



November 15, 2018

To: Jeremy Arling, Stratospheric Protection Division, EPA

Subject: Failure to Monetize the Value of Forgone Emission Reductions from Revisions to the Refrigerant Management Program's Extension to Substitutes

Docket ID No. EPA-HQ-OAR-2017-0629

Submitted by: Environmental Defense Fund, Institute for Policy Integrity at New York University School of Law, Natural Resources Defense Council, Sierra Club, and Union of Concerned Scientists¹

EPA proposes either rescinding the leak repair regulatory provisions that reduce emissions of refrigerant substitutes that are highly potent greenhouse gases, or else rescinding all regulatory provisions under Subpart F that reduce emissions of these greenhouse gases.² EPA supports its proposed rescissions with an analysis of annual cost savings, estimating either \$20,390,000 or \$24,446,000 in annual savings (depending on the extent of the rescission, calculated at a 3% discount rate in 2014\$).³ Yet while the agency admits the rescissions will significantly increase emissions of potent greenhouse gases,⁴ EPA arbitrarily fails to monetize the climate damages caused by the forgone emission reductions.⁵

The climate damages caused by the increased emissions resulting from the proposed rescissions can and should be monetized using the social cost of greenhouse gas metrics. While the federal Interagency Working Group on the Social Cost of Greenhouse Gases did not develop metrics specific to hydrofluorocarbons, the relative global warming potential of hydrofluorocarbons allows for converting quantities of these greenhouse gases into carbon dioxide-equivalent units. Indeed, EPA estimates that its proposed rescissions will increase hydrofluorocarbon emissions by 5,266,00 metric tons of carbon dioxide-equivalent emissions in the year 2020.⁶ While valuing the climate damages of hydrofluorocarbon emissions using their carbon-dioxide equivalents and the social cost of carbon metrics may be "not as accurate as a direct calculation,"⁷ completely failing to value the climate damages implicitly and

¹ Our organizations may separately submit other comments regarding other aspects of the proposed rescission.

² 83 Fed. Reg. 49,332 (Oct. 1, 2018).

³ *Id.* at 49,335.

⁴ *Id.* (calculating annual forgone emissions reductions of 2.946MMT_{CO2e} or 3.603MMT_{CO2e}, depending on the extent of the rescission).

⁵ See *Ctr. for Biological Diversity v. Nat'l Highway Traffic Safety Admin.*, 538 F.3d 1172, 1198 (9th Cir. 2008) (warning agencies not to "put a thumb on the scale by undervaluing the benefits and overvaluing the costs").

⁶ EPA, *Technical Support Document: Analysis of the Economic Impact of the Proposed 2018 Revisions to the National Recycling and Emission Reduction Program* at 13, tbl. 7 (2018). Note that this estimate for year 2020 emissions is significantly higher than the 3,603,000 metric tons reported as "annual" emissions increases. *Id.* at 12, tbl. 6; 83 Fed. Reg. at 49,335. Also, to the extent this estimate is based on HFC's 100-year global warming potentials, EPA should also consider a separate assessment using the 20-year global warming potential, given the shorter lifespan of HFC-134a and more potent near-term effects.

⁷ Interagency Working Group, *Addendum: Valuing Methane and Nitrous Oxide Emission Changes in Regulatory Benefit-Cost Analysis* at 1 (2016),

https://obamawhitehouse.archives.gov/sites/default/files/omb/inforeg/august_2016_sc_ch4_sc_n2o_addendum_final_8_26_16.pdf. Greenhouse gases differ not only in their relative radiative forcing potential, but also in their atmospheric lifespan,

arbitrarily treats climate damages as worthless, and the value of the emissions “is certainly not zero.”⁸ Therefore, until a specific social cost of hydrofluorocarbon value can be estimated, agencies should use relative global warming potentials to apply the Interagency Working Group’s estimates of the social cost of carbon to hydrofluorocarbons.⁹ Additionally, because HFCs have a shorter lifespan than carbon dioxide and are especially potent in the near-term, EPA should use both the 100-year and 20-year relative global warming potential values to convert forgone HFC emission reductions into carbon dioxide-equivalent units.¹⁰

Had EPA used the Interagency Working Group’s (“IWG’s”) social cost of greenhouse gases metric—which is by far the best tool that the federal government has thus far produced to calculate these impacts—the agency would have found that the climate damages of the proposed rescission’s forgone emissions reductions outweigh the estimated cost savings by a full order of magnitude. In evaluating its proposal, EPA calculates an increase of 5,266,000 metric tons of carbon dioxide-equivalent emissions in the year 2020. At a 3% discount rate, the social cost of carbon dioxide for year 2020 emissions is \$49 per metric ton (in 2014\$, which, for consistency, is the unit EPA uses to estimate cost savings).¹¹ Therefore, the proposed rescission will generate over \$258 million in climate damages in the year 2020.¹² The forgone benefits thus far exceed EPA’s calculations of annual cost savings. If EPA’s estimates of forgone emissions reductions are calculated only using the 100-year relative global warming potential figures, then also using the 20-year figures would significantly increase the estimate of forgone benefits. Furthermore, the Interagency Working Group’s social cost estimates—while currently the best available tool for monetizing the harm associated with greenhouse gas emissions—are conservative by design, and should be understood to represent a minimum “floor” for the social cost of greenhouse gases. Thus, the true extent of the climate damages that will result from EPA’s proposal very likely exceeds \$258 million by a significant amount.

