

The Social Cost of Carbon

RFF researchers are leading a team of distinguished economists and scientists to improve the science behind estimates of the social cost of carbon—the means by which the US federal government, state governments, and foreign governments account for climate change in their actions—through a process that ensures the highest levels of scientific quality and transparency and builds the scientific foundation for future estimates.

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The social cost of carbon (SCC) assesses the benefits and harms to society of reducing and increasing carbon dioxide emissions, respectively. This measure informs billions of dollars of policy and investment decisions in the United States and abroad. The following examples highlight use of the SCC across several jurisdictions.

- The **US federal government** has used SCC estimates to account for the effects on climate change of over 150 regulatory measures, including land use decisions and standards for vehicle fuel economy, power plant emissions, and appliances.
- In **New York** and **Illinois**, the SCC serves as the basis for the value of “zero emission credits” paid to electric utilities under state clean energy legislation.
- In **Colorado**, **Minnesota**, and **Washington**, electric utilities are now required to use the federal SCC in their resource planning.
- In **California**, recent state legislation requires regulators to incorporate the SCC in policy analysis.
- The **Canadian government** has adopted the estimation methodology in full, and the **Mexican government** is considering its incorporation as well.

The prominent and expanding role of the SCC in the analysis of policies that affect climate change makes it critical that the estimates are transparent and based on the best available science. A recent **National Academy of Sciences (NAS)** report highlighted the need for revision of the SCC estimation methodology. In response to the NAS recommendations, RFF’s new initiative seeks to improve the transparency and scientific basis of SCC estimation. The initiative provides timely leadership on SCC estimates, supporting and informing climate policy choices by decisionmakers and analysts worldwide. Improvements to the SCC stand to affect the way climate change is accounted for across a wide spectrum of policies.

Why RFF?

A non-partisan organization dedicated to providing transparent research, RFF is strongly positioned to carry out this effort. The SCC research team includes RFF President **Richard Newell** and Senior Fellow **Maureen Cropper**, who have served as co-chairs of the NAS committee, and RFF Fellow **Casey Wichman**, who has served as a technical consultant. The initiative is led by **Kevin Rennert**, a climate scientist and former EPA official in the Office of Policy. Rennert guided the work of the EPA economists directly engaged in SCC calculations and methodology and engaged with the federal Interagency Working Group to update the official SCC estimates. Many other RFF scholars also have expertise directly relevant to SCC estimation, including methods for socioeconomic projections (e.g., statistical forecasting, energy-economic modeling), valuing environmental damages (e.g., human health, flood risk, ecosystem services), discounting, integrated assessment modeling, expert elicitation, and regulatory analysis.

Key Elements of the Initiative

- Providing scientific updates across each of the four core steps of estimating the social cost of carbon: projections of economic growth, population, and emissions; modeling of the climate system; translation of changes in climate into economic damages across multiple sectors; and calculation of total damages over time in terms of present-day value.
- Generating updated estimates of the social cost of carbon based on the scientific updates.
- Building a set of open-source software tools that provides the foundation for the scientific community's improvement of SCC estimates for the future.
- Facilitating more informed policymaking worldwide by providing educational materials and technical assistance to domestic and international government entities and businesses seeking to use estimates of the social cost of carbon in their policy analyses.

RFF's Approach

RFF's Social Cost of Carbon Initiative is a multi-year, multidisciplinary research initiative that will advance recommendations of the NAS to update the methodology for estimating the social cost of carbon, enhance transparency, and ensure that the updated figures reflect the best available science. The initiative will provide an updated set of estimates of the SCC that are grounded in the most current science and facilitate a more flexible and regular process for updating the SCC going forward. These improvements will enhance the capabilities of decisionmakers and analysts worldwide who use the SCC estimates to measure the benefits of emissions reductions, now and in the future.

RFF's initiative will incorporate extensive stakeholder engagement, communications, and scientific review to ensure that the work adheres to the highest levels of scientific integrity and transparency. All of the data and computer code used to generate RFF's estimates will be made freely available under open-source licenses.

— more information —



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