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U.S. Environmental Protection Agency
Docket ID: EPA-HQ-OAR-2020-00044

Increasing Consistency and Transparency in Considering Benefits and Costs in the Clean Air Act Rulemaking Process
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To Whom It May Concern:

The undersigned members of the Abrams Environmental Law Clinic at the University of Chicago Law School respectfully submit this Comment on the Environmental Protection Agency’s (EPA) proposed rulemaking, “Increasing Consistency and Transparency in Considering Benefits and Costs in the Clean Air Act Rulemaking Process,” Docket ID No. EPA-HQ-OAR-2020-00044.

The Abrams Environmental Law Clinic at the University of Chicago Law School seeks to solve some of the most pressing environmental problems through advocacy and litigation at the local, state, and federal levels. The Clinic works regularly with and comments on rulemakings in conjunction with Professor Michael Greenstone, the Milton Friedman Professor in Economics at the College and the Harris School of Public Policy, as well as the Director of the interdisciplinary Energy Policy Institute at the University of Chicago (EPIC) and the Energy & Environment Lab at the University of Chicago Urban Labs. Professor Greenstone is an expert on the Social Cost of Carbon (SCC) and benefit-cost analysis (BCA); he has worked extensively on the Clean Air Act (CAA) and examined its impacts on air quality, manufacturing activity, housing prices, and human health to assess its benefits and costs. The undersigned members of the Abrams Environmental Law Clinic have based the comments below in significant part on briefs and comments that the Clinic and Professor Greenstone have filed in federal litigation and dockets in other federal government rulemakings and proposed actions.

3 For a full biography, see https://www.michaelgreenstone.com/ (last visited July 14, 2020).
This comment focuses on EPA’s proposal to codify “best practices” for BCAs that EPA would use for significant future regulations under the CAA, which is a part of a larger EPA effort across a variety of its statutory programs. First, this comment argues that significant regulatory decisions should account for all benefits, including both direct benefits (i.e., pollution reductions targeted by the statutory objective of the regulation) and co-benefits (i.e., ancillary benefits), to maximize social welfare. Second, with regard to EPA’s request for comment regarding non-domestic and domestic benefits and costs, this comment argues that EPA should always consider all benefits and costs; for example, EPA should use a global SCC, rather than just a domestic-only SCC, to ensure BCAs reflect the true scope of climate change’s global damages. Third, the comment argues that EPA should rely on the best scientific literature (e.g., that from the National Academy of Sciences) to address uncertainties in BCAs, including health and welfare benefits under certain emissions reductions thresholds. Finally, this comment responds to EPA’s inquiries about considering in BCAs the sequence of the promulgation of rules with interrelated effects, the promulgation of rules when monetized benefits exceed costs, and the possibility of retrospective analyses of rules.

I. EPA should consider both direct benefits and co-benefits for new significant rulemakings consistent with regulatory best practices, agency guidance documents, and the CAA.

At a high level, the purpose of a BCA is to assess whether a regulation will improve the aggregate welfare of society, i.e., provide a net benefit (benefits minus costs) to society. A BCA also assists in making socially optimal regulatory decisions that maximize the total benefits of a regulation and overall social welfare. Failing to account for all benefits, including co-benefits, may cause agencies to make non-superior determinations when promulgating a rule. To the extent that the law requires promulgation of regulations, agencies should choose benefit-maximizing

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5 For more information, see Brief of Professor Michael Greenstone as Amicus Curiae Supporting Petitioners at American Lung Association v. EPA, 84 Fed. Reg. 32,520 (July 8, 2019) (No. 19-1140), https://www.law.uchicago.edu/files/19-1140%20Greenstone%20ACE%20Rule%20Amicus%20Brief%202020-04-24%20STAMPEDE.pdf.
7 See Resources for the Future, Co-Benefits and Regulatory Impact Analysis: Theory and Evidence from Federal Air Quality Regulations, at 30 (August 3, 2020), https://media.rff.org/documents/RFF_WP_20-12_Aldy_et_al19599.pdf (“Co-benefits are simply a semantic category of benefits that should be included in BCAs in order to make an appropriate determination about whether a given policy promotes economic efficiency compared with a baseline status quo.”).
alternatives when possible. But, agencies cannot do so if they decline to analyze foreseeable co-benefits thoroughly.

