Comments of Massachusetts, California, by and through the Attorney General and California Air Resources Board, Delaware, Illinois, Iowa, Maine, Maryland, Minnesota, by and through its Minnesota Pollution Control Agency, New Jersey, New York, North Carolina, Oregon, Vermont, Virginia, Washington, and the District of Columbia

November 15, 2018

Via Electronic Filing

Jeremy Arling
U.S. Environmental Protection Agency
Stratospheric Protection Division (6205T)
1200 Pennsylvania Avenue NW
Washington, DC 20460

Re: Protection of Stratospheric Ozone: Revisions to the Refrigerant Management Program's Extension to Substitutes, 83 Fed. Reg. 49,332 (Oct. 1, 2018)
Docket ID No: EPA-HQ-OAR-2017-0629

Dear Mr. Arling:

The Attorneys General of Massachusetts, Delaware, Illinois, Iowa, Maine, Maryland, New Jersey, New York, North Carolina, Oregon, Vermont, Virginia, Washington, and the District of Columbia, the State of California, by and through the Attorney General and the California Air Resources Board (CARB), and the State of Minnesota, by and through its Minnesota Pollution Control Agency (collectively, the States) appreciate this opportunity to comment on the U.S. Environmental Protection Agency's (EPA) proposed rule entitled *Protection of Stratospheric Ozone: Revisions to the Refrigerant Management Program's Extension to Substitutes*, 83 Fed. Reg. 49,332 (Oct. 1, 2018) (Proposed Rule). As detailed herein, the States strongly oppose any revisions that would limit the scope of the Refrigerant Management Program and thereby increase emissions of dangerous chemicals.

Section 608 of the Clean Air Act generally prohibits any person from knowingly venting or releasing ozone-depleting substance (ODS) refrigerants and their substitutes, including hydrofluorocarbons (HFCs). 42 U.S.C. § 7671*g*(c). It also defines EPA's responsibilities to regulate the use and safe disposal of refrigerants. *Id.* § 7671*g*(a)–(b); *see* 40 C.F.R. pt. 82, subpt. F (codifying EPA's Refrigerant Management Program standards) [Subpart F Requirements]. In 2016, EPA extended certain Subpart F Requirements, including its appliance-maintenance and leak-repair standards, to ODS substitutes as well as ODS refrigerants.[1] 81 Fed. Reg. 82,272 (Nov. 18, 2016) [2016 Rule]. In doing so, EPA explained that inclusion of substitutes would protect the ozone layer by further reducing emissions of ODS refrigerants, protect public health and welfare by reducing climate-warming refrigerant substitutes, and promote regulatory

[1] EPA has exempted from the venting prohibition under 42 U.S.C. § 7671*g*(c)(2) certain end uses of certain non-ODS substitutes that the agency found did not pose an environmental threat. *See* 69 Fed. Reg. 11,946 (Mar. 12, 2004); 79 Fed. Reg. 29,682 (May 23, 2014); 80 Fed. Reg. 19,453 (Apr. 10, 2015). The term "substitute" as used herein refers to non-exempt alternatives, including certain HFC refrigerants, that are subject to Subpart F Requirements under the 2016 Rule.

certainty and compliance by harmonizing standards across all major refrigerant types. *Id.* at 82,278.

In its Proposed Rule, EPA now reinterprets the Clean Air Act to conclude that EPA lacks authority to extend its appliance-maintenance and leak-repair standards to substitute refrigerants. EPA also seeks comment on whether, in light of its changed legal interpretation, the agency should rescind the extension of *any* Subpart F Requirements to ODS substitutes, and whether it should extend the 2016 Rule's compliance date for certain appliances that contain substitutes.

EPA's proposed reinterpretation of the Clean Air Act is unlawful and misguided. The Clean Air Act gives EPA broad authority to promulgate regulations to prevent the knowing ventilation of both ODS refrigerants and their substitutes and to reduce ODS emissions to the lowest achievable level. Extension of appliance-maintenance and leak-repair requirements and other Subpart F Requirements to substitute refrigerants works toward both ends, providing a sensible and consistent regulatory scheme that prevents knowing ventilation and emissions of both ODSs and dangerous ODS substitutes. EPA has not offered substantial evidence or legal reasoning for abandoning its previous findings or refuted its 2016 findings that a more unified regulatory regime would improve compliance and reduce emissions of both ODSs and their substitutes. Nor has EPA adequately analyzed the costs and benefits of the Proposed Rule, including the significant public harm associated with increased emissions of greenhouse gases and ODSs. The Proposed Rule thus reflects an arbitrary, capricious, and inadequately explained departure from EPA's 2016 Rule. *See* 42 U.S.C. § 7607(d)(9)(A), (C); *FCC v. Fox Television Stations, Inc.* [*Fox*], 556 U.S. 502, 515 (2009); *Motor Vehicle Mfrs. Ass'n of the United States v. State Farm Mut. Auto. Ins. Co*. [*State Farm*], 463 U.S. 29, 43 (1983).

The Proposed Rule is part of EPA's recent pattern of cross-program efforts to roll back regulations promulgated under clear and established statutory authority to protect the public from the dangers of ODSs and their substitutes.[2] Stratospheric ozone depletion and climate change are among the most severe environmental threats faced by modern human civilization. The States strongly oppose any EPA action that unlawfully licenses industry to emit more ozone- and climate-damaging chemicals at the expense of human and environmental health and in contravention of the Clean Air Act and its core purposes. The undersigned States thus urge EPA to withdraw the Proposed Rule and fully implement all of the Subpart F Requirements, including appliance-maintenance and leak-repair provisions, that apply to substitute refrigerants.

BACKGROUND

Due in part to the low cost of many refrigerants, there is a common practice of re-charging leaky, poorly designed, or poorly maintained appliances without attempting a repair. As a result, release of refrigerants frequently occurs during appliance servicing and maintenance.

[2] Many of the undersigned States are litigants in ongoing litigation challenging a recent EPA action under section 612 of the Clean Air Act, the Significant New Alternatives Policy (SNAP) Program. *New York v. Wheeler*, No. 18-1174 (D.C. Cir.); *see* 83 Fed. Reg. 18,431 (Apr. 27, 2018). And all of the States previously participated as *amici curiae* in litigation regarding regulation of ODS substitutes under the SNAP Program. *Mexichem Fluor, Inc. v. EPA*, 866 F.3d 451 (D.C. Cir. 2017), *cert. denied sub nom. Honeywell Int'l Inc. v. Mexichem Fluor Inc.*, No. 17-1703, 2018 WL 3127416 (U.S. Oct. 9, 2018), *and cert. denied sub nom. Natural Res. Def. Council v. Mexichem Fluor, Inc.*, No. 18-2, 2018 WL 3210813 (U.S. Oct. 9, 2018).

EPA's Subpart F Requirements promote the proper handling and use of ODS and substitute refrigerants to reduce these and other releases. *See* 83 Fed. Reg. at 49,332. They include, for example, standards for technicians servicing air-conditioning and refrigeration equipment, certification requirements, restrictions on the sale of certain refrigerants, standards for disposal of certain refrigerant-containing appliances, and requirements to repair leaking appliances that contain a certain amount of refrigerant. *See* 40 C.F.R. pt. 82, subpt. F.

