

Ultimately, EPA considers three policy options. First, EPA considers the MACT floor for each pollutant— that is, the minimum stringency level permissible under the Clean Air Act.[10] Second, EPA considers an option that reflects the more stringent standard for only nitrogen oxide (NOx) and the MACT floor for all other regulated pollutants.[11] Third, EPA considers an option that reflects the more stringent standard for all regulated pollutants.[12] EPA selects among these options using cost-effectiveness analysis, calculating a ratio of the cost per ton of reduced

[3] 42 U.S.C. § 7429(a)(4). The nine regulated pollutants are particulate matter, carbon monoxide, dioxins/furans, sulfur dioxide, nitrogen oxides, hydrogen chloride, lead, mercury, and cadmium. *Id.*
[4] *Id.* § 7429(a)(2).
[5] Proposed Rule, 89 Fed. Reg. at 4248.
[6] 42 U.S.C. § 7429(a)(2).
[7] *See id.*
[8] Proposed Rule, 89 Fed. Reg. at 4248 (citing Nat'l Ass'n for Surface Finishing v. EPA, 795 F.3d 1, 5 (D.C. Cir. 2015)).
[9] *See id.* at 4251–53 (discussing MACT floor assessment); 4253–55 (discussing beyond-the-floor and five-year review assessment).
[10] *Id.* at 4250; *see also* 42 U.S.C. § 7429(a)(2).
[11] *See* Proposed Rule, 89 Fed. Reg. at 4250.
[12] *See id.*

emissions per year.[13] Because the second option "provides the most cost-effective means to maximize emissions reductions"—that is, it has the highest ratio of emissions reduction to cost, according to EPA's analysis—EPA selects it as the preferred alternative.[14]

EPA also conducts a regulatory impact analysis (RIA) where it assesses the benefits and costs of the different regulatory options.[15] In that analysis, EPA estimates that the present value of the compliance costs for its preferred regulatory option is $1.7 billion while monetized benefits of that option total $5.1 billion to $16 billion for its preferred regulatory option (at a 3% annual discount rate).[16] For the more stringent option, both monetized benefits and costs are higher, and monetized net benefits are lower.[17]As EPA acknowledges, however, "these results present an incomplete overview . . . because important categories of benefits . . . were not monetized."[18]

I. When Selecting Among Regulatory Alternatives, EPA Should Use Benefit-Cost Analysis Rather than Cost-Effectiveness Analysis and Assess Stringency Separately for Different Pollutants

As noted above, EPA analyzes the MACT floor and more stringent standards for numerous different pollutants. But although EPA conducts a benefit-cost analysis for the various regulatory options, it does not base its regulatory selection on such an analysis. Instead, it selects regulatory stringency based on a cost-effectiveness analysis, in which it divides the total cost of each regulatory option by its total emission reductions.[19]

EPA should refine its approach in two ways. First, rather than relying on cost-effectiveness analysis, EPA should select regulatory stringency using benefit-cost analysis. And second, EPA should consider the benefits and costs for each pollutant (or pollutant grouping), rather than all together, in selecting the appropriate regulatory stringency for each pollutant.

A. EPA Should Select Regulatory Stringency Based on Benefit-Cost Analysis

EPA's standards under Section 129 must reflect the "maximum degree" of emissions reduction it determines to be achievable, considering cost and several other enumerated factors.[20] In the Proposed Rule, EPA uses cost-effectiveness analysis to select among regulatory options.[21]

