ORAL ARGUMENT NOT YET SCHEDULED
No. 22-1031 (and consolidated cases)

IN THE
United States Court of Appeals for the District of Columbia Circuit

STATE OF TEXAS, *et al.*,

Petitioners,

– v. –

ENVIRONMENTAL PROTECTION AGENCY AND MICHAEL S. REGAN, in his official capacity as Administrator of the U.S. Environmental Protection Agency,

Respondents,

ADVANCED ENERGY ECONOMY, *et al.*,

Intervenors.

On Petitions for Review of a Final Action of the United States Environmental Protection Agency
86 Fed. Reg. 74,434 (Dec. 30, 2021)

FINAL BRIEF OF THE INSTITUTE FOR POLICY INTEGRITY AT NEW YORK UNIVERSITY SCHOOL OF LAW AS *AMICUS CURIAE* IN SUPPORT OF RESPONDENTS

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STATEMENT AS TO PARTIES, RULINGS, AND RELATED CASES

As required by Circuit Rule 28(a)(1), counsel for the Institute for Policy Integrity at New York University School of Law certify as follows:

(1) All parties, amici, and intervenors appearing in this case are listed in EPA's Answering Brief (cross-referencing Petitioners' opening briefs).

(2) The final agency action under review is entitled "Revised 2023 and Later Model Year Light-Duty Vehicle Greenhouse Gas Emissions Standards," 86 Fed. Reg. 74,434 (Dec. 30, 2021) (the Final Rule). There are no related cases within the meaning of Circuit Rule 28(a)(1)(C). These consolidated cases have been designated for argument on the same day and before the same panel as *NRDC v. National Highway Traffic Safety Administration*, Case No. 22-1080 and consolidated cases. Order (Sept. 12, 2022).

RULE 26.1 DISCLOSURE STATEMENT

The Institute for Policy Integrity (Policy Integrity) is a nonpartisan, not-for-profit organization at New York University School of Law.* No publicly held entity owns an interest in Policy Integrity. Policy Integrity does not have any members who have issued shares or debt securities to the public.

* This brief does not purport to represent the views, if any, of New York University School of Law.

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GLOSSARY OF ACRONYMS AND ABBREVIATIONS

Pursuant to Circuit Rule 28(a)(3), the following is a glossary of acronyms and abbreviations used in this brief:

EPA	U.S. Environmental Protection Agency
EPA Br.	Answering Brief for EPA
Final Rule	Revised 2023 and Later Model Year Light-Duty Vehicle Greenhouse Gas Emissions Standards, 86 Fed. Reg. 74,434 (Dec. 30, 2021)
Fuel Br.	Brief for Private Petitioners
JA	Joint Appendix
NHTSA	National Highway Traffic Safety Administration
State Br.	Brief for State Petitioners

INTEREST OF *AMICUS CURIAE* AND AUTHORITY TO FILE

The Institute for Policy Integrity at New York University School of Law (Policy Integrity) is a nonpartisan, not-for-profit think tank dedicated to improving the quality of government decisionmaking through advocacy and scholarship in the fields of administrative law, economics, and public policy, with a focus on environmental issues.[1]

Policy Integrity publishes scholarship on the use of economic analysis in agency decisionmaking, including on cost-benefit analysis of vehicle emissions regulations and the "energy efficiency gap." *E.g.*, Rachel Rothschild & Jason A. Schwartz, Inst. for Pol'y Integrity, *Tune Up: Fixing Market Failures to Cut Fuel Costs and Pollution from Cars and Trucks* (2021).

Policy Integrity also produces scholarship and participates in administrative proceedings and litigation involving the social cost of greenhouse gases. For instance, Policy Integrity filed *amicus curiae* briefs in *Zero Zone, Inc. v. U.S. Department of Energy*, 832 F.3d 654 (7th Cir. 2016), which upheld the usage of the valuations that the Environmental

[1] Per Federal Rule of Appellate Procedure 29(a)(4)(E), no party's counsel authored this brief wholly or partly, and no person contributed money intended to fund its preparation or submission.

Protection Agency (EPA) applied in this rulemaking, and *California v. Bernhardt,* 472 F.Supp.3d 573 (N.D. Cal. 2020), which rejected an analysis that disregarded those valuations. Our staff has also written on the use of the social cost of greenhouse gases in regulatory analysis. *E.g.*, Richard L. Revesz & Max Sarinsky, *The Social Cost of Greenhouse Gases: Legal, Economic, and Institutional Perspective*, 39 Yale J. on Regul. 856 (2022).

