



Institute for
Policy Integrity

NEW YORK UNIVERSITY SCHOOL OF LAW

**Comments to the Office of Management and Budget on
the Social Cost of Greenhouse Gases**

June 21, 2021 (Docket No. OMB-2021-0006-0001)

The Institute for Policy Integrity at New York University School of Law (“Policy Integrity”)¹ respectfully submits these comments in response to the Office of Management and Budget’s request for information, on behalf of the Interagency Working Group on the Social Cost of Greenhouse Gases (“Working Group”), regarding the social cost of greenhouse gases.

Policy Integrity is a non-partisan think tank dedicated to improving the quality of government decisionmaking through advocacy and scholarship in the fields of administrative law, economics, and public policy. Policy Integrity has contributed research and advocacy supporting the broad usage of the social cost of greenhouse gases in government policymaking by bolstering the legal justifications for the social cost values, defending the Working Group’s estimates against criticism from opponents of climate regulation, and engaging in original research to improve the social cost metrics and assess the views of climate change experts.

In response to this call for comments, **Policy Integrity has published five original reports that it attaches hereto.** This comment letter summarizes those five reports and offers several additional points for the Working Group’s consideration. Policy Integrity is also submitting a separate comment letter co-signed by nine other organizations, emphasizing many of the key points in this document and the attached reports. The five attached reports are:

- ***Broadening the Use of the Social Cost of Greenhouse Gases in Federal Policy*** argues that the Working Group should endorse the use of its social cost values in all areas of federal policy with quantifiable greenhouse gas impacts.
- ***Strategically Estimating Climate Pollution Costs in a Global Environment*** provides suggestions for bolstering the justifications for focusing on global damage estimates, while also suggesting methods to improve domestic social cost estimates to account for reciprocity, foreign spillovers, and other U.S. strategic interests, that agencies can use in sensitivity analysis.
- ***About Time: Recalibrating the Discount Rate for the Social Cost of Greenhouse Gases*** documents voluminous evidence for lowering the discount rates used to compute the social cost values and offers legal support for lowering those rates.

¹ This document does not purport to represent the views, if any, of New York University School of Law.

- *Expert Elicitation and the Social Cost of Greenhouse Gases* explains how the Working Group can use expert elicitation to inform critical parameters such as socioeconomic scenarios, damage functions, and discount rates.
- *Playing with Fire: Responding to Criticism of the Social Cost of Greenhouse Gases* offers a roadmap for responding to common objections being raised by opponents of climate regulation against the Working Group’s methodology.

In addition to summarizing those five reports, this comment letter offers several additional points:

- First, it explains that the Working Group should **prioritize implementation of recommendations from the National Academies of Sciences** based on the best available science and economics and consistent with the Group’s available resources.
- Next, it explains that the Working Group should **promote better quantification**, or at least more detailed qualitative discussions, **of currently omitted damages**—including effects relevant to understanding and advancing environmental justice.
- Finally, this comment letter provides additional analysis for why **alternative valuations, like metrics based on emission targets, can supplement—but not replace—the social cost of greenhouse gases**.

This letter begins with the report summaries before proceeding to the additional points.

Report Summaries

I. The Working Group Should Endorse the Broad Application of the Social Cost of Greenhouse Gases Throughout Federal Policymaking

While federal agencies have on occasion applied the social cost of greenhouse gases valuations to different areas, agency use of these valuations outside of regulatory cost-benefit analysis has been somewhat sporadic and limited. It is time for this to change.

In *Broadening the Use of the Social Cost of Greenhouse Gases in Federal Policy*, we suggest that the Working Group provide guidance by September 2021 recommending usage of the social cost of greenhouse gases in any process or decision with meaningful greenhouse gas implications. Because the social cost of greenhouse gases provides the best metric to assess the climate damages from a specific amount of emissions (or the climate benefits from emissions reductions), it can and should **be integrated into all areas of federal policymaking affecting climate change**. Broad application of the social cost of greenhouse gases throughout federal policymaking and processes will enable administrative agencies and departments to efficiently reduce greenhouse gas emissions. Using the social cost metrics, agencies can identify programs

or policies to cost-effectively reduce greenhouse gas emissions. This will promote rationality in federal climate policy and enable a speedy and well-managed transition to a greener economy.

Use of the social cost of greenhouse gases is particularly warranted in two broad categories of agency action in addition to rulemaking. First, use of the social cost of greenhouse gases allows agencies to capture climate effects and seamlessly compare them against other monetized economic effects. This is highly useful in assessments and determinations that involve balancing of beneficial and adverse impacts, such as in National Environmental Policy Act assessments, determinations under land-use or energy-management statutes, grant-making, procurement, and other contexts. Second, when an agency seeks to internalize the costs of climate change, such as through administrative penalties or mineral royalties, the social cost of greenhouse gases provides a monetized estimate of damages that can be directly incorporated into the applicable monetary rate. This will enable an efficient reduction in greenhouse gas emissions.

