

June 21, 2021

VIA WWW.REGULATIONS.GOV

Dominic Mancini
Deputy Administrator
Office of Information and Regulatory Affairs
Office of Management and Budget
New Executive Office Building
Washington, D.C. 20503

RE: Notice of Availability and Request for Comment on the “Technical Support Document: Social Cost of Carbon, Methane, and Nitrous Oxide Interim Estimates Under Executive Order 13990.”

Dear Deputy Administrator Mancini,

We, the undersigned Associations, submit the following comments in response to the Office of Management and Budget (“OMB”), May 7, 2021, Notice of Availability and Request for Comment on the “Technical Support Document: Social Cost of Carbon, Methane, and Nitrous Oxide Interim Estimates Under Executive Order 13990” (“Notice”).¹

At the outset, the Associations reassert their commitment to addressing climate change and extend their continued support for sound, transparent regulatory policy reducing greenhouse gas (“GHG”) emissions. The Social Cost of Carbon, Methane, and Nitrous Oxide (collectively, “the Social Cost of GHG” or “SC-GHG”) estimates have a far reaching impact on regulatory policy affecting nearly every sector of the economy, including members of the Associations. They have also increasingly been used by states and other entities to justify policies that similarly affect members. For these reasons, a subset of the Associations have long sought to engage in the policy of using such estimates as well as the Interagency Working Group on the SC-GHG (“IWG”) process for developing the estimates. Most recently, several Associations wrote the Administration requesting to engage with the IWG as it works to revise the SC-GHG estimates.²

¹ 86 Fed. Reg. 24,669 (May 7, 2021).

² Letter from Am. Chemistry Council et al. to Robert S. Fairweather, Acting Dir., Office of Mgmt & Budget, et al. RE: Updates to the Social Cost of Carbon, Social Cost of Nitrous Oxide and Social Cost of Methane; Modernizing Regulatory Review Memorandum for Heads of Exec. Depts. And Agencies, Feb. 16, 2021, *available at* <https://www.globalenergyinstitute.org/coalition-letter-requesting-engagement-social-cost-carbon-update>.

The Associations remain committed to the principles of transparency outlined in previous comments, which sought public engagement and review of the modeling and underlying assumptions. These comments address changed circumstances since prior comments were filed as well as additional questions posed in the OMB Notice. This includes but is not limited to the OMB Notice's question concerning the potential for expanded application of the SC-GHG beyond benefit-cost analyses used for regulatory actions.

The Associations support appropriate consideration of GHG emissions as part of the benefit-cost analyses for regulatory actions required under the E.O. 12866 process. Working to develop and institute a set of SC-GHG values for informing such analyses is a worthy endeavor, and the Associations support continued efforts to refine and improve upon existing estimates. We recognize that the process of developing an estimate for the social cost of greenhouse gases is not easy. Inherent within SC-GHG estimates is a litany of assumptions related to both the societal costs and benefits of GHG emissions, many of them subjective and uncertain, and all of which become increasingly difficult to accurately estimate the farther they project into the future.

As described within, reasonable disagreements and risks of overstatement or other error can arise with respect to any number of these inputs and assumptions, sometimes to a significant degree. Divergence among inputs and assumptions may then be compounded with each step of the process, resulting in estimates that must be understood as part of a range of possibilities that are sensitive to model uncertainties and subjective assumptions. The inherent inability to arrive at accurate and precise calculations of future impact of GHG emissions greatly limits the usefulness of SC-GHG as a tool to drive federal policy, including policy as it relates to the consideration of individual projects. These challenges cannot be eliminated, but can and should be managed, made transparent, and properly communicated and applied. To this end, the Associations remain committed to working with the Administration and the IWG to improve upon the usefulness of the SC-GHG in providing insight for regulatory analysis.

BACKGROUND

Executive Order (“E.O.”) 12866, “Regulatory Planning and Review,” issued by President Clinton, directs federal agencies to assess the costs and benefits of significant regulatory actions and to “adopt a regulation only upon a reasoned determination that the benefits of the intended regulation justify its costs.”³ Agencies rely on benefit-cost analyses to evaluate alternatives, inform their decisions, and help justify regulatory options. In 2010, government-wide estimates of the Social Cost of Carbon (“SCC”) were developed for use in a regulatory benefit-cost analysis for *regulatory*

³ Exec. Ord. 12866, Regulatory Planning and Review, 58 Fed. Reg. 51,735 (Oct. 4, 1993).

actions as defined by E.O. 12866 (emphasis added).⁴ The estimates have fluctuated over the last decade, particularly with changes of administrations, and expanded to cover other GHGs,⁵ but the underlying design for use in regulatory benefit-cost analyses has remained.

On his first day in office, President Biden issued E.O. 13990, “Protecting Public Health and the Environmental and Restoring Science to Tackle the Climate Crisis,” which directed the IWG to take significant steps regarding the SC-GHG estimates.⁶ The E.O. immediately established the IWG and called for the IWG to release updated interim values of the SC-GHG within 30 days. The E.O. further charged the IWG with developing recommendations for the President by September 1, 2021, regarding “areas of decision-making, budgeting, and procurement by the Federal Government where the SCC, SCN, and SCM should be applied.”⁷ By January 2022, the E.O. directed the IWG to conduct a comprehensive review of the estimates, taking into account 2017 National Academies of Sciences, Engineering, and Medicine (“NAS”) recommendations,⁸ and issue final revised SC-GHG estimates. Lastly, the E.O. directs the IWG to provide recommendations by June 1, 2022, regarding 1) a process for reviewing, and, as appropriate, updating the estimates, and 2) revised methodologies for the estimates to account for climate risk, environmental justice, and intergenerational equity.

The IWG released the interim values on February 26, 2021, in the *Technical Support Document: Social Cost of Carbon, Methane, and Nitrous Oxide Interim Estimates under Executive Order 13990* (“2021 TSD”).⁹ The interim estimates reverted to the pre-2017 estimates of the SC-GHG – adjusted for inflation – without making any other adjustments or other changes to those estimates. Thus, the IWG has an opportunity to significantly improve the estimates. The IWG can also take meaningful steps to establish a clear, robust process for revising the estimates. This new process should be guided by the 2017 NAS recommendations and provide ample opportunity for public engagement.

⁴ U.S. Gov't Interagency Working Group on Social Cost of Carbon, *Technical Support Document: Social Cost of Carbon for Regulatory Impact Analysis – Under Executive Order 12866*, Feb. 2010 (“2010 TSD”) (“The purpose of the “social cost of carbon” (SCC) estimates presented here is to allow agencies to incorporate the social benefits of reducing carbon dioxide (CO₂) emissions into cost-benefit analyses of regulatory actions.”).

⁵ U.S. Gov't Interagency Working Group on Social Cost of Greenhouse Gases, *Addendum to Technical Support Document on Social Cost of Carbon for Regulatory Impact Analysis under Exec. Order 12866: Application of the Methodology to Estimate the Social Cost of Methane and the Social Cost of Nitrous Oxide*, Aug. 2016 (“2016 TSD”).

⁶ Exec. Ord. 13990, Protecting Public Health and the Environment and Restoring Science to Tackle the Climate Crisis, 86 Fed. Reg. 7,037 (Jan. 25, 2021).

⁷ *Id.* at 7,040.

⁸ National Academies of Sciences, Engineering, and Medicine. 2017. Valuing Climate Damages: Updating Estimation of the Social Cost of Carbon Dioxide. Washington, DC: The National Academies Press. <https://doi.org/10.17226/24651> (“NAS Phase II Report”).

⁹ U.S. Gov't 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*, Feb. 2021 (“2021 TSD”).

EXECUTIVE SUMMARY

The Associations appreciate the opportunity to share our feedback on the SC-GHG estimates with the IWG. These comments build on past experience and comments, identify opportunities for improvements, and provide constructive recommendations.

Developing estimates of the potential future socio-economic costs of GHG emissions is a demanding task, and we commend the members of the IWG for taking on this important work. The Associations support appropriate consideration of GHG emissions as part of benefit-cost analyses for regulatory actions required under the E.O. 12866 process. At the same time, the need to address climate change does not hinge on any one metric.

Our members have been leaders in addressing climate change and driving reductions in U.S. GHG emissions, which have declined significantly over the past two decades through innovation and the changing marketplace. While serving as the engine for growth and jobs as we emerge from COVID-19, we are advancing shared goals for reducing GHG emissions. Some of the Associations also spearheaded advocacy efforts to find common ground and enact the first meaningful piece of climate legislation in well over a decade. Our partnerships with state, local, and tribal governments have likewise led to further emissions reductions.

We look to extend this partnership with the IWG. As our membership represents nearly every sector of the U.S. economy, we offer a perspective and expertise central to the IWG. The IWG has tremendous work ahead in meeting the remaining deliverables of E.O. 13990. Trying to resolve the complex mix of economic, scientific, and policy considerations inherent in calculating SC-GHG estimates in such a short period of time is a tall order. Each and every decision made could have profound implications for the estimates. For these reasons, it is critical the IWG start this work with a proper approach.

To that end, our comments, which are designed to provide the early input that the IWG requested, seek to provide constructive recommendations to ensure the IWG can create the necessary scientific foundation for its work. This includes suggestions that the IWG first establish a clear process. Indeed, before tackling the substantive scientific and technical issues, it is critical the IWG spell out its process for revising the SC-GHG estimates and its related tasks under E.O. 13990. This process should be guided by principles of fairness and transparency, providing very clear steps that all affected members of the public can easily understand, navigate, and engage—including business representatives, community leaders, and state, local, and tribal government officials.

Following these recommendations, our comments underscore the importance of the IWG's work to educate and reinforce what the SC-GHG is and is not. Establishing these guardrails can ensure the estimates serve their intended purpose—for use in benefit-cost analyses for regulatory actions under E.O. 12866—and can avoid misapplication to areas for which it is not designed. Then,

building on our recommendations for a clearly defined process and application, our comments provide recommendations for addressing substantive elements of the estimates. These recommendations largely flow from those of the NAS and longstanding OMB guidance.

The IWG has an excellent opportunity to establish sound SC-GHG estimates based on the best available, peer-reviewed science. We want to assist the IWG in this regard as this process continues. At this early stage of the process, we submit these comments with the following top-level recommendations:

- **The Process Should Be Transparent and Include Full Engagement and Participation by the Public.** The IWG should set forth a transparent and robust process for implementing E.O. 13990 that includes full public engagement. First and foremost, we suggest that the IWG establish the “predictable” three-step process for revising the SC-GHG estimates recommended by the NAS. This should include notice and public comment on any draft revised estimates, without inappropriate limitations. The IWG should adequately respond to those comments before any draft estimates are finalized and applied to a regulatory action, which will be subject to the Administrative Procedure Act and other relevant statutes. The Associations recommend that the public notice and comment process extend to draft recommendations for the President due this September as well as additional recommendations due to the President in June 2022. We also suggest the IWG make its process, with as much detail as possible, publicly available and well understood. Absent a clearly articulated process and more information and clarity on the IWG and its work, the public may not be able to meaningfully comment on the estimates or engage the IWG as the law requires or the E.O. had envisioned.
- **All Estimates Should Undergo Proper Peer Review.** Peer review is critical to securing public trust in scientific information, analysis, and its real-world application. Consistent with OMB Guidelines and the NAS recommendations for independent scientific review of the revised estimates, the Associations strongly encourage the IWG to establish a process that factors in time for a full, robust peer review of any draft revised estimates.
- **The IWG Should Explicitly Limit the SC-GHG Use Outside of Regulatory Impact Analyses.** The IWG should be clear with the public as to what the SC-GHG is and is not. The original SCC estimates were developed for use in benefit-cost analyses for regulatory actions under E.O. 12866, where permissible under an agency’s statutory authority. The estimates are imprecise, uncertain, and not designed for other applications, such as project-level analyses, electricity planning and subsidy schemes. The IWG should explicitly inform potential users that the SC-GHG values likewise necessarily involve significant uncertainty and are not useful outside of the limited context of regulatory analyses authorized by the agency’s governing statutes and undertaken pursuant to the E.O. 12866 process.

