



Insight

By the Numbers: Ending the Social Cost of Carbon

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President Trump has signed a new executive action limiting the “Social Cost of Carbon” (SCC), a measure that quantifies the benefit of reducing greenhouse gas emissions. The administration justified its action by citing [concerns](#) about the Obama Administration’s SCC estimates and the procedure used to calculate them. What does largely eliminating the SCC mean for regulation in the future? According to an American Action Forum (AAF) review of 55 Obama-era regulations that monetized the SCC, only seven regulations would turn from net-beneficial to net-cost, and of those, two already imposed net costs. Broadly, SCC benefits generated more than \$63 billion in benefits for Obama-era regulations or just 14 percent of all stated benefits. Completely eliminating the SCC in benefit-cost analysis will make it more difficult to pursue certain regulations, but hardly impossible. Judging from the sample of Obama-era rules, less than ten percent would be directly affected.

Social Cost of Carbon (SCC) at a Glance

Broadly, the SCC is designed to capture the benefit of avoided emissions. The previous administration argued that every ton of carbon dioxide, or more broadly, any greenhouse gas (including methane), contributed to higher global temperatures, rising sea levels, ocean acidification, and other global impacts.

To put a price on the social cost of carbon emissions, the Obama Administration convened an inter-agency working group and devised the SCC. According to [EPA](#), “For a regulation that decreases emissions, the SC-CO₂ represents the damage avoided - or the benefit of the regulation - for marginal reductions of CO₂.” Then, the working group monetized the cost of each ton released. For 2015, the listed totals range from [\\$11 to \\$105](#), with a central estimate of \$36 (assuming a discount rate of 3 percent). For example, any regulation that prevented 100 tons of carbon dioxide emissions would generate \$3,600 in benefits.

The appropriate discount rate and the actual values are disputed by some scholars. Typically, federal agencies are instructed to count only domestic benefits and costs of regulatory action and employ discount rates of [three and seven percent](#). Seven percent is the recommended discount rate if private sector capital is displaced (seven percent is the average rate of return on capital); and three percent is the recommended rate if the regulation cuts private consumption (the average rate of savings).

Federal agencies, including EPA and the [Department of Energy](#) (Energy), don't use the seven percent rate for the SCC, and the working group that formulated the SCC did not include a seven percent estimate. Because the timescales are hundreds of years for climate change, as the discount rate increases, the perceived benefits today greatly decrease. For instance, the 2017-2025 CAFE standards list the SCC benefits of [between \\$8.5 billion](#) (five percent rate) and \$74 billion (lowest rate). That gap between discount rate preference could make the difference between a rule with net benefits to the American economy and one with net costs.

In addition to disagreements over appropriate discount rates, there is also uncertainty on the estimated benefits. The SCC is compiled from an averaging of climate models and estimated economic impacts. The SCC has taken criticism both for being potentially too low and too high. As an example, the Department of Defense's policy that climate change is a [threat multiplier](#) is not a consequence that can be accurately monetized and included in the SCC, meaning the SCC is potentially too low. Conversely, disagreements over model's accuracy in estimating the effects and timing of climate change impacts lead to a [much smaller SCC](#).

SCC under Obama Administration

AAF identified 55 regulations that quantified a reduction in carbon emissions. Only four agencies did so: EPA, Energy, and the Departments of Interior and Transportation. The listed annual benefits of these measures were \$312 billion, compared to roughly \$450 billion in total published benefits during the Obama Administration. From these \$312 billion in annual benefits, the SCC component totaled \$63 billion (at a three percent rate). Thus, the SCC figure contributed roughly one-quarter to the overall benefit total from these 55 rules. Considering the SCC contributed nothing to benefits during previous administrations, to go from zero to roughly 14 percent of all published benefits during the Obama Administration is a testament to its impact. These figures would have been much lower at the five percent rate and drastically higher with even lower discount rates.

The five largest rules with SCC benefits are below, with the first four from EPA and the final rule from Energy:

- [2017 to 2025 CAFE Standards](#): \$24.4 billion in annual benefits
- [Clean Power Plan](#): \$20 billion in annual benefits
- [GHG Standards for Trucks, Phase II](#): \$4.7 billion in annual benefits
- [2012-2016 CAFE Standards](#): \$3.7 billion in annual benefits
- [Efficiency Standards for HVAC Equipment](#): \$1.3 billion in annual benefits

Combined, these five rules contributed \$54.2 billion in annual carbon emission benefits, or 86 percent of all SCC benefits from the Obama Administration. This should not come as a surprise, as all were major initiatives from President Obama to reduce greenhouse gas emissions.

Implications

The big question is whether significantly amending, or even discarding, the SCC estimates turn rules that initially might have been net beneficial to the economy into rules with net costs. From the sample of Obama-era regulations, SCC benefits tend only to provide a fraction of overall benefits (25 percent) and rarely does removing all carbon benefits lead to net costs.

For instance, after removing SCC benefits, there are seven rules where the implementation costs equal or exceed the total benefits. Because particulate matter (PM) and other clean air benefits often confer high monetized benefits, the SCC does not often carry an individual rule. For the seven rules listed below (with the SCC excluded), two already imposed net costs.

<u>Rule</u>	<u>Initial Costs</u>	<u>Revised Benefits</u>
2012-2016 CAFE Standards	\$10.8 billion	\$10.8 billion
EPA Fracking Emissions Standards	\$530 million	\$10 million
Natural Gas Flaring on Public Lands	\$279 million	\$156 million
Effluent Limitations Guidelines	\$471 million	\$293 million
Standards for Cooling Water Intakes	\$297 million	\$16 million
Emissions for Solid Waste Landfills	\$54.1 million	\$0
Standards for Solid Waste Landfills	\$6 million	\$0

Totals	\$11.6 billion	\$11.3 billion
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For two of the rules above, removing the SCC is fatal; 100 percent of the benefits disappear. The first solid waste landfill measure derived its benefits entirely from a related metric, the “Social Cost of Methane.” Because methane is a more potent greenhouse gas, eliminating 285,000 tons generates \$430 million in climate benefits (three percent discount rate), the only benefits the rule monetized. Here, the cost per ton of avoided methane emissions was more than \$1,500. The analysis notes these are the “global benefits,” but the costs will be borne domestically.

The second solid waste measure generates just \$68 million in global benefits, at a three percent rate, but EPA did not monetize any related benefits. Here the benefit of the emissions is \$61 per ton, with an equivalent reduction of carbon dioxide of 1.1 million tons.

Finally, EPA’s fracking standards lost 99 percent of listed benefits when the SCC is removed. Initially, benefits (\$690 million) exceeded costs (\$530 million); a benefit-cost ratio below 2:1 is generally suspect and when climate benefits comprise the overwhelming majority, it’s easy to see how a major shift in the SCC could prevent certain rules in the future. However, even though there are five rules that would have drastically different cost-benefit scenarios if the SCC were excluded, there were only four rules in the sample of 55 where climate benefits represented a majority of overall benefits.

Conclusion

One fear of the SCC is that it could be used to justify rules with global benefits and little immediate domestic advantages. Removing or significantly lowering the impact of the SCC will make a difference, roughly 25 percent of benefits for rules that quantified climate impacts during the Obama Administration, but it won’t upend all energy and environmental rules. For example, the SCC provided \$6.3 billion total to Energy regulations, but just 20 percent of its benefits, and as low as seven percent for some rules. The agency relied on “consumer savings” to justify the regulations. Similarly, EPA often relies on clean air benefits, rarely needing the SCC to tip the balance. Thus, removing the SCC will have notable implications for energy and environmental regulation, but it will not tip the scales for all rules.