In short, application of the social cost of greenhouse gases would be extremely beneficial for any decision with significant greenhouse gas implications. The Working Group should endorse the usage of its social cost valuations throughout the federal government.

II. The Working Group Should Bolster the Justifications to Focus on Global Damages, While Also Developing Domestic Estimates that Capture U.S. Strategic Interests

Federal agencies need to apply estimates of the social cost of greenhouse gases that best promote the interests and fulfill the responsibilities of the United States. But debate has reemerged about whether federal agencies' policy analyses should focus on those climate pollution costs that will occur only within U.S. borders, rather than on the full global valuation of climate damages.

In *Strategically Estimating Climate Pollution Costs in a Global Environment*, we endorse the Working Group's focus on global damage estimates, provide additional research and justifications supporting a global focus, and suggest that the Working Group also develop more robust domestic damage estimates for agencies to apply in sensitivity analysis. Some federal courts have upheld use of the global values as "appropriate"² or "the best"³ estimate, and one federal court struck down a prior attempt to calculate a "domestic-only" value for arbitrarily ignoring spillovers and reciprocal actions that would affect U.S. interests.⁴ Adopting a global perspective in analyses also has precedents in prior agency actions.

Nevertheless, at least one federal judge questioned why a domestic-only estimate is not possible,⁵ and lawsuits continue to challenge reliance on the global values.⁶ To minimize legal

² *Zero Zone, Inc. v. U.S. Dep't of Energy*, 832 F.3d 654, 679 (7th Cir. 2016).

³ *California v. Bernhardt*, 472 F. Supp. 3d 573, 611 (N.D. Cal. 2020).

⁴ *Id.* at 614.

⁵ *Wyoming v. U.S. Dep't of the Interior*, 493 F. Supp. 3d 1046, 1081 (D. Wyo. 2020).

⁶ Complaint, *Louisiana v. Biden*, No. 2:21-cv-01074 ¶¶ 54, 69, 106, 109 (W.D. La. filed Apr. 22, 2021); Complaint, *Missouri v. Biden*, No. 4:21-cv-00287-AGF ¶ 108 (E.D. Mo. filed Mar. 8, 2021).

risk, the Working Group should bolster its defense of the global values with additional support. In particular, the Working Group should explicitly explain why reciprocity can by itself justify the full global values. The Working Group should cite evidence of foreign countries reciprocally adopting global values and climate policies that benefit the United States. Additional strategic considerations, including the potential for informational spillovers to benefit the United States, buttresses this conclusion.

The Working Group should also expand its discussion of spillover effects, to cover transboundary resources and feedback loops, and to explicitly make the case why spillover effects also justify a focus on the full global values, either independently or in combination with strategic and ethical considerations. The Working Group should add to its list of extra-territorial interests the valuable military installations abroad and U.S. citizens' and residents' willingness to pay to protect their foreign relatives as well as cultural, religious, and natural sites abroad. The Working Group should add that it would be arbitrarily inconsistent for agencies to try to separate or ignore non-U.S. climate costs when agencies do not separate or ignore the portion of compliance costs and other effects that ultimately accrue to foreign entities through investments and ownership in corporations affected by U.S. policies.

The Working Group should also add legal justifications and recommend that agencies incorporate both legal and economic justifications for the global values in their individual proceedings. In particular, statutes that reference "public welfare" or "the needs of the United States" can be read as consistent with the global values, because of the strategic, economic, security, and ethical interests involved. **The National Environmental Policy Act's requirement to interpret and administer all U.S. laws in light of the "worldwide . . . character of environmental problems" supports this approach.**⁷ The Working Group should also explain how the legal standards for arbitrary and capricious review require consideration of various key factors that a non-global estimate would arbitrarily omit from consideration.

Even as federal agencies stay focused on the global estimates of the social cost of greenhouse gases, the Working Group should consider developing more robust estimates of the reciprocal benefits of foreign actions, international spillovers to the United States, impacts to extra-territorial U.S. interests, and the willingness of U.S. citizens to pay to protect foreign people, locations, and ecosystems. **Estimates of impacts to U.S. interests both can improve the accuracy and completeness of the global estimates, and also can be incorporated when appropriate into agencies' sensitivity analyses as domestic estimates that may help safeguard against legal or political risks from relying exclusively on the global estimates.**

The Working Group should first disavow as flawed and incomplete any prior suggestions to calculate a domestically-oriented value as 7-23% of the global values. Instead, the Working Group should recommend a new domestic valuation of the social cost of greenhouse gases, as a lower-bound estimate for use in sensitivity analysis. The Working Group should be clear that agencies should focus on the global values in their main analyses to best promote U.S. interests and fulfill U.S. responsibilities. The domestic valuations will reflect the *lower-bound* estimates

⁷ 42 U.S.C. § 4332(F).

of the minimum factors that U.S. agencies must evaluate so as not to arbitrarily and illegally omit consideration foreign reciprocity, international spillovers, and extra-territorial interests. The Working Group should make clear that the domestic values are optional and may be used, if appropriate, only in sensitivity analyses.