The BCA Proposal would require EPA to report separately monetized benefits targeted by the statutory provision under which a particular rule is promulgated, as well as report the overall results of the BCA. Per the BCA Proposal, the presentation of benefits in this manner is practical for consistency and transparency and can provide important, up-front information for the public to assess.

However, EPA’s statements about why it is undertaking this approach suggest that doing so may result is decisions that are less socially optimal because they will lead EPA to not account for all benefits. EPA states that “disaggregating benefits into those targeted and ancillary to the statutory objective of the regulation may cause the EPA to explore whether there may be more efficient, lawful and defensible, or otherwise appropriate ways of obtaining ancillary benefits.” While EPA suggests that breaking out co-benefits could result in more efficient regulatory decisions, in actuality, this practice could undermine the neutrality of BCAs and result in socially inefficient decisions. This would also negate the intent of this proposal to increase transparency in CAA rulemakings and the purpose of BCAs to identify how to maximize social welfare. Put differently, if EPA separates benefits and focuses only on the direct benefits of a regulation, EPA’s approach would–by design–point the agency away from decisions that maximize social welfare and away from other “appropriate ways of obtaining ancillary benefits.” Obfuscating overall benefits in this way would decrease transparency and could induce EPA to make non-superior determinations that are inconsistent with the overall interest of the public.

EPA describes its proposal as an effort to codify into regulation several best practices outlined in OMB Circular A-4 (2003)\(^9\) and EPA’s Guidelines for Preparing Economic Analyses (2010),\(^10\) but simultaneously suggests rejecting the approach of both of those well-reasoned documents with regard to ancillary benefits. Both regulatory guidance documents require the consideration of co-benefits. Circular A-4 suggests that a BCA “analysis should look beyond the direct benefits and direct costs of your rulemaking and consider any important ancillary benefits and countervailing risks.”\(^11\) Co-benefits, especially those with potentially significant effects, merit analysis because “[i]n some cases the mere consideration of these secondary effects may help in the generation of a superior regulatory alternative” by informing decision-makers of the best possible approach within statutory confines.\(^12\) Thus, “an

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\(^8\) BCA Proposal, supra note 1, at 35622.
\(^11\) OMB Circular A-4, supra note 9, at 26.
\(^12\) Id. (emphasis added).
effort should be made to quantify and monetize [co-]benefits” with the “same standards of information and analysis quality” as applied to direct benefits.\textsuperscript{13} Similarly, EPA’s own Guidelines for Preparing Economic Analyses requires that an “economic analysis of regulatory or policy options should present all identifiable costs and benefits … includ[ing] directly intended effects and associated costs, as well as ancillary (or co-) benefits and costs.”\textsuperscript{14} As such, considering co-benefits in BCAs is the best approach, consistent with regulatory guidance documents. However, EPA does not propose to codify these best practices respecting co-benefits and instead suggests an approach that would move it away from these guidance documents.

The statutory framework of the CAA also supports the inclusion of co-benefits. As an example, the text of § 112(n)(1)(A) requires EPA to be cognizant of co-benefits when regulating hazardous air pollutants (HAPs). The provision directs EPA to promulgate “appropriate and necessary” regulations on power plant emissions based on a study of the public health harms from HAP emissions “after imposition of the requirements of this chapter.”\textsuperscript{15} In other words, the CAA directs the Agency that further regulation may be “necessary” to drive the further reduction of pollutants that either might be the specific target of regulation under a different statutory provision or may have already been reduced as a co-benefit of regulation targeting some other pollutant. Indeed, EPA took this approach in a 2004 proposed rule under § 112(n)(1)(A) on mercury and nickel emissions from coal- and oil-fired power plants, respectively, where EPA described “monetized benefits… [of] approximately $15 billion.”\textsuperscript{16} EPA, however, conceded that the “large benefit estimate is not attributable to reducing human and environmental exposure to [the target pollutant] Hg.”\textsuperscript{17} Instead, EPA acknowledged that most of the monetized benefits “arise[ ] from ancillary reductions in SO2 and NOx,”\textsuperscript{18} and at no point suggested that target pollutant benefits are meaningfully divisible from co-benefits.