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[13] *Id.* at 4254.
[14] *Id.*
[15] EPA, Preliminary Regulatory Impact Analysis for the Proposed Standards of Performance for New Stationary Sources and Emission Guidelines for Existing Sources: Large Municipal Waste Combustors 1-13 to 1-14 (Jan. 2024) [hereinafter RIA]. *See also* Proposed Rule, 89 Fed. Reg. at 4264–65 (summarizing RIA).
[16] RIA, *supra* note 15, at 6-2 tbl.6-1. Although EPA also analyzed benefits and costs at a 7% discount rate. However, we present results at a 3% discount rate because the updated version of Circular A-4 recommends against using a capital-based discount rate (i.e., the 7% rate). OFF. OF MGMT. & BUDGET, CIRCULAR A-4: REGULATORY ANALYSIS 77–80 (Nov. 9, 2023) [hereinafter UPDATED CIRCULAR A-4].
[17] RIA, *supra* note 15, at 6-2 tbl.6-1.
[18] Proposed Rule, 89 Fed. Reg. at 4264.
[19] *Id*. at 4254.
[20] *See* 42 U.S.C. § 7429(a)(2).
[21] Proposed Rule, 89 Fed. Reg. at 4254.

Though permissible under the statute, cost-effectiveness analysis has at least two key drawbacks relative to benefit-cost analysis.

First, benefit-cost analysis is aligned with Executive Order 12,866, which directs agencies choosing among regulatory approaches to select the approach that "maximize[s] net benefits."[22] Benefit-cost analysis, which assesses net benefits, allows agencies to fulfill this directive.[23] Selecting the regulatory option based on benefit-cost analysis, in addition to being mandated by executive order, will offer a more rigorous analytic approach to aid EPA in selecting the option which maximizes social welfare.[24]

Second, while benefit-cost analysis is generally preferable to cost-effectiveness analysis, it is particularly so here because EPA's cost-effectiveness analysis is focused not on the cost per ton of reducing a single pollutant, but rather multiple different pollutants. Circular A-4 specifically highlights that cost-effectiveness analysis "can . . . be misleading" when "effectiveness [is] measured in tons of reduced emissions encompassing multiple types of pollutants," and, for this reason, "should generally be avoided" in such cases.[25] EPA's effectiveness measure, relying on the combined emissions reductions of numerous pollutants, obscures the marginal benefits of reducing specific pollutants.[26] This problem is exacerbated by the fact that EPA does not measure all pollutants using the same metric—some are in tons reduced, whereas others (like mercury) are in pounds reduced.

In sum, EPA's cost-effectiveness analysis suffers from several analytical pitfalls. Circular A-4 highlights benefit-cost analysis as "the more informative of the two types of analysis," better capturing the effects of regulation on social welfare.[27] EPA should therefore select its regulatory approach based on benefit-cost analysis rather than cost-effectiveness analysis.

B. In Assessing Regulatory Stringency, EPA Should Consider Each Pollutant (or Pollutant Grouping) Distinctly Rather than Lumping Together Most Pollutants

In selecting among regulatory alternatives, EPA should also consider each pollutant (or pollutant grouping) distinctly for each alternative rather than lumping most of them together. As noted above, EPA considers just three total regulatory options and effectively ties together the stringency of all non-NOx pollutants. That is, for each considered alternative, all non-NOx pollutants are all either at the MACT floor or the more stringent level.[28] Because different

[22] Exec. Order No. 12,866 § 1(a), 58 Fed. Reg. 51,735, 51,735 (Oct. 4, 1993) (emphasis added).
[23] UPDATED CIRCULAR A-4, *supra* note 16, at 4 (recognizing that benefit-cost analysis "is a better way of capturing the effects of regulations on social welfare").
[24] *See id.*
[25] *Id.* at 6.
[26] *See id.* (explaining that cost-effectiveness measures encompassing multiple pollutants will be misleading "unless each ton of reduced emissions of each pollutant results in the same health and environmental benefits").
[27] UPDATED CIRCULAR A-4, *supra* note 16, at 4.
[28] *See supra* notes 10–14 and accompanying text.

pollutants pose different risks and their reductions yield different marginal benefits and costs, EPA should consider them separately when selecting regulatory stringency.