- **The IWG Should Harmonize its Work and Clarify its Role with Related Administration Initiatives.** Additional transparency measures, such as clarifying the role of the IWG in relation to Presidential and Administration activities, can provide additional improvements to understanding the IWG's processes and procedures. We encourage the IWG to harmonize its activities with other relevant White House and agency activities, including those implementing President Biden's recent memoranda on regulatory review and scientific integrity. The timelines for these efforts should be complementary, well sequenced, and communicated publicly, with robust stakeholder input so that the resulting guidance from each is consistent with the other.
- **IWG Should Improve Its Major Modeling Assumptions/Inputs and Presentation of the Estimates.** The IWG should draw from the directions provided in the 2016 and 2017 NAS reports evaluating the integrated assessment modeling and related analysis of the previous SCC metrics. The IWG should provide guidance to agencies on how benefit-cost estimates using the new SC-GHG should be combined and displayed with other benefit and cost estimates using different discount rates, timeframes, and geographic regions in their regulatory analyses.
- **The IWG Should More Fully Expand its Approach to Addressing Uncertainty.** The IWG should conduct a formal uncertainty analysis, consistent with the NAS recommendations. The IWG should also follow the NAS recommendations and OMB guidance to characterize the uncertainty in the SC-GHG estimates, as well as the integrated assessment models, more comprehensively, consistently, and completely.
- **The IWG Should Conduct a More Complete and Transparent Account of Intergenerational Issues.** While the IWG states that a lower discount rate supports intergenerational equity, OMB Circular A-4 suggests that may not be appropriate. We recommend the IWG extend and square its intergenerational equity analysis with its discount rate arguments.
- **The IWG Should Follow the NAS Directions and Circular A-4 and Include An Estimate of Domestic Benefits.** Consistent with the NAS, the IWG should develop its own modules to construct an analytic approach that provides a distinct analysis of the domestic costs and benefits. This squares fully with OMB's Circular A-4 to report benefits for U.S. citizens—while separately reporting the global effects.

Looking ahead, the Associations hope to be of service to the IWG as it considers these comments, takes steps to further implement E.O. 13990, and guides agencies' consideration of SC-GHG estimates in regulatory actions.

I. The Process Should Be Transparent and Include Full Engagement and Participation by the Public

The Administration now has an excellent opportunity to improve the SC-GHG estimates. As a first step, the IWG can easily distinguish itself from the previous IWG by setting forth a transparent and robust process for implementing E.O. 13990 that includes full public engagement. The 2017 NAS Report recommendations provide a framework for a process the IWG should adopt. Additional transparency measures, such as clarifying the role of the IWG in relation to related Presidential and Administration activities, can help the public understand and better engage the IWG process. Absent a clearly articulated process and more information and clarity on the IWG, the public will not be able to meaningfully comment on the estimates or engage the IWG as the law requires or the E.O. had envisioned. This core deficiency in turn will create vulnerabilities for individual agency actions that purport to rely on SC-GHG values as justification. The Associations provide several recommendations for improving the IWG process below.

A. The IWG Can Make Meaningful Process Improvements

The Associations suggest the IWG establish a clearly defined process for revising the SC-GHG estimates. The 2017 NAS Report provided a helpful set of recommendations that we advise the IWG should implement. This process should also account for proper peer review of the estimates in accordance with OMB's Information Quality Act ("IQA") Guidelines.

1. The IWG Should Establish a Clear Process for Revising SC-GHG Estimates, Consistent with NAS Recommendations

Consistent with the NAS recommendations, the Associations agree the IWG should first and foremost establish a "predictable" process for revising the SC-GHG estimates. The NAS recommended a three-step process for future updates to the estimates, which the IWG can start implementing now.¹⁰ We appreciate the IWG's request for public input on "approaches to implementing the recommendations" of the NAS, including "how the IWG should prioritize and respond to these recommendations."¹¹ The Associations offer several suggestions below for the IWG related to the NAS recommendations on process.

At the outset, the Associations suggest the IWG prioritize the NAS process recommendations as they can provide the IWG with needed structure and can provide the public with necessary transparency and predictability. Indeed, a well-established and accepted process can serve as a strong foundation for the IWG, regardless of the evolving science, economics, or administration. The 2017 NAS report recommended the IWG establish a "predictable," three-step process for SC-GHG revisions including:

¹⁰ NAS Phase II Report. To be consistent with the NAS, we refer to the social cost of carbon (SCC), but the comments apply generally to estimation of the social cost of carbon, methane and nitrous oxide (collectively referred to as the social cost of greenhouse gases).

¹¹ 86 Fed. Reg. at 25,670.

In the first step, the interagency process and associated technical efforts should draw on internal and external technical expertise and incorporate scientific peer review. In the second step, draft revisions to the SC-CO₂ methods and estimates should be subject to public notice and comment, allowing input and review from a broader set of stakeholders, the scientific community, and the public. In the third step, the government's approach to estimating the SC-CO₂ should be regularly reviewed by an independent scientific assessment panel to identify improvements for potential future updates and research needs.¹²

In regard to approaches for implementing the recommendations, we suggest the IWG fully utilize diverse external expertise, as described by NAS for "step 1," as well as consider additional forms of engagement with relevant stakeholders, including direct discussions with relevant industry experts. This engagement could include public hearings, listening sessions, or potentially sector-specific workshops as have been used by some agencies. The IWG may also consider establishing an ad hoc external advisory panel to provide input. Such a panel could include a diverse set of members with various backgrounds and expertise.

Furthermore, in order to implement "step 2," consistent with the NAS recommendation, the Associations fully agree the IWG should solicit public comment on any draft revised estimates prior to issuing final values. In some cases, it may be advisable to solicit comment on a particular topic prior to issuing proposed values via a supplementary request for input. The Associations offer below additional guidance and suggestions related to public notice and comment. Independent scientific review is also a key component that should be initiated at this step. Indeed, such review should be conducted in accordance with longstanding government policy on information quality and peer review, as discussed below.

The Associations welcome the opportunity to provide additional feedback as the IWG considers developing such a process consistent with the NAS recommendations. We suggest the IWG solicit additional public input on any procedures it may employ. Any process the IWG chooses to implement should be made public and should be as detailed as possible.

2. All Estimates Should Undergo Proper Peer Review

Peer review is critical to securing public trust in scientific information, analysis, and its real-world application. The NAS review, though valuable, does not absolve the IWG from the requirement to conduct a robust peer review of the estimates.¹³ Indeed, the NAS review recommended the

¹² NAS Phase II Report.

¹³ The IWG requested the NAS review of the 2015 SCC estimates and provided the NAS a specific set of parameters and questions for the review. Thus, the NAS review did not fully consider all aspects of the estimates that may be covered in peer review. In addition, the review was conducted prior to the IWG's issuance of the social cost of methane and nitrous oxide. Accordingly, those estimates have not been subject to any independent peer review.

IWG include additional independent scientific peer review in its process. Accordingly, the Associations recommend the IWG's process incorporate a full, independent peer review of any future, revised estimates.

In 2001, Congress directed OMB to issue government-wide guidelines "that 'provide policy and procedural guidance to Federal agencies for ensuring and maximizing the quality, objectivity, utility, and integrity of information (including statistical information) disseminated by Federal agencies.'"¹⁴ OMB issued its Guidelines for Ensuring and Maximizing the Quality, Objectivity, Utility, and Integrity of Information Disseminated by Federal Agencies ("OMB Guidelines") in September 2001,¹⁵ and revised them in 2002,¹⁶ to ensure that federal agency data is of high quality, objective, and useful.

Among the principles laid out by the OMB Guidelines is that information must be useful for the intended user's objective, meaning it is presented "in an accurate, clear, complete, and unbiased manner, and as a matter of substance, is accurate, reliable, and unbiased."¹⁷ OMB stated that "[i]t is crucial that information Federal agencies disseminate meets these guidelines" and that the "more important the information, the higher the quality standards to which it should be held."¹⁸ This is especially true for "influential scientific or statistical information," defined as information that "will have or does have a clear and substantial impact on important public policies or important private sector decisions."¹⁹ The SC-GHG clearly meet this definition. The IWG should ensure that any revised estimates satisfy the OMB Guidelines.

As the SC-GHG estimates are influential information under OMB's Guidelines, we recommend the IWG seek a comprehensive peer review of any updates to the SC-GHG estimates. Such peer review should cover all the estimates (i.e., SCC, SCM, and SCN) and should be robust, including the inputs, assumptions, and averaging practices used for updated modeling runs. Although the three IAMs themselves have been peer-reviewed, the inputs and assumptions used by the IWG modelers, and the IWG's practice of averaging across model outputs, have not been.²⁰ Obtaining peer review of these key inputs and assumptions for updated modeling is important. This is not

¹⁴ 67 Fed. Reg. 8,452 (quoting Section 515 of the Treasury and General Government Appropriations Act for Fiscal Year 2001, Pub. L. No. 106-554).

¹⁵ 66 Fed. Reg. 49,718.

¹⁶ 67 Fed. Reg. 8,452.

¹⁷ *Id.* at 8,453.

¹⁸ *Id.* at 8,452.

¹⁹ *Id.* at 8,455.

²⁰ The modelers' inputs and assumptions were never disclosed to the public at the time that OMB requested public comments on the SCC in 2013 and still have not been peer reviewed to this day. The underlying inputs and assumptions have since been released to some parties that have sought them through Freedom of Information Act requests but the IWG refused to make them publicly available via a docket or other means at the time of 2013 request for comments.

only because the SC-GHG are influential on federal agency and increasingly state decision-making, but because variability in the inputs and assumptions, and how the individual model outputs are averaged, can dramatically change the values.²¹ In other words, unreliable model inputs will likely generate similarly unreliable outputs. Obtaining peer review of modeler inputs and assumptions is consistent with OMB Guidelines to demonstrate objectivity, and would build public trust in any agency rulemakings that use them.

Consistent with OMB Guidelines and the NAS recommendations for independent scientific review of the revised estimates, the Associations strongly encourage the IWG establish a process that factors in time for a full peer review of any draft revised estimates.

B. The IWG Should Ensure Revised Estimates Are Subject to Notice and Comment and Should Increase Overall Public Engagement

The IWG should meaningfully engage with the public—on any revised estimates and its future plans under E.O. 13990. In the first instance, notice and public comment is necessary and appropriate for purposes of the Administrative Procedure Act (“APA”). The SC-GHG estimates should go through a public notice and comment process before they are applied to a regulatory action, subject to the APA and other relevant statutes. This is consistent with the NAS recommendation that the IWG provide public notice and comment as well as other modes of external engagement. The need for public comment has also been reinforced by executive orders.

1. Any Revised Estimates Require Prior Public Notice and Comment

First, the IWG must ensure that the public has a meaningful opportunity to comment on any draft revised estimates and that the IWG fully considers those comments before the estimates are used in a regulatory action and subject to the strictures of the APA. The APA requires agencies to “consider and respond to significant comments received during the period for public comment.”²² Indeed, “[i]n enacting the APA, Congress made a judgment that notions of fairness and informed administrative decision-making require that agency decisions be made only after affording interested persons notice and an opportunity to comment.”²³ Consistent with these principles, opportunities for public comment on a particular rulemaking that may apply the estimates does not

²¹ Robert Pindyck, an influential climate economist at M.I.T., explained that a “modeler has a great deal of freedom in choosing functional forms, parameter values, and other inputs, and different choices can give wildly different estimates of the SCC and the optimal amount of abatement ... ‘reasonable’ is very much in the eye of the modeler. Thus, these models can be used to obtain almost any result one desires.” Robert S. Pindyck, *Climate Change Policy: What do the Models Tell Us?*, *J. of Econ. Lit.*, Vol. 51, No. 3 (Sept. 2013).

²² *Perez v. Mortgage Bankers Ass’n*, 135 S. Ct. 1199, 1203 (2015).

²³ *Chrysler Corp. v. Brown*, 441 U.S. 281, 316 (1979).

displace the IWG's responsibility to provide notice and an opportunity to comment on draft estimates.²⁴

The IWG should commit to providing public notice and comment prior to the release of any revised estimates. Agencies have applied the 2021 interim values in benefit-cost analyses for regulatory actions without the benefit of public comment, as with EPA's Revised Cross-State Air Pollution Rule Update for the 2008 Ozone NAAQS.²⁵ Other agencies have taken actions related to the SC-GHG, seemingly getting ahead of the issues raised in this Notice and the IWG process. For these reasons it is even more important the IWG provide an affirmative commitment to public notice and comment on any revised estimates.

While the 2021 TSD states that the SC-GHG "estimates were subject to public comment in the context of dozens of proposed rulemakings as well as in a dedicated public comment period in 2013,"²⁶ those comment periods nearly a decade ago were not as meaningful as the TSD suggests, were not adequate for legal or policy purposes, and should not be used as a model for the future.²⁷ The Associations note the 2013 request for comment was limited to the IWG's revised SCC

²⁴ In its letter dated June 17, 2021, denying the Associations' request for an extension of the deadline for comment on the Notice, OMB stated (1) that the comment period "provides interested stakeholders with an opportunity to provide early input on how best to incorporate the latest peer-reviewed science and economics literature in order to develop an updated set of SC-GHG estimates, and [that] delaying such input would not serve that purpose"; (2) that "before any agency actually relies upon the interim SC-GHG estimates as part of a future rulemaking, the agency will (if required by principles of administrative law) solicit and respond to additional comments at that time"; and (3) "that *no* comment period is legally required in this circumstance." (Emphasis added.) OMB's letter does not reference the topic of "[a]reas of decision-making, budgeting, and procurement by the Federal Government where the SC-GHG estimates should be applied," on which the Notice requests comment in addition to the science and economics topics noted in the letter. OMB's letter seems to imply that OMB is of the view (1) that the SC-GHG values and TSD are not subject to the notice and comment requirements of the APA, and (2) that any such notice and comment requirements can be satisfied at a later stage of the process. Notwithstanding OMB's statements in its letter, the Associations reserve the right to argue in the future (depending in part on their assessment of future OMB and IWG actions and statements) that the SC-GHG interim values and 2021 TSD – and any subsequent values and TSD that the IWG may develop in the future – are final agency actions subject to challenge for compliance with the APA and with the substantive and procedural requirements of other statutes and appropriate regulations.

²⁵ 86 Fed. Reg. 23,054 (Apr. 30, 2021).

²⁶ 2021 TSD at 3.

²⁷ The Associations caution against reliance on comment periods dating back several years. An "agency must examine the *relevant data* and articulate a satisfactory explanation for its action including a 'rational connection between the facts found and the choice made.'" *Motor Vehicle Mfrs. Ass'n v. State Farm Mut. Auto. Ins. Co.*, 463 U.S. 29 (1983) (quoting *Burlington Truck Lines, Inc. v. United States*, 371 U.S. 156, 168 (1962)) (emphasis added). "Normally, an agency rule would be arbitrary and capricious if the agency ... entirely failed to consider an important aspect of the problem" or "offered an explanation for its decision that runs counter to the evidence before the agency...." *Id.* This means that "an agency cannot *ignore* new and better data." *District Hospital Partners, LP v. Burwell*, 786 F.3d 46, 57 (D.C. Cir. 2015) (emphasis in original); *see also Amer. Iron & Steel Inst. v. EPA*, 115 F.3d 979, 1007 (D.C. Cir. 1997) (agencies "have an obligation to deal with newly acquired evidence in some reasonable fashion").

values,²⁸ not values for methane or nitrous oxide, which were issued in 2016.²⁹ Further, the 2010 and 2013 TSDs and all subsequent updates through 2016 were withdrawn by E.O. 13783; when President Biden revoked E.O. 13783 (among other executive orders) in E.O. 13990, he did not reinstate these TSDs and updates, but instead directed the new IWG to take new action to publish an interim SCC, SCN, and SCM within 30 days, and then to take new action to publish a final SCC, SCN, and SCM by January 2022.³⁰

The Associations advise the IWG not to limit opportunities for public comment on the SC-GHG to the public comment opportunities that arise in the particular rulemakings that may use the SC-GHG, as suggested in the 2021 TSD.³¹ In the past, federal agencies that used the SC-GHG did not substantively respond to comments concerning the inputs, assumptions, and decisions underlying the SC-GHG, thus creating unnecessary legal and policy risks for agency decisions that utilized the SC-GHG. No agency applying the SC-GHG has the capacity to explain the inputs, assumptions, and decisions made by the IWG. For instance, detailed objections to the SCC were raised in comments on the Department of Energy's energy conservation standards for commercial refrigeration equipment.³² In response, the Department of Energy simply cited back to, and restated, the 2013 TSD.³³ It did not make an independent assessment of the SCC itself. In several other rules, agencies similarly deflected comments on the SCC to the TSD.³⁴ For these reasons, we suggest that the IWG—as the author of the estimates—provide adequate opportunities for public comment on the estimates independent of any particular future potential rulemaking.

The IWG should ensure that future opportunities for public comment are robust. As a practical matter, the previous comment periods did not provide sufficient information for the public to meaningfully comment. Key decisions concerning how those estimates were created, such as the

²⁸ 78 Fed. Reg. 70,586 (Nov. 26, 2013).

²⁹ 2016 TSD.

³⁰ 82 Fed. Reg. 16,093, 16,095-96 (Mar. 31, 2017). The Associations caution the IWG against relying on those previously rescinded estimates as the basis for the Interim SC-GHG estimates or any future revised estimates without appropriately analyzing the TSDs and taking full comment on them. In *South Carolina Coastal Conservation League v. Pruitt*, 318 F. Supp. 3d 959 (D. S.C. 2018), groups successfully challenged the withdrawal of a 2015 Clean Water Act rulemaking and reinstatement of the preceding Clean Water Act regulations, first promulgated in 1980. The court there held that the U.S. Environmental Protection Agency was required to take substantive comment on the 1980 regulations as they were “new and different” from the 2015 regulations.

³¹ 2021 TSD at 3.

³² 79 Fed. Reg. 17,726, 17,779 (Mar. 28, 2014) (summarizing comments raised by associations).

³³ 79 Fed. Reg. at 17,777-79.

³⁴ See, e.g., Final Affordability Determination – Energy Efficiency Standards, 80 Fed. Reg. 25,901, 25,905-06 (May 6, 2015) (summarizing technical critiques of SCC and responding that “the SCC is an important and established element of a regulatory impact analysis”); Energy Conservation Standards for General Service Fluorescent Lamps and Incandescent Reflector Lamps, 80 Fed. Reg. 4,042, 4,100-01 (Jan. 26, 2015) (summarizing technical comments critiquing the SCC but declining to address them).

modeling inputs and assumptions, were not disclosed to the public in 2013 and therefore could not be considered in comments to the IWG. “[W]hen an agency refuses to consider comments on a rule’s substance and merits ... the content restriction is ‘so severe in scope’ that ‘by preventing any discussion of the substance or merits’ ... the opportunity for comment ‘cannot be said to have been a meaningful opportunity.’”³⁵ In light of these considerations, IWG should ensure that future requests for comments allow for a full and appropriate scope of comments and public input on the SC-GHG.

Lastly, the Associations look to the IWG to fully consider the public comments and adequately respond. In regards to the comment period on the 2013 SCC estimates, the IWG did not adequately respond to comments submitted by a subset of the Associations.³⁶ Instead, the IWG stated that at some point in the future, it would make “revisions based on the many thoughtful public comments we have received and the independent advice of the Academies.”³⁷ Thus, many of the concerns previously raised have not yet been substantively addressed.³⁸ Accordingly, it is critical that the IWG fully consider public comments and adequately respond to such comments on future revised estimates.

2. The IWG Should Increase Its Overall Public Engagement

³⁵ *S. Carolina Coastal Conserv. League*, 318 F. Supp. 3d at 965 (quoting *North Carolina Growers’ Association, Inc. v. United Farm Workers*, 702 F.3d 755, 770 (4th Cir. 2012)).

³⁶ IWG, Response to Comments: Social Cost of Carbon for Regulatory Impact Analysis Under Executive Order 12866 (July 2015) (“RTC”). The IWG released a response to comment document in July 2015—more than a year after the public comment period closed and more than five years after the IWG released the first government-wide SCC estimate for benefit-cost analyses. Many of the concerns raised in the 2014 Association Comments were simply declared beyond the scope of the IWG’s request for comments. For instance, the IWG “clarified that it was not requesting comments on the three peer reviewed IAMs themselves; rather, OMB was requesting comments on their use in developing the SCC estimates.” In other words, the actual IAMs were off-limits to the public. As for how they were used, the IWG merely pointed to the 2010 TSD already provided a description of “how the harmonized modeling decisions were developed, how the sources of the data inputs were selected, and how the model results were aggregated to the final four point estimates that are used in the regulatory analysis.” However, the IWG never provided an opportunity for public comment on the 2010 TSD. In addition, much of this information became available only through Freedom of Information Act requests after the IWG issued its 2013 request for comments. In the end, the IWG made no changes to the SCC based on the substantial technical concerns detailed in comments.

³⁷ *Id.* at 5.

³⁸ The Associations advise the IWG that, “[b]y ducking serious evaluation” of the issues presented by commenters, an agency may be acting arbitrarily and capriciously. *Business Roundtable v. SEC*, 647 F.3d 1144, 1152 (D.C. Cir. 2011).

Beyond the APA, the IWG should note other authorities that have reinforced the need for public engagement. E.O. 13990 directed the IWG to “solicit public comment [and] engage with the public and stakeholders.”³⁹ The Associations reinforce this important charge.

E.O. 12866, which served as the basis for the 2010 through 2016 TSDs, similarly directs the IWG provide “the public with meaningful participation in the regulatory process.”⁴⁰ Specifically, E.O. 12866 calls for outreach to the public before issuing a proposal and a comment period “not less than 60 days” on any subsequent proposals.⁴¹

The IWG co-chairs also stated they were “committed to engaging with the public and diverse stakeholders.”⁴² We strongly encourage the IWG to take additional steps to fulfill this commitment. A subset of the Associations wrote the Administration soon after E.O. 13990 was issued requesting to engage with the IWG. While we did not receive a response, we appreciate the opportunity, however belatedly, to comment on this Notice. However, we believe the IWG should have provided the public additional time rather than limit the comment period to half the amount of time afforded on the 2013 TSD.⁴³ In the future, we suggest the IWG provide not less than sixty days for the public to comment on any revised estimates. We also believe the public would benefit from a more proactive level of outreach and communication by the IWG.

The IWG should improve its level of engagement with the public, by allowing a full and appropriate range of comments and public input on this significant topic. We recognize the IWG stated this Notice was “to facilitate *early* ... interaction with the public” (emphasis added); however, we also understand that the IWG intends the interaction be “transparent and *robust*” (emphasis added).⁴⁴ For these reasons, we recommend the IWG publicly state its plans for external engagement beyond this Notice for public comment. This plan should entail the process for implementing the three-steps recommended by the NAS above. In addition, the Associations advise the IWG establish a process and timeline for meeting the specific milestones in the E.O. and incorporate ample opportunities for public notice and input. Specifically, we recommend the IWG identify additional opportunities for public engagement, such as public comment on draft

³⁹ Exec. Ord. 13990, Protecting Public Health and the Environment and Restoring Science to Tackle the Climate Crisis, 86 Fed. Reg. 7,037 (Jan. 25, 2021).

⁴⁰ Exec. Ord. 12866, Regulatory Planning and Review, 58 Fed. Reg. 51,735, 51,740 (Oct. 4, 1993).

⁴¹ *Id.*

⁴² Heather Boushey, Council of Econ. Advisers, *A Return to Science: Evidence-Based Estimates of the Benefits of Reducing Carbon Pollution*, Feb. 26, 2021, <https://www.whitehouse.gov/cea/blog/2021/02/26/a-return-to-science-evidence-based-estimates-of-the-benefits-of-reducing-climate-pollution/>.

⁴³ OMB’s notice was published in the Federal Register on November 26, 2013, with a comment period closing January 27, 2014, and on that date extended the comment period to February 26, 2014. *See* Technical Support Document: Technical Update of the Social Cost of Carbon for Regulatory Impact Analysis Under Executive Order 12866; 79 Fed. Reg. 4,359 (Jan. 27, 2014); Technical Support Document: Technical Update of the Social Cost of Carbon for Regulatory Impact Analysis Under Executive Order 12866; 78 Fed. Reg. 70,586 (Nov. 26, 2013).

⁴⁴ 86 Fed. Reg. 24,669 (May 7, 2021) at 24,670.

recommendations for the President due this September on the appropriate scope of agency actions that may utilize the SC-GHG, draft updated estimates due January 2022, and the additional recommendations due to the President next June. Such engagement should include public hearings or meetings to allow a fuller vetting of these issues.

C. The IWG Should Be Transparent With Its Decision-Making

We support the establishment of an IWG. However, given the significance of the estimates and the forthcoming recommendations to the President, the IWG should be more transparent and provide the public greater insight into its decision-making processes. The IWG should be clear about its process for implementing E.O. 13990 and overall operations. The Associations also request the IWG disseminate full supporting information about its decision-making and inner-workings to allow for adequate public participation.

Information on the IWG decision-making processes is not only good government, it is necessary to provide the public assurances that the estimates of such widespread potential impact comply with President Biden's memorandum on scientific integrity.⁴⁵ It is also important for the public to know whom to contact and how best to engage with the IWG on the SC-GHG estimates.

Throughout the years, the public and Congress have sought this type of information, but the IWG has declined to produce it without providing a good reason for withholding this information. Such withholding is unusual when compared to other interagency working groups on related topics that have provided detailed information. For instance, the Interagency Working Group on Environmental Justice ("EJ IWG"), established by President Clinton's E.O. 12898, directed the EJ IWG to host public meetings, and even created a Public Participation Committee.⁴⁶ The EJ IWG also made public details on its membership, internal structure, and the schedule for and general attendance expected at their meetings.⁴⁷ That is a practice that has been followed in the new EJ councils established by this administration.

⁴⁵ Memorandum for the Heads of Exec. Depts. And Agencies, Memorandum on Restoring Trust in Gov't Through Scientific Integrity and Evidence-Based Policymaking, Jan. 27, 2021, *available at*, <https://www.whitehouse.gov/briefing-room/presidential-actions/2021/01/27/memorandum-on-restoring-trust-in-government-through-scientific-integrity-and-evidence-based-policymaking/>.

⁴⁶ Exec. Ord. 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, 59 Fed. Reg. 7,629 (Feb. 16, 1994).

⁴⁷ Charter for Interagency Working Group on Environmental Justice (Nov. 18, 2014), *available at*, <https://www.epa.gov/sites/production/files/2015-02/documents/iwg-charter-2011.pdf> (Stating the IWG will designate a Senior Leadership Representative and a Senior Staff Representative and describes those roles. Further states the IWG will meet monthly and that Senior Leadership Representatives and the Chiefs of Staff will attend at least two meetings per year and they will hold public meetings at least once a year.). *See also* Memorandum of Understanding on Environmental Justice and Executive Order 12898 (2011), *available at*, <https://www.epa.gov/sites/production/files/2015-02/documents/ej-mou-2011-08.pdf>.

For the reasons stated above we recommend the IWG increase transparency in its operations and provide the public with details on its decision-making processes, including information on membership, internal structure, and the timing and nature of IWG meetings.

D. The IWG Should Harmonize its Work and Clarify its Role with Related Administration Initiatives

Separate from the work of the IWG implementing E.O. 13990, the Associations note that several related Administration initiatives would benefit from clarification regarding the IWG's role in relation to these efforts.

For one, on the same day that the President signed E.O. 13990, he also signed a memorandum to the heads of all agencies and departments regarding regulatory review that, among other provisions, requires OMB to begin a process with the goal of producing a set of recommendations for various changes to OMB regulatory review processes, including recommendations for revising Circular A-4.⁴⁸ Circular A-4 provides government-wide guidance on the development of regulatory analysis as required under E.O. 12866 and a variety of related authorities. In developing Circular A-4, OMB first developed a draft that was subject to public comment, interagency review, and external peer review. It is similarly expected that OMB's review and forthcoming revised Circular A-4 will go through the same process. While there has been no detailed information provided to the public on OMB's process for considering potential revisions to Circular A-4, the memorandum directed OMB to begin the process for potential revisions "as soon as practicable."⁴⁹ Any such process should precede the IWG's work on the SC-GHG estimates or should be harmonized with the work of the IWG, as technical elements of the estimates are to be governed by Circular A-4.⁵⁰ The Associations encourage OMB—as the co-chair of the IWG and author of Circular A-4—to ensure this harmonization is well documented, sequenced appropriately, and clearly communicated to the public.

The President also issued a Memorandum on Scientific Integrity to the heads of all agencies and departments, which, among other directives, orders OMB to "review whether guidance to agencies

⁴⁸ Modernizing Regulatory Review, 86 Fed. Reg. 7,223 (Jan. 26, 2021) (the Director of OMB "should provide concrete suggestions on how the regulatory review process can promote public health and safety, economic growth, social welfare, racial justice, environmental stewardship, human dignity, equity, and the interests of future generations" and recommendations should include proposals that will ensure regulatory review serves as a tool to affirmatively promote regulations that advance these values.")

⁴⁹ *Id.*

⁵⁰ See Office of Mgmt. & Budget, Circular A-4: Regulatory Analysis (Sept. 17, 2003), available at, <https://www.whitehouse.gov/sites/whitehouse.gov/files/omb/circulars/A4/a-4.pdf> (providing OMB's guidance to Federal agencies on the development of regulatory analysis as required under E.O. 12866) ("OMB Circular A-4"); see also, <https://www.whitehouse.gov/omb/information-for-agencies/circulars/>.

on implementation of the Information Quality Act needs to be updated and reissued.”⁵¹ As noted above, the IQA and the corresponding OMB guidance on the IQA serve as a long-standing, significant source of direction on agency policies to ensure significant federal actions are rooted in sound, transparent science. Any changes to the IQA guidance should be taken into account by the IWG.

E.O. 14030, “Climate-Related Financial Risk,” issued in May similarly gave agency direction that appears relevant to the work of the IWG.⁵² Specifically, E.O. 14030 directed the Federal Acquisition Regulatory (“FAR”) Council (not a member of the IWG), in consultation with the Council on Environmental Quality (“CEQ”) and heads of other agencies, to “consider amending” the Federal Acquisition Regulation to require that the SC-GHG be considered in procurement decisions and give preference to proposals and bids from federal suppliers with a lower SC-GHG estimate.⁵³ This directive may be considered premature, given that E.O. 13990 requires the IWG to provide recommendations to the President by September 2021 on whether the SC-GHG estimates should be applied to procurement. Thus, it is evident that there are several related but separate Administration initiatives that have implications for the IWG’s ongoing process that should be clarified for the public and appropriately coordinated with one another.

The Associations also seek additional information regarding how the IWG’s work has factored into other agency actions related to the SC-GHG. For instance, on May 19, 2021, EPA—a core member of the IWG—published a proposed rulemaking that included a novel social cost of hydrofluorocarbons (“HFCs”) in its benefit-cost analysis.⁵⁴ The proposal, which would establish an allowance program that would reduce the production and consumption of HFCs, used the novel social cost of HFCs to calculate the climate benefits of the rule at an estimated \$2.8 billion in 2022 and \$283.9 billion in cumulative net benefits from 2022 through 2050.⁵⁵ EPA said the social cost of HFCs estimate was based on “a method consistent with the method used to estimate the [SC-GHG],” but provided no indication that the IWG had reviewed the estimate.⁵⁶ The proposal referenced the ongoing effort by the IWG to address the NAS recommendations, yet posed questions for the public that are precisely the types of questions that the IWG should consider in

⁵¹ Memorandum for the Heads of Exec. Depts. And Agencies, Memorandum on Restoring Trust in Gov’t Through Scientific Integrity and Evidence-Based Policymaking, Jan. 27, 2021, *available at*, <https://www.whitehouse.gov/briefing-room/presidential-actions/2021/01/27/memorandum-on-restoring-trust-in-government-through-scientific-integrity-and-evidence-based-policymaking/>.

⁵² 86 Fed. Reg. 27,967 (May 25, 2021).

⁵³ *Id.*

⁵⁴ 86 Fed. Reg. 27,150 (May 19, 2021).

⁵⁵ *Id.* at 27,157.

⁵⁶ *Id.*

this docket.⁵⁷ These kinds of questions should be deferred until this IWG process is completed. Indeed, it appears EPA may be getting ahead of the IWG with this estimate and its questions. Clarification from the IWG on its role with respect to the SC-HFCs and transparency regarding its plans for potentially incorporating the estimate into the government-wide SC-GHG estimates would be helpful.

Separately, while the IWG stated that the purpose of the 2021 TSD was to “promote consistency in the values used across agencies,”⁵⁸ the Federal Energy Regulatory Commission (“FERC”), an independent agency⁵⁹ and not a member to the IWG, posed a series of questions related to the SCC in a Notice of Inquiry (“NOI”) soliciting input on its certification policy for new natural gas transportation facilities.⁶⁰ One of the Associations commented to FERC that its foray into this area while the IWG’s efforts (and OMB’s efforts relating to Circular A-4) are pending “would be premature, while also residing well outside of FERC’s statutory authority or expertise.”⁶¹ It is

⁵⁷ *Id.* at 27,202-03 (“To complement the IWG process, and as an active member of the IWG, EPA is soliciting comment in this proposed rule on the SC–HFC estimates used in this RIA and the methodology underlying them, including on how that methodology should be adapted in future to accommodate advances in the scientific and economic literature.”).

⁵⁸ 2021 TSD at 1.

⁵⁹ As an independent agency, FERC is not required to abide by E.O. 12866, but OMB has issued guidance requesting that independent agencies follow the E.O. and associated OMB guidance. *See* Memorandum from Cass R. Sunstein, Adm’r, Office of Information & Regulatory Affairs, Exec. Order 13579, “Regulation and Independent Regulatory Agencies” (Jul. 22, 2011), *available at*, <https://www.whitehouse.gov/sites/whitehouse.gov/files/omb/memoranda/2011/m11-28.pdf> (requesting that independent agencies follow the key principles and central requirements of E.O. 13563 on Improving Regulation and Regulatory Review, Jan. 18, 2011, which supplements and reaffirms E.O. 12866); Memorandum from Cass R. Sunstein, Adm’r, Office of Information & Regulatory Affairs, Exec. Order 13563, “Improving Regulation and Regulatory Review,” at 6 (Feb. 2, 2011), *available at*, <https://www.whitehouse.gov/sites/whitehouse.gov/files/omb/memoranda/2011/m11-10.pdf> (“Executive Order 13563 does not apply to independent agencies, but such agencies are encouraged to give consideration to all of its provisions, consistent with their legal authority.”); Memorandum from Sally Katzen, Adm’r, Office of Information & Regulatory Affairs, Guidance for Implementing E.O. 12866, at 1 (Oct. 12, 1993), *available at*, https://www.whitehouse.gov/sites/whitehouse.gov/files/omb/assets/inforeg/eo12866_implementation_guidance.pdf (“The Order as a whole applies to all Federal agencies, with the exception of the independent agencies . . . the independent regulatory agencies are requested on a voluntary basis to adhere to the provisions that may be pertinent to their activities.”); *id.* at 2.

⁶⁰ 86 Fed. Reg. 11,268 (Feb. 24, 2021). The Notice of Inquiry includes the question of whether the Natural Gas Act or NEPA “mandate[s] the use of Social Cost of Carbon (SCC) analysis by the Commission in its consideration of [natural gas pipeline] certificate applications?” 174 FERC ¶ 61,125, P. 17.C.6. FERC is also exploring whether it could use a SC-GHG tool in considering whether denying pipeline certificates are required by the public convenience and necessity. *Id.* P. 17.C.7.

⁶¹ Letter from M. Durbin, Pres., Global Energy Inst., U.S. Chamber of Commerce to K. Bose, Sec’y, Fed. Energy Reg. Commission, RE: Cert. of New Interstate Natural Gas Facilities (Docket No. PL18-1-000), May 26, 2021, *available*

unclear what role, if any, the IWG may have had with regard to FERC's NOI or intends to have in the future as FERC reviews comments that could possibly inform the IWG's E.O. 13990 implementation.

We encourage the IWG to harmonize its activities with the Presidential memoranda on regulatory review and scientific integrity. The timelines for these efforts should be complementary and include robust stakeholder input so that the resulting guidance from each is consistent with the other. Given this Notice's request for information regarding environmental justice considerations, the IWG should also provide the public information on its work related to other administration initiatives such as those on environmental justice. The Associations would similarly recommend the IWG clarify the relationship of its work to that of the related agency actions, including but not limited to those identified above at FERC, EPA, and the FAR Council.

II. The IWG Should Explicitly Limit the SC-GHG Use Outside of Regulatory Impact Analyses

Given the IWG's next milestone under E.O. 13990 is to "provide recommendations to the President, by no later than September 1, 2021, regarding areas of decision-making, budgeting, and procurement by the Federal Government where the SCC, SCN and SCM should be applied,"⁶² the IWG should clarify the application of the estimates prior to addressing substantive technical improvements to the estimates. The Associations appreciate the opportunity to provide feedback as the IWG develops recommendations in response to this charge in E.O. 13990. The IWG should be clear with the public as to what the SC-GHG is and is not. As explained below, the estimates are monetized estimates of the projected cost of GHG emissions developed for use in benefit-cost analyses for regulatory actions under E.O. 12866, where permissible under an agency's statutory authority. The estimates are imprecise, uncertain, and not designed for other applications, such as project-level analyses, electricity planning and subsidy schemes. Accordingly, we advise the IWG reinforce the proper role and scope of the SC-GHG use in regulatory benefit-cost analyses. Given the significant implications of the IWG's forthcoming recommendations under E.O. 13990, we suggest that the IWG solicit public input on draft recommendations to the President and make its final recommendations fully available to the public.

A. The SC-GHG Estimates Were Developed for Use Only in Regulatory Benefit-Cost Analyses

at, <https://www.globalenergyinstitute.org/sites/default/files/2021-05/US%20Chamber%20FERC%20NOI%20Comments%20--%20PL18-1.pdf>.

⁶² Exec. Ord. 13990, Protecting Public Health and the Environment and Restoring Science to Tackle the Climate Crisis, 86 Fed. Reg. 7,037 (Jan. 25, 2021).

The SCC estimates were created in response to a court decision holding that the National Highway Traffic Safety Administration had committed legal error by implicitly assuming that the future costs of current carbon dioxide emissions would be zero in its corresponding regulatory impact analyses.⁶³ The purpose of the subsequent 2010 TSD was to “promote consistency in the values used across agencies” for the future cost of carbon dioxide emissions.⁶⁴ The resulting “SCC values” were intended “to support agency regulatory impact analyses.”⁶⁵ These estimates were developed only for use in benefit-cost analyses for regulatory actions under E.O. 12866. This was made clear in the first TSD, which stated:

Under Executive Order 12866, agencies are required, to the extent permitted by law, ‘to assess both the costs and the benefits of the intended regulation and, recognizing that some costs and benefits are difficult to quantify, propose or adopt a regulation only upon a reasoned determination that the benefits of the intended regulation justify its costs.’ The purpose of the “social cost of carbon” (SCC) estimates presented here is to allow agencies to incorporate the social benefits of reducing carbon dioxide (CO₂) emissions into benefit-cost analyses of *regulatory actions* that have small, or “marginal,” impacts on cumulative global emissions. The estimates are presented with an acknowledgement of the many uncertainties involved and with a clear understanding that they should be updated over time to reflect increasing knowledge of the science and economics of climate impacts (emphasis added).⁶⁶

Indeed, the 2010 TSD and every subsequent TSD through 2016 included the same text regarding the application to regulatory actions and were all conspicuously labeled with “for Regulatory Impact Analysis Under Executive Order 12866,” in the title of the TSD.⁶⁷ While the 2021 TSD no longer includes this key language and instead states “under Executive Order 13990,”⁶⁸ it is still based on the same underpinnings as the prior estimates.

⁶³ 2021 TSD at 2 (citing *Center for Biological Diversity v. Nat’l Highway Traffic Safety Admin.*, 538 F.3d 1172, 1200-03 (9th Cir. 2008)).

⁶⁴ *Id.*

⁶⁵ *Id.*

⁶⁶ 2010 TSD.

⁶⁷ U.S. Gov’t Interagency Working Group on Social Cost of Carbon, *Technical Support Document: Technical Update of the Social Cost of Carbon for Regulatory Impact Analysis Under Exec. Order 12866* (May 2013); U.S. Gov’t Interagency Working Group on Social Cost of Carbon, *Technical Support Document: Technical Update of the Social Cost of Carbon for Regulatory Impact Analysis Under Exec. Order 12866* (Nov. 2013); U.S. Gov’t Interagency Working Group on Social Cost of Carbon, *Technical Support Document: Technical Update of the Social Cost of Carbon for Regulatory Impact Analysis Under Exec. Order 12866* (July 2015); U.S. Gov’t Interagency Working Group on Social Cost of Greenhouse Gases, *Addendum to Technical Support Document on Social Cost of Carbon for Regulatory Impact Analysis under Exec. Order 12866: Application of the Methodology to Estimate the Social Cost of Methane and the Social Cost of Nitrous Oxide* (Aug. 2016).

⁶⁸ 2021 TSD.

B. The SC-GHG Is Appropriate Only For Regulatory Benefit-Cost Analyses

Over the last decade, federal agencies have used the SC-GHG estimates (primarily the SCC) in dozens of regulatory impact analyses for rules spanning all major energy sectors, including electricity, transportation, buildings, and industry.⁶⁹ Putting aside the issue of determining the appropriate SCC value, applying it in the context of a formal benefit-cost analysis for a significant regulatory action generally is conceptually appropriate, assuming it is applied properly.

Unless economic considerations are explicitly precluded by statute, all significant proposed actions are subject to rigorous benefit-cost analysis consistent with E.O. 12866 and OMB Circular A-4.⁷⁰ In such an analysis, the estimated compliance costs for regulated industries subject to a proposed action are typically compared to projected societal benefits, including, in this case, those resulting from a reduction in greenhouse gas emissions. Conducting rigorous benefit-cost analysis helps to determine whether society, as a whole, would be made better off by the proposed action.⁷¹

Importantly, the ability to make claims about social welfare based on a benefit-cost analysis hinges on whether all significant costs and benefits are included in the analysis. If significant monetized costs or benefits are excluded, then comparing the residual terms no longer indicates whether a proposed action would be welfare-enhancing. Circular A-4 states: "When important benefits and costs cannot be expressed in monetary units, BCA is less useful, and it can even be misleading, because the calculation of net benefits in such cases does not provide a full evaluation of all relevant benefits and costs."⁷²

For proposed actions not subject to benefit-cost analysis, it is typical for quantitative accounting of benefits and costs to be incomplete, if such accounting is attempted at all. For example, project-level analyses often describe impacts across many different areas in qualitative terms because qualitative impacts are most salient to stakeholders. Monetizing such impacts could be extremely difficult in some cases due to a lack of established methods or protocols and could render the discussion of impacts more opaque to most users by turning a relatively concrete outcome into something more abstract.

⁶⁹ Rose, S and J. Bistline, Applying the Social Cost of Carbon: Technical Considerations, Electric Power Research Inst. (July 2016), available at, <https://www.epri.com/research/products/3002004659>.

⁷⁰ Some statutory provisions may prohibit an agency from considering costs or otherwise relying on a benefit-cost analysis in its decision-making. *Whitman v. Amer. Trucking Ass'ns*, 531 U.S. 457 (2001) (holding that Clean Air Action Section 109(b) barred EPA from considering costs in setting National Ambient Air Quality Standards for criteria air pollutants).

⁷¹ See Exec. Ord. 12866, Regulatory Planning and Review, 58 Fed. Reg. 51,735 (Oct. 4, 1993) (Section 1 purpose is to inform agencies on the alternative regulatory approaches that maximize net benefits).

⁷² OMB Circular A-4.

In such analyses, while it might be possible to monetize some impacts (such as projected climate impacts), partial monetization is not advisable for several reasons. First, it could be interpreted as emphasizing or de-emphasizing the monetized impact, even though there is no basis on which to say that a monetized impact is more or less significant than a non-monetized impact. Second, for reasons discussed above, monetized benefits and costs are meaningful only when they are compared to one another in aggregate. Third, it is likely that monetizing emissions at the project-level may be misleading if the market-mediated effects of the proposed action are not explicitly evaluated. For example, an energy project could lead to more emissions locally but displace other emissions non-locally. A project-level, inherently local analysis would therefore not capture the emissions relevant to determining the total impact at a national or global scale.

These considerations suggest that there is a material distinction between formalized benefit-cost analysis in the regulatory context and other types of analysis. Both types of analysis can be useful. However, whereas monetization is essential for the former, it is potentially misleading in the latter for reasons discussed above. As a practical matter, E.O. 12866 distinguishes between “regulatory actions” and “significant regulatory actions” based in part of the projected scale of impact. For each “significant” proposed action, the issuing agency is required to provide a benefit-cost analysis.⁷³ Thus, existing regulatory guidance essentially equates significance with the need for benefit-cost analysis, which in turn, implies full monetization of costs and benefits. Applying an SCC value generally is sensible in situations where all costs and benefits are monetized, so restricting its use to significant regulatory actions ensures consistency with this principle.

C. Efforts To Expand The Use of the SC-GHG Estimates Are Inappropriate

Despite the SC-GHG purpose, and its limitations, other parties have adopted it for uses that were never contemplated by the IWG in its 2010 TSD. Many of these adoptions are driven by the erroneous belief that the SC-GHG represents a certain and precise scientific calculation of future impacts from GHG emissions that can be used to analyze individual projects or complicated state regulatory schemes. The IWG should explicitly inform potential users that the SC-GHG values involve significant uncertainty and are not useful outside of the limited context of regulatory analyses undertaken pursuant to the E.O. 12866 process.

1. Outside the limited context of regulatory benefit-cost analyses under E.O. 12866, the SC-GHG is inappropriate for agency decision-making, including decisions made under electricity regulation, taxing, and subsidy schemes

Regulators have sought a myriad of uses for the SCC, such as NEPA analyses, electric utility integrated resource plans, and subsidy schemes. However, the SC-GHG involves too many uncertainties and limitations to be used for anything other than benefit-cost analyses under E.O. 12866. The IWG should clarify that using the SC-GHG beyond benefit-cost analyses under E.O.

⁷³ Exec. Ord. 12866, Regulatory Planning and Review, 58 Fed. Reg. 51,735 (Oct. 4, 1993).

12866 is inappropriate. A few examples illustrate some of the problems associated with expanding the use of the SC-GHG beyond its proper role.

A number of state public utility commissions have begun using the SCC in electric resource planning, such as California, Colorado, Minnesota, Nevada, and Washington.⁷⁴ For instance, the SCC was added as a cost of present GHG emissions from fossil fuel generation in order to make such generation more expensive compared to other sources when considering the “least cost” option for baseload generation. This can cause significant increases in electricity rates for businesses. And, as noted by economist Dr. Noah Kaufman, regulators are using the SCC as an “off the shelf” metric in electricity tax and subsidy schemes.⁷⁵

For both integrated resource planning and the tax and subsidy schemes, instead of using the range of estimates by discount rate provided by the IWG, state regulations are coalescing around a single value of approximately \$50 per metric ton of carbon dioxide for 2020.⁷⁶ This single value is then used to calculate electricity costs by states using them for integrated resources planning and subsidies for nuclear power and renewables in Illinois, Minnesota, and New York.⁷⁷ Additionally, federal legislation has been introduced to impose a carbon tax based on a single metric purportedly derived from the SCC.⁷⁸

The SC-GHG values, according to the IWG, use a range of discount rates to at least partially capture the significant uncertainty involved in their estimation.⁷⁹ However, electricity pricing, subsidies, and taxes require a single monetary value, not a range, and reducing the SC-GHG to a single value creates a presumption of certainty that the IWG has expressly disclaimed. Many regulatory bodies lack the expertise to properly understand the SC-GHG and its limitations.⁸⁰ It is incumbent upon the IWG to clearly express that the SC-GHG was are suitable solely for federal

⁷⁴ See Oregon Dep't of Energy, Primer on the Social Cost of Carbon (May 2020) (“Oregon Primer”) (providing chart of various energy regulatory uses in other states), available at, <https://www.oregon.gov/energy/energy-oregon/Documents/2020-Social-Cost-of-Carbon-Primer.pdf>.

⁷⁵ Noah Kaufman, The Use of Current Social Cost of Carbon Estimates in Taxes and Subsidies (“Kaufman”) (Mar. 27, 2018), available at, <https://www.energypolicy.columbia.edu/research/commentary/use-current-social-cost-carbon-estimates-taxes-and-subsidies>.

⁷⁶ *Id.*; see also Oregon Primer, Table 2 (states typically use a single value for all purposes).

⁷⁷ *Id.*; see also *Vote Solar v. Dep't of Public Service Regulation*, 473 P.3d 963 (Mont. 2020) (requiring the Montana Public Service Commission to consider the SCC in setting solar power standard offer rates as an avoided cost).

⁷⁸ See H.R. 4209, 115th Cong.; S. 2368, 115th Cong.

⁷⁹ See 2021 TSD at 4 (“For purposes of capturing uncertainty around the SC-GHG estimates in analyses, the IWG emphasized previously and reemphasizes here the importance of considering all four of the SC-GHG values.”).

⁸⁰ Even environmental groups complained about applying the SCC to energy program subsidies, arguing that the New York Public Service Commission “simply seized the SCC model from federal authorities and demonstrated a lack of expertise in using said model as a basis for the creation of” a subsidy credit formula for nuclear plants. *In the Matter of Hudson River Sloop Clearwater, Inc. v. New York PSC*, 2019 WL 5583492, *11-12 (N.Y. Sup. Oct. 8, 2019).

regulatory impact analyses under E.O. 12866 and should not be used for different purposes as those purposes fail to account for the many uncertainties and limitations inherent in the estimates.

2. The SC-GHG is particularly inappropriate for NEPA analyses

It is now routine for groups opposing projects requiring federal permits or authorizations to demand that federal agencies use the SCC for National Environmental Policy Act (“NEPA”) analyses. Federal agencies have almost universally opposed the SCC for such analyses. Among the objections are that “the protocol is too uncertain and indeterminate to be useful to the [NEPA] analysis.”⁸¹ Others include the lack of consensus regarding the appropriate discount rates and that agencies have no way of understanding whether a wide range of monetary damages are “significant” for NEPA purposes or not.⁸²

Litigation, however, has caused a significant division among courts.⁸³ A significant issue is that the purpose of, and uncertainties involved in, the SC-GHG is not well understood. For instance, in the *High Country Conservation Advocates v. U.S. Forest Service*, the district court mistakenly held that the SCC was “designed to quantify a project’s contribution to costs associated with global climate change.”⁸⁴ (emphasis added). Certainly, the SCC was *not* designed for assessing the future impacts of a single project on global GHG atmospheric concentrations or climatic effects, and there is no indication that it is capable of providing any meaningful information with respect to a single project. Indeed, the IWG has disclaimed its ability to provide meaningful information with respect to regional impacts.⁸⁵ There is no indication that the range of SCC values can be applied to estimate the impacts from a single highway, oil and gas lease sale, or new factory. Yet, litigation briefing often inaccurately portrays the SCC as providing mathematically precise estimates of future project “costs.” The plaintiffs’ brief in *High Country* asserted that the SCC was “designed specifically to disclose” the impacts of a single project, in that case, modifications to a coal lease.⁸⁶ The plaintiffs there claimed that, according to the SCC, the coal lease modification would cause

⁸¹ *350 Montana v. Bernhardt*, 443 F. Supp. 3d 1185, 1196 (D. Mont. 2020).

⁸² *EarthReports v. FERC*, 828 F.3d 949 (D.C. Cir. 2016).

⁸³ See *High Country Conservation Advocates v. U.S. Forest Service*, 52 F. Supp. 3d 1174 (D. Colo. 2014) (requiring use of SCC where NEPA considers any economic benefits of a proposed project); *Montana Environmental Information Center v. U.S. Office of Surface Mining*, 274 F. Supp. 3d 1074 (D. Mont. 2017) (same); *350 Montana*, 443 F. Supp. 3d 1185 (same); but see *WildEarth Guardians v. Zinke*, 368 F. Supp. 3d 31 (D.D.C. 2019) (upholding BLM’s explanation that use of the SCC was too speculative for NEPA purposes); *Citizens for a Healthy Community v. BLM*, 377 F. Supp. 3d 1223 (D. Colo. 2019) (upholding BLM rejection of SCC as inappropriate for small, discrete projects); *Wilderness Workshop v. BLM*, 342 F. Supp. 3d 1145 (D. Colo. 2018) (BLM was justified in providing a qualitative assessment of potential climate change impacts instead of using SCC); *EarthReports*, 828 F.3d 949 (upholding FERC’s rejection of the SCC).

⁸⁴ 52 F. Supp. 3d at 1190.

⁸⁵ 2021 TSD at 25-26.

⁸⁶ Plaintiffs’ Opening Brief on the Merits, Case No. 13-cv-01723, Dkt No. 62 (Mar. 20, 2014) (D. Colo.) at 45.

between \$248 million and \$3.4 billion in future impacts – a conclusion that the SCC was not designed to reach and cannot be supported with any scientific accuracy.⁸⁷

Using the SC-GHG in NEPA analyses can be misleading. The SC-GHG should not be portrayed as mathematically precise calculations of a project's potential social cost, especially when they are compared against more concrete, immediate, non-speculative, and better understood project benefits, such as capital expenditures, jobs created, local tax revenues generated, or government royalty rates. This is simply not an apples-to-apples comparison and both the lead federal agency performing the NEPA analysis and the public could be misled by such a comparison. Second, there is no current understanding of what value of future social cost has a "significant impact on the environment" under NEPA.⁸⁸ As noted above with respect to the *High Country* litigation, applying the SCC to a project's construction, operational, and downstream or indirect emissions produced a wide range of potential future costs, spanning from \$248 million to \$3.4 billion. There is no discernible method for a federal agency to pick the high end, the low end, or some mid-range number and determine whether or not that monetary value represents a significant impact on the environment. Further, the CEQ's NEPA regulations define "significance" as "usually depend[ing] upon the effects in the locale rather than in the world as a whole."⁸⁹ Yet, the majority of the impacts calculated by the SCC go to global effects, not just those in the U.S. or the local area of the project under consideration. The IWG should clarify that the SC-GHG is simply a poor fit for NEPA analyses and, again, that the use of this tool should be limited to regulatory impact analyses under E.O. 12866. The unacceptable alternative to IWG clarification is inconsistent court-by-court determinations pertaining to SC-GHG application for agency actions or NEPA analyses.

The same basic principles apply to other agency actions beyond NEPA. For example, in response to FERC's recent notice of inquiry discussed above, several commenters asserted that FERC should use SC-GHG values "to monetize all [GHG] emissions (direct, upstream, and downstream) from a proposed project" and that "this methodology allows [FERC] to seamlessly consider climate impacts . . . through a comparison to the project's other monetized effects."⁹⁰ This statement is not accurate, as SC-GHG values are not a precise measure of the effects of a specific

⁸⁷ *Id.* at 46-47.

⁸⁸ 40 C.F.R. § 1508.27(b)(7).

⁸⁹ *Id.* at § 1508.27(a).

⁹⁰ Environmental Defense Fund, et al., *New Information and Additional Perspectives on Using the Social Cost of Greenhouse Gases to Weigh Climate Impacts in the Certification of New Interstate Natural Gas Facilities* at 1-2, FERC Dkt. No. PL18-1-000 (May 26, 2021); see also Natural Resources Defense Council, et al., *New Information and Additional Perspectives on Using the Social Cost of Greenhouse Gases to Weigh Climate Impacts in the Certification of New Interstate Natural Gas Facilities* at 58, FERC Dkt. No. PL18-1-000 (May 26, 2021) ("The SCC tools can be used to provide a robust picture of the environmental effects, as well as the monetized harms, or a project[.]").

project, and any “comparison” of those values “to the project’s other monetized effects” would be a case of comparing apples to oranges.

III. IWG Should Review Its Major Modeling Assumptions/Inputs and Presentation of the Estimates in Line with the NAS Recommendations and OMB Guidance

A. The IWG Should Use This Review Process to Consider Fully the NAS Recommendations

This new IWG process offers an opportunity to address fully the recommendations outlined by the NAS during its reviews. In 2015, the IWG contracted with the NAS for two reviews of its SCC methodology and estimates. In Phase I, the IWG asked the NAS whether it should pursue short-term updates to parts of the underlying IAMs.⁹¹ The IWG also sought recommendations on its characterization of uncertainty with the SCC estimates. In Phase II, the IWG asked the NAS for recommendations for a more comprehensive update to reflect the best available science. The IWG asked for recommendations on the choice of IAMs, discount rates, socio-economic scenarios, and presentation of uncertainty. The NAS panel held several public meetings during both its Phase I and Phase II reviews and produced two reports. The NAS peer reviewed each report and published the Phase I report in January 2016 and the Phase II report in January 2017. The NAS also held a public symposium on both reports in June 2017.

The NAS reports made recommendations that we urge the IWG to consider now as it moves forward with new SC-GHG analyses. Specifically, in the Phase I report, the NAS considered the role of the specific parameters the IWG was considering for an update. The NAS panel examined the role of these parameters in the modeling and the sensitivity of the final estimates to these parameters. It also evaluated whether the models were more sensitive to other assumptions, data, and methodologies.

In its Phase I report the NAS recommended against any near-term change to the SCC estimates, but identified opportunities for IWG to improve its approach. For example, NAS found that the modeling was more sensitive to other inputs and assumptions than the parameters the IWG identified. Further, the NAS concluded that the principal parameter the IWG had proposed to update at that time, the equilibrium climate sensitivity was an inadequate descriptor of the impact of emissions on climate change.⁹² Therefore, updating this parameter may not yield a more scientifically supported SCC estimate. The NAS also concluded that the IWG’s uncertainty analysis and presentation of results could likewise be augmented. The NAS pointed out the SCC estimates were sensitive to parameters beyond those in the IWG’s uncertainty analysis. The NAS

⁹¹National Academies of Sciences, Engineering, and Medicine. (2016). *Assessment of Approaches to Updating the Social Cost of Carbon: Phase 1 Report on a Near-Term Update*. Committee on Assessing Approaches to Updating the Social Cost of Carbon, Board on Environmental Change and Society. Washington, DC: The National Academies Press (“NAS Phase I Report”).

⁹² See NAS Phase I Report at 47-48 (Conclusion 2).

thus recommended that the IWG expand its description of the uncertainty, discuss the various types of uncertainty and how the IWG accounted for them, and present a wider range of estimates from the frequency distribution.

In January 2017 the NAS released its Phase II report, which was a more comprehensive evaluation of the IWG's methodology. In its report, the NAS recommended that the IWG adopt a new approach. The NAS recommended that the IWG develop a series of modules for the different components of the modeling exercise, gather updated data and expert judgments, and then start a process to update and to peer review the modeling, data, and SCC values every five years.

The 2017 NAS Phase II report also looked closely at the selection of the discount rate. The NAS recommended a declining discount rate based on the "Ramsey equation"⁹³ and that is parameterized with three variables: the pure rate of time preference, the growth rate in consumption over time, and the marginal utility of consumption. The last of these three parameters declines as consumption increases; the more consumption a person has, the less valuable the next unit of consumption is. Since consumption has grown throughout most human history due to technical innovation and human capital gains, the Ramsey equation leads to a discount rate that declines over long time horizons. The NAS report also recommended in the near-term that IWG base the discount rate on the consumption rate of interest. The IWG cites this NAS recommendation in the 2021 TSD.

The IWG should draw from these NAS reports as it develops new SC-GHG today. First, the IWG should base any quantitative SC-GHG estimates on an examination the 2017 NAS report. For example, one of the NAS report's conclusions concerns the ability to present a domestic estimate:

CONCLUSION 2-4 Estimation of the net damages per ton of CO₂ emissions to the United States alone, beyond the approximations done by the IWG, is feasible in principle; however it is limited in practice by the existing SC-IAM methodologies, which focus primarily on global estimates and do not model all relevant interactions among regions. It is important to consider what constitutes a domestic impact in the case of a global pollutant that could have international implications that impact the United States. More thoroughly estimating a domestic SC-CO₂ 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. 94

⁹³ See NAS Phase II Report at 162-163. The Ramsey discount rate formula state that the discount rate, r , is given as ($r = \delta + \eta \cdot g$) where δ is the discounting of the utility of future generations or "pure time preference" rate; η is the change in the value of an additional dollar as society grows wealthier (the absolute value of the "elasticity of marginal utility of consumption") and g is the growth rate of per capita consumption.

⁹⁴ NAS Phase II Report at 53.

Therefore, the NAS endorsed considering “what constitutes a domestic impact,” while recognizing the analytic challenges to estimating effects on U.S. consumers with the IWG’s existing models. The IWG also has an opportunity to construct an analytic approach that provides an analysis of domestic impacts, consistent with the NAS recommendation that the IWG develop its own modules.

In addition, given the long time horizons and the inherent uncertainty in these projections, the NAS encourages the IWG to present its data in a way that provides the public with an understanding of when the incremental benefits from avoided GHG emissions occur:

Longer time horizons allow for representation and evaluation of longer-run geophysical system dynamics, such as sea level change and the carbon cycle; however, they involve greater speculation and uncertainty about socioeconomic conditions and emissions. It will be informative, for analytic transparency and decision making, for the IWG to report the share of the SC-CO2 accruing over different time horizons. Such reporting would provide a sense of the relative importance of very long-term impacts to the overall estimate.

The NAS also provides recommendations on how to present the results, such as by providing results using different discount rates and time horizons. The NAS recommendation, which the IWG should adopt, is to be explicit in guidance to agencies on how benefit estimates using the SC-GHG should be combined and displayed with other benefit and cost estimates using different discount rates, timeframes, and geographic regions.⁹⁵

B. The IWG Should More Fully Expand its Approach to Addressing Uncertainty

The IWG should follow the NAS recommendations and OMB guidance to characterize the uncertainty in the SC-GHG estimates comprehensively, consistently, and completely.

1. The IWG Should Conduct a Formal Uncertainty Analysis, Consistent With the NAS Recommendations

Foremost, the IWG should follow the NAS recommendation to conduct a formal and full uncertainty analysis. The IWG includes in the 2021 TSD a partial uncertainty analysis that mirrors the approach in the 2016 SCC estimate. The NAS Phase I and Phase II reports recommended that the IWG move beyond this partial uncertainty analysis. The NAS stated:

The five scenarios used by the IWG do not span uncertainties in relevant variables (e.g., GDP, population, and energy) or reflect the broader scenario literature (e.g., Kopp and Mignone, 2012; Rose et al., 2014b). In estimating the SC-CO2, these five

⁹⁵ NAS Phase II Report at 181-182.

scenarios are weighted equally, thereby treating them as equally likely. The IWG does not provide a justification for this implicit assumption. As discussed throughout this report, good scientific practice requires that key variables and associated uncertainties be clearly identified, characterized, and supported; that the methods used to produce probabilistic projections be consistent with the available peer reviewed literature; and that the projections themselves be consistent with the main features of the historical record.⁹⁶

We would urge the IWG to follow this NAS recommendation as it proceeds with its new analysis. To facilitate that, we suggest that the partial uncertainty analysis found in the 2021 TSD be set aside so that the IWG can prepare a formal uncertainty analysis consistent with OMB guidance and the NAS recommendations, and present that information in a way that the full uncertainty in the estimate is understood by the public.

Uncertainty analysis is vital because the underlying metric is so uncertain. The SC-GHG values depend on the predictions of the global economy, the global climate, the global population, and many other factors for the next 280 years. Numerous retrospective studies of long-run predictions of much more modest scopes—e.g., U.S. energy consumption 30 or 50 years in the future—have been shown to have substantial errors.⁹⁷ One analysis found studies of Gross Domestic Product were at least 10 percent off of the true value within one decade.⁹⁸ In addition to fundamental uncertainty, there is variability in known parameters that affect outcomes of future states of the world. These tenets – uncertainty and variability –should be addressed in a systematic, transparent manner so that the public can gain a more complete understanding of the SC-GHG estimates.

The NAS in its Phase II report acknowledges the fundamental uncertainty of estimating economic conditions and demographics even to 2100. For example, the NAS states:

Unfortunately, the literature contains only a few examples of projections of population, GDP, and emissions of any sort beyond 2100 and provides little discussion of how to construct them (see further discussion below). In fact, the scenario libraries do not necessarily span even the range of historical experience. For example, among the IPCC baseline scenarios that extend to 2100 and were used by Working Group III in the Fifth Assessment Report (Intergovernmental Panel on Climate Change, 2014), the range of GDP growth rates is 1.1-2.5 percent (with only 1 of 263 below 1.2 percent and only 2 out of 263 above 2.4 percent). Yet the

⁹⁶ NAS Phase II Report at 62.

⁹⁷ See, e.g., Craig, Gadgil, and Koomey, What Can History Teach Us? A Retrospective of Long-Term Energy Forecasts for the United States, *Annu. Rev. Energy Environ.* 27:83–118 (2002); Bezdek, R.H., Wendling, R.M., A Half Century of Long-Range Energy Forecasts: Errors Made, Lessons Learned, and Implications for Forecasting, *Journal of Fusion Energy* 21, 155–172 (2002), available at, <https://doi.org/10.1023/A:1026208113925>

⁹⁸ O'Neill, Brian & Desai, Mausami, Accuracy of Past Projections of US Energy Consumption. *Energy Policy*. 33. 979-993 (2005), available at, <https://doi.org/10.1016/j.enpol.2003.10.020>.

historical data show that a set of representative rates would span a significantly wider range.

While the NAS suggests methodologies for constructing estimates from the available data, the NAS emphasizes the fundamental uncertainty of knowing the performance of a complex system decades in the future:

Based on the more recent methodology (United Nations, 2015b), the probabilistic projections to 2100 could be extended further into the future. The IWG could explore that task with IIASA, the United Nations, and other researchers. Such extrapolation, like the economic projections beyond 2100, *raise significant questions about whether the assumptions used in the model will hold over more than a century* (emphasis added).⁹⁹

The NAS proposed near-term actions and longer-term actions to craft estimates in the face of this fundamental uncertainty. We suggest the IWG undertake these actions, consistent with the NAS recommendations.

2. The IWG Should Recognize More Fully the Uncertainty Inherent in the Integrated Assessment Models.

The underlying models that the IWG uses to develop the SC-GHG also each contain their own substantial uncertainty, which the IWG should factor in more expressly in its analysis and when communicating the SC-GHG to the public. During its review, the NAS panel heard from many scientists who had conducted more quantitative analysis of the IAMs. For example, a paper by Gillingham et al. cast doubt on whether the fundamental uncertainty could be reduced through the updates the IWG has taken to date.¹⁰⁰ According to the authors, the paper provided the “first comprehensive study of uncertainty of major outcomes for climate change using multiple IAMs. The six models used in the study are representative of the models used in the IPCC Fifth Assessment Report (IPCC 2014) and in the U.S. government Interagency Working Group Report on the Social Cost of Carbon or SCC (US Interagency Working Group 2013).”¹⁰¹

The authors found the results show significant uncertainty across six available integrated assessment models. The authors ran six IAM models (including those that form the IWG SCC estimate) to “develop estimates of the uncertainty to 2100 for major variables, such as emissions,

⁹⁹ NAS Phase II Report at 74-75.

¹⁰⁰ Gillingham, K., Nordhaus, W., Anthoff, D., Blanford, G., Bosetti, V., Christensen, P., McJeon, H., Reilly, J., Sztorc, P. *Modeling Uncertainty In Climate Change: A Multi-Model Comparison*. Cowles Foundation Discussion Paper No. 2022. (Sept. 2015).

¹⁰¹ *Id.* at 2.

concentrations, temperature, per capita consumption, output, damages, and the social cost of carbon.”¹⁰² They present the percentile distribution of the results for their base case. In describing Table 3 reprinted below, the authors state: “given the size of the interquartile range, these results definitely indicate that there are substantial uncertainties in all aspects of future climate change and its impacts in all the models investigated here.”¹⁰³

Table 3. Distribution of all major variables, average of six models

The date for all variables is 2100 except for the SCC, which is 2020. Damages and SCC are for three models.

Variable	0.1 %ile	1 %ile	5 %ile	10%ile	25%ile	50%ile	75%ile	90%ile	95%ile	99%ile	99.9%ile
CO2 concentrations	533.8	565.1	602.9	633.3	710.5	841.9	1,023.0	1,228.1	1,369.5	1,672.1	2,071.5
Temperature	1.75	2.14	2.55	2.79	3.24	3.79	4.42	5.05	5.46	6.29	7.33
Output	104.3	108.3	114.9	124.7	190.4	422.8	882.5	1,495.0	1,949.1	2,974.5	4,394.6
Output (log)	16.8	38.0	77.6	113.3	211.8	417.6	811.2	1,456.6	2,055.0	3,877.9	7,826.8
Emissions	9.8	18.7	28.5	36.0	55.9	94.2	152.8	223.2	273.1	382.0	528.6
Population	4,961	5,771	6,745	7,352	8,513	10,005	11,717	13,444	14,558	16,816	19,696
Radiative Forcings	3.7	4.3	5.0	5.4	6.2	7.2	8.4	9.6	10.3	11.8	13.7
Damages	(7.3)	(2.8)	(0.1)	1.2	4.3	16.6	44.8	86.1	117.9	191.9	297.2
SCC	2.01	3.49	5.09	6.15	8.40	11.82	16.59	22.31	26.46	36.19	50.82

Economic output and damages (as shown by the wide range in Table 3) show greater variance than temperature, population, and radiative forcing. Within the uncertainty modeled in the paper, these factors vary by one to two orders of magnitude. This finding is significantly larger than the approximately one order of magnitude of uncertainty in the IWG analysis.

3. The IWG Should Also Consider and Present Uncertainty in Accordance With the Guidance Provided by OMB Circular A-4 and General NAS Direction.

Existing OMB guidance provides IWG further direction in how to fully present the uncertainties inherent in the SC-GHG analysis. Specifically, Circular A-4 has two directives that we suggest that the IWG adopt in its next version. First, the IWG should avoid the impression of precision when presenting the SC-GHG estimates. As Circular A-4 states, “Your estimates cannot be more precise than their most uncertain component. Thus, your analysis should report estimates in a way that reflects the degree of uncertainty and not create a false sense of precision.”¹⁰⁴ The 2021 IWG

¹⁰² *Id.*

¹⁰³ *Id.* at 32.

¹⁰⁴ OMB Circular A-4.

estimates have three significant digits for some values, suggesting a degree of precision that could potentially mislead readers and users of the metrics. Second, Circular A-4 requires a formal uncertainty analysis for regulatory actions that have an annual effect of greater than \$1 billion. 105 Past SCC estimates have been used in many rulemakings that have had an annual effect greater than \$1 billion, and that certainly could be the case for future regulatory analyses.

Methodologies and approaches for uncertainty analysis are well known. Numerous NAS panels have given agencies detailed recommendations on how to characterize uncertainty for policy officials and the public.¹⁰⁶ In its revisions, recent and past NAS recommendations on risk/uncertainty characterizations would be further useful guides for the IWG as it revises the SC-GHG.

C. Application of the Discount Rate Should be Augmented and Account for Intergenerational Ethical Concerns

In addition to the value of the discount rate, the IWG should augment its recommendations to agencies on applying the discount rate.

1. The IWG Should Provide Guidance to Agencies to Use the Same Discount Rate for Benefits and Costs at the Same Points in Time.

The SAB report provides another important recommendation to EPA that the IWG should consider expanding to all agencies in its guidance on any SC-GHG application. The SAB emphasized its support for EPA's policy in the Revised Economic Guidelines that "Regardless of the approach or rate selected, the same discount rate should be applied to all benefits and costs that occur in the same year."¹⁰⁷ In previous applications of the SCC, agency analyses used different discount rates for the regulatory costs than the discount rates in the IWG's SCC values. The IWG should recommend that agencies use the same discount rate for benefits and costs that occur in the same year.

2. The IWG Should Conduct a More Complete and Transparent Assessment of Intergenerational Issues.

¹⁰⁵ *Id.* at 39-42.

¹⁰⁶ See, e.g., National Research Council, Comm. On Decision Making Under Uncertainty; Board on Population Health and Public Health Practice; Institute of Medicine, Environmental Decisions in the Face of Uncertainty; National Research Council, Science and Decisions: Advancing Risk Assessment, Washington, DC: The National Academies Press, 2009, Chapter 4; National Research Council, Assessing the Reliability of Complex Models: Mathematical and Statistical Foundations of Verification, Validation, and Uncertainty Quantification, Washington, DC: The National Academies Press, 2012.

¹⁰⁷ *Id.*

The IWG states that a lower discount rate supports intergenerational equity where today's generation should consider its effect on future generations who do not have a role in today's decisions. The TSD also cites this consideration as one of the bases to use the Ramsey formulation for a declining interest rate schedule and a lower interest rate than today's social rate of interest: future generations will be richer and thus will value consumption less than today's generation. Since a dollar will be less valuable to those future consumers, the discount rate should decline to reflect future generations' progressively increasing wealth.

We recommend the IWG extend and square its intergenerational equity analysis with its discount rate arguments. As a number, the discount rate has no ethical content. However, regulatory and policy decisions using it do have ethical implications. Using a lower discount rate for the SC-GHG has the effect of reducing today's consumption in favor of future consumption. Future generations are generally expected to be wealthier in terms of human capital, technical innovations, and physical capital, which means a lower SC-GHG will effectively lead to decisions that shift resources from the relatively poor (current population) to the relatively rich (future generations).

Circular A-4 puts it this way:

Using the same discount rate across generations has the advantage of preventing time-inconsistency problems. For example, if one uses a lower discount rate for future generations, then the evaluation of a rule that has short-term costs and long-term benefits would become more favorable merely by waiting a year to do the analysis. Further, using the same discount rate across generations is attractive from an ethical standpoint. If one expects future generations to be better off, then giving them the advantage of a lower discount rate would in effect transfer resources from poorer people today to richer people tomorrow.¹⁰⁸

We recommend the IWG conduct a more comprehensive and probing analysis of intergenerational equity.

D. The IWG Should Follow the NAS Directions and Circular A-4 and Include Estimates of Domestic Benefits

In the 2021 TSD, the IWG presents SC-GHG values that represent the global benefits of marginal reductions in GHG emissions. To provide a complete set of information to the public, consistent with OMB guidance, the IWG should present estimates for domestic benefits to U.S. citizen and the U.S. economy from marginal GHG reductions.

¹⁰⁸ OMB Circular A-4 at 35.

While the TSD correctly states that Circular A-4 permits agencies to evaluate the global benefits and costs of their actions, the IWG should still include a separate analysis of domestic benefits. Circular A-4 states: “Your analysis should focus on benefits and costs that accrue to citizens and residents of the United States. Where you choose to evaluate a regulation that is likely to have effects beyond the borders of the United States, *these effects should be reported separately.*”¹⁰⁹ Following that direction, the IWG should include a domestic benefit estimate as part of its revisions to the TSD and its analysis – while “separately” reporting the global effects.

Including a domestic benefit shows the U.S. population how much spending U.S. resources benefits the U.S. population and how much benefits others. This information allows U.S. voters to understand the policies of the elected officials and the proposals of those seeking elective office. To provide this transparency into federal agency decisions, the IWG should include a domestic estimate in future updates to the SC-GHG.

In addition, given the long time horizons and the inherent uncertainty in these projections, the NAS encourages the IWG to give the public a better understanding of when the incremental benefits from avoided GHG emissions occur:

Longer time horizons allow for representation and evaluation of longer-run geophysical system dynamics, such as sea level change and the carbon cycle; however, they involve greater speculation and uncertainty about socioeconomic conditions and emissions. It will be informative, for analytic transparency and decision making, for the IWG to report the share of the SC-CO2 accruing over different time horizons. Such reporting would provide a sense of the relative importance of very long-term impacts to the overall estimate. 110

The NAS also provides recommendations on how to present the results and how agencies could present results valued with a SCC and results using different discount rates and time horizons. The NAS recommendation, which the IWG should adopt immediately, is to be explicit in guidance to agencies on how benefit estimates using the SC-GHG should be combined and displayed with other benefit and cost estimates using different discount rates, timeframes, and geographic scopes.

Conclusion

Thank you for the opportunity to comment on the OMB Notice and provide recommendations for the IWG to consider as it moves forward. We hope the IWG finds these comments helpful and would welcome the opportunity to meet with you to discuss these comments and be of any assistance to the IWG as it undertakes this effort.

¹⁰⁹ *Id.*

¹¹⁰ NAS Phase II Report at 54.

Mr. Dominic Mancini
June 21, 2021
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Associations' Comments

Respectfully,

The Aluminum Association
American Chemistry Council
American Exploration & Production Council
American Farm Bureau Federation
American Fuel & Petrochemical Manufacturers
American Gas Association
American Highway Users Alliance
American Iron and Steel Institute
American Petroleum Institute
American Public Gas Association
American Public Power Association
Associated Builders and Contractors
Associated General Contractors of America
Council of Industrial Boiler Owners
The Fertilizer Institute
Independent Petroleum Association of America
Interstate Natural Gas Association of America
National Association of Manufacturers
National Lime Association
National Mining Association
National Rural Electric Cooperative Association
Portland Cement Association
U.S. Chamber of Commerce