Policy Integrity submits this *amicus curiae* brief to address misconceptions in several of Petitioners' arguments regarding regulatory precedents, the energy efficiency gap, and the social cost of greenhouse gases. Policy Integrity's expertise in vehicle emissions regulation and cost-benefit analysis provides a unique perspective on these arguments.

All parties have consented to the filing of this brief. A single joint *amicus curiae* brief is not practicable in this case due to the numerous and complicated legal issues involved.

SUMMARY OF ARGUMENT

Petitioners frame the Final Rule as a significant and improper departure from past EPA rules, but both the rule and its supporting regulatory analysis comport with decades of EPA vehicle regulation and extensive scientific and economic research. This brief focuses on three sets of Petitioners' arguments that overlook relevant regulatory history, conflict with sound scientific and economic analysis, or both.

I. Although Petitioners argue that EPA deviated from past practice by increasing the level of electric vehicle penetration; using averaging, banking, and trading; and independently issuing the Final Rule, each of those features aligns with past EPA practice. Because EPA's actions here were not unprecedented, they do not trigger the major questions doctrine.

II. Petitioners' disagreement with EPA over the existence and relevance of the "energy efficiency gap"—a phenomenon in which consumers fail to purchase and producers fail to supply fuel-efficient vehicles,[2] even when consumers would save more money on fuel than it would cost them to purchase more expensive, fuel-efficient vehicles—

[2] This brief uses "fuel efficient" as a shorthand for using less or no gasoline.

likewise fails. As it has done under Republican and prior Democratic administrations, EPA relied on peer-reviewed analysis to explain which market failures might account for this phenomenon. Where expert uncertainty existed, EPA described this uncertainty and justified its decision to rely on the scholarly evidence it found most compelling.

III. Finally, Petitioners' objection to the social cost of greenhouse gas emissions ignores that EPA's standards did not depend on these values to justify the Final Rule. Regardless, EPA rigorously justified its valuation of the Final Rule's climate benefits. As it has under prior administrations, EPA used values developed by the Interagency Working Group on the Social Cost of Greenhouse Gases (Working Group). Contrary to Petitioners' arguments, the Working Group's methodology accords with cutting-edge scholarship and, if anything, understates the costs of greenhouse gas emissions. EPA reasonably adopted the Working Group's estimates, which account for the many effects climate change will have on U.S. interests and use a discount rate appropriate for evaluating intergenerational impacts.

Because Petitioners' arguments ignore relevant regulatory precedents and sound scientific and economic analysis, this Court should reject them and deny the petitions.

ARGUMENT

I. The Final Rule Is Consistent With Decades Of EPA Rulemaking.

Petitioners erroneously argue that EPA's actions implicate the major questions doctrine because, according to Petitioners, the Final Rule raises a question of "vast economic and political significance." *E.g.*, Fuel Br. 22. Petitioners' arguments miss the mark because they misstate the relevant inquiry from *West Virginia v. EPA*, 142 S.Ct. 2587 (2022), and misconstrue EPA's actions.

In *West Virginia*, the Supreme Court did not hold that the major questions doctrine applies any time challengers contend that an agency action raises a question of "vast economic and political significance"; rather, the Court applied a framework that asks whether the agency's action (1) is "unheralded" and (2) represents a "transformative" change

in its authority.[3] *Id.* at 2610; *see also* Natasha Brunstein & Donald L.R. Goodson, *Unheralded and Transformative: The Test for Major Questions After* West Virginia, 47 Wm. & Mary Env't L. & Pol'y Rev. 47, 71–82, 87–93 (2023). If so, the action triggers the major questions doctrine and courts should view it with "skepticism," but that skepticism can be overcome with "clear congressional authorization." *West Virginia*, 142 S.Ct. at 2614. Although Petitioners get the inquiry wrong, they offer three main arguments as to why the Final Rule is unprecedented. Each fails because EPA acted consistently with decades of past practice under both Republican and Democratic administrations.