EPA appears to already have data necessary to rationally conduct individual stringency determinations, particularly for the pollutants with monetized benefit estimates. For each pollutant, EPA quantifies emissions reductions for the MACT scenario and the beyond-the-floor/five-year review scenario.[29] For several of those pollutants, EPA then monetizes key benefits (while not quantifying others).[30] EPA also estimates the compliance costs for each pollutant grouping under each alternative.[31] With this information, EPA can meaningfully compare the marginal benefits and costs of each pollutant grouping for each stringency level—particularly for pollutants with partially monetized benefit estimates like particulate matter. In conducting this analysis, EPA should also consider potential interactions between different pollutants and be sensitive to cumulative impacts that result from these interactions.

As noted above, EPA already selects the more stringent standard for NO_X. Thus, EPA appears open to selecting different regulatory scenarios for different pollutants. And for the reasons discussed above, doing so using benefit-cost analysis, rather than cost-effectiveness analysis, offers the more rigorous evaluative approach.

II. EPA Should Conduct a More Robust Benefit-Cost Analysis to Better Identify the Welfare-Maximizing Alternative

While EPA should select its regulatory option using benefit-cost analysis, it should also improve upon its benefit-cost analysis in the following four ways.

First, EPA should monetize additional benefits. Most notably, EPA has promulgated a number of rules targeting mercury (or Hg) emissions, and during that time has improved its methodology for monetizing benefits associated with Hg emissions reductions. Because the Proposed Rule also targets Hg emissions, EPA should consider whether it can monetize those emissions reductions using the tools it deployed in previous rulemakings.

Second, in accordance with the updated Circular A-4, EPA should use a 2% discount rate. A 2% rate is not only consistent with current best practices and federal guidance, but also will help ensure that EPA more accurately represents the long-term impacts of each regulatory option.

Third, EPA should consider the relative distributional impacts of each alternative. For example, EPA should consider how the Proposed Rule and regulatory alternatives will impact environmental justice populations in proximity to MWCs, including any quantitative and qualitative benefits regulation for these populations relative to their baseline status.

[29] Proposed Rule, 89 Fed. Reg. at 4260–61 tbl.7
[30] *See* RIA at 4-11 tbl.4-1 (listing monetized and unmonetized effects of PM2.5 emissions reductions); *id.* at 4-17 tbl.4-2 (same for ozone).
[31] Proposed Rule, 89 Fed. Reg. at 4262 tbl.8.

Finally, EPA should conduct a break-even analysis on any remaining unmonetized benefits so that these benefits are properly considered. A break-even analysis will allow EPA to consider what order of magnitude remaining unmonetized benefits would have to be to affect the ordering of regulatory alternatives.

A. EPA Should Monetize Benefits of Mercury Emissions Reductions Using Existing Approaches, Or Explain Why It Cannot

EPA monetizes some of the Proposed Rule's benefits, namely public health benefits "associated with reductions in $PM_{2.5}$ and ozone concentrations,"[32] but, does not monetize the "vast majority of the public health benefits associated with reductions of [hazardous air pollutants (HAP)]," including important "benefits from reducing Hg and non-Hg metal HAP."[33] As detailed below, EPA should consider the relative scale of unmonetized benefits between regulatory options and assess whether they alter the ordering of alternatives.[34] But first, EPA may be able to monetize additional benefits. In particular, EPA should consider whether it can monetize the emissions reductions of mercury, which the agency has already monetized in other contexts.

Prior EPA rules suggest that the agency highly values mercury emissions reductions. In the 2005 Clean Air Mercury Rule, which addressed mercury standards for coal-fired electric utility steam generating units, EPA estimated the marginal cost of mercury reductions for its chosen regulatory option to be $39,000 per pound (in 1999$).[35] That's equivalent to nearly $67,000 per pound in 2022$, the unit of analysis in the Proposed Rule.[36] To put this in perspective, in the Proposed Rule, EPA rejects a cost-effectiveness value of $35,000 per ton of emissions reduced across all regulated pollutants.[37] If EPA valued mercury emissions reductions at $67,000 per pound, as an order-of-magnitude exercise, then it would value the additional 276 pounds of mercury emissions reduction per year from the more stringent regulatory alternative[38] at approximately $18.4 million annually.