In sum, the position on co-benefits articulated in the BCA Proposal appears on its face to represent a departure from sound BCA practices as those practices have been embodied in past guidance and implemented in the past. EPA should make decisions that maximize social welfare; the BCA Proposal could lead the agency away from that goal.

\textsuperscript{13} Id. (emphasis added).
\textsuperscript{14} EPA Guidelines, supra note 10, at 11-2.
\textsuperscript{17} Id. at 4711.
\textsuperscript{18} Id.
II. EPA should adhere to the CAA and OMB Circular A-4 and always consider both non-domestic and domestic benefits and costs in BCAs for significant regulations.

EPA’s BCA Proposal solicits comments on whether “non-domestic benefits and costs of regulations, when examined, should be reported separately from domestic benefits and costs of such regulations.”\(^ {19} \) Similar to EPA’s proposed presentational requirements for targeted and ancillary benefits, simply “reporting” non-domestic benefits and costs separately to provide greater transparency may not present an issue.

However, a policy of breaking out non-domestic benefits only “when examined” de-values non-domestic benefits and ignores the impacts that occur outside of the United States but that harm individuals in and outside of the United States directly and indirectly. For example, if EPA adopts an approach that values only domestic benefits, this would allow EPA to disregard the changes in climate that affect directly U.S. citizens who reside abroad, property owned by U.S. citizens and residents outside the territorial United States, and U.S. military assets overseas.\(^ {20} \) EPA should account for all benefits and costs to identify the efficient regulatory alternative that maximizes overall welfare.

The problem of greenhouse gas pollution may provide the clearest example. According to EPA, “these [greenhouse] gases remain in the atmosphere long enough to become well mixed, meaning that the amount that is measured in the atmosphere is roughly the same all over the world, regardless of the source of the emissions.”\(^ {21} \) Therefore, any country’s domestic carbon emissions impose damages on other countries, places and persons, regardless of political borders. To understand the full effects of greenhouse gas emissions, one needs to look at the emissions from all countries and the impacts on all countries. One should therefore look at both benefits and costs worldwide to account for scale of the pollution problem.

Because the greenhouse-gas emissions problem is worldwide, EPA should use a global SCC in BCAs to account for the full benefits to the United States from mitigating climate change’s global damages. The SCC is the widely adopted metric for the present monetary value of anticipated climate-change damages caused by an incremental ton of carbon dioxide emissions. Professor Greenstone co-led the

\(^{19} \) BCA Proposal, \textit{supra} note 1, at 35623.

\(^{20} \) See OMB Circular A-4, \textit{supra} note 9, at 15 (“Your analysis should focus on benefits and costs that accrue to citizens and residents of the United States.”). See also Dep’t of Defense, \textit{Report on Effects of a Changing Climate to the Department of Defense}, 16-17 (2019) (“About two-thirds of the 79 [military] installations [a]re vulnerable to current or future recurrent flooding[,] more than one-half are vulnerable to current or future drought[,] [a]nd about one-half are vulnerable to wildfires.”).

Interagency Working Group (IWG) that developed the SCC in 2010.\textsuperscript{22} The IWG developed the SCC by estimating the expected consequences of carbon emissions based on three peer-reviewed climate models, assigning costs to these consequences, and discounting them so that their value can be expressed in present dollars. The IWG determined that the SCC will increase as time progresses, and has updated technical components of the models in consultation with the National Academy of Sciences four times to ensure SCC values reflect the best available science.\textsuperscript{23} While Executive Order 13,783 discontinued the IWG,\textsuperscript{24} it also directed agencies to ensure SCC estimates are consistent with Circular A-4\textsuperscript{25} and the best available science,\textsuperscript{26} which justifies a global SCC.

A recent US Government Accountability Office (GAO) report\textsuperscript{27} stated that “thoroughly estimating a domestic [value] would therefore need to consider the potential implications of climate impacts on, and actions by, other countries, which also have impacts on the United States.”\textsuperscript{28} In other words, the GAO report supports consideration of at least some non-domestic aspects of the social costs of carbon when assessing the greenhouse gas problem and potential solutions.