Reducing ODS refrigerant releases is critical to protection of the ozone layer. Emissions of ODSs reduce the amount of ozone in the stratosphere, allowing more of the sun's ultraviolet radiation to reach the Earth's surface. Among other damaging impacts, ozone depletion is linked to adverse human health effects, including skin cancer, cataracts, and immune suppression,[3] as well as respiratory disease.[4] Rates of melanoma, the most serious form of skin cancer, have been rising over the past several decades.[5] According to the Centers for Disease Control and Prevention, more than 80,000 new cases of melanoma were reported in the United States in 2015.[6] Ozone depletion also has adverse ecological and biogeochemical effects.[7] For instance, ozone depletion leads to roughly $10–20 billion in annual crop losses.[8]

Reducing refrigerant emissions would help protect the climate in a variety of ways. Scientific literature suggests that "changes in stratospheric ozone are tightly coupled to the climate."[9] And many refrigerants—ODSs and ODS substitutes alike—are potent greenhouse gases that contribute to climate change. *See* 74 Fed. Reg. 66,496, 66,497 (Dec. 15, 2009) (finding that greenhouse gases, including HFCs, endanger public health and welfare).[10] As EPA

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[3] *See* WORLD METEOROLOGICAL ORG., SCIENTIFIC ASSESSMENT OF OZONE DEPLETION: 2014 (2014); U.N. Env't Prog., *Environmental Effects of Ozone Depletion and its Interactions with Climate Change: Progress Report, 2011*, 11 PHOTOCHEMICAL & PHOTOBIOLOGICAL SCI. 13 (2012); *see also* T. Sivasakthivel & K.K. Siva Kumar Reddy, *Ozone Layer Depletion and Its Effects: A Review*, 2 INT'L J. ENVTL. SCI. & DEV. 30 (2011); M.P. Chipperfield et al., *Quantifying the Ozone and Ultraviolet Benefits Already Achieved by the Montreal Protocol*, 6 NAT. COMMC'NS (2015); R.M. Lucas et al., *The Consequences for Human Health of Stratospheric Ozone Depletion in Association with Other Environmental Factors*, 14 PHOTOCHEMICAL & PHOTOBIOLOGICAL SCI. 53 (2015); S. Madronich et al., *Changes in Air Quality and Tropospheric Composition Due to Depletion of Stratospheric Ozone and Interactions with Changing Climate: Implications for Human and Environmental Health*, 14 PHOTOCHEMICAL & PHOTOBIOLOGICAL SCI. 149 (2015).

[4] S. Eastham et al., *Mortality Tradeoff Between Air Quality and Skin Cancer from Changes in Stratospheric Ozone*, ENVIRON. RES. LETT. 13 (2018).

[5] *Key Statistics for Melanoma Skin Cancer*, AM. CANCER SOC'Y (Jan. 4, 2018), https://www.cancer.org/cancer/melanoma-skin-cancer/about/key-statistics.html; *see also* Lucas et al., *supra* note 3.

[6] Ctrs. for Disease Control & Prevention & Nat'l Cancer Inst., *U.S. Cancer Statistics Data Visualizations Tool, based on November 2017 submission data (1999-2015)*, CTRS. FOR DISEASE CONTROL & PREVENTION (June 2018), www.cdc.gov/cancer/dataviz.

[7] 81 Fed. Reg. at 82,278; *Health and Environmental Effects of Ozone Layer Depletion*, EPA (Sept. 24, 2018), https://www.epa.gov/ozone-layer-protection/health-and-environmental-effects-ozone-layer-depletion.

[8] Madronich et al., *supra* note 3, at 149.

[9] F. Iglesias-Suarez et al., *Stratospheric Ozone Change and Related Climate Impacts Over 1850-2100 as Modelled by the ACCMIP Ensemble*, 16 ATMOSPHERIC CHEMISTRY PHYSICS 343, 356 (2016); *see also* Eastham et al., *supra* note 4, at 5–6.

[10] *See also* M. Allen et al., Intergovernmental Panel on Climate Change, *Summary for Policymakers, in* GLOBAL WARMING OF 1.5°C ¶ B5.2 (2018), http://ipcc.ch/report/sr15/ (concluding that "[a]ny increase in global warming is

has found, some HFCs are thousands of times more climate-damaging than carbon dioxide. 81 Fed. Reg. at 82,278. Global Warming Potential (GWP) is a measure of how damaging a particular pollutant is to the climate relative to carbon dioxide, where the GWP of one unit of carbon dioxide is valued at 1. The six most commonly used HFC refrigerants all have a high GWP, from 1,430 (for the refrigerant HFC-134a) to 3,985 (for R-507, also known as AZ-50).[11]

These refrigerant emissions are accelerating climate change, which is already imposing substantial harms and costs on the States.[12] *See Massachusetts v. EPA*, 549 U.S. 497, 523 (2007). For example:

- With climate change unabated, snowpack—a vital resource for California drinking water and the State's agricultural industry—is projected to decline by two-thirds, more of California's forests will burn, and rising seas will wipe out southern California beaches and coastal properties, potentially inundating $17.9 billion worth of residential and commercial buildings in California by 2050.[13] As these comments were drafted, the Camp Fire in Northern California has burned approximately 140,000 acres, destroyed over 9,000 structures, most of which were residences, and killed at least 56 civilians, making it California's deadliest fire on record.[14] The death toll is expected to rise as hundreds of people remain missing.[15]

- By 2100, Massachusetts is projected to experience between 4.0 and 7.6 feet of sea level rise (relative to the mean 2000 level), with up to 10.2 feet of sea level rise under a high-emissions scenario. Sea level rise will increase the frequency and extent of flooding associated with coastal storms, damaging or destroying critical infrastructure and private property.[16] A recent coastal storm on March 2 and 3, 2018 reached the third-highest water level recorded at the Boston Harbor tide gauge and caused more than $24 million in public damages and expenditures.

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projected to affect human health, with primarily negative consequences").

[11] *See High-GWP Refrigerants*, CAL. AIR RES. BD., https://ww2.arb.ca.gov/resources/documents/high-gwp-refrigerants (last visited Nov. 15, 2018).

[12] *See generally* Comments of the Attorneys General of New York et al. on EPA's Proposed Emission Guidelines for Greenhouse Gas Emissions from Existing Electric Utility Generating Units, EPA-HQ-OAR-2017-24817 (Oct. 31, 2018), App. A (describing climate change impacts to states and cities, including many of the undersigned States) (attached hereto as Appendix).

[13] *Key Findings*, CALIFORNIA'S FOURTH CLIMATE CHANGE ASSESSMENT, http://www.climateassessment.ca.gov/.

[14] *Incident Information – Camp Fire*, CAL. FIRE, http://www.fire.ca.gov/current_incidents/incidentdetails/Index/2277 (last visited Nov. 15, 2018).

[15] BCSO CAMP FIRE MISSING LIST, https://www.buttecounty.net/Portals/24/CampFire/BCSO%20UNACCOUNTED%20FOR%2011-14-2018%20PM.pdf?ver=2018-11-14-202802-993 (last visited Nov. 15, 2018).

