



Via email: SCC@omb.gov

January 27, 2014

Howard Shelanski
Administrator
Office of Information and Regulatory Affairs
Office of Management and Budget
725 17th Street, NW
Washington, DC 20503

Re: Comments on Technical Support Document *Technical Update of the Social Cost of Carbon for Regulatory Impact Analysis under Executive Order 12866*

Dear Mr. Shelanski:

Thank you for the opportunity to comment on the Technical Support Document *Technical Update of the Social Cost of Carbon for Regulatory Impact Analysis under Executive Order 12866* (TSD). Western Energy Alliance has serious concerns about the methodology used to calculate and the usefulness of the social cost of carbon (SCC).

The SCC was calculated by combining both climate models and economic models, and the combination of the uncertainty in each results in a range of SCC that is almost useless for policymakers. Add to this uncertainty the fact that key model inputs and parameters used by the Interagency Working Group to calculate the SCC were developed behind closed doors, and the SCC becomes a completely arbitrary number that the public cannot truly evaluate based on transparent analysis. Use of the SCC reported in the TSD in cost/benefit analyses for rulemakings serves only to add weight to the benefits side of the equation without providing a measurable benefit. We suggest the SCC in the TSD not be used to calculate proposed rule benefits and a more rigorous methodology be developed and applied to calculate the costs and benefits of carbon emission reductions for rulemaking.

Western Energy Alliance represents over 450 companies engaged in all aspects of environmentally responsible exploration and production of oil and natural gas across the West. The majority of our members are independent producers – small businesses with an average of twelve employees. Small businesses comprise 98% of the E&P sector of the oil and gas industry, and the continued string of regulations placed upon our industry is a particular burden for those small businesses. The highly uncertain SCC does not justify ever more regulations that will be costly to implement and will not provide a commensurate environmental benefit.

The SCC, defined as the net present damage done by emitting a marginal ton of CO₂ equivalent, is typically calculated by combining physical models of the climate system with economic models of future economic conditions resulting from climate scenarios to form Integrated Assessment Models (IAM). The Interagency Working Group used three IAMs in the TSD, DICE, FUND and PAGE. There are three key calculations required to build

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IAMs with many assumptions contained within each. Modelers must first assume future emission scenarios, then assume the resulting climate from those emissions, and finally, the economic consequences of the change in climate. Future emissions can be justifiably assumed in the near and mid-term given current emissions and growth trends. Long term emissions trends are more uncertain and are not independent from future economic conditions. The last two steps are rife with uncertainty, and the compounding of such uncertainty leads to extremely wide ranges of the SCC so as to be useless for policymaking.

The second assumption, how emissions will impact climate, is often referred to as climate sensitivity and is the resulting temperature change after a doubling of CO₂ concentrations in the atmosphere. The uncertainty in climate sensitivity has undergone almost no changes since it was hypothesized despite the concerted effort by climate scientists to reduce it. Both the IPCC First Assessment report from 1990 and the most recent 5th Assessment report of 2013 give a climate sensitivity range of 1.5 to 4.5°C after a doubling of CO₂ concentration.¹ This is likely a function of the nature of climate feedbacks rather than a lack of scientific knowledge. A paper in *Science* by Roe and Baker shows the uncertainty in climate sensitivity is likely irreducible given that most of the feedbacks in the climate system are positive.² They find, “the more likely a large warming is for a given forcing (i.e., the greater the positive feedbacks), the greater the uncertainty will be in the magnitude of that warming.” If the uncertainty around climate sensitivity is irreducible, one key part of the calculation of the SCC likewise cannot be further refined.

If the uncertainty in climate sensitivity cannot be reduced, the remaining method to reduce the SCC uncertainty is through the economic calculations of the IAMs, but the economic models suffer from even more uncertainty and lack of rigorous analysis. The key driver of the economic model of an IAM is the economic damage function, which gives the net economic loss that will occur from a given global mean temperature increase. It is also the “most speculative” part of the SCC analysis.³ There is no economic theory and little analysis of what a proper damage function for climate change should be, leaving the chosen damage functions in the IAMs on shaky ground, to say the least. The lack of peer-reviewed economic literature on damage functions allows modelers to arbitrarily choose any damage function they like. Typically, damage functions are chosen so that the models produce “reasonable” decreases in GDP with temperature increase, but who defines “reasonable?” It is deeply concerning that an equation so central to calculating the SCC as the damage function does not rest on any economic theory but on the whims of the IAM modeler.

In addition to the equations that drive each model, other model inputs and parameters are also very important to know if we are to understand the results coming out the back end.

¹ [IPCC First Assessment Report](#), J.T. Houghton and others (eds.), Cambridge University Press, 1990. [IPCC 5th Assessment Report](#), Working Group I: The Physical Science Basis, 2013.

² [Why Is Climate Sensitivity So Unpredictable?](#) Gerard H. Roe and Marcia B. Baker, *Science*, **318**, p.629-632, 2007.

³ [Climate Change Policy: What Do the Models Tell Us?](#) Robert S. Pindyck, National Bureau of Economic Research working paper 19244, 2013.

The economic models, in particular, are highly sensitive to the inputs, and it's very disturbing that we have little information on how and why the Interagency Working Group chose the inputs it did. The TSD explains the changes made to the underlying IAM models but does not elaborate on their chosen inputs to the models. One particularly important parameter in the models is the discount rate, the cost of future losses discounted back to today's value. According to one economist who developed the FUND model, one of those used in the TSD, the discount rate "is probably the most important source of variation in the estimates of the [SCC]."⁴ While we support the use of a range for the discount rate by the TSD, there is no rigorous economic analysis given to support the particular range used in the IAMs.

Given the very large, and often unknown, uncertainties in multiple parts of the IAMs and the lack of transparency on model input choice, the SCC values reported in the TSD are arbitrary and useless for policymaking. We have only pointed out the most egregious examples of lack of rigor in the main assumptions required to model the SCC. There are many more inconsistencies and unknown unknowns within the details of the model, but we believe our examples are enough to show that the SCC values rest on value judgments about the distant future rather than science. The cost/benefit analysis of potentially onerous and expensive regulations that will impact small businesses and indeed our entire economy, which requires energy to function, should not be based on such weak numbers.

Sincerely,



Ursula Rick, PhD
Manager of Regulatory Affairs

⁴ [The Social Cost of Carbon](#), Richard S.J. Tol, ESRI working paper No. 377, 2011.