In litigation regarding the climate change mitigation benefits of the “methane waste prevention rule,” a judge in the U.S. District Court for the Northern District of California recently came to a similar conclusion. The Court here held that the Bureau of Land Management’s (BLM) consideration of only domestic impacts of methane emissions “ignores impacts on 8 million United States citizens living abroad, including thousands of United States military personnel; billions of dollars of physical assets owned by United States companies abroad; United States companies impacted by their trading partners and suppliers abroad; and global migration and geopolitical security.”\textsuperscript{29} Ultimately, the Court found BLM’s use of a purely domestic measure to be arbitrary and capricious.\textsuperscript{30}

More generally, both the CAA and OMB Circular A-4 support the inclusion of global impacts—a best practice that EPA should implement in future rulemakings. In reference to including impacts outside of U.S. borders, § 312(b) of the CAA states

\textsuperscript{25} Id. at 16,096.
\textsuperscript{26} Id. at 16,093, 16,095.
\textsuperscript{28} National Academy Report at 52–53 (“Climate damages to the United States cannot be accurately characterized without accounting for consequences outside U.S. borders.”).
\textsuperscript{30} Id. at 36.
that “a default assumption of zero value shall not be assigned to such benefits unless supported by specific data.” A solely-domestic SCC that treats global impacts as having zero value, for example, would ignore this statutory guidance and fail to acknowledge the spillover effects of damages that occur abroad. This would result in an erroneously lower estimate of actual damages in the United States. Circular A-4 also calls for a BCA that matches the scope of the problem, which justifies a global rather than a solely-domestic SCC, for example. Accordingly, the IWG implemented OMB’s instructions because a global approach is more appropriate for analyzing climate change. Thus, the case of greenhouse gas emissions shows that EPA should consider non-domestic impacts when those are relevant for the scope of the pollution problem to be addressed by a particular proposed regulation.

III. EPA’s proposed requirements should reflect the best available science to determine endpoints and should quantify all benefits and costs to the extent possible in BCAs.

Consistent with the explanation provided in sections I. and II. above regarding the value of including all benefits to support decision-making that maximizes societal welfare, EPA should account for all benefits and costs, if feasible, and not just those that are “most influential” or those that limit benefits to endpoints where some scientific evidence questions the extent of a “clear” “causal relationship.” EPA proposes to “select the [benefit] endpoints for which the scientific evidence indicates there is (a) a clear causal or likely causal relationship between pollutant exposure and effect, and subsequently, (b) an anticipated change in that effect in response to changes in environmental quality or exposures is expected as a result of the regulation under analysis.” Selecting endpoints where scientific evidence indicates there is causal link is common under periodic reviews of the National Ambient Air Quality Standards (NAAQS), but the statute does not justify imposing a heightened standard that such causality be “clear” and BCAs for significant CAA regulations should not be constrained by those specific endpoints.

EPA also states that “BCAs should identify uncertainties underlying the estimation of both benefits and costs and, to the extent feasible, quantitatively analyze those [costs, changes in air quality, and changes in benefit endpoints] that are most influential.” This could allow EPA to set thresholds that exclude the consideration of benefits from emissions reductions below set levels, where there is uncertainty as to the precise rate at which those benefits accrue at various levels.

31 42 U.S.C. § 7612(b).
32 BCA Proposal, supra note 1, at 35620.
33 42 U.S.C. 7408(a) (“For the purpose of establishing national primary and secondary ambient air quality standards, the Administrator shall within 30 days after December 31, 1970, publish, and shall from time to time thereafter revise, a list which includes each air pollutant...emissions of which, in his judgment, cause or contribute to air pollution which may reasonably be anticipated to endanger public health or welfare.”).
34 BCA Proposal, supra note 1, 35621.
Effectively, EPA could declare benefits below its selected threshold as too insufficiently established to be “influential” to its decision and impose an unsupported assumption that those benefits fall to zero.

EPA’s proposal to consider only benefit endpoints with “clear” causal connections from scientific studies to estimate benefits, as well as EPA’s focus on quantifying benefits and costs that are “most influential,” is inappropriately restrictive. This proposal could lead EPA to reject scientific studies (e.g., epidemiological studies) that are informative for BCAs because they show a correlation but do not establish a causal relationship. As such, EPA should consider best practices that allow for the use of the best available science (e.g., from the National Academy of Science) that might not meet the strict criteria for causality, but that can provide important evidence for BCAs on the relationship between pollutant exposure and human health. In this respect, the BCA Proposal effectively imposes a causation standard for proving tort liability for known harms ex post that is inappropriate in rulemakings aimed at reducing risks of potential harms ex ante.