Based on available evidence—including estimates of the Climate Reciprocity Ratio showing foreign countries pledge to reduce over six tons of emissions for every ton pledged by the United States; Matthew Kotchen’s calculation of the U.S. “preferred” social cost of greenhouse gases at nearly three-fourth the global values based just on basic strategic interests (without considering spillovers or other important factors); the scale of impacts to hundreds of billions of dollars annually in U.S. exports and imports; the risks to U.S. security interests and military installations abroad with replacement costs in the hundreds of billions of dollars; the U.S. willingness to pay hundreds of billions of dollars annually in remittances, foreign investments, foreign aid, and private philanthropy to benefit foreign countries; evidence from the recent pandemic on the impacts to U.S. interests from a global disruption; and other significant effects to U.S. interests that cannot be quantified or monetized—the Working Group should consider recommending a domestic valuation of at least 75% of the global values for optional use as a *lower-bound* estimate in sensitivity analysis.

Bearing in mind both that the global estimate itself is likely an underestimate (due to omitted damages), and also that the scientific and economic understanding of inter-regional impacts is still developing, the Working Group should clarify that such domestic estimates remain provisional and may underestimate even the minimum strategic value to U.S. interests of addressing global climate change.

III. The Working Group Should Apply Lower Discount Rates in Light of Extensive Evidence

Over a decade has passed since the Working Group selected its discount rates, thereby determining how much or how little weight would be given to the climate effects that will impact future generations. Nearly two decades have passed since the federal government holistically reviewed its broader choice of discount rates for analyzing agency actions. In the intervening years, new data and new literature have emerged that strongly point toward the need for lower discount rates. In short, it is about time for an update. In *About Time: Recalibrating the Discount Rate for the Social Cost of Greenhouse Gases*, we highlight economic and legal considerations that should inform an update to the discount rates used for the social cost of greenhouse gases.

The central discount rate selected by the Working Group in 2010—3%—was estimated from the average Treasury note interest rates from 1973–2002. The Working Group selected a rate based on this kind of data (i.e., a consumption-based discount rate) after properly concluding that a rate based on private returns on investment (i.e., a capital-based discount rate) would be inappropriate for analysis of climate damages. But simply recalculating this average using **new data from the last twenty years**—during which interest rates have fallen and savings rates have risen—**would suggest a significantly lower discount rate, of at most 2%**. Updated methodologies for studying trends would reanalyze the same data and find an even lower

discount rate, closer to 1%. Market forecasts indicate that a rate above 2% is unlikely in the foreseeable future. Given the importance of the discount rate in estimating the social cost of greenhouse gases, discount-rate updates of this magnitude would have a large influence on the social cost estimates.

But even such estimates based on updated market data and methodologies require further adjustments. Any update based solely on market data will ignore multiple key factors, including our ethical obligations to future generations and the ways in which climate change may disrupt future economic development. Instead of relying just on market data, the Working Group should move toward a longstanding, well-accepted economic framework known as the extended Ramsey equation, which not only can be calibrated to reflect the latest market data, but also can be calibrated according to recent expert elicitations and the best economic literature on other appropriate adjustments. Notably, **expert elicitations reveal a growing consensus for a central discount rate at or below 2%**—and that is before even fully accounting for important extensions and adjustment to the formula.

For example, there is also a strong consensus in the economics literature that uncertainty over future economic growth supports both a lower overall discount rate and also a *declining* discount rate schedule, under which effects further into the future are discounted at lower rates. Additional evidence on project risk, risk aversion, aversion to inter-generational inequity, and ambiguity aversion also counsels in favor of lower rates. In aggregate, the literature on these issues supports adjusting the long-run discount rate down to a range between 0.5% and 1.9%. Finally, because non-market goods (like environmental goods and services) will grow at a slower rate in the future than market goods—and will likely decline in value due to climate change—the rate appropriate for discounting future environmental goods should be lower than the standard market discount rate. This effect can conservatively decrease the lower end of the discount rate range by another 0.5%.

