



Understanding the Social Cost of Greenhouse Gas Estimates

SBCA Professional Development Workshop

February 14-15, 2024

For more information and to register: <https://www.benefitcostanalysis.org/workshops>

Description: In December 2023, the U.S. Environmental Protection Agency finalized a set of updated social cost of greenhouse gas estimates within a rulemaking on the oil and natural gas sector. The [*Report on the Social Cost of Greenhouse Gases: Estimates Incorporating Recent Scientific Advances*](#) presents these new estimates of the social cost of carbon (SC-CO₂), the social cost of methane (SC-CH₄), and the social cost of nitrous oxide (SC-N₂O), collectively referred to as the “social cost of greenhouse gases” (SC-GHG). The estimates reflect recent advances in the scientific literature on climate change and its economic impacts and incorporate recommendations made by the National Academies of Science, Engineering, and Medicine.

This workshop will explain the methodology underlying the new set of SC-GHG estimates, and is intended for economists, practitioners, and students who want to gain a working knowledge of how the SC-GHG estimates were developed. The structure of the workshop will follow the four components, or modules, of the SC-GHG estimation process – socioeconomics and emissions, climate, damages, and discounting. Topics include the following:

- The development of probabilistic projections for population, income, and GHG emissions.
- The climate science and assumptions used to capture the relationships between GHG emissions, atmospheric GHG concentrations, and global mean surface temperature.
- The estimates from three separate damage functions used to form the damage module: a subnational-scale, sectoral damage function based on the Data-driven Spatial Climate Impact Model (DSCIM) developed by the Climate Impact Lab; a country-scale, sectoral damage function based on the Greenhouse Gas Impact Value Estimator (GIVE) model developed under Resources for the Future’s Social Cost of Carbon Initiative; and a meta-analysis damage function based on Howard and Sterner (2017).
- The discounting of the stream of future net climate damages back to the year of emissions using a set of dynamic Ramsey discount rates that were calibrated to match the average of the near-term consumption rate of interest and the decline in the certainty-equivalent discount rate reflecting the latest empirical evidence on interest rate uncertainty.

The workshop will conclude with a discussion of the estimates and what advances can be made in future estimates. Workshop materials will include SCGHG-related documents and PowerPoint presentation slides.

Instructors



[Charles Griffiths](#) (organizer) is a senior economist at the National Center for Environmental Economics at the U.S. Environmental Protection Agency, teaches benefit-cost analysis at Johns Hopkins University and environmental economics at the University of Maryland, and served as a Senior Economist for the Council of Economic Advisers. His current research addresses the social cost of greenhouse gases, cost-benefit analysis, human health risk valuation, valuing water quality improvements, and valuing health benefits under uncertainty.



[Tamma Carleton](#) is an Assistant Professor at the Bren School of Environmental Science & Management at the University of California, Santa Barbara. Her work focuses on climate change and remote sensing for global-scale environmental and socioeconomic monitoring. She is the Director of the Climate & Energy program at the Environmental Markets Lab, a member of the Climate Impact Lab, an affiliate of the Center for Effective Global Action, and a faculty research fellow at the National Bureau of Economic Research.



[Maureen Cropper](#) is a professor of economics at the University of Maryland, senior fellow at Resources for the Future, member of the Board of Directors at the National Bureau of Economic Research, and member of the National Academy of Sciences. She has served as a Lead Economist in the World Bank's Research Department, chair of EPA's Science Advisory Board Environmental Economics Advisory Committee, and co-chair of the NAS Committee on Assessing Approaches to Updating the Social Cost of Carbon.



[Elizabeth Kopits](#) is a senior economist at the National Center for Environmental Economics at the U.S. Environmental Protection Agency. She provides economic analysis and expertise on air quality standards and regulations affecting the oil and natural gas sector, mobile sources, and landfills. Since 2009, she has led the EPA's team of economists and climate scientists supporting the development of the U.S. Government's social cost of greenhouse gas estimates. Elizabeth served as a senior economist at the Council of Economic Advisers.



[Al McGartland](#) is the Director of the National Center for Environmental Economics and the lead economist at the U.S. Environmental Protection Agency. Al advises EPA's senior leadership on regulatory analyses, science, and environmental policy. Most recently, Al has focused on improving the quantification of the Social Cost of Greenhouse Gases and examining ways to enhance financial information available on risks from climate change. Al also supports numerous interagency and White House initiatives.



[Ishan Nath](#) is an economist at the Federal Reserve Bank of San Francisco working on topics related to climate change, growth, trade, and development. He completed his Ph.D. in economics from the University of Chicago, and held postdoctoral fellowships with the Climate Impact Lab and the International Economics Section at Princeton University. He completed a B.A. in Economics and a B.S. in Earth Systems at Stanford, and an MPhil in Economics at Oxford as a Rhodes Scholar.



[Bryan Parthum](#) is an economist at the National Center for Environmental Economics at the U.S. Environmental Protection Agency. His research involves environmental and natural resource economics and their intersection with environmental policy. He has published in areas related to nonmarket valuation, environmental policy, and the social cost of greenhouse gases, using both structural and reduced-form modeling, coupled with high-frequency big data methods.



[Brian Prest](#) is an economist and fellow at Resources for the Future specializing in the economics of climate change, energy economics, and oil and gas supply; and the Director of the Social Cost of Carbon Initiative. He uses economic theory and econometrics to improve energy and environmental policies. His recent work includes improving the scientific basis of the social cost of carbon and economic modeling of various policies around oil and gas supply.



[Lisa Rennels](#) is a PhD candidate at the Energy and Resources Group at UC Berkeley and holds an MSc. in computer science. She is an interdisciplinary scholar of climate change economics, climate policy, and computer science. Her work on climate change impact analysis and federal policy focuses on integrated assessment modeling (IAM) and the social cost of greenhouse gases. She leads the development of the Mimi package, which supports the construction and research of IAMs.



[Kevin Rennert](#) is a fellow at Resources for the Future. He has served as the Director of RFF's Comprehensive Climate Strategies Program, Deputy Associate Administrator for the U.S. EPA's Office of Policy, and a senior advisor on energy for the Senate Finance Committee. He also worked on energy and climate legislation as senior professional staff for the Senate Energy Committee. He has addressed a wide range of topics related to clean energy, efficiency, and policies to reduce greenhouse gas emissions.



[Marcus Sarofim](#) is an Environmental Scientist in the Climate Change Division at the U.S. Environmental Protection Agency, and was a AAAS Science & Technology Policy Fellow at the EPA. He works on climate change regulations, scientific assessments, and communications documents. He provides expertise on climate metrics such as global warming potentials, the effects of future changes in extreme temperatures, and guidance on the role of short-lived climate forcers such as methane and black carbon, particularly in the Arctic context.



[David Smith](#) is an economist at the National Center for Environmental Economics at the U.S. Environmental Protection Agency in Washington, DC. David's research is currently focused on valuing the impacts of greenhouse gases and water pollution. Previously, David was a research economist at the Economic Research Service at the U.S. Department of Agriculture. David has a Ph.D. in applied economics from the University of Minnesota.