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[3] While petitioners argue that the costs of the Final Rule make it "one of the most expensive" in history, Fuel Br. 24, this is both legally irrelevant and factually misleading. *West Virginia* does not rely on costs as a relevant factor. 142 S.Ct. at 2610–14; *accord* Brunstein & Goodson, *supra*, at 80–82, 87–93 (explaining that costs played no role in the Court's legal analysis). And regulatory costs here are comparable to those of previous vehicle standards. In fact, the Final Rule's projected costs ($300 billion) are actually *less* than the costs for EPA's 2010 light-duty vehicle standards—without even accounting for inflation. *Compare* Final Rule, 86 Fed. Reg. at 74,443 tbl.4 ($300 billion in 2018 dollars through 2050 at a 3% discount rate on a calendar-year basis), *with* EPA, *Final Rulemaking to Establish Light-Duty Vehicle Greenhouse Gas Emission Standards and Corporate Average Fuel Economy Standards: Regulatory Impact Analysis* 6-13 tbl.6-14 (2010) ($346 billion in 2007 dollars through 2050 at a 3% discount rate on a calendar-year basis).

First, Petitioners point to EPA's projections that electric vehicle sales will increase under the Final Rule. Fuel Br. 25–26, 34–35. But EPA's modeling of its prior greenhouse gas tailpipe regulations also predicted increasing shares of electric vehicles in the light-duty vehicle market as a result of its standards. For example, in the 2020 rulemaking under the Trump Administration, the final standards were projected to increase fleetwide electric vehicle sales to 7.9% by model year 2029, as compared to 6.9% had EPA not required emissions reductions. NHTSA & EPA, *Final Regulatory Impact Analysis: The Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule for Model Year 2021–2026 Passenger Cars and Light Trucks* 2018 tbl.VIII-11 (2020). And the 2012 rulemaking under the Obama Administration was projected to increase electric vehicle penetration from 0% to 2% by model year 2025. EPA, *Regulatory Impact Analysis: Final Rulemaking for 2017–2025 Light-Duty Vehicle Greenhouse Gas Emission Standards and Corporate Average Fuel Economy Standards* 3-48 tbl.3.5-19, 3-54 tbl.3.5-25 (2012).

Although EPA projected that the Final Rule would lead to greater percentage increases than these past examples, those are differences of degree rather than of kind. *Cf. West Virginia*, 142 S.Ct. at 2610–11

(discussing as relevant precedents rules that operated similarly while ignoring the degree of change effected by those rules). Furthermore, economic literature establishes that adoption of innovative technology does not proceed linearly; it follows an S-shaped curve, with the adoption rate increasing more rapidly once a critical mass is reached[4]—as we are now seeing in electric vehicle adoption.[5]

Second, Petitioners object to EPA's use of fleetwide average emissions standards. Fuel Br. 51–52. This challenge is not properly before the Court. EPA Br. 35–38. Regardless, as Petitioners acknowledge, "EPA has long employed [fleetwide averaging] without significant industry pushback." Fuel Br. 51. That concession alone demonstrates fleetwide averaging is not unprecedented.

According to Petitioners, however, these past examples are irrelevant because "averaging has generally been offered as an accommodation to regulated parties" rather than a method to set the

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[4] *E.g.*, Everett M. Rogers, *Diffusion of Innovations* 344 (5th ed. 2003).
[5] *See, e.g.*, Tom Randall, *US Crosses the Electric-Car Tipping Point for Mass Adoption*, Bloomberg (July 9, 2022), https://www.bloomberg.com/news/articles/2022-07-09/us-electric-car-sales-reach-key-milestone (discussing the S-shaped technology adoption curve and noting that the United States has crossed the 5% market share "tipping point" that triggers "rapidly accelerating demand").

standard itself. *Id.* Perhaps "generally," but not always: EPA has used averaging, banking, and trading to set more stringent vehicle emissions standards than would otherwise be appropriate. *E.g.*, 2017 and Later Model Year Light-Duty Vehicle Greenhouse Gas Emissions and Corporate Average Fuel Economy Standards, 77 Fed. Reg. 62,624, 62,788 (Oct. 15, 2012) ("2012 Rule") (explaining that these programs are "an integral part of the standard setting itself . . . [and] not just an add-on to help reduce costs"); Control of Emissions of Air Pollution from 2004 and Later Model Year Heavy-Duty Highway Engines and Vehicles, 65 Fed. Reg. 59,896, 59,921 (Oct. 6, 2000) (averaging, banking, and trading allows EPA "to consider a lower emissions standard . . . compared to a standard that might otherwise be appropriate"); Control of Air Pollution from New Motor Vehicles, 65 Fed. Reg. 6698, 6744 (Feb. 10, 2000) (fleetwide averaging enables EPA to set "a more stringent emission standard" and allow for earlier implementation).