In light of all this evidence, but also recognizing that the lowest discount rate that the Working Group previously used was 2.5%, **a new range of discount rates appropriate for calculating the social cost of greenhouse gases could be conservatively estimated as between 0.5%-2.5%, with a central estimate of 1.5%.**

Agencies should follow the Working Group’s guidance on applying new social cost of greenhouse gas estimates based on updated discount rates—and, as appropriate, should make any corresponding adjustments to the discount rates applied to other costs and benefits in their analyses—as agencies have substantial discretion to implement best practices in selecting discount rates. Statutes and executive orders both support agency choices that are grounded in the best available data and that reflect consideration of the welfare of future generations. However, agencies will need to justify their choices, including any departures from prior practices. Moreover, agencies will either need to adopt consistent approaches to discounting across all climate and non-climate costs and benefits under analysis, or else will need to thoroughly justify any differences in the discount rates applied to different contexts.

Developing a declining discount rate schedule would be one straightforward option to achieve a more consistent approach to discounting across all costs and benefits. But if the federal government remains hesitant to adopt a declining discount rate schedule, other approaches are possible, including if necessary by thoroughly explaining why special economic,

legal, and ethical considerations require discounting climate effects at a lower rate than other costs and benefits.

IV. The Working Group Should Incorporate Elicitation to Update Its Parameters and Estimate Omitted Impacts

Researchers often formally elicit the views of subject-matter experts to help clarify consensus on complex or uncertain topics. This technique, known as expert elicitation, can be used to improve forecasts and inform the assumptions behind predictive models, among other applications. Several expert elicitations published in recent years offer useful insights on the dynamics and impacts of climate change.

In *Expert Elicitation and the Social Cost of Greenhouse Gases*, we explain how the Working Group can use the findings from expert elicitations to improve its social cost estimates. In its recommendations for updating the modeling behind the social cost of greenhouse gases, the National Academies of Sciences, Engineering, and Medicine included a call to use expert elicitation in the development of some components of the reduced-form Integrated Assessment Models (“IAMs”) that underlie the social cost of greenhouse gas estimates.

The results from expert elicitations can be used to help calibrate several IAM parameters. Calibrating key parameters to match the consensus views of experts will lead to a more comprehensive account of likely climate impacts. Based on related recalibration efforts, the result would likely be a significant increase in the social cost of greenhouse gas values.

As part of its current update of the social cost of greenhouse gases, the Working Group should consider several component updates that incorporate data from expert elicitations, including:

Socioeconomic and Emissions Scenario Updates – The Working Group should no longer use the outdated socioeconomic and emission scenarios from the EMF-22 modeling exercise, and instead consider using the Shared Socioeconomic Pathways. It should also stop weighting scenarios equally. Ideally the Working Group should calibrate a joint probability distribution function for all socioeconomic and emissions scenario components including GDP, population, and emissions. If that is not feasible in the current timeline, the Working Group should consider assigning probabilities based on existing expert elicitation findings.

Climate Science Assumption Updates – The Working Group should replace or update its modeling of climate science by adopting the FAIR climate model, after updating FAIR to match new data from the sixth IPCC once it is released in July 2021. The Working Group should also use expert elicitation to inform longer-term updates to climate-science assumptions.

Climate Damage Estimate Updates – It is critically important that the Working Group update the damage functions in the reduced-form IAMs to reflect the best available, current information. The Working Group should strongly consider using existing expert elicitations to improve the climate damage functions, especially given the short timeframe for the current update. Another option would be to conduct meta-regressions of climate damages, including

damage estimates from expert elicitation and other methodologies beyond the traditional enumerative strategy.

Discount Rate Updates – The Working Group should supplement its calibration of the discount rate by considering evidence besides just market data and consider moving toward discount rate schedules based on the extended Ramsey discount rate equation, which can be informed by expert elicitation and the latest economic literature as well as any updated and reliable market data. There is a strong consensus forming around consumption discount rates between 1% and 3%. Within this range, the Working Group will need to select an appropriate discount rate or schedule for its central estimates, as well as additional rates or schedules for sensitivity analysis. Expert elicitation can help inform those decisions.

Expert elicitation can also play an important role in longer-term efforts to improve the social cost of greenhouse gas metrics, after the current update is completed. To help improve the quality of the modeling assumptions, the Working Group or its member agencies can solicit or conduct expert elicitations on such topics as climate science parameters, regional and sector-based damage estimates, and the dynamics and costs of adaptation.

V. The Working Group Should Provide Detailed Responses to Common Criticisms of the Social Cost of Greenhouse Gases

As the Working Group updates its social cost estimates, it—and federal agencies that will eventually use the numbers—should be aware of and prepared to respond to misguided criticisms of its methodology that are being made by opponents of climate regulation. In ***Playing with Fire: Responding to Criticism of the Social Cost of Greenhouse Gases***, we offer a roadmap for the Working Group to respond to common misguided criticisms of the social cost values.