For example, the Clean Power Plan (CPP) Final Rule Regulatory Impact Analysis (RIA)\(^35\) highlighted the importance of using the best available science. The RIA provided support for the use of a no-threshold log-linear model to analyze benefits from reducing particulate matter (PM 2.5) below the NAAQS level of 12 μg/m\(^3\). The RIA used this model based on EPA’s interpretation of the best scientific literature, the Integrated Science Assessment for Particulate Matter (PM ISA). The PM ISA reflects thousands of epidemiology, toxicology, and clinical studies, and has concluded that little evidence suggests that a threshold exists for PM 2.5 effects. While EPA recognized “potential uncertainty about the exact shape of the concentration-response function” of the PM-mortality relationship in the CPP Final Rule RIA, it ultimately deferred to scientific consensus on the issue.\(^36\) EPA’s conclusion on this point echoed a study of PM 2.5 modeling by Schwartz et al. that “considered the option for a threshold at various concentrations” and empirically compared the accuracy of threshold and non-threshold models.\(^37\) Schwartz et al. concluded that “[a] key finding of this study is that there is little evidence for a threshold in the association between exposure to fine particles and the risk of death.”\(^38\) As a matter of policy, “[t]he apparent absence of a threshold has important implications,” chiefly that thresholds should be eschewed for “[a] more reasonable goal … to reduce particle concentrations everywhere, at all times, to the extent feasible and affordable.”\(^39\) The support for a no-threshold log-linear model in this

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\(^{36}\) Id. at 4-16.
\(^{38}\) Id. at 67.
\(^{39}\) Id. at 67-68.
instance reflects the significance of using the best available science, and not just those studies that prove causation, to capture the full range of benefits.

The CPP Repeal RIA\textsuperscript{40} also acknowledged that there is no basis on which to conclude that PM reductions at any level are too low to confer a public health benefit. The CPP Repeal RIA provided that the PM ISA’s no-threshold conclusion for PM influenced the 2012 NAAQS, but instead dismissed benefits of reductions below NAAQS by noting that “NAAQS are not meant to eliminate all risk.”\textsuperscript{41} This implicitly admits that there are potential health risks at concentrations below the current NAAQS threshold that could still be addressed via NAAQS or other rulemakings, and that EPA should therefore quantify all uncertainties underlying the estimation of both benefits and costs, where possible.

EPA should continue to rely on the best available scientific approach as it did with the CPP Final Rule to deal with uncertainty and account for all benefits and costs in BCAs. The best approach should not be limited to scientific evidence that indicates there is a “clear” causal relationship, nor should it be limited to the estimation of benefits and costs that are “most influential.” If EPA codifies these restrictions, it risks using inaccurate and incomplete BCAs in future CAA rulemakings.

IV. Other requests for comment in the BCA Proposal are concerning and merit careful consideration.

A. “EPA seeks comment on how sequencing of rules might affect the estimation of benefits and costs.”\textsuperscript{42}

EPA should look to their Guidelines for Preparing Economic Analyses, which have been peer-reviewed by the EPA Science Advisory Board (SAB), to help address the question.\textsuperscript{43} Broadly, decisions related to the sequencing of linked and unlinked rules can have a significant impact on BCA analyses and the promulgation of regulations, and thus, EPA should also consult with experts, including SAB, to understand the impacts of sequencing in the context of specific rulemakings. Doing so will help ensure that proper baselines are used which factor in evidence of full compliance, under-compliance, or over-compliance within a sequence of emissions tightening rules. For example, “a proposed regulation that can be justified from a net benefit perspective under full compliance can also be justified under any baseline compliance rate. However, if non-compliance with previous regulation occurs selectively when compliance costs are high, then the benefit-cost ratio will decline as

\textsuperscript{41} Id. at 49.
\textsuperscript{42} BCA Proposal, supra note 1, at 35624.
\textsuperscript{43} EPA Guidelines, supra note 10, at 5-1 to 5-16.
higher rates of compliance are assumed [given the cost per unit of benefit], and net benefits could potentially switch from positive to negative for a proposed regulation." It is crucial that any consideration of the sequence of rulemakings include carefully incorporating analysis of different compliance rates for each rule involved to avoid producing deflated or inflated net benefits.