Prior EPA rules also offer insights into methodologies for monetizing the benefits of reducing mercury emissions. In the 2005 mercury rule, EPA monetized benefits for just "a few of the endpoints associated with reducing Hg," focusing on "avoided IQ decrements in potentially

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[32] *Id.* at 4264 tbl.10.
[33] *Id.* at 4264 ("[I]mportant categories of benefits—including benefits from reducing Hg and non-Hg metal HAP . . .—were not monetized . . . .").
[34] *See infra* Sec. I.D.
[35] EPA, Regulatory Impact Analysis of the Final Clean Air Mercury Rule 7-7 tbl.7-8 (2005); *see also* National Emission Standards for Hazardous Air Pollutants: Mercury Emissions From Mercury Cell Chlor-Alkali Plants, 76 Fed. Reg. 13852 (Mar. 14, 2011) (noting that EPA "accepted regulatory strategies with estimated cost-effectiveness values of $39,000 per pound").
[36] CPI Inflation Calculator, https://data.bls.gov/cgi-bin/cpicalc.pl (finding that $39,000 in January 1999 has the same purchasing power as $66,736.29 in January 2022).
[37] Proposed Rule, 89 Fed. Reg. at 4254.
[38] *Id.* at 4261 tbl.7. Because EPA considers mercury and dioxin/furans emissions together in its analysis in the Proposed Rule of compliance costs by regulatory option, it is unclear how this monetized value alone would compare with the actual compliance cost attributed to mercury emissions reductions in the different regulatory scenarios. *See* Proposed Rule, 89 Fed. Reg. at 4262 tbl.8.

prenatally exposed children from the reduction of MeHg [methylmercury] exposures."[39] But as science and economics have developed, so has EPA's valuation capability. In a 2021 Technical Support Document (TSD),[40] EPA expanded its modeling of IQ loss associated with mercury exposure to account for fish consumption through commercially-sourced fish, generating a range of estimates using a bounding analysis.[41] In addition, EPA quantified and monetized myocardial infarction (MI) deaths associated with mercury exposure through fish consumption, which it had not previously monetized.[42] EPA should consider whether the same methodology could apply here, as it would yield meaningful (though relatively small) benefit estimates.[43]

EPA's analysis need not end here. Experts have identified methodologies for further monetizing the health benefits associated with mercury emissions reductions, including "more fully quantify[ing] the exposure pathway for general population exposures" due to fish consumption."[44] These experts also note that given studies of the relationship between methylmercury exposure and heart disease, and the fact that MI-deaths represent only a small portion of the total cardiovascular deaths in the United States, EPA should consider reductions in total premature cardiovascular mortality due to mercury exposure.[45] Even if such an analysis is not feasible for this rulemaking, EPA should consider these additional monetization methodologies for future rules.

EPA should also consider ways in which it can monetize benefits other than those associated with reduced mercury emissions, including regulatory benefits related to ecosystem services.[46] Though available monetization techniques may be limited for certain regulated pollutants, EPA should also consider distributional impacts and unmonetized benefits in selecting its regulatory approach, as discussed further below.

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[39] Standards of Performance for New and Existing Stationary Sources: Electric Utility Steam Generating Units, 70 Fed. Reg. 28,606, 28,641 (May 18, 2005).

[40] EPA, Technical Support Document: National-Scale Mercury Risk Estimates for Cardiovascular and Neurodevelopmental Outcomes for the National Emission Standards for Hazardous Air Pollutants: Coal- and Oil-Fired Electric Utility Steam Generating Units – Revocation of the 2020 Reconsideration, and Affirmation of the Appropriate and Necessary Supplemental Finding; Notice of Proposed Rulemaking (Sept. 2, 2021) (EPA-HQ-OAR-2018-0794).

[41] *Id.* at 2.

[42] *Id.* at 3-13.