In early 2021, two state coalitions—one led by Missouri Attorney General Eric Schmitt, the other by Louisiana Attorney General Jeff Landry—filed suit in federal district court seeking to enjoin agency usage of the Working Group’s interim social cost estimates. The complaints in these suits raise some familiar arguments against the Working Group’s methodology. First, the State Parties claim it is inappropriate for federal agencies to use a social cost estimate that reflects global climate damages. Second, the State Parties argue that it is inappropriate to exclude a 7% discount rate from the range of social cost estimates. Third, the State Parties claim that there is too much uncertainty and subjectivity to rely on the Working Group’s interim social cost estimates, pointing to numerous alleged errors in the valuations including issues with baseline emission scenarios, equilibrium climate sensitivities, omitted positive externalities, and the reduce-form integrated assessment models.

These criticisms are misguided. The Working Group developed its social cost estimates based on a rigorous process using the best available science and economics. The Working Group properly took a global view of climate damages, which is both appropriate and necessary for a global pollutant and is in the strategic interest of the United States. The Working Group also applied an appropriate range of discount rates reflecting the intergenerational nature of climate impacts. And the Working Group appropriately accounted for uncertainty and made reasonable methodological choices. While there is some uncertainty in the social cost valuations, this is not

a reason to abandon the metric, and evidence overwhelmingly suggests that the Working Group’s interim estimates are a lower bound of the true harm of greenhouse gas emissions.

Although the state lawsuits are groundless, they highlight the fact that federal agencies will need to offer considered and detailed responses to objections raised in the notice-and-comment process for individual regulations or administrative actions that apply the Working Group’s social cost valuations. While this is a relatively low bar to clear, agencies still must be prepared to clear it. For example, the U.S. Court of Appeals for the Seventh Circuit was satisfied that the Department of Energy had given at least some “respon[s]es to . . . general concerns and made clear that, despite those concerns, the calculation of [the social cost of carbon] could be used.”⁸ The Working Group should include in its Technical Support Document sufficient responses to common criticisms, so that individual agencies have language readily available to cite to and borrow from if those same concerns may be raised in their individual proceedings.

Additional Recommendations

VI. The Working Group Should Implement Revisions Recommended by the National Academies, and Explain Its Rationale for Any Recommendations that It Does Not Implement in this Update

The Working Group should prioritize implementation of the National Academies of Sciences, Engineering, and Medicine’s recommendations, and other appropriate recommendations from public comments, based on the best available science and economics. Priorities and implementation choices should further be based on what can realistically be accomplished—given available resources—first by January 2022 and, later, by subsequently scheduled timelines for updates.

While the executive branch has discretion to prioritize its resources and to tackle problems one step at a time,⁹ agencies that apply the Working Group’s social cost values will have to explain why this choice is consistent with legal principles for rational decisionmaking.¹⁰ **The Working Group should explain why the updates it plans to make by January 2022 are those that are the most important based on available evidence and/or the most practical given resources—and, furthermore, that its choices are not based on achieving any pre-determined outcome.** If the Working Group does not plan to implement any particular reasonable updates recommended by public comments, it should explain at least at a general level why it is not currently proceeding with those recommendations and note whether (and, to the extent feasible, when) it plans to address those recommendations in the future. And the

⁸ *Zero Zone*, 832 F.3d at 678.

⁹ *Massachusetts v. EPA*, 549 U.S. 497, 524, 527 (2007) (explaining that agencies have “broad discretion to choose how best to marshal [their] limited resources and personnel to carry out [their] delegated responsibilities” and are not required to “resolve massive problems in one fell regulatory swoop,” but rather may “whittle away at [problems] over time, refining their preferred approach as circumstances change and as they develop a more nuanced understanding of how best to proceed”).

¹⁰ *Id.* at 524 (“That a first step might be tentative does not by itself support the notion that federal courts lack jurisdiction to determine whether that step conforms to law.”).

Working Group should explicitly state, if that turns out to be the case, that considering all recommendations yet to be implemented by January 2022, taken together with other omitted damages and limitations of the models, the valuations calculated in January 2022 still likely underestimate the true extent of climate damages.¹¹

While courts generally defer to agencies' technical expertise on questions of methodology, agencies applying the social cost of greenhouse gases cannot "completely fail" to address an "important aspect of the problem," and cannot ignore evidence "pointing in the opposite direction" from its conclusions.¹² Reversing a prior position—like reliance on the Trump Administration's calculations of the social cost of greenhouse gases—may require more "detailed justification."¹³ Particularly given the harsh criticism by the U.S. District Court for the Northern District of California of the Trump Administration's failure to subject its modeling choices to "any public comment or peer review" and failure to clearly outline a timeline and public process for updating its interim estimates,¹⁴ the Working Group should clarify the timeline for implementing any future updates that cannot be accomplished by January 2022, as well as any future periods for public comment.