B. “EPA also solicits comment on whether and under what circumstances the EPA could determine that a future significant CAA regulation be promulgated only when monetized benefits exceed the costs of the action.”

EPA should continue to weigh both benefits and costs—both monetized and unmonetized—in future decisions consistent with the current guidance within the Agency, from OMB, and from Presidential Executive Orders. It is unclear why the BCA Proposal seeks input on a potential policy under which a rule might be promulgated only when monetized benefits exceed costs, which presumably could be monetized or unmonetized. EPA’s Guidelines for Preparing Economic Analyses provide monetization methods and principles, as well as alternatives that should inform regulatory determinations. Specifically, the Guidance explains that benefits and costs should be expressed in monetary terms where possible, expressed quantitatively if certain benefit and cost categories cannot be monetized, and discussed qualitatively if certain categories cannot be expressed quantitatively. The Guidance also points out that “an economic analysis should assess the likelihood that non-monetized benefits and costs would materially alter the net benefit calculation,” which EPA should continue to accept as a best practice when deciding whether to promulgate a regulation. Limiting the potential bases for future rulemakings to only monetized benefits is inconsistent with both longstanding best practices and sound BCA.

Furthermore, the question itself conflicts with EPA’s assertion elsewhere in the NPRM that the Agency “is not proposing to specify how or whether the results of the BCA should inform significant CAA regulatory decisions.” As a result, if EPA promulgated a rule here that EPA would promulgate a future significant CAA regulation only when the monetized benefits exceed the costs, then it arguably would not be a logical outgrowth of the current proposed rulemaking.

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44 Id. at 5-10.
45 BCA Proposal, supra note 1, at 35623.
46 EPA Guidelines, supra note 10, at 11-1 to 11-11.
47 Id. at 11-3.
48 BCA Proposal, supra note 1, at 35623.
C. “EPA requests comment on whether EPA should include a requirement for conducting retrospective analysis of significant CAA rulemakings.”

Such a requirement could duplicate existing efforts under the CAA and impose additional demands on Agency resources. Section 312 of the CAA requires EPA to “conduct a [periodic] comprehensive analysis of the impact of this chapter on the public health, economy, and environment of the United States. In performing such analysis, the Administrator should consider the costs, benefits and other effects associated with compliance with each standard.” With a greater demand on resources, a supplemental requirement might affect the timeline of other significant rulemakings and enforcement and compliance activities that impact public health, the economy, and the environment. It is further unclear what benefit or function such a duplicative requirement for retrospective analysis would provide.

Before considering this potential requirement further, EPA should clarify whether this retrospective analysis would be different from the current comprehensive analysis, and if so, how might this contribute to CAA’s purpose of protecting and enhancing the quality of the Nation’s air resources.

Conclusion

The overall goal of EPA’s Proposed Rulemaking is reasonable. Setting out best practices in BCAs under CAA is valuable for consistency and transparency.

However, presenting direct benefits and co-benefits, or domestic and non-domestic benefits and costs separately may devalue co-benefits and non-domestic benefits and costs in future CAA regulations. The CAA, OMB Circular A-4, and EPA’s Guidelines for Preparing Economic Analyses support the consideration of all benefits and costs, which includes co-benefits and non-domestic benefits and costs.

EPA should account for all benefits and costs as a best practice to make socially optimal regulatory decisions. This includes, for example, using a global SCC to ensure that BCAs fully reflect climate change’s damages that occur abroad, but which impact the United States and its citizens. EPA should continue to rely on all of the best available science in BCAs, and refrain from creating new opportunities to omit scientific data or challenge its inclusion through imposing unprecedented, unclear and unhelpful limitations to consider only the “most influential” information that shows “clear” causality, to maximize the net benefit to society. EPA should also continue to act in accordance with its Guidelines for Preparing Economic Analyses.

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49 Id. at 35624.
50 42 U.S.C. § 7612.
51 42 U.S.C. § 7401(b).
in decisions related to the sequencing of rules, consideration of non-monetized benefits, and use of retroactive benefit-cost analysis.

The CAA requires EPA to protect public health and welfare and to do so through regulations based on a broad understanding of the best available science. Separating out particular categories of benefits undermines the purposes of the Clean Air Act and will lead EPA to make suboptimal policy decisions that harm public health and the environment.

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