[16] *See* MASSACHUSETTS CLIMATE CHANGE PROJECTIONS (2018), https://nescaum-dataservices-assets.s3.amazonaws.com/resources/production/MA%20Statewide%20and%20MajorBasins%20Climate%20Projections_Guidebook%20Supplement_March2018.pdf; *see also* Appendix at A-28 (map depicting mean high high water (MHHW) plus 5 and 7.5 feet of sea level rise in Boston).

- Extreme precipitation, heat waves, and milder winters caused by climate change hurt the Illinois farming industry, endanger public safety, and disrupt the water levels of Lake Michigan. In 2009, flooding led to a train derailment in Cherry Valley, Illinois, resulting in 1 death, 7 people injured, and 600 home evacuations.[17] In 2011, a major flood caused extensive damage to roads and train tracks and at least one fatality.[18] Illinois has also struggled with urban flooding caused by heavy rains falling on impervious surfaces.[19] In 2013, the wettest January-to-June period ever recorded in Illinois forced farmers to delay planting and lose revenue. In 2013, Lake Michigan fell to an all-time low water level.[20] In 2015, Lake Michigan climbed to its highest level since 1998.[21] In July 1995, over 700 Illinois residents died due to the historically intense heat wave.[22] Further, Illinois farming sectors are vulnerable to heat waves during the crop pollination season that could cause 15% loss in the next 5 to 25 years and up to a 73% average loss by the end of the next century.[23] 2012 was Illinois' third-driest summer on record. Milder winters will lead to more weeds, insects, and diseases surviving throughout winter, also hurting crop yield and quality.[24]

- This year, Hurricane Florence claimed 41 lives in North Carolina and caused an estimated $17 billion in damage.[25] Based on pre-climate change weather patterns, Hurricane Florence's rainfall was an event that eastern North Carolina could expect only once every 1000 years.[26] Over the past 19 years, eastern North Carolina has been hit by three 500-year (or longer) flood events—Hurricane Florence, Hurricane Matthew in

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[17] *Derailment of CN Freight Train U70691-18 with Subsequent Hazardous Materials Release and Fire*, NAT'L TRANSP. SAFETY BD., https://www.ntsb.gov/investigations/AccidentReports/Pages/RAR1201.aspx (last visited Nov. 15, 2018); *CN Blamed for Fatal Train Derailment in Illinois*, CBC, Feb. 14, 2012, https://www.cbc.ca/news/canada/cn-blamed-for-fatal-train-derailment-in-illinois-1.1139430.

[18] *Crews Find Body of Woman Sept Away by Flood in Galena*, ROCKFORD REGISTER STAR, July 30, 2011, http://www.rrstar.com/article/20110730/News/307309939.

[19] NOAA Nat'l Ctrs. for Envtl. Info., *State Climate Summaries: Illinois*, https://statesummaries.ncics.org/il (2017).

[20] Tony Briscoe, *Lake Michigan Water Levels Rising at Near Record Rate*, CHI. TRIBUNE, July 12, 2015, http://www.chicagotribune.com/news/local/breaking/ct-lake-michigan-water-levels-met-20150710-story.html.

[21] *Id.*

[22] Jan C. Semeza et al., *Heat Related Deaths During the July 1995 Heat Wave in Chicago*, 335 NEW ENG. J. MED. 84 (1996), https://www.nejm.org/doi/full/10.1056/NEJM199607113350203.

[23] KATHY BAYLIS ET AL., PREPARING FOR CLIMATE CHANGE IN ILLINOIS: AN OVERVIEW OF ANTICIPATED IMPACTS 2 (2015), https://igpa.uillinois.edu/sites/igpa.uillinois.edu/files/reports/Preparing-for-Climate-Change-in-Illinois.pdf.

[24] *See id.* at 5–6.

[25] Press Release, North Carolina Governor's Off., Governor Cooper Visits Washington to Push for More Florence Recovery Help from Federal Government (Nov. 14, 2018), https://governor.nc.gov/news/governor-cooper-visits-washington-push-more-florence-recovery-help-federal-government.

[26] *Hurricane Florence: Rainfall up to a 1,000-Year Return Period*, RISK MANAGEMENT SOLUTIONS (Sept. 14, 2018), https://www.rms.com/blog/2018/09/14/hurricane-florence-rainfall-up-to-a-1000-year-return-period/.

2016,[27] and Hurricane Floyd in 1999.[28] The rainfall and flooding these hurricanes have brought was once extremely rare in North Carolina, but no longer is. The resulting human, economic, and ecological consequences are immense.

- Oregon has experienced an increase in forest fires—a predicted result of climate change.[29] The increase in fires has caused a dramatic increase in "unhealthy air days" due to forest fires. The Medford metro region experienced 42 air quality alert days due to fire from 1985 through 2012. But since 2013, Medford has had 74 such days, including 20 in 2017 and 35 in 2018. Portland, meanwhile, had a total of 2 such days from 1985 through 2014—but 13 such days from 2015 through 2018.[30]

- Nuisance flooding in riverfront areas in the District of Columbia has already increased by more than 300% according to the National Oceanic and Atmospheric Administration.[31] By 2080, the U.S. Army Corps of Engineers conservatively predicts up to 3.4 feet of additional sea level rise in the District.[32] Historically, the average summer high temperature in the District was 87°F—by the 2080s, the average temperature is projected to increase significantly to between 93°F and 97°F.[33]

The latest report of the Intergovernmental Panel on Climate Change, the leading international climate science body, indicates that immediate action to drastically reduce HFCs and other fluorinated gases is needed to mitigate the most severe risks of catastrophic climate change.[34]

The States thus share a substantial interest in protecting the health of their residents and the environment from the risks of harmful ODS refrigerants and their substitutes. The Subpart F Requirements are critical to States given the prevalence of refrigerants and the need to avert State harms through national regulation of ODS refrigerants and substitutes. In California alone,

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[27] Off. of Water Prediction, Nat'l Weather Serv., Hurricane Matthew, 6-10 October 2016 Annual Exceedance Probabilities (AEPs) for the Worst Case 24-Hour Rainfall (prepared Oct. 18, 2016), http://www.nws.noaa.gov/ohd/hdsc/aep_storm_analysis/AEP_HurricaneMatthew_October2016.pdf.

[28] M. Millner, *Remembering Hurricane Floyd*, DOCUMENTING THE AMERICAN SOUTH (Oct. 2009), https://docsouth.unc.edu/highlights/floyd.html.

[29] THIRD OREGON CLIMATE ASSESSMENT REPORT 74 (2017).

[30] Or. Dep't of Envtl. Quality, *Forest Fire Smoke Impact on Air Quality Health Trends in Bend, Klamath Falls, Medford, and Portland (1985 to 2018)*, DEQ18-NWR-0066-TR (Oct. 2018).

[31] DEP'T OF ENERGY & ENV'T, CLIMATE READY DC 3 (2016), https://doee.dc.gov/sites/default/files/dc/sites/ddoe/service_content/attachments/CRDC-Report-FINAL-Web.pdf.

[32] *Id.*

[33] *Id.* at 2.