[43] In the 2021 TSD, EPA monetized the costs of 29 tons of mercury. EPA's range of estimates from its bounding analysis found that with the upper bound of 6000 estimated lost IQ points (using another EPA's study's findings of $11,859/IQ point at a 3% discount rate), IQ loss related to Hg could be monetized at $53 million (2016$) per year. Id. at 26 tbl. 5. EPA also found that MI-mortality reduction could be monetized at $720 million (2016$) assuming the upper bound of 91 deaths and a VSL of $10.7 million. Id. at 25, tbl. 4. Combining these equals $773 million per year (2016$) from 29 tons, which, if scaled linearly, equals roughly $26.65 million per ton or about $13,300 per pound. Multiplying that value by the 275.8 pounds of mercury emissions reductions in the more stringent regulatory alternative in the Proposed Rule yields about $3.7 million in 2016$, or about $4.4 million in 2022$.

[44] Elsie Sunderland et al., A Template for a State-of-the-Science Assessment of the Public Health Benefits Associated with Mercury Emissions Reductions for Coal-fired Electricity Generating Units 6–7.

[45] *Id.* at 11.

[46] *See generally* Guidance for Assessing Changes in Environmental and Ecosystem Services in Benefit-Cost Analysis (Feb. 28, 2024) [hereinafter Ecosystem Services Guidance].

B. EPA Should Use a 2% Discount Rate to Calculate the Present Value of Monetized Benefits and Costs

EPA should also apply a 2% discount rate, in line with the most up-to-date interagency Office of Management and Budget guidance.[47] EPA's monetized costs and benefits estimates in the Proposed Rule rely on outdated discount rates of 3% and 7%, which no longer reflect best practices.

Though the 2003 version of Circular A-4, on which EPA relies, recommended a 3% and 7% discount rate,[48] this guidance is now more than twenty years old and no longer reflects best practices. The updated Circular A-4, issued in November 2023, updated the social discount rate to 2% based on more recent economic data and theory.[49] Lowering the discount rate to 2% will ensure that long-term benefits and costs receive appropriate weight in EPA's analysis, and this choice of discount rate will better reflect the present-value net benefits of EPA's regulatory options.[50]

Amending EPA's calculations in the Proposed Rule to use a 2% discount rate is a feasible way to bring EPA's analysis in line with current economic theory and regulatory analysis practices. Replacing the 3% and 7% rate with 2% requires only minor adjustments to existing calculations, making compliance with the 2023 Circular A-4 both "feasible and appropriate."[51]

Policy Integrity attempted to re-run EPA's benefit-cost analysis using a 2% discount rate. However, this was not feasible because EPA's workbook presents benefit-per-ton estimates for individual pollutants already discounted. While EPA should use a 2% discount rate on its own, it should also provide undiscounted benefit-per-ton figures so that the public can assess how using different discount rates would affect the calculation of net benefits.

C. EPA Should Consider the Distributional Effects of Each Alternative When Selecting Among Regulatory Options

To better identify the welfare-maximizing alternative, EPA should also consider the distributional impacts that the proposed scenario and the other alternatives may have, including benefits and costs to environmental justice communities. EPA provides an "Economic Impact Analysis and Distributional Assessments" in Section 5 of the RIA to address distributional impacts. This section, however, does not discuss environmental justice or analyze the relative

[47] The updated Circular A-4 is effective March 1, 2024. Agencies are encouraged to follow the updated Circular's guidance "to the extent feasible and appropriate" earlier than this effective date. UPDATED CIRCULAR A-4, *supra* note 16, at 93.
[48] OFF. OF MGMT. & BUDGET, CIRCULAR A-4: REGULATORY ANALYSIS 33–34 (2003).
[49] The 2% rate reflects the average pre-tax rate of return for 1993 through 2022, based on the thirty-year average of the yield on ten-year U.S. Treasury marketable securities, adjusted for inflation. UPDATED CIRCULAR A-4, *supra* note 16, at 76–77.
[50] *See generally* Hiroshi Matsushima & Max Sarinsky, Inst. for Pol'y Integrity, *Analytical Clarity: How Updated Climate-Damage Values and Discount Rates Will Affect Regulatory Analysis* (2023) (describing how applying 2% discount rate to regulatory analysis accounts for net benefits which the federal government has systematically underestimated).
[51] UPDATED CIRCULAR A-4, *supra* note 16, at 93.