Petitioners seem to recognize these past examples cut against their position, as they further attempt to distinguish this rulemaking by claiming that EPA is now "'averaging' in more and more zeros." Fuel Br. 37–38. Once again, this is nothing new. EPA has allowed automakers to

count electric vehicles as "zeros" in their fleetwide compliance averages in all past greenhouse gas tailpipe standards. Light-Duty Vehicle Greenhouse Gas Emission Standards and Corporate Average Fuel Economy Standards, 75 Fed. Reg. 25,324, 25,341 (May 7, 2010); 2012 Rule, 77 Fed. Reg. at 62,651; The Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule for Model Years 2021–2026 Passenger Cars and Light Trucks, 85 Fed. Reg. 24,174, 24,178 (Apr. 30, 2020). And in another mobile source regulation, EPA "averaged zeros" in its phaseout—and eventual ban—of leaded gasoline. There, EPA used an averaging program to set an aggressive grams-per-gallon target that allowed cross-grade averaging of unleaded (i.e., "zeros" in the refiners' averages) and leaded gasoline. Controls Applicable to Gasoline Refineries Lead Phase-Down Regulations, 44 Fed. Reg. 53,144, 53,144–45 (Sept. 12, 1979).

Finally, Petitioners object to EPA issuing standards alone rather than with NHTSA. Fuel Br. 35. But even when the two agencies issued rules "jointly," each agency still conducted independent analyses and used different modeling programs in light of their "wholly independent" statutory obligations. *See* Final Rule, 86 Fed. Reg. at 74,474 (explaining EPA and NHTSA's use of distinct modeling programs in the 2010 and

2012 rulemakings); *Massachusetts v. EPA*, 549 U.S. 497, 532 (2007); *see also* Response to Comments 25-17 to -18.

In a similar vein, Petitioners also object to the Final Rule's cost-benefit analysis, arguing that EPA arbitrarily and capriciously departed from past agency practice. State Br. 24–27; Fuel Br. 64–68. As explained in sections II and III, *infra*, however, Petitioners' arguments misconstrue EPA's actions and ignore their consistency with prior EPA rulemakings.

II. EPA Provided Ample Evidence Of Market Failures That Explain Why, Absent Regulation, Consumers Under-Purchase Vehicles That Will Save Them Money.

Because some of the technologies that reduce conventional vehicles' greenhouse gas emissions can also improve their fuel efficiency, and other technologies—such as electric vehicles—avoid liquid fuel entirely, EPA projected that the Final Rule would save consumers money on fuel. Petitioners contend that EPA's cost-benefit analysis overstated the Final Rule's net benefits to consumers from their purchase of more fuel-efficient cars: If the Final Rule truly benefited consumers, Petitioners argue, consumers would purchase more fuel-efficient cars without EPA's intervention. Fuel Br. 65. As EPA explained, however, consumers do not always purchase vehicles that will save them money over time—a

phenomenon known as the "energy efficiency gap" or "energy paradox." Petitioners nonetheless maintain that EPA (1) did not adequately support the existence of the market failures causing this phenomenon and (2) unreasonably dismissed the alternative explanation that other "adverse effects" outweigh fuel savings for consumers. *Id.* at 65–68. Petitioners are wrong on both counts.

A. EPA pointed to abundant evidence showing that market failures cause the energy efficiency gap.

The energy efficiency gap can be explained as follows. Fuel-efficient vehicles already exist, and lifetime consumer fuel savings from those vehicles exceed the vehicles' additional purchase costs. Savvy consumers should thus be motivated to buy these cars—and automakers to sell them—absent regulation. But neither consumers nor automakers act as one would expect.

Petitioners question this phenomenon's existence, calling it the "supposed 'energy efficiency gap.'" *Id.* at 65–66. But EPA has long acknowledged this phenomenon. In its 2010 and 2012 light-duty vehicle rulemakings and in its 2016 Midterm Evaluation of those standards, EPA discussed the energy efficiency gap and theories explaining its existence. 75 Fed. Reg. at 25,510–13; 77 Fed. Reg. at 62,913–17; EPA,

Proposed Determination on the Appropriateness of the Model Year 2022–2025 Light-Duty Vehicle Greenhouse Gas Emissions Standards Under the Midterm Evaluation A-27 to -34 (2016), JA121–28. EPA also discussed the energy efficiency gap in its 2020 rulemaking under the Trump Administration and included the full value of fuel savings as a regulatory benefit—just as it had done previously. 85 Fed. Reg. at 24,200, 24,603–13.