[34] Allen et al., *supra* note 10, at ¶ C1; J. Rogelj et al., Intergovernmental Panel on Climate Change, *Chapter 2: Mitigation pathways compatible with 1.5°C in the context of sustainable development*, *in* GLOBAL WARMING OF 1.5°C 2-38 (2018), http://ipcc.ch/report/sr15/; *see also* B. DeAngelo et al., *Perspectives on Climate Change Mitigation*, *in* 1 CLIMATE SCIENCE SPECIAL REPORT: FOURTH NATIONAL CLIMATE ASSESSMENT 393, 393, https://science2017.globalchange.gov/downloads/CSSR_Ch14_Mitigation.pdf ("Stabilizing global mean temperature to less than 3.6°F (2°C) above preindustrial levels requires substantial reductions in net global CO_2 emissions prior to 2040 relative to present-day values and likely requires net emissions to become zero or possibly negative later in the century.").

there are roughly 6,800 facilities with a charge system greater than 50 pounds of high-GWP refrigerants. Based on data reported to CARB, refrigerant leaks at these facilities occur frequently. Meanwhile, use of substitute refrigerants, including HFCs, is growing rapidly. New global scenarios show that baseline (or business-as-usual) annual emissions of HFCs could reach 4.0–5.3 billion metric tons of carbon dioxide equivalent in 2050.[35] In the United States, HFC emissions are increasing more quickly than emissions of *any other* greenhouse gas, and they are projected to triple by 2030. 81 Fed. Reg. at 82,277.

The States also have an interest in promoting regulatory clarity and certainty for their businesses, values that are increasingly important as the use of substitute refrigerants grows and the number of available substitutes proliferates. ODSs and ODS substitutes can be used interchangeably in many applications, and service technicians are likely to encounter both types of refrigerants. Often, facilities contain both ODS- and HFC-refrigerant systems.[36] Regulatory regimes that apply different standards to ODS and substitute refrigerants, or that are unclear in their application across refrigerant types, can therefore impose uncertainty, complexity, and costs for businesses.

ANALYSIS

The Proposed Rule is Contrary to the Clean Air Act and Arbitrary and Capricious.

EPA's proposed reinterpretation of the Clean Air Act is impermissible and lacks any reasoned basis. As EPA found in 2016, and contrary to its claim now, the text and purposes of the Clean Air Act provide ample authority for extension of the Subpart F Requirements, including the appliance-maintenance and leak-repair standards, to substitute refrigerants. *See* 81 Fed. Reg. at 62,282–86; *see also* 42 U.S.C. § 7601(a)(1). Moreover, rescission of those requirements would increase, rather than reduce, harmful emissions, a critical fact EPA now blatantly ignores. Accordingly, EPA has failed to "examine the relevant data and articulate a satisfactory explanation for its action including a rational connection between the facts found and the choice made." *State Farm*, 463 U.S. at 43 (quotation and citation omitted); *see also Fox*, 556 U.S. at 515 (agency must supply "good reasons" for departing from prior policy). Additionally, EPA has failed to provide any lawful basis for its proposal to delay the compliance date for the 2016 Rule. *See Air All. Houston v. EPA*, 906 F.3d 1049, 1067 (D.C. Cir. 2018) (delay unlawful where EPA failed to "explain its departure from [its] previous conclusions regarding the appropriate and practicable timeline for implementing the [rule]"). Finally, EPA has failed to properly analyze or consider the Proposed Rule's enormous costs to public health and the environment. The meager compliance cost savings estimated by EPA are suspect and otherwise fail to provide a cogent rationale for imposing significant and inadequately analyzed costs on the public. The Proposed Rule accordingly should be withdrawn in its entirety. *See* 42 U.S.C. § 7607(d)(9)(A), (C) (reviewing court can invalidate any action under section 608 found to be "arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law," or in excess of statutory authority).

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[35] G. Velders et al., *Future Atmospheric Abundances and Climate Forcings from Scenarios of Global and Regional Hydrofluorocarbon (HFC) Emissions*, 123 ATMOSPHERIC ENV'T 200 (2015).

[36] In California, approximately 17% of reporting facilities have both ODS and HFC systems.

A. EPA's Proposal to Exclude ODS-Substitute Refrigerants from the Appliance-Maintenance and Leak-Repair Requirements is Arbitrary and Capricious and Unlawful.

In the Proposed Rule, EPA claims that it lacks authority under the Clean Air Act to apply appliance-maintenance and leak-repair standards (40 C.F.R. § 82.157) to substitute refrigerants. But, as EPA found in 2016, the text and purposes of the Clean Air Act authorize application of the appliance-maintenance and leak-repair requirements to substitute refrigerants, both to prevent knowing ventilation of ODS substitutes and to reduce ODS emissions. *See* 81 Fed. Reg. at 62,282–86; *see also* 42 U.S.C. § 7601(a)(1) (authorizing EPA to promulgate regulations to carry out the statute). Moreover, rescission of those requirements would cause, rather than curb, the emissions Congress sought to prevent. EPA should withdraw the Proposed Rule because it rests on a plainly incorrect reading of the statute and reflects an arbitrary and capricious and inadequately explained departure from prior policy.

1. The Proposed Rule Impermissibly Reinterprets the Clean Air Act's Prohibition on Venting ODS Substitutes and Violates its Purpose.

Section 608(c), commonly known as the venting prohibition, expressly prohibits "any person" from "knowingly vent[ing] or otherwise knowingly releas[ing] or dispos[ing]" of an ODS or "any substitute" refrigerant "in the course of maintaining, servicing, repairing, or disposing of an appliance or industrial process refrigeration." 42 U.S.C. § 7671*g*(c)(1)–(2). In the 2016 Rule, "EPA interpret[ed] section 608(c) such that if a person adds refrigerant to an appliance that he or she knows is leaking, he or she also violates the venting prohibition unless he or she has complied with . . . [EPA's] leak repair requirements." 81 Fed. Reg. at 82,285–86. In the Proposed Rule, EPA reinterprets section 608(c) to prohibit only a limited subset of those knowing releases of ODS substitutes that occur while a technician is *servicing* appliances, such as adding refrigerant where the technician can see or hear a ruptured line or cutting refrigerant lines. 83 Fed. Reg. at 49,338. EPA claims this new interpretation eliminates the legal authority for the 2016 Rule's appliance-maintenance and leak-repair requirements for ODS substitutes. But EPA's reinterpretation of section 608(c) is impermissibly narrow, and its Proposed Rule would result in the very emissions section 608(c) aims to prevent. EPA thus has failed to provide the requisite "good reasons" for its arbitrary and capricious about-face. *See Fox*, 556 U.S. at 515.

Section 608(c)'s text, purpose, and context make plain that the statute authorizes EPA to broadly regulate ODS substitutes to prevent illegal venting of such substances. As already noted, section 608(c) expressly prohibits the knowing venting of "any substitute" refrigerant. 42 U.S.C. § 7671*g*(c)(1)–(2). Contrary to EPA's strained claim, the venting prohibition applies generally "in the course of *maintaining*" appliances, *id.* § 7671*g*(c)(1) (emphasis added)—that is, while "keep[ing] in an existing state" or "preserv[ing]" the machinery.[37] And it extends to "*any* person," not just technicians. *Id.* § 7671*g*(c)(1). The venting prohibition thus plainly covers venting of ODS substitutes that occurs in the course of a broad range of activities beyond servicing events.