Similarly, the Northern District of California criticized the Trump Administration's reliance on "bald assertions"¹⁵ and for being "internally inconsistent" by picking and choosing which recommendations and findings to rely on and which to ignore.¹⁶ The Working Group should be clear about when and why the National Academies' recommendations will or will not be implemented, so that its "promise" to implement these recommendations at some undefined future period will not "ring hollow."¹⁷ And above all, the Working Group should explain that its selection of which recommendations and updates to implement and which to postpone are not designed to "confirm a preordained outcome,"¹⁸ but rather are driven by resource prioritization and by the best available, actionable evidence.

VII. The Working Group Should Promote Better Quantification, or at Least More Robust Qualitative Discussion, of Currently Omitted Damages—Including Effects Relevant to Environmental Justice

The Working Group should make progress on improving the damage modules by January 2022, including by adding some key omitted damages and incorporating more recent evidence regarding the magnitude of the damages that are currently considered.

¹¹ Interagency Working Group on Social Cost of Greenhouse Gases, Technical Support Document: Social Cost of Carbon, Methane, and Nitrous Oxide Interim Estimates under Executive Order 13990 at 31 (2021) [hereinafter "2021 TSD"] ("[I]t is in the [Working Group's] judgement that, taken together, the limitations suggest that the interim [social cost of greenhouse gases] estimates presented in this TSD likely underestimate the damages."). Of course, the Working Group should transparently acknowledge all model limitations and uncertainties, whichever direction they point.

¹² *Bernhardt*, 472 F. Supp. 3d at 610–11 (citations omitted).

¹³ *Id.* (citations omitted).

¹⁴ *Id.* 611–12 & nn.25–26.

¹⁵ *Id.* at 613.

¹⁶ *Id.* at 613 n.28.

¹⁷ *Id.* at 614.

¹⁸ *Id.*

In its 2017 recommendations, the National Academies provided a framework for the Working Group to provide near-term improvements to the damage estimations, including more recent literature that could inform specific updates.¹⁹ Since that report was published, additional literature has also assessed the various damage estimates and identified areas to improve the damage modules.²⁰ The Working Group should also consider incorporating global non-climate impacts of specific greenhouse gases to the damage estimates of those gases, such as the tropospheric ozone production resulting from methane emissions, for which monetized estimates of damages already exist in the literature.²¹ As detailed above, insofar as certain parameters cannot be updated with precision by January 2022 due to limitations of the existing literature, the Working Group should consider using expert elicitation to substitute or complement other methods of calibrating those parameters.

Consistent with the Presidential Memorandum on Modernizing Regulatory Review, the Working Group should especially consider ways to promote quantification, or at least more meaningful qualitative discussion, of the effects from greenhouse gas emissions that may burden disadvantaged, vulnerable, or marginalized communities.²² To that end, the Working Group should also engage with environmental and climate justice stakeholders to better address considerations of distributional equity as it relates to climate impacts.

VIII. Alternative Valuations, Like Metrics Based on Emissions Targets, Can Supplement—But Cannot Replace—the Social Cost of Greenhouse Gases

Footnote 7 of the Working Group’s 2021 technical support document discusses estimates of the cost of attaining emissions or warming limits and explains they can be useful supplement but cannot replace the social cost of greenhouse gas estimates. The Working Group is correct on this point, and these comments provide some additional support here.

The U.S. Supreme Court has recognized that federal agencies generally must weigh the costs and benefits of proposed regulations.²³ Executive branch agencies are subject to an even more specific requirement—first introduced in 1981²⁴ and consistently applied ever since under

¹⁹ Nat’l Acad. Sci., Engineering & Med., *Valuing Climate Damages: Updating Estimation of the Social Cost of Carbon Dioxide* 138–47 (2017), <https://www.nap.edu/read/24651/chapter/1>.

²⁰ E.g. Tamma A. Carleton et al., *Valuing the Global Mortality Consequences of Climate Change Accounting for Adaptation Costs and Benefits* (Nat’l Bureau of Econ. Research, Working Paper No. 27,599) 4–5 (July 2020), available at https://www.nber.org/system/files/working_papers/w27599/w27599.pdf (finding that new empirical estimates suggest that the increase in mortality risk from climate change is valued at approximately 3.2% of global GDP in 2100, and concluding that “[t]hese empirically grounded estimates of the costs of climate-induced mortality risks substantially exceed available estimates from leading IAMs”).

²¹ Working Group, Addendum to Technical Support Document on Social Cost of Carbon for Regulatory Impact Analysis under Executive Order 12866: Application of the Methodology to Estimate the Social Cost of Methane and the Social Cost of Nitrous Oxide 11–12 (2016), available at https://obamawhitehouse.archives.gov/sites/default/files/omb/inforeg/august_2016_sc_ch4_sc_n2o_addendum_final_8_26_16.pdf (highlighting limitations in methane valuations).

²² Presidential Memo. on Modernizing Regulatory Review §§ 2(a), 2(b)(ii) (Jan. 20, 2021).

²³ *Michigan v. EPA*, 576 U.S. 743 (2015).

