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Public Interest Comment[1] on
The Interagency Technical Support Document:

Technical Update of the Social Cost of Carbon for Regulatory Impact Analysis under Executive Order No. 12866

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The George Washington University Regulatory Studies Center strives to improve regulatory policy through research, education, and outreach. As part of its mission, the Center conducts careful and independent analyses to assess rulemaking proposals from the perspective of the public interest. This comment on the interagency Technical Support Document to estimate a social cost of carbon dioxide emissions does not represent the views of any particular affected party or special interest, but is designed to evaluate the effect of the SCC document on overall consumer welfare.

[1] This comment reflects the views of the authors, and does not represent an official position of the GW Regulatory Studies Center or the George Washington University. The Center's policy on research integrity is available at http://research.columbian.gwu.edu/regulatorystudies/research/integrity.

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I. Introduction

In May 2013, the White House released a revised Technical Support Document (TSD) with a new estimate of the "social cost of carbon" (SCC), to be used by various agencies when evaluating the benefits of emissions regulations, energy efficiency standards, renewable fuel mandates, technology subsidies, and other policies intended to mitigate global warming. Federal agencies immediately began using the revised SCC to make regulatory decisions, prompting objections from the public and requests for an opportunity to comment on the SCC and the underlying models and analyses. On November 1, 2013, the White House released updated values for the SCC, and on November 26 invited the public to comment. In this public interest comment we make four points:

First, we endorse the administration's effort to arrive at a uniform SCC, to help ensure at least internal consistency across a portfolio of policies directed at reducing carbon emissions.

Second, we applaud the Office of Management and Budget's (OMB's) effort to seek public comment on the TSD, and urge the administration to follow through with scientific peer review and with other measures to ensure transparency in regulatory decisions.

Third, we caution that the task of estimating the SCC was undertaken with an apparent bias that needs to be corrected before it can be taken as objective.

Finally, we point out that the logical next step is not, contrary to the subtitle of the TSD, for regulatory agencies to incorporate the SCC into Regulatory Impact Analyses (RIAs). Rather, the next step is to seek an international consensus on the value of the SCC and to negotiate a coordinated global policy response, which is the only way that the theoretical benefits of government actions to reduce global carbon emissions can be translated into actual results.

II. The rationale for a uniform SCC

President Obama has publicly committed to addressing climate change through an ambitious regulatory agenda, to be undertaken by multiple federal agencies, using a wide range of existing statutory authorities. While the merits of this climate agenda as a whole are debatable, the use of a unified SCC to impose some order on its components is sensible. The SCC summarizes into a single number (more properly, a range of numbers) a vast array of information derived from scientific and economic research and modeling. All of this information is subject to disagreement, and the relationships embedded in the calculation of the SCC are extraordinarily complex, presenting a daunting challenge to anyone trying to arrive at a consensus figure. Nonetheless, it is worthwhile to try. The SCC may appear to be a gross oversimplification of a complex underlying reality; but, in fact, it is the right simplification to undertake. This is

because any damage that greenhouse gas emissions may inflict on global climate systems is independent of the source of the emissions. To the climate, all CO_2 molecules look the same.

This simple fact does not tell us whether it makes sense to regulate energy efficiency or subsidize certain technologies, but it does tell us that any cost-effective portfolio of climate policies will have a single implicit marginal cost of carbon. For this reason, we commend the efforts of the interagency working group to reach agreement on the value of the SCC. A common SCC should be used to evaluate climate-related regulatory mandates, grant programs, and tax policies.

Certainly it makes more sense for policy makers to focus on the SCC than to try to figure out the "right" level of greenhouse gas (GHG) emissions from every source, or the "right" temperature of the earth, or the "right" combination of fuels and technologies to pursue as a policy goal. Indeed, past efforts to develop an international climate policy framework were doomed, in part, by their focus on negotiating the level of emissions each country would be allowed—an unproductive diplomatic zero-sum game. An international conversation about the marginal cost of carbon emissions might have led to some useful policy outcomes. Similarly, the domestic Renewable Fuels Standard attempts to set, in statute and regulation, the required level of renewable transportation fuels. The program has degenerated into a rent-seeking contest for subsidies, with little or no (or negative) benefit to the environment.[3] The marginal cost of GHG emissions—the SCC—may be very difficult to calculate, but is a far more promising path to pursue than the various attempts to guess at optimal quantities of emissions or technologies.