[37] *Maintain*, MERRIAM-WEBSTER ONLINE DICTIONARY, https://www.merriam-webster.com/dictionary/maintain (last visited Nov. 15, 2018).

Section 608(c)'s history and context confirm Congress's intent to ensure that ODS substitutes are used responsibly and released minimally such that the phase-out of ODSs does not result in additional harms to public health and the environment. In enacting the venting prohibition, the Senate Managers specifically explained that the provision is "important . . . because many of the substitutes being developed do not have ozone depleting properties but they are 'greenhouse gases' and have radiative properties that are expected to exacerbate the problem of global climate change."[38] Other provisions of the Clean Air Act similarly demonstrate Congress's intent to prevent that outcome, requiring ODSs to be replaced "to the maximum extent practicable" by "substitutes . . . that reduce overall risks to human health and the environment," 42 U.S.C. § 7671*k*(a), and authorizing EPA to promote the use of those safe alternatives, *id.* § 7671*g*(a)(3).[39] EPA's 2016 Rule thus implements the statute's clear authority and purpose, providing guidance to the regulated community on both how to avoid violating the venting prohibition across all appliances and refrigerants and how to reduce the release of harmful greenhouse gases. 81 Fed. Reg. at 82,284–85; *see Utility Air Regulatory Grp. v. EPA*, 573 U.S. 302, 134 S. Ct. 2427, 2441 (2014) (words in statute "must be read in their context and with a view to their place in the overall statutory scheme" (internal quotation omitted)).

By contrast, EPA's Proposed Rule ignores section 608(c)'s plain text and flouts its purpose to reduce emissions of ODS substitutes. As EPA itself acknowledges, replenishing leaked ODS substitutes during servicing "creates the practical *certainty* that the refrigerant will be released contemporaneously with the servicing event." 83 Fed. Reg. at 49,338 (emphasis added). Although EPA attempts to limit that concession, it cannot do so because such practical certainty is evident from the fact that the refrigerant needs to be replenished—in other words, replenishment is necessary because a leak has occurred or is occurring, whether or not the technician can actually see or hear the release at the time of servicing. And such leaks are sure to continue if not repaired. Failure to undertake repairs in such circumstances therefore would yield knowing releases of ODS substitutes, both immediately and going forward, in direct violation of the venting prohibition. EPA has ample authority under—and is certainly not prohibited by—sections 608(c) and 301 to prevent that illegal conduct by extending appliance-maintenance and leak-repair requirements to ODS substitutes. *See* 81 Fed. Reg. at 82,291. EPA's erroneous claim otherwise cannot supply the reasoned basis for the Proposed Rule. *Fox*, 556 U.S. at 515; *State Farm*, 463 U.S. at 43; *Good Fortune Shipping SA v. Comm'r of IRS*, 897 F.3d 256, 263–64 (D.C. Cir. 2018).

Moreover, EPA's decision to eliminate appliance-maintenance and leak-repair requirements for ODS substitutes is arbitrary and capricious because it would result in more of the pollution the Clean Air Act seeks to limit. By EPA's own calculation, the Proposed Rule would result in foregone annual greenhouse gas emissions reductions of 2.9 million metric tons of carbon dioxide equivalent ($MMTCO_2e$)—approximately 40% less of a benefit than the 2016 Rule was expected to achieve. 83 Fed. Reg. at 49,342. Additionally, EPA's estimated foregone greenhouse gas emissions reductions do not take into account appliances' end-of-life emissions

[38] Statement of Senate Managers, S. 1630, The Clean Air Act Amendments of 1990, *reprinted in* 1 A LEGISLATIVE HISTORY OF THE CLEAN AIR ACT AMENDMENTS OF 1990, at 929 (1993).

[39] Notably, the D.C. Circuit upheld EPA's authority to remove HFCs from the list of safe ODS substitutes and place them on the list of prohibited substitutes. *Mexichem Fluor*, 866 F.3d at 455.

and are thus erroneously low.[40] *Id.* EPA does not propose to retract its prior findings regarding the increasing contribution of HFCs to climate change harms.

The Proposed Rule is also arbitrary and capricious because it would fail to achieve the efficiency EPA supposedly seeks. In extending leak repair requirements to ODS substitutes, EPA provided a roadmap for compliance with the venting prohibition for technicians who handle both ODSs and their substitutes, permitting them to follow one, clear set of protocols for all refrigerants. The Proposed Rule replaces this certainty with an uneven and confusing regulatory scheme. EPA did not explain how its new interpretation "is rationally related to the goals of the statute." *Village of Barrington v. Surface Transp. Bd.*, 636 F.3d 650, 665 (D.C. Cir. 2011) (internal quotation omitted).

2. The Proposed Rule Also Misreads the Clean Air Act's ODS-Reduction Mandates and Will Cause ODS Emissions.

Section 608(a) provides additional authority for extension of appliance-maintenance and leak-repair requirements to ODS substitutes to achieve that provision's ODS-reduction mandate, further undermining the purported legal basis for EPA's reversal here. Section 608(a) obligates EPA to adopt regulations to reduce ODS emissions "to the lowest achievable level" and "to maximize the recapture and recycling of such substances," in line with Title VI's core purpose to reduce harms associated with ODSs in response to the global ozone depletion crisis. 42 U.S.C. § 7671*g*(a); *see also id.* § 7671*g*(b) (mandating disposal in manner that maximally reduces releases). Extension of the Subpart F Requirements to ODS substitutes helps EPA do just that, as EPA found in 2016: it significantly reduces the release, and increases the recovery, of ODSs by reducing the complexity and increasing the clarity of regulatory requirements and promoting compliance for both ODSs and their substitutes. 81 Fed Reg. at 82,278, 82,283, 82,286, 82,288, 82,335. In particular, because it is extremely likely that every technician will encounter both ODSs and ODS substitutes, [41] consistent regulation of all refrigerants will increase compliance with the Subpart F Requirements and thus reduce accidental releases and contamination by ODSs. *Id.* at 82,286. Accordingly, EPA estimated that the 2016 Rule would in fact decrease ODS emissions. *Id.* at 82,278.

EPA mischaracterizes its 2016 findings to claim otherwise now. In the Proposed Rule, EPA erroneously contends that regulating substitute refrigerants under the appliance-maintenance and leak-repair provisions would not yield additional ODS reductions beyond those achieved by other Subpart F Requirements. But in fact, in 2016, EPA expressly found that consistent appliance-maintenance and leak-repair standards for ODS and ODS-substitute refrigerants would reduce ODS emissions. *Id.* The agency provides no sound explanation or

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[40] As noted in text, EPA estimates that withdrawing the extension of appliance-maintenance and leak-repair provisions to substitutes would result in additional foregone annual greenhouse gas emissions reduction benefits of 2.9 MMTCO2e and another 0.7 MMTCO2e associated with the use of self-sealing valves (for a total of at least 3.6 MMTCO2e). 83 Fed. Reg. at 49,335, 49,342. Neither of these numbers accounts for increased HFC emissions that are likely to occur without Subpart F's requirements for proper handling and disposal of HFC refrigerants (included in its certification standards for technicians, reclaimers, and recovery equipment); its requirements for proper evacuation levels before opening an appliance; its requirements for removing refrigerant before appliance disposal; and its requirements that appliances have a servicing aperture or process stub to facilitate refrigerant recovery.