²⁴ Exec. Order No. 12,291 § 2(b), 46 Fed. Reg. 13,193 (Feb. 17, 1981).

administrations of both parties²⁵—to “adopt a regulation only upon a reasoned determination that the benefits of the intended regulation justify its costs.”²⁶ In addition to recognizing the important role that cost-benefit analysis plays in sound agency decisionmaking, federal courts have rejected agency actions that are either not supported by such an analysis or whose supporting analysis is materially flawed.²⁷ Notably, the Working Group’s initial development of the social cost of greenhouse gases responded to the decision of the U.S. Court of Appeals for the Ninth Circuit, which rejected an agency rulemaking that had failed to appropriately weigh climate impacts.²⁸ Further, agencies must balance beneficial and adverse impacts²⁹ and take a hard look at the project’s “actual environmental effects”³⁰ even for project-level determinations that typically do not require preparation of a formal cost-benefit analysis.

The social cost of greenhouse gases is uniquely suited to the analytical task required of an agency when it considers an action that would result in higher or lower levels of greenhouse gas emissions. It is an estimate of social damages of emitting a marginal unit of greenhouse gases, and serves also as an estimate of the social benefits of avoiding the emission of that unit. It not only quantifies those damages/benefits but monetizes them, making them available for comparison to other impacts of agency decisions. Thus, as the Working Group correctly recognizes, the social cost of greenhouse gas estimates are “the theoretically appropriate values to use when conducting benefit-cost analyses of policies that affect [greenhouse gas] emissions.”³¹

Alternatives to the social cost of greenhouse gases for weighing decisions with climate implications generally rely analytically and practically on some form of emissions reduction target.³² Whether that target takes the form of an emissions cap or environmental limit, such as a global temperature threshold,³³ it functions as a limit on the permissible quantity of emissions in a given timeframe. After specifying a target, these alternative approaches compare the policies and technologies available to reach it—that is, to abate emissions. The resulting analysis yields a

²⁵ See Exec. Order No. 13,422, 72 Fed. Reg. 2763 (Jan. 18, 2007); Exec. Order No. 13,563 § 1(b), 76 Fed. Reg. 3821 (Jan. 18, 2011).

²⁶ Exec. Order No. 12,866 § 1(b)(6), 58 Fed. Reg. 51,735 (Oct. 4, 1993).

²⁷ E.g., *Nat’l Ass’n of Home Builders v. EPA*, 682 F.3d 1032, 1036, 1040 (D.C. Cir. 2012) (“When an agency decides to rely on a cost-benefit analysis as part of its rulemaking, a serious flaw undermining that analysis can render the rule unreasonable.”); *City of Portland v. EPA*, 507 F.3d 706, 713 (D.C. Cir. 2007) (“[W]e will [not] tolerate rules based on arbitrary and capricious cost-benefit analyses[.]”).

²⁸ *Ctr. for Biological Diversity v. Nat’l Hwy. Transp. & Safety Admin.*, 538 F.3d 1172 (9th Cir. 2008).

²⁹ E.g., *Calvert Cliffs’ Coordinating Comm., Inc. v. U.S. Atomic Energy Comm’n*, 449 F.2d 1109, 1113 (D.C. Cir. 1971).

³⁰ *Baltimore Gas & Elec. Co. v. Natural Res. Def. Council*, 462 U.S. 87, 96 (1983).

³¹ 2021 TSD, *supra* note 11, at 9.

³² See New York State Energy Research and Development Authority & Resources for the Future, *Estimating the Value of Carbon: Two Approaches 15–17* (2020) (describing and contrasting social cost of carbon and “target consistent” marginal abatement cost approaches).

³³ Nicholas Stern & Joseph E. Stiglitz, *The Social Cost of Carbon, Risk, Distribution, Market Failures: An Alternative Approach* (NBER Working Paper 28472, Feb. 2021).

marginal abatement cost curve, which shows the expected costs of one or more pathways to emissions abatement consistent with the target.³⁴

Two points argue strongly against supplanting the social cost of greenhouse gases with a marginal abatement cost estimate.

First, marginal abatement cost-based estimates of the value of a unit of greenhouse gas emissions do not specify the social damage done by those emissions (or the social benefit of avoiding them). They instead serve to compare how cost-effective different actions would be in pursuit of an emissions reduction goal. As such, **a marginal abatement cost-based value is incompatible with federal agencies' legal obligations to weigh the costs and benefits of their actions**. That is, without an estimate of the emissions-related damages imposed or avoided by a proposed regulation or action, an agency cannot determine whether a given determination would yield net societal benefits, as it is legally required to do for regulations.