III. The need for an open public process

The influential nature of the SCC value for a variety of future policies, as well as the difficulties and uncertainties of calculating the SCC, demand conscientious attention—including public comment and peer review—to the task of getting it right. The May 2013 SCC revision of the SCC, for example, raised the estimated social cost of U.S. CO_2 emissions by about $100 billion per year. If the U.S. were using a carbon tax to address climate change, this would amount to a trillion-dollar tax increase over the next decade. Instead, this trillion dollars will be placed on the scale of benefit-cost analysis, weighing in favor of expanded regulation by the DOE, the DOT, the EPA, and all of the other federal agencies engaged directly or indirectly in climate policy. The implications for the economy are troubling, particularly since—assuming they are real—few, if any, of those climate benefits will accrue to the U.S.

The process of scientific inquiry revels in debate, discussion, and discourse. Public comment and peer review of how the government selected, weighed, and combined the integrated assessment climate models, what those models mean, and the appropriateness of the various

[3] See, e.g., Sofie Miller, "Crony Environmentalism," *Regulation*. Vol.36 No. 1 (Spring 2013)

assumptions and inferences made to deal with economic and scientific uncertainty will not only add credibility to future government climate policies, but encourage advances in scientific understanding of these complex issues.

For this reason, we commend OMB for seeking public comment on the revised TSD. In addition to public comment, however, TSD would benefit from a rigorous peer review process. President Obama has stressed the importance of adhering to established scientific procedures, including peer review, when making policy decisions, stating:

> When scientific or technological information is considered in policy decisions, the information should be subject to well-established scientific processes, including peer review where appropriate, and each agency should appropriately and accurately reflect that information in complying with and applying relevant statutory standards.[4]

OMB itself has observed:

> Peer review is an important procedure used by the scientific community to ensure that the quality of published information. Peer review can increase the quality and credibility of the scientific information generated across the federal government.[5]

In 2004, the OMB called for more consistency in the use of peer review across government agencies, issuing an *Information Quality Bulletin for Peer Review* ("Bulletin").[6] The Bulletin implemented the Information Quality Act of 2001,[7] which directed OMB to issue guidelines to "provide policy and procedural guidance to Federal agencies for ensuring and maximizing the quality, objectivity, utility and integrity of information" disseminated by Federal agencies.[8] It established "minimum standards for when peer review is required for scientific information and the types of peer review that should be considered by agencies in different circumstances," noting:

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[4] President Barack Obama, Memorandum for the Heads of Executive Departments and Agencies, "Scientific Integrity." March 9, 2009.
[5] Office of Management and Budget, *Information Quality Bulletin for Peer Review*. October 2002.
[6] Available at: http://www.whitehouse.gov/sites/default/files/omb/memoranda/fy2005/m05-03.pdf.
[7] Pub. L. No. 106-554, § 515(a)
[8] OMB also issued Information Quality Guidelines (October 2002) http://www.whitehouse.gov/sites/default/files/omb/assets/omb/inforeg/iqg_oct2002.pdf

> The use of a transparent process, coupled with the selection of qualified and independent peer reviewers, should improve the quality of government science while promoting public confidence in the integrity of the government's scientific products.

The SCC TSD appears to be precisely the kind of information the Bulletin was intended to cover. Section I(5) of the Bulletin defines "scientific information" to include "factual inputs, data, models, analyses, technical information, or scientific assessments based on the behavioral and social sciences, public health and medical sciences, life and earth sciences, engineering, or physical sciences."

The SCC TSD also qualifies as "influential scientific information," which the Bulletin defines as "scientific information the agency reasonably can determine will have or does have a clear and substantial impact on important public policies or private sector decisions." As the Bulletin notes, "information dissemination can have a significant economic impact even if it is not part of a rulemaking."