[41] *See supra* note 36.

factual basis for its contradictory finding now—an "[u]nexplained inconsistency" that amounts to "a reason for holding [its] interpretation to be an arbitrary and capricious change." *National Cable & Telecomms. Ass'n v. Brand X Internet Servs.*, 545 U.S. 967, 981 (2005); *see also Good Fortune Shipping*, 897 F.3d at 264 (invalidating regulation where agency failed to explain how sound rationale for earlier rule "had somehow become unworkable"); *Goldstein v. S.E.C.*, 451 F.3d 873, 883 (D.C. Cir. 2006) (invalidating regulation as "completely arbitrary" where Commission failed to "justify [it] by reference to any change in the nature of" the regulated industry since promulgation of original rule). "[E]ven when reversing a policy after an election, an agency may not simply discard prior factual findings without a reasoned explanation." *Organized Vill. of Kake v. U.S. Dep't of Agric.*, 795 F.3d 956, 968 (9th Cir. 2015). Section 608(a) thus provides additional authority for extension of appliance-maintenance and leak-repair requirements to ODS substitutes to reduce ODS emissions, further underscoring the inadequacy of EPA's rationale for the Proposed Rule. 42 U.S.C. § 7671*g*(a); *see Fox*, 556 U.S. at 515.

B. Excluding Substitute Refrigerants from All Subpart F Requirements Would Be Arbitrary and Capricious and Unlawful.

EPA also seeks comment on whether it should exempt ODS substitutes from all Subpart F Requirements, including requirements for evacuating an appliance before servicing, removing refrigerant before appliance disposal, and restricting refrigerant sales to certified technicians. *See, e.g.*, 83 Fed. Reg. at 49,338, 49,340. EPA seeks comment on whether it would be reasonable to reverse course in light of the "substantial discretion" section 608(c) affords the agency and supposed "questions as to EPA's legal authority" for extension of the Subpart F Requirements. *Id.* at 49,339. EPA also requests comment on whether the agency should conclude that it cannot rely on section 608(a) for authority to extend any Subpart F Requirements to ODS substitutes. *Id.* at 49,340. Because both sections 608(c) and 608(a) provide ample authority for extension of Subpart F Requirements to ODS substitutes, and because the agency's own, undisputed findings demand such extension, EPA's misguided suggestion should be abandoned.

As already explained, section 608(c)(2)'s venting prohibition and section 608(a) each plainly authorize extension of Subpart F Requirements to ODS substitutes to reduce venting of ODS substitutes and to reduce ODS emissions to the lowest achievable level, and maximize their recapture, respectively. 42 U.S.C. § 7671*g*(a), (c)(2). EPA has confirmed in the Proposed Rule that the extension of Subpart F Requirements to ODS substitutes would achieve both ends. *See, e.g.*, 83 Fed. Reg. at 49,338, 49,340. EPA acknowledges its longstanding position that Subpart F's non-leak-repair requirements will effectively prevent knowing ventilation of ODS substitutes in violation of section 608(c).[42] And EPA similarly acknowledges, in seeking to differentiate leak-repair requirements, that other Subpart F Requirements also will reduce ODS emissions, as

[42] As EPA explains: "failure to properly evacuate an appliance (§ 82.156 and § 82.158) before opening it for servicing will create the practical certainty that the refrigerant in the appliance will be released during the servicing event"; "disposing of the appliance without removing the refrigerant (§ 82.155) will result in the release of any remaining refrigerant during disposal of the appliance"; and the sales restriction and technician certification requirements will prevent untrained or undertrained technicians from "obtain[ing] access to refrigerants that are likely to be used improperly" and "educating technicians on how to contain and conserve refrigerant effectively" would "curtail[] illegal venting into the atmosphere." 83 Fed. Reg. at 49,338–39 (quoting 58 Fed. Reg. 28,703, 28,678, 28,698, 28,691) (internal quotation marks omitted).

required under section 608(a).[43] Rescission of those requirements thus would result in knowing violations of, and eliminate the roadmap for compliance with, the venting prohibition and would increase ODS emissions in violation of section 608(a). EPA's complete failure to contend with these findings renders its potential proposal to fully rescind the application of Subpart F Requirements to ODS substitutes arbitrary and capricious. *See Goldstein*, 451 F.3d at 883 ("By painting with such a broad brush, the [agency] has failed adequately to justify departing from its own prior interpretation.").

EPA admits, as it must, that "it has authority to implement, explain, and enforce the [section 608(c)] venting prohibition" for ODS substitutes. 83 Fed. Reg. at 49,339. But it nonetheless contends that interpreting section 608(c) to authorize the same set of requirements as section 608(a) would render section 608(a) superfluous, thus raising "questions as to EPA's legal authority." *Id.* EPA's rationale is nonsensical. As an initial matter, these subsections are plainly not coextensive. Section 608(c) only bars emissions of refrigerants, whereas section 608(a) authorizes regulation of other substances, an authority EPA has used in the past for halon management. *See* 81 Fed. Reg. at 82,290 (citing 63 Fed. Reg. 11,084 (Mar. 5, 1998)). And section 608(c) only prohibits *knowing* ventilation, while section 608(a) authorizes regulation more broadly. *Compare* 42 U.S.C. § 7671*g*(a)(3)(A)-(B) (requiring regulations to "reduce the use and emissions of [ODSs] to the lowest achievable level," and maximize the recapture and recycling of such substances), *with id.* § 7671*g*(c)(1) (prohibiting knowing ventilation of ODSs except good faith "de minimis releases"). The fact that the provisions reflect an overlapping concern for minimizing harmful refrigerant emissions is no reason to decline to implement one of them; it is a reason for adopting a robust, comprehensive program to fully implement both, as EPA did in the 2016 Rule. A consistent, coherent regulatory scheme is, indeed, essential to providing clarity for businesses that handle both ODSs and ODS substitutes, effectively prohibiting knowing ventilation of both substances, and maximally reducing ODSs, in furtherance of the Clean Air Act's goals. *See* 81 Fed. Reg. at 82,290.

Nor can EPA resort to its assurance that it may someday consider whether to promulgate some different, unspecified requirements as justification for excluding ODS substitutes from all Subpart F Requirements. 83 Fed. Reg. at 49,341. "Without showing that the old policy is unreasonable, for [the agency] to say that no policy is better than the old policy solely because a new policy *might* be put into place in the indefinite future is as silly as it sounds." *Public Citizen v. Steed*, 733 F.2d 93, 102 (D.C. Cir. 1984). EPA's failure to afford notice of specific regulatory changes and its reasoned basis deprives the public of a meaningful opportunity to comment on the agency's rescission of the 2016 Rule. *See* 5 U.S.C. § 7607(d)(9)(D); *Home Box Office, Inc. v. FCC*, 567 F.2d 9, 35–36 (D.C. Cir. 1977); *see also Gerber v. Norton*, 294 F.3d 173, 179 (D.C. Cir. 2002). In any event, EPA's suggested approach would result in a disjointed, inefficient, and confusing regulatory scheme that fails to achieve section 608's core purposes to eliminate or

[43] As EPA explains: "improper handling of non-exempt substitute refrigerants by persons lacking the requisite training may contaminate appliances and recovery cylinders with mixtures of ODS and non-ODS substances," "lead to equipment failures and emissions from those systems, including emissions of ODSs," and incentivize unlawful disposal and additional ODS releases; thus, "the sales restriction and technician certification requirement . . . may reduce the possibility that refrigerant in the appliances will be misidentified . . . in turn reduc[ing] the possibility that contamination and subsequent refrigerant releases may occur," and "reclamation standards may ensure that used refrigerant is not contaminated when it reenters the market for use and may reduce emissions associated with the mixing of refrigerants and equipment damage." 83 Fed. Reg. at 49,340.

minimize refrigerant emissions. For these reasons, EPA's unsupported and unreasonable proposal to rescind all Subpart F Requirements for ODS substitutes should be withdrawn.