Second, for the value estimated by a marginal abatement cost to be valid, the abatement target on which that marginal abatement cost's analysis is based must be binding. Some jurisdictions have adopted a binding emissions reduction target;³⁵ the federal government of the United States is not currently among them. Unless and until federal law imposes a target that is economically and legally binding, any marginal abatement cost-based estimate of emissions' value will lack appropriate foundation for use in agency decisionmaking. Agencies using a marginal abatement cost-based value in that context would invite legal challenges to whatever action they assess.

It should be noted that these two points do not argue against the consideration of marginal abatement cost-based emissions values by agencies, only against the use of such values *instead of* values based on the social costs of greenhouse gases. For instance, if the marginal abatement cost is calculated using the United Nations' 1.5°C or 2°C emissions targets, it can indicate whether the social cost of greenhouse gases is consistent with these targets. In addition, the United States submitted to the Secretariat of the United Nations Framework Convention on Climate Change an updated Nationally Determined Contribution ("NDC") to global greenhouse gas emissions reductions,³⁶ further specification of components of that NDC might usefully be informed by reference to one or more marginal abatement cost curves.³⁷ However, while marginal abatement cost-based emissions valuation is potentially useful for this or other

³⁴ NYSERDA & RFF, *supra* note 32, at 15; *see also* UK Dep't of Energy & Climate Change (DECC), Carbon Valuation in UK Policy Appraisal: A Revised Approach 2 (2009) ("[T]he approach, based on estimates of the [social cost of carbon], should be replaced with a target-consistent approach, based on estimates of the abatement costs that will need to be incurred to meet specific emissions reduction targets.").

³⁵ *See* UK DECC, *supra* note 34, at 2 ("With the onset of binding carbon budgets applying across the UK economy, a robust approach to valuing emissions is vital . . .").

³⁶ *See* The United States of America -- Nationally Determined Contribution (Apr. 22, 2021) (setting economy-wide 2030 net greenhouse gas emissions reduction target of 50-52 percent below 2005 levels).

³⁷ The social cost of greenhouse gas estimates are also useful in calibrating the NDC: as the interim technical support document notes, any "policy that specifies an environmental target implicitly requires a valuation of damages." 2021 TSD, *supra* note 11, at 9 n.7.

purposes, under current law such values can only provide additional information and cannot replace the social cost of greenhouse gases in analyses of regulations and other agency actions.

CONCLUSION

Although the Working Group's existing valuations of the social cost of greenhouse gases represent the best estimates currently available, the Working Group can improve upon those estimates to reflect the latest science and economics, including by applying lower discount rates, incorporating more omitted damages, following the recommendations of the National Academies, and relying on expert elicitation when appropriate. The Working Group should implement updates that can realistically be accomplished by January 2022.

The Working Group should provide detailed explanations of its updates and should bolster the legal justifications for controversial methodological choices. Most notably, the Working Group should provide additional research and justifications supporting a global focus, while also developing more robust domestic damage estimates for agencies to apply in sensitivity analysis. The Working Group should also offer detailed responses to public comments and provide a framework and, if possible, timetable for its future updates.

By September 2021, the Working Group should provide guidance endorsing the use of the social cost metrics in any process or decision with meaningful greenhouse gas implications. This will promote rationality in federal climate policy and enable a speedy and well-managed transition to a greener economy.

Sincerely,

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Enclosures listed on next page

Enclosures

Original Policy Integrity Reports

- 1) Max Sarinsky et al., *Broadening the Use of Social Cost of Greenhouse Gases in Federal Policy* (2021)
- 2) Jason A. Schwartz, *Strategically Estimating Climate Pollution Costs in a Global Environment* (2021)
- 3) Peter Howard & Jason A. Schwartz, *About Time: Recalibrating the Discount Rate for the Social Cost of Greenhouse Gases* (2021)
- 4) Peter Howard & Derek Sylvan, *Expert Elicitation and the Social Cost of Greenhouse Gases* (2021)
- 5) Iliana Paul & Max Sarinsky, *Playing with Fire: Responding to Criticism of the Social Cost of Greenhouse Gases* (2021)

Previously Published Reports and Articles

- 6) Peter Howard & Jason Schwartz, *Think Global: International Reciprocity as Justification for a Global Social Cost of Carbon*, 42 COLUMBIA J. ENV'T L. 203 (2017)
- 7) Peter Howard & Jason Schwartz, *Foreign Action, Domestic Windfall: The U.S. Economy Stands to Gain Trillions from Foreign Climate Action* (2015)
- 8) Peter Howard, *Omitted Damages: What's Missing from the Social Cost of Carbon* (2014)
- 9) Inst. for Pol'y Integrity, *A Lower Bound: Why the Social Cost of Carbon Does Not Capture Critical Climate Damages and What That Means for Policymakers* (2019)
- 10) Peter Howard & Derek Sylvan, *Gauging Economic Consensus on Climate Change* (2021)
- 11) Peter Howard & Derek Sylvan, *Expert Consensus on the Economics of Climate Change* (2015)