distributional impacts of different regulatory alternatives.[52] While EPA briefly addresses environmental justice in the regulatory preamble, presenting the results of a demographic proximity analysis for the 57 existing large MWCs,[53] it does not perform a distributional analysis, which could provide additional data to compare the distributional impacts between the proposed regulatory scenario and its alternatives. Based on these materials, the rule's distributional impacts do not appear to factor into EPA's decisionmaking.

Several executive documents direct agencies such as EPA to perform distributional analyses to identify, and potentially address, the disproportionate impacts of regulation on various groups. In particular, Circular A-4 offers best practices for distributional analysis.[54] Circular A-4 states that agencies should assess net benefits, including both monetized and non-monetized impacts, for relevant groups, cautioning that "[i]t is generally not sufficient for [an agency's] analysis to merely state that the chosen regulatory alternative does not reduce net benefits for relevant groups; it is important to *analyze and describe* the benefits and costs of different regulatory alternatives for relevant groups."[55] Past executive orders also note the importance of distributional analysis, including Executive Order 12,866[56] and Executive Order 13,563.[57]

EPA has also issued guidance on environmental justice, which offers robust recommendations on factoring distributional issues into benefit-cost analysis (EJ Technical Guidance).[58] This guidance "encourages staff to evaluate the distribution of burdens," especially to "populations that have historically borne a disproportionate share of environmental harms and risk," and to "examine the distribution of positive environmental and health outcomes resulting from regulatory actions."[59] The guidance also directs analysts to evaluate differences in anticipated impacts across population groups of concern[60] for different regulatory options, recommending quantitative analysis when risks, exposures, outcomes, or benefits are quantifiable.[61] Moreover,

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[52] *See* RIA ch.5.
[53] *See* Proposed Rule, 89 Fed. Reg. at 4263–64, 4267.
[54] Both the 2003 Circular A-4 and the updated 2023 version recognize that benefits and costs may be unevenly distributed and encourage agencies to consider distributional effects of regulation. *See generally* UPDATED CIRCULAR A-4, *supra* note 16, at 61–62; OFF. OF MGMT. & BUDGET, CIRCULAR A-4: REGULATORY ANALYSIS (2003), https://obamawhitehouse.archives.gov/omb/circulars_a004_a-4.
[55] UPDATED CIRCULAR A-4, *supra* note 16, at 61–66 (emphasis added).
[56] Exec. Order. No. 12,866 § 1(a) (directing agencies to consider "distributive impacts" and "equity" when identifying the approach that maximizes net benefits).
[57] Exec. Order No. 13,563 § 1(b)–(c)., 76 Fed. Reg. 3821 (Jan. 18, 2011) (reemphasizing importance of "distributive impacts" and "equity" in regulatory impact analysis).
[58] *See generally* EPA, TECHNICAL GUIDANCE FOR ASSESSING ENVIRONMENTAL JUSTICE IN REGULATORY ANALYSIS 1 (2016) [hereinafter 2016 EJ TECHNICAL GUIDANCE]. In 2023, EPA proposed a revised draft of this guidance for public comment. This revised draft reflects advancements in science, peer-reviewed guidance documents, and priorities and directions related to the conduct of environmental justice analysis, including Executive Order 14,096. *See generally* EPA, DRAFT REVISION OF TECHNICAL GUIDANCE FOR ASSESSING ENVIRONMENTAL JUSTICE IN REGULATORY ANALYSIS (2023) [hereinafter 2023 Draft EJ TECHNICAL GUIDANCE].
[59] 2016 EJ TECHNICAL GUIDANCE, *supra* note 58, at 1.
[60] The guidance defines "population groups of concern" as "minority populations, low-income populations, and indigenous peoples in the United States and its territories and possessions." *Id.* at 68.
[61] *See* 2023 DRAFT EJ TECHNICAL GUIDANCE *supra* note 58, at 3, 51–53; *see also* 2016 EJ TECHNICAL GUIDANCE, *supra* note 58, at 4, 43–44.