C. EPA's Proposed Delay of the 2016 Rule's Compliance Date Would Be Unlawful.

The duly promulgated 2016 Rule set a compliance date of January 1, 2019, for the extended appliance-maintenance and leak-repair requirements. 81 Fed. Reg. at 82,342–43. EPA now requests comment on whether it should extend that compliance date for appliances containing only ODS-substitute refrigerants, pending the agency's reconsideration of those requirements. 83 Fed. Reg. at 49,332, 49,341. The D.C. Circuit's recent opinion in *Air Alliance Houston* squarely forecloses EPA's delay tactics. 906 F.3d 1049.

In *Air Alliance Houston*, the court held that EPA could not delay compliance with important Clean Air Act protections solely to accommodate reconsideration of those requirements. *Id.* at 1065. "The mere fact of reconsideration, alone," the court held, "is not a sufficient basis to delay promulgated effective dates specifically chosen by EPA on the basis of public input and reasoned explanation[.]" *Id.* at 1067. Because EPA failed to "explain its departure from [its] previous conclusions regarding the appropriate and practicable timeline for implementing the [protections]," the delay was arbitrary and capricious. *Id.* at 1067–68; *see also Natural Res. Def. Council v. NHTSA*, 894 F.3d 95, 111–12 (2d Cir. 2018) ("[A] decision to reconsider a rule does not simultaneously convey authority to indefinitely delay the existing rule pending that reconsideration."); *Clean Air Council v. Pruitt*, 862 F.3d 1, 9 (D.C. Cir. 2017) (rejecting EPA argument that it could stay Clean Air Act implementing rules pending reconsideration beyond express statutory authority).

Here, too, EPA seeks an extension *solely* to excuse noncompliance pending reconsideration, so as to prevent regulated entities from "incur[ring] costs to comply with provisions that might ultimately be rescinded." 83 Fed. Reg. at 49,341. In promulgating its 2016 Rule, EPA weighed the rule's costs and burdens for regulated entities against the important benefits of extending the appliance-maintenance and leak-repair requirements. 81 Fed. Reg. at 82,343. EPA explained that it selected a compliance date "two years from the effective date, and more than 24 months from publication of the final rule" to give appliance owners and operators sufficient time "to learn about the updated requirements; update systems, standard operating procedures, and training materials to best administer the requirements; and fix leakier systems." *Id.* EPA's eleventh-hour proposal to further delay these requirements provides no basis on which to claim that additional time is needed to enable compliance. Nor does EPA explain how further delay is consistent with the Clean Air Act's goal of reducing refrigerant emissions or at all contend with the agency's admission that such delay could result in significant foregone annual greenhouse gas emissions reductions—2.9 $MMTCO_2e$. 83 Fed. Reg. at 49,342.

The Proposed Rule also fails to acknowledge that regulated entities have already taken significant steps toward compliance over the past two years, including making one-time investments in establishing a refrigerant management program and recordkeeping system. *Id.* at 49,341. For example, several of the companies complaining about compliance with the 2016

Rule—Boeing, Phillips 66, and Proctor & Gamble[44]—already have complied with California's more stringent 2010 regulations regarding leak detection and monitoring, leak repair, and system retrofit or retirement, which include regulation of ODS substitutes.[45] As in *Air Alliance Houston*, "EPA has failed to rationally explain its departure from its previous conclusions about appropriate compliance period that it reached after specifically soliciting and considering comments on the subject." 906 F.3d at 1068.

D. EPA's Economic Analysis is Erroneous and Underscores that the Proposed Rule is Unlawful.

EPA claims that the expected cost savings for the Proposed Rule would be $39 million for rescission of the appliance-maintenance and leak-repair requirements for ODS substitutes and $43 million if EPA rescinded the entire extension of all Subpart F requirements to ODS substitutes. These purported savings, EPA asserts, would outweigh the monetized foregone benefits of $15 million in avoided refrigerant purchases. But EPA's analysis of the costs and benefits of the Proposed Rule has critical infirmities, fails to accurately capture the true costs and benefits of the Proposed Rule, and cannot support promulgation. *See* 83 Fed. Reg. 49,341–43.

First, EPA has failed to adequately consider the costs of the Proposed Rule associated with foregone reductions in climate-damaging and ozone-depleting emissions, such as the 2.9 $MMTCO_2e$ of anticipated foregone greenhouse gas emissions reductions. *See id.* at 49,335, 49,342. As detailed above, these emissions impose significant environmental and public health harms, which EPA virtually ignores. *See State Farm*, 463 U.S. at 30–31 (agency action must be based on "consideration of [all] relevant factors"); *Michigan v. EPA*, 135 S. Ct. 2699, 2707 (2015) (relevant costs "include[] more than the expense of complying with regulations" and include "harms that regulation might do to human health or the environment").

In the absence of such analysis, Table 1 briefly explores the environmental damages associated with foregone HFC emissions reductions under the Proposed Rule, applying a conservative social cost of carbon ($SC\text{-}CO_2$) developed by the federal government through an interagency process in 2013 and refined in 2016, and used in hundreds of regulatory proceedings at the federal level through January 2017.[46] The $SC\text{-}CO_2$ is the cost to society (in U.S. dollars)

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[44] These companies are members of the NEDA/CAP coalition that challenged the 2016 Rule in the D.C. Circuit. Petition for Review, *National Envtl. Dev. Ass'n's Clean Air Project v. EPA*, No. 17-1016 (D.C. Cir. Jan. 17, 2017).

[45] *See* CAL. CODE REGS. tit. 17, §§ 95380–98. CARB's regulatory program categorizes facilities based on the charge size of the system. Owners and operators of stationary refrigeration systems that fall under the program must register, report annually, abide by recordkeeping requirements, conduct regular leak inspections or implement automatic leak detection systems, repair leaks within fourteen days, and, in certain circumstances, retrofit or retire leaking systems. *Id.* Leak repairs must be made by a licensed technician, and there are service practices for any person performing installation, maintenance, service, repair, or disposal of certain appliances. *Id.* § 95390. Distribution or sale of high-GWP refrigerants is prohibited, unless for reclamation or destruction. *Id.* § 95391.