Petitioners further contend that EPA failed to adequately demonstrate that market failures cause the energy efficiency gap. Fuel Br. 66–67. Yet, in its Regulatory Impact Analysis, EPA offered multiple theories to explain this phenomenon. Consumers might lack the information necessary to determine anticipated fuel savings; myopically undervalue future fuel savings; or focus excessively on visible attributes like vehicle size and less on nonobvious attributes like fuel savings. EPA, *Revised 2023 and Later Model Year Light-Duty Vehicle GHG Emissions Standards: Regulatory Impact Analysis* 8-4 (2021) ("RIA"), JA989. Conversely, producers might underproduce fuel-efficient vehicles because they do not want to expend resources to develop new technologies that other producers will then copy. *Id.* at 8-5 to -6, JA990–91. There may

also be network effects to the adoption of fuel-efficient technology such that the cost of the technology decreases and its quality improves only once several producers compete for sales. *Id.* at 8-6, JA991. These are only a few of the many theories that EPA provided to explain the energy efficiency gap, most of which are discussed in a National Academies report from 2021. *Id.* at 8-4 to -6, JA989–91; Nat'l Acads. Scis., Eng'g & Med., *Assessment of Technologies for Improving Light-Duty Vehicle Fuel Economy 2025–2035*, at 311–17 (2021).

Furthermore, this was not the first time EPA discussed the market failures that drive the energy efficiency gap. Citing extensive scholarship, EPA has addressed the paradox over the years, recognizing how it is readily explained by a range of market failures. *E.g.*, 75 Fed. Reg. at 25,510 (citing Adam B. Jaffe & Robert N. Stavins, *The Energy Paradox and the Diffusion of Conservation Technology*, 16 Res. & Energy Econ. 91 (1994)); 77 Fed. Reg. at 62,914 & n.798 (citing Gloria Helfand & Ann Wolverton, *Evaluating the Consumer Response to Fuel Economy: A Review of the Literature*, 5 Int'l Rev. Env't & Res. Econ. 103 (2011)).

Petitioners argue that, because the scholarly community lacks consensus about the cause and magnitude of the relevant market

failures, EPA failed to adequately justify its standards. Fuel Br. 66–67. But there is uncertainty regarding only *which* market failures contribute at what *magnitude* to the energy efficiency gap—not whether market failures cause the energy efficiency gap. *See* Nat'l Acads. Scis., Eng'g & Med., *supra*, at 312 (recognizing "general agreement that the actual fuel savings realized over time should be fully valued in cost-benefit analysis"). And EPA explained as much, noting only that it "cannot demonstrate at this time *which specific failures* operate in this market." Final Rule, 86 Fed. Reg. at 74,501 (emphasis added).

In any event, scholarly debate does not render an agency's decision arbitrary. Agencies regularly make decisions under conditions of uncertainty; in fact, they must. *See Motor Vehicle Mfrs. Ass'n of U.S. v. State Farm Mut. Auto. Ins.*, 463 U.S. 29, 52 (1983) (If "the available data does not settle a regulatory issue," an agency must "exercise its judgment in moving from the facts and probabilities on the record to a policy conclusion."). When, as here, there is widespread consensus that market

failures exist, EPA must discuss relevant uncertainties and choose a reasonable path forward.[6] EPA did so.