the updated Circular A-4 states that analysts "should aim for transparency about key methods, data, and other analytical choices" made in their analysis and specifically, "when distributional effects are relevant to the agency's decision, you should summarize your results and describe your analysis in a manner that supports transparency and comprehensibility for policymakers and the public."[62]

Based on EPA's existing analysis, it appears that the Proposed Rule will have tangible benefits for environmental justice communities living in proximity to large MWCs, and these benefits will increase with regulatory stringency. In particular, EPA's proximity demographic analysis shows a disproportionate share of population groups of concern residing near the 57 existing large MWC facilities subject to this regulation.[63] For instance, the percentage of non-White people living within five kilometers is 12 percentage points greater than the population nationwide (52% vs. 40%), and the percentage of people below the poverty line is also marginally greater (16% within 5 kilometers, compared to 13% nationwide).[64] Such groups are often disproportionately burdened by environmental harms, including air pollution.[65]

While EPA's proximity analysis is a helpful step, the agency should go further by assessing the baseline status of environmental hazards in proximate regions and the impacts of each policy option on local populations.[66] While some effects may be difficult to quantify, EPA should analyze whether, and to what extent, affected local populations face disparate environmental burdens and, to the extent feasible, consider how different regulatory options may help alleviate those burdens. This analysis would enable EPA's analysis to better reflect the potential advantages of each alternative on communities in proximity to MWCs. And it would provide a stronger foundation for EPA to assess whether distributional impacts affect the ranking of alternatives.

EPA's recently-finalized methane standards (Methane Rule)[67] offer a more robust analysis of environmental justice impacts which may serve as a model for this rule. In the regulatory impact analysis for that rule, EPA provided a comparatively thorough analysis of environmental justice impacts relying on the EJ Technical Guidance.[68] The Methane Rule contains several practices that EPA might consider to bolster its analysis here. First, EPA could expand the demographic

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[62] *See* UPDATED CIRCULAR A-4, *supra* note 16, at 4, 65.
[63] *See* Proposed Rule, 89 Fed. Reg. at 4263 tbl.9.
[64] Proposed Rule, 89 Fed. Reg. at 4263; SC&A, Inc., Analysis of Demographic Factors for Populations Living Near Large Municipal Waste Combustors tbl.2 (June 26, 2023) (Docket No. EPA-HQ-OAR-2017-0183-0022).
[65] *See* THE WHITE HOUSE, ENVIRONMENTAL JUSTICE, https://www.whitehouse.gov/environmentaljustice (last visited Mar. 15, 2024).
[66] *See* UPDATED CIRCULAR A-4, *supra* note 16, at 64; 2016 EJ TECHNICAL GUIDANCE, *supra* note 58, at 11, 43–45; 2023 DRAFT EJ TECHNICAL GUIDANCE, *supra* note 58, at 51–53, 57.
[67] Standards for Performance for New, Reconstructed, and Modified Sources and Emissions Guidelines for Existing Sources: Oil and Natural Gas Sector Climate Review, 89 Fed. Reg. 16,820 (Mar. 7, 2024).
[68] EPA, Regulatory Impact Analysis of the Standards of Performance for New, Reconstructed, and Modified Sources and Emissions Guidelines for Existing Sources: Oil and Natural Gas Sector Climate Review 4-24 (2023) ("For the purposes of analyzing regulatory impacts, the EPA relies upon its June 2016 'Technical Guidance for Assessing Environmental Justice in Regulatory Analysis', which provides recommendations that encourage analysts to conduct the highest quality analysis feasible … .")

analysis to employees in the regulated sector, including demographics of communities whose employment in the sector is disproportionately high, to consider a different channel of possible impact.[69] Additionally, EPA could evaluate the exposure impacts and health risks in EJ populations of concern living in proximity to large MWCs.[70]

D. EPA Should More Robustly Consider the Remaining Unmonetized Benefits of Each Alternative, Including Through Break-even Analysis

As discussed above, EPA should seek to monetize some key benefits of mercury emissions reductions from each regulatory alternative. But even if EPA does this monetization, numerous unquantified benefits will remain. In comparing regulatory alternatives, EPA should give meaningful consideration to unquantified impacts and their relative differences between alternatives.