[46] INTERAGENCY WORKING GRP. ON SOC. COST OF GREENHOUSE GASES, TECHNICAL SUPPORT DOCUMENT: TECHNICAL UPDATE OF THE SOCIAL COST OF CARBON FOR REGULATORY IMPACT ANALYSIS UNDER EXECUTIVE ORDER 12,866 (2016). At a 3% discount rate, the $SC\text{-}CO_2$ is calculated at $36 (in 2007 dollars) per metric ton of carbon dioxide, and rises each year to $50 by 2030. *Cf.* Richard L. Revesz et al., *Best Cost Estimate of Greenhouse Gases*, 357 SCIENCE 655 (2017) (confirming that best estimate of social cost of greenhouse gases is U.S. Interagency Working Group's estimate).

of adding 1 metric ton of carbon dioxide to the atmosphere in a particular year. It is intended to provide a measure of the monetary damages resulting from the greenhouse gas pollution that is causing global climate change. Framed alternatively, it is the avoided cost (or benefit) of reducing carbon dioxide emissions by the same amount in a given year. Federal agencies have incorporated the social costs of greenhouse gases, including carbon dioxide, methane, and nitrous oxide, into their analysis of regulatory actions to comprehensively and accurately account for the economic impact of regulations that impact greenhouse gas emissions. *Cf. Ctr. for Biological Diversity v. NHTSA*, 538 F. 3d 1172, 1203 (9th Cir. 2008) (invalidating agency action as arbitrary and capricious for failure to monetize benefits of greenhouse gas emissions reduction). The SC-CO_2 provides one way to approximate the true costs of increased emissions caused by the Proposed Rule.

Table 1: Potential Annual Cost of Proposed Rule Foregone Emissions Reductions Based on Social Cost of Carbon (SC-CO_2)[47]

Year	SC-CO_2 Value ($/MTCO$_2$e) (2017 dollars)[48]	Cost of withdrawal of extension of the appliance-maintenance and leak-repair provisions (2.946 MMTCO$_2$e) (million$)	Cost of withdrawal of extension of the full set of Subpart F Requirements (0.657 MMTCO$_2$e) (million $)	Total Cost (3.603 MMTCO$_2$e) (million $)
2015	$42	$124	$28	$151
2020	$49	$144	$32	$177
2025	$54	$159	$35	$195
2030	$59	$174	$39	$213

Here, as estimated using the SC-CO_2, the costs of the environmental damages that would result from the Proposed Rule *far exceed* any cost savings EPA has projected. And, troublingly, EPA has failed to identify or analyze any of the disproportionate impacts of those foregone emissions reductions on minority and low-income populations, claiming, without support or elaboration, that it is "not feasible" to quantify such impacts. *See* 83 Fed. Reg. at 49,344.

Second, and relatedly, EPA fails to acknowledge or consider the costs of the Proposed Rule for States, devoting merely two conclusory sentences to the subject. Under the Proposed Rule, if a State lacks a regulatory regime comparable to the Refrigerant Management Program, it is likely that HFCs would account for a higher percentage of the States' greenhouse gas emissions, thereby making state emission-reduction targets and mandates more difficult to achieve.[49] Further, the Proposed Rule broadly threatens to harm States, because States benefit

[47] The SC-CO_2 was calculated using a discount rate average of 3%, resulting in a value of $42 for 2015, $49 for 2020, $54 for 2025, and $58 for 2030. Many experts believe that a discount rate of less than 3% should be applied in the context of climate change.

[48] This number has been adjusted from 2007 to 2017 dollars based on the CPI Inflation Calculator from the U.S. Bureau of Labor Statistics (https://data.bls.gov/cgi-bin/cpicalc.pl?cost1=1.00&year1=200712&year2=201809).

[49] *See, e.g.*, MASS. GEN. LAWS c. 21N, § 4(a) (imposing a legally binding requirement on Massachusetts to reduce its greenhouse gas emissions 25% below 1990 levels by 2020 and 80% by 2050); CAL. HEALTH & SAF. CODE § 39750.5 (imposing a legally binding requirement on California to reduce HFC emissions 40% below 2013 levels by 2030); *id.* § 38566 (imposing a legally binding requirement on California to reduce its greenhouse gas emissions to 1990 levels by 2020 and an additional 40% by 2030); N.Y. Exec. Order No. 166 (2017) (pledging to reduce in-state greenhouse gas emissions by 40% below 1990 levels by 2030 and 80% below 1990 levels by 2050).

from federal rules that help mitigate harmful effects of global climate change and stratospheric ozone depletion. *See Massachusetts*, 549 U.S. at 519–23. Given the global nature and complexity of the chemical industry, and the ubiquity of products containing refrigerants, a strong federal regulatory floor is important to protect the States and their residents and businesses from these risks and to provide the strongest incentives for emissions reductions.

Third, EPA improperly calculated the Proposed Rule's estimated cost savings to industry. In particular, EPA compares foregone compliance costs only against costs associated with purchasing replacement refrigerant under the Proposed Rule. 83 Fed. Reg. at 49,342. But, as EPA is well aware, leaking refrigerant will yield other costs to industry because it causes appliances to run less efficiently—and more expensively—and increases the possibility of extremely expensive catastrophic appliance failures. *See* 81 Fed. Reg. at 82,304. For these reasons, many regulated businesses actually supported the extension of Subpart F Requirements to substitute refrigerants[50] and have committed to phasing down high-GWP refrigerants in other programs.[51] EPA also failed to consider the effect on producers of substitute refrigerants and small businesses vital to our economies. *See* 83 Fed. Reg. at 49,341-44.

EPA must adequately assess costs and reasonably explain its choice of a policy that could impose significant costs on the public, including public health and environmental harms, and yield little, if any, cost savings to regulated entities. *Fox*, 556 U.S. at 513–15; *State Farm*, 463 U.S. at 43. EPA's failure to do so here merely underscores that the Proposed Rule would be arbitrary and capricious and contrary to the Clean Air Act.

CONCLUSION

EPA's new proposal to roll back the 2016 Rule is neither compelled by the statutory text, as EPA claims, nor reasonable in light of the Clean Air Act's text, structure, and purpose to protect and improve air quality and the stratospheric ozone layer. It also is irrationally contrary to EPA's prior and even current factual findings. Excluding substitute refrigerants from standards that EPA previously and reasonably found warranted would be an abdication of EPA's duty to protect public health and welfare from the urgent environmental threats of ozone depletion and climate change. And the Proposed Rule would increase uncertainty for regulated businesses by undermining a sensible, comprehensive regulatory program in the name of dubious cost savings. For the foregoing reasons, EPA should withdraw its unlawful and imprudent Proposed Rule and fully and swiftly implement all Subpart F Requirements in their entirety.

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[50] *See, e.g.*, Comments of the Chemours Company (EPA-HQ-OAR-2015-0453-0107), Hudson Technologies (EPA-HQ-OAR-2015-0453-0066), the Alliance for Responsible Atmospheric Policy industry coalition (EPA-HQ-OAR-2015-0453-0076), GE Appliances (EPA-HQ-OAR-2015-0453-0106), and Carrier/United Technologies (EPA-HQ-OAR-2015-0453-0093) submitted during the public comment period of the 2016 Rule.

[51] *See, e.g.*, Industry Letter to Mary Nichols (Sept. 14, 2018), http://www.ahrinet.org/Portals/_Appleseed/documents/news/AHRI_NRDC_CARB_Letter_regarding_SLCP_HFC_measures.pdf.

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