B. EPA explained why increasing fuel efficiency is unlikely to negatively affect vehicle performance.

Petitioners also dispute EPA's rejection of an alternative theory explaining the energy efficiency gap: that "adverse effects" on vehicle performance associated with fuel-efficient technology outweigh consumers' fuel savings. Fuel Br. 67–68. They incorrectly contend that EPA based its rejection of that theory on a single, non-peer-reviewed working paper. *Id.*

To the contrary, EPA cited several studies supporting its position; most were peer-reviewed. *See, e.g.*, Final Rule, 86 Fed. Reg. at 74,500 (citing Gloria Helfand et al., *Searching for Hidden Costs: A Technology-Based Approach to the Energy Efficiency Gap in Light-Duty Vehicles*, 98 Energy Pol'y 590 (2016) (finding it possible to employ fuel-saving

[6] Petitioners' reliance on *American Public Gas Ass'n v. U.S. Department of Energy*, 22 F.4th 1018, 1027–28 (D.C. Cir. 2022), is misplaced because the agency there "lackadaisical[ly]" "assum[ed] a purchaser's decisions will not align with its economic interests" and did not adequately explain the existence of market failures supporting that assumption. *Id.* at 1027. Here, EPA thoroughly explained the energy efficiency gap (as EPA did in 2010, 2012, 2016, and 2020) and multiple market failures that could cause it. Final Rule, 86 Fed. Reg. at 74,500–01.

technologies without affecting other vehicle characteristics); Hsing-Hsiang Huang et al., *Re-Searching for Hidden Costs: Evidence from the Adoption of Fuel-Saving Technologies in Light-Duty Vehicles*, 65 Transp. Rsch. 194 (2018) (same)). One of these studies even suggests that vehicles with fuel-efficient technology are *less* likely to receive negative evaluations of other operational characteristics. Helfand et al., *supra*, at 605.

Of course, not all studies come to identical conclusions. In its Regulatory Impact Analysis, EPA presented research finding potential tradeoffs between fuel efficiency and other vehicle attributes. RIA 8-2, JA987. But it also described why this research was less compelling than the studies rejecting those tradeoffs. Importantly, those studies use historical data on tradeoffs between fuel efficiency and vehicle power—a relationship that may not stay constant. RIA 8-2 to -3, JA987–88 (citing Andrew Moskalik et al., *Representing GHG Reduction Technologies in the Future Fleet with Full Vehicle Simulation*, 11 SAE Int'l J. Fuels & Lubricants 469 (2018)); *see also* EPA, *The 2022 EPA Automotive Trends Report* ES-4 (2022) (showing how, in contrast with earlier periods, vehicle

fuel economy has risen alongside vehicle horsepower since the early 2000s).

Difficult scientific questions rarely produce expert consensus. When, as here, the "available data does not settle a regulatory issue," an agency need only "explain the evidence which is available" and "offer a rational connection between the facts found and the choice made." *State Farm*, 463 U.S. at 52. EPA did just that.

III. EPA Used A Rigorous Methodology To Evaluate The Social Cost Of Greenhouse Gases, And Its Estimates Are Appropriate In Scope And Discount Rate.

Petitioners also attack EPA's use of the Working Group's social cost of greenhouse gas figures. State Br. 24–26. But EPA did not depend on these values in setting its standards, EPA Br. 86, as the Final Rule's benefits would exceed its costs even if climate benefits were excluded, Final Rule, 86 Fed. Reg. at 74,511 tbls.47–48 (finding that the rule generates $190 billion in net benefits at a 3% discount rate, including $130 billion in climate benefits).

Even assuming, for the sake of argument, that EPA's standards depended on the Working Group's values, Petitioners' arguments still lack merit. EPA used climate-damage values resulting from a lengthy,

consensus-based process. These values properly include damages deriving from transboundary climate impacts that will directly and indirectly affect U.S. interests. And these values reflect the use of a discount rate appropriate for long-term effects. Contrary to Petitioners' assertions, EPA justified its climate-damage numbers, which scientific and economic experts have widely endorsed.

A. EPA based its estimates on the results of a years-long, science-based process.

Petitioners claim that EPA "blindly adopt[ed]" its climate-damage estimates and failed to explain why its estimates differ from those it used in 2020. State Br. 25–26. Not so. EPA selected appropriate values to use in its cost-benefit analysis, employing a process it has used for years and across Republican and Democratic administrations.

The social cost of a greenhouse gas—calculated for carbon dioxide, methane, and nitrous oxide—represents the estimated "monetary value of the net harm to society associated with a marginal increase in emissions in a given year, or the benefit of avoiding that increase." Final Rule, 86 Fed. Reg. at 74,504. Although experts first developed these estimates in the 1990s, federal agencies did not regularly use them until the Ninth Circuit found NHTSA's fuel-efficiency rule arbitrary and

capricious because its cost-benefit analysis failed to value the rule's climate impacts. *Ctr. for Biological Diversity v. Nat'l