Currently, EPA's benefit-cost analysis fails to meaningfully consider the incremental benefits of unmonetized benefits from emissions reductions. While EPA concludes that consideration of unmonetized effects would increase the net benefits of its proposed regulatory alternative,[71] it does not analyze how consideration of the unmonetized benefits might affect the net benefits of the more stringent alternative. Without considering unquantified benefits, EPA cannot fully compare the net benefits of the proposed alternative and the more stringent alternative.

Circular A-4 instructs agencies to consider unmonetized impacts more robustly, including how they affect the identification of the welfare-maximizing regulatory alternative. As Circular A-4 explains, an agency can address key unmonetized benefits by conducting "threshold" or "break-even" analysis, which asks what magnitude the unmonetized benefits would need to have for the proposed regulation to "yield positive net benefits or to change which regulatory alternative is most beneficial."[72] Circular A-4 also endorses "order-of-magnitude" analysis to determine the potential magnitude of unmonetized effects.[73]

In addition to mercury, which is discussed above, many of the rule's unquantified benefits appear to differ significantly between regulatory alternatives. For instance, hydrogen chloride emissions reductions associated with the more stringent regulatory alternative are approximately 2.7 times the reductions achieved by the proposed scenario.[74] In addition, dioxins/furans emissions reductions are nearly five times greater under the more stringent alternative.[75] Particulate matter emissions reductions also more than triple under the more stringent alternative[76] and sulfur

[69] *See id.* at 4-55 to 4-61.
[70] *See id.* at 4-27 to 4-55.
[71] Proposed Rule, 89 Fed. Reg. at 4264.
[72] UPDATED CIRCULAR A-4, *supra* note 16, at 47.
[73] *Id.* at 48.
[74] Proposed Rule, 89 Fed. Reg. at 4261 tbl.7 (928 tons/year versus 344).
[75] E. Rsch. Grp., Emissions Reduction Estimates for Existing Large MWCs 3 tbl.1 (Sept. 13, 2023) (EPA-HQ-OAR-2017-0183-0008) (249 tons/year versus 52).
[76] *Id.* (88 tons/year versus 24).

dioxide emissions reductions nearly double,[77] and many key benefits from reducing these pollutants remain unmonetized.[78] EPA should provide more rigorous analysis of the benefits associated with these emissions reductions, including the potential magnitudes of those benefits.

In assessing these unmonetized benefits, EPA should also follow best practices from the OMB's guidance on ecosystem services.[79] That guidance explains that where monetization of changes in ecosystem services is not possible, quantification and qualitative description of those changes should be "expressed in terms of welfare change" when feasible.[80] EPA describes possible ecosystem effects associated with ozone exposure, including "reduced growth and/or biomass production in sensitive trees, reduced yield and quality of crops, visible foliar injury," and "change[s] to species composition."[81] If feasible, EPA should link these natural changes to changes in human welfare.[82] EPA should also characterize differences in ecosystem services benefits across regulatory alternatives to the extent feasible.[83]

Sincerely,

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[77] *Id.* (4,348 tons/year versus 2,422).
[78] *See* RIA at 4-25 to 4-29.
[79] *See id.* at 4-1 ("The potential benefits from reduced ecosystem effects from the reduction in NOx and SOx deposition and O_3 concentrations are not quantified or monetized here.").
[80] Ecosystem Services Guidance, *supra* note 53, at 7.
[81] RIA at 4-25 to 4-26.
[82] Ecosystem Services Guidance, *supra* note 53, at 18.
[83] *See id.* at 6, 15.