In previous comments submitted to EPA, the Institute for Policy Integrity and its co-signatories have fully explained why it is crucial to use the IWG’s social cost of greenhouse gases and why the IWG’s 2016 estimates in particular remain the most appropriate choice currently available for agency analysis. Elsewhere, EPA has recently developed so-called domestic-only “interim” estimates of the social cost of carbon to replace the IWG’s figures. Our other comments to EPA (attached) explain why those interim

chemical interactions in the atmosphere, and effects on other climate-related consequences like ocean acidification. For these and other reasons, direct estimation for each greenhouse gas pollutant is more accurate. That said, an approximation using relative global warming potential is preferable to treating climate damages from non-carbon emissions as worthless.

⁸ 538 F.3d at 1200.

⁹ Before a direct estimate of the social cost of methane was developed by the IWG, for example, several agencies used global warming potential-adjusted figures to apply the social cost of carbon as a proxy for damages from methane emissions. See Interagency Working Group, *Response to Comments: Social Cost of Carbon for Regulatory Impact Analysis* at 33 (2015), <https://obamawhitehouse.archives.gov/sites/default/files/omb/inforeg/scc-response-to-comments-final-july-2015.pdf>. Methane’s lifetime (about 12.4 years) is on par with HFCs-134a (about 13.4 years), see IPCC, *AR5-WG1: Anthropogenic and Natural Radiative Forcing* at 714 (2013). Notably, using a relative global warming potential range of 28-34 for methane (taking the GWP₁₀₀ figures; at GWP₂₀, the range would be 84-86), applying the central social cost of carbon estimates to methane (\$42 for year 2020 emissions in 2007\$ * 28 = \$1176; and \$42 * 34 = \$1428) gives monetized values for climate damages from methane that are not very different from the more accurate direct calculation of the central social cost of methane (about \$1200 for year 2020 emissions in 2007\$). Compare IWG, 2016 Technical Support Update with IWG, 2016 Addendum, available at <https://obamawhitehouse.archives.gov/omb/oira/social-cost-of-carbon>. Therefore, though not as accurate as a direct calculation of the social cost of HFCs, using the relative global warming potentials and the social cost of carbon is likely a reasonable approximation of the forgone climate benefits here.

¹⁰ See IPCC, *Anthropogenic and Natural Radiative Forcing*, *supra*, at 714.

¹¹ Using the CPI Inflation Calculator to convert the social cost of carbon values from 2007\$ to 2014\$. See Interagency Working Group, *Technical Update of the Social Cost of Carbon* at 4, tbl. ES-1 (2016).

¹² Discounted back to present value at a 3% rate, the forgone benefits are still over \$243 million.

estimates arbitrarily omit important considerations and inappropriately manipulate the values in ways inconsistent with the best science and economics. But it is notable that, even using the gross underestimates of climate damages reflected in EPA's "interim" estimates (e.g., \$7 per metric ton for year 2020 emissions at a 3% discount rate),¹³ the forgone climate benefits of this proposed rescission would still outweigh the alleged cost savings.

It is patently arbitrary for EPA to support its proposed rescissions by monetizing the alleged cost savings while failing to monetize the climate damages of the proposed rescissions by applying a readily available tool: the social cost of greenhouse gas metrics. *See, e.g., High Country Conservation Advocates v. Forest Service* (holding that the Forest Service acted arbitrarily in "quantify[ing] the *benefits* of the lease modifications and then explain[ing] that a similar analysis of the *costs* was impossible when such an analysis was in fact possible" through use of the IWG's social cost of greenhouse gases metric);¹⁴ *Montana Environmental Information Center v. Office of Surface Mining* (holding similarly);¹⁵ *Center for Biological Diversity v. National Highway Traffic Safety Administration* (holding that NHTSA "cannot put a thumb on the scale by undervaluing the benefits and overvaluing the costs of more stringent standards," and that the agency's "decision not to monetize the benefit of carbon emissions reduction was arbitrary and capricious").¹⁶ If the agency were to monetize climate damages, as it must legally do, it would find that the proposed rescissions are not cost-benefit justified.

Sincerely,

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No part of this document purports to present New York University School of Law's views, if any. For any questions regarding these comments, please contact jason.schwartz@nyu.edu.

Attached: Comments on Flawed Estimates of the Social Cost of Carbon in the Proposed Emission Guidelines for Greenhouse Gas Emissions from Existing Electric Utility Generating Units (Oct. 31, 2018), https://policyintegrity.org/documents/ACE_CPP_Joint_SCC_Comments_2018.10.31.pdf

¹³ EPA, *Regulatory Impact Analysis for the Proposed Emission Guidelines for Greenhouse Gas Emissions from Existing Electric Utility Generating Units* at 4-4, tbl. 4-1 (2018).

¹⁴ 52 F. Supp. 3d 1174, 1191 (D. Colo. 2014).

¹⁵ 274 F. Supp. 3d 1074, 1094-99 (D. Mont. 2017) (also holding that it was arbitrary to imply that there would be zero effects from greenhouse gas emissions), amended in part, adhered to in part sub nom. *Montana Env'tl. Info. Ctr. v. United States Office of Surface Mining*, No. CV 15-106-M-DWM, 2017 WL 5047901 (D. Mont. Nov. 3, 2017).

¹⁶ 538 F.3d 1172, 1198, 1203 (9th Cir. 2008).