The Bulletin explicitly covers "scientific assessments," defined as "an evaluation of a body of scientific or technical knowledge, which typically synthesizes multiple factual inputs, data, models, assumptions, and/or applies best professional judgment to bridge uncertainties in the available information."

> These assessments include, but are not limited to, state-of-science reports; technology assessments; weight-of-evidence analyses; meta-analyses; health, safety, or ecological risk assessments; toxicological characterizations of substances; integrated assessment models; hazard determinations; or exposure assessments. Such assessments often draw upon knowledge from multiple disciplines. Typically, the data and models used in scientific assessments have already been subject to some form of peer review.

Thus, the fact that the models evaluated in the SCC TSD may have been reviewed separately does not absolve the federal government of the requirement for peer review. The Bulletin states: "prior peer review and publication is not by itself sufficient grounds for determining that no further review is necessary."

Nor does the fact that the SCC TSD combines scientific inputs with economic and social science information negate the importance of peer review. The Bulletin references the Congressional/Presidential Commission on Risk Assessment and Risk Management, which

recognized that "peer review of economic and social science information should have as high a priority as peer review of health, ecological, and engineering information."[9]

As President Obama has announced his intent to address climate change through various rulemakings issued by different parts of the federal government, the use of a consistent set of SCC values can encourage more cost-effective policies than if different agencies were permitted to develop different estimates. But that makes peer review all the more important. As the Bulletin notes, "the need for rigorous peer review is greater when the information contains precedent-setting methods or models, presents conclusions that are likely to change prevailing practices, or is likely to affect policy decisions that have a significant impact."

According to the Bulletin:

> A scientific assessment is considered "highly influential" if the agency or the OIRA Administrator determines that the dissemination could have a potential impact of more than $500 million in any one year on either the public or private sector or that the dissemination is novel, controversial, or precedent-setting, or has significant interagency interest. One of the ways information can exert economic impact is through the costs or benefits of a regulation based on the disseminated information. The qualitative aspect of this definition may be most useful in cases where it is difficult for an agency to predict the potential economic effect of dissemination. In the context of this Bulletin, it may be either the approach used in the assessment or the interpretation of the information itself that is novel or precedent-setting. Peer review can be valuable in establishing the bounds of the scientific debate when methods or interpretations are a source of controversy among interested parties.

Peer review and public participation are necessary to support the President's commitment to "creating an unprecedented level of openness in Government."[10] According to the Bulletin:

> Whenever feasible and appropriate, the agency shall make the draft scientific assessment available to the public for comment at the same time it is submitted for peer review (or during the peer review process) and sponsor a public meeting where oral presentations on scientific issues can be made to the peer reviewers by interested members of the public. When employing a public comment process as part of the peer review, the agency shall, whenever practical, provide peer reviewers with access to

[9] Presidential/Congressional Commission on Risk Assessment and Risk Management, Risk Commission Report, Volume 2, Risk Assessment and Risk Management in Regulatory Decision-Making, 1997:103.

[10] Memorandum on Openness and Transparency, January 21, 2009.

> public comments that address significant scientific or technical issues. To ensure that public participation does not unduly delay agency activities, the agency shall clearly specify time limits for public participation throughout the peer review process.[11]

IV. The problem of bias

The problem of integrating climate forecasts and economic forecasts in order to estimate a net social cost of carbon is extraordinarily complex, and requires careful judgment. Other informed observers have expressed serious misgivings about the current state of the art and about the particular Integrated Assessment Models (IAMs) used in the TSD.

> These models have crucial flaws that make them close to useless as tools for policy analysis: certain inputs (e.g. the discount rate) are arbitrary, but have huge effects on the SCC estimates the models produce; the models' descriptions of the impact of climate change are completely ad hoc, with no theoretical or empirical foundation; and the models can tell us nothing about the most important driver of the SCC, the possibility of a catastrophic climate outcome. IAM-based analyses of climate policy create a perception of knowledge and precision, but that perception is illusory and misleading.[12]

We do not want to argue that the task is hopeless. There is, however, one crucial ingredient that appears to be lacking in the current effort: a balanced, good faith inquiry, without a preconceived outcome or directional bias.

For example, the choice of discount rates in the TSD does not conform to the standard guidance issued by OMB,[13] and is biased in the direction of low discount rates. Without going through all of the arguments bearing on the choice of discount rates, we will simply note that the choices at the lower end tend not to be grounded in empirical observations of consumer preferences, but rather in a prescriptive notion of what consumers *ought* to want. As one early participant in the TSD process observed, "the prescriptive approach reflects the normative judgments of the decisionmaker."[14] As such, it cannot be characterized as a true representation of public welfare as benefit-cost analysis traditionally defines it. If the administration's intent is to issue a *prescriptive* SCC, it should be labeled as such. Moreover, it would be irresponsible to produce a

[11] Bulletin III(5).
[12] Robert Pindyck, "Climate Change Policy: What do the Models Tell Us?" Working Paper 19244, National Bureau of Economic Rsearch (http://www.nber.org/papers/w19244), July 2013.
[13] OMB Circular A-4 references OMB Circular A-94, which "states that a real discount rate of 7 percent should be used as a base-case for regulatory analysis." Circular A-4 goes on to tell agencies "For regulatory analysis, you should provide estimates of net benefits using both 3 percent and 7 percent."
[14] Michael Greenstone, "Estimating the Social Cost of Carbon for the United States Government," Massachusetts Institute of Technology, November 2010, p. 32.

prescriptive SCC, derived from the preferences of agency decisionmakers, without also producing for comparison an empirical SCC derived from observations of consumers' actual revealed preferences.

Another illustration of bias in the development of the TSD is its explicitly one-sided line of enquiry: a focus only on anthropogenic effects, and not on non-anthropogenic climate variability; only on warming, and not on cooling; only on warm-side catastrophes, and not on cold side-catastrophes; only on the 95th percentile outcomes, and not on the 5th percentile. While a similar bias is pervasive in the government-sponsored scientific literature about climate change, one would expect an economic analysis – particularly one aimed at calculating the expected value of a highly uncertain metric – to take greater pains to adopt an unbiased perspective.

Consider that, while an extra ton of carbon emissions is likely to mean that the earth's climate will be warmer in the future than it would otherwise be, that does not necessarily mean that the climate will be warmer than it is today. We know that, over long periods of time, absent any anthropogenic effect, the earth will almost certainly cool. This effect is not small and it is not seriously in doubt. Glacial advances have happened repeatedly in the past; and, absent anthropogenic warming, they will happen again, with catastrophic consequences. Absent warming, we know that glaciers will cover New York City again one day. Moreover, the effects of the glacial advance will not be limited to coastlines; we will likely lose Chicago, too, and most of Canada. We know from the historical record that such events also produce mass species extinctions by a variety of mechanisms.

We cannot predict the timing of a glacial advance accurately, but even a simple regression-towards-the-mean analysis tells us that catastrophic natural cooling scenarios are not so improbable that they can safely be neglected.

Moreover, to the extent we think the SCC should "account for extreme scenarios,"[15] the cooling catastrophes become more important. To the extent we think long-term effects deserve greater weight (i.e., very low discount rates), cooling becomes a greater concern. To the extent we look for evidence of climate "tipping points" that are highly disruptive, the tipping point that triggers glacial advance cannot be ignored. If we take an honest look at the 5th percentile of climate outcomes, as well as the 95th, it becomes clear that cooling scenarios need attention. The TSD's examination of only one tail of the climate probability distribution displays a bias that could lead to serious policy mistakes.

[15] February 2010 TSD discussion beginning p. 29.

V. The need for an international consensus

While the TSD purports to provide guidance to federal agencies for their use in RIAs, its use for that purpose would, at this point, be a mistake. The Interagency Working Group chose to calculate a global SCC, which purports to represent the *global* benefits of a *global* reduction in greenhouse gas emissions. Even if we accept that *global* benefits are the right ones to count (a questionable assumption, see infra), the fact remains that unilateral actions by the United States cannot be assumed to achieve a *global* reduction in emissions.

> The interagency group concluded that a global measure of the benefits from reducing US emissions is preferable to a domestic measure because the climate change issue is highly unusual in at least two respects. First, it involves a global externality. That is, emissions of most GHGs contribute to damages around the world even if they are emitted in the United States. Consequently, to address the global nature of the problem, the interagency group concluded that the SCC should incorporate the full (global) damages caused by GHG emissions. Second, climate change is a problem that the United States cannot solve alone. Even if the United States were to reduce its GHG emissions to zero, it would be insufficient to avoid substantial damages from climate change."[16]

This reasoning makes sense if, and only if, the intent is to use the SCC to support the development of a global system of constraining carbon emissions. It does not make sense to use that same global SCC to characterize the benefits of unilateral domestic actions that are unlikely to achieve the stated global benefits. Too often, agencies produce RIAs that estimate only the intended energy savings, without regard to usage elasticities, now commonly called "rebound effects." Moreover, the world economy is a vast competitive web of elasticities that frustrate any attempt to push a policy lever here to save a ton of carbon there. This is particularly true when the regulatory instruments in question do not have global reach. Carbon intensive production will migrate away from carbon restricting regimes, so that, to a first approximation, unilateral efforts to reduce carbon emissions can be expected to have no net effect on global carbon emissions.

It is simply not plausible to claim that any unilateral U.S. action could achieve, in practice, the global benefits that are implied by the SCC as it is calculated in the TSD. International competition will cause the costs of unilateral action to be amplified, even while the benefits evaporate. The place to use the global SCC is not – at least for now – in the RIAs of U.S. regulatory agencies, but in the international fora where climate policies are being negotiated.

[16] Greenstone, op cit, p. 35.

There is a second reason to bring the SCC into the international negotiations on climate policy: it is likely to make those conversations more productive. As long as such talks focus on allowable quantities of carbon, they will be a proxy for international economic competition. Each delegation will be charged with ensuring that its nation gets a "fair share" of the fixed pie. Negotiations over price (the SCC) can finesse these arguments, and focus attention instead on the development of cost-effective climate policies. In contrast, negotiations over quantities (caps) necessarily will be consumed by self-interest, rather than on finding the common interest. There will be a consensus (there always is) that the U.S. should do more; but that has little to do with climate; instead, it is a reflection of economic envy, a desire to constrain U.S. growth, and a plea for compensation. Whatever the merits of these arguments, they have been, and will continue to be, a serious impediment to reaching agreement on effective forward-looking action.

With international talks focused on the SCC, the rent-seeking opportunities will be much more limited, and a serious discussion can take place on effective remedies. If other countries want to press a claim that the U.S. should pay compensation for past emissions, that can be a separate conversation, and need not hold up progress on figuring out just what common level of stringency all countries should strive for.

The absence of an international consensus is problematic for another reason. We know that the vast majority – perhaps all – of the benefits incorporated into the SCC will not accrue to the U.S. It might be possible to justify using the SCC as a guide for domestic regulations if they are being undertaken within an international framework that promises reciprocal action by other countries. Even in that context, it seems likely that the U.S. would be a net loser – bearing more of the costs of effective global action, and less of the benefits. Nonetheless, with proper Congressional authorization, such actions might be justified. If carbon emissions are, as argued in the TSD, a global externality, then it makes sense that there will be winners and losers in a corrective global regulatory regime, and it is not hard to imagine the U.S. being willing to do its part despite not being a net beneficiary of a global regime.

In the absence of such reciprocal action by other nations, however, the global benefits in the SCC cannot be regarded as a legitimate entry in the benefit-cost ledger. Basing domestic action on the global SCC would put U.S. government agencies in the impossible position of acting *contrary* to the interests of U.S. citizens, using the excuse that they are acting as representative agents of foreign countries. Moreover, since the *actual* representative agents of those foreign countries have declined to take comparable action to constrain carbon emissions, U.S. agencies would be making the implausible argument that they are better representatives of foreign interests than are the governments of those countries. To use the global SCC in support of unilateral, and harmful, domestic regulation of carbon emissions, is to derive the authority to govern from the non-consent of the non-governed. No political theory, economic theory, or legal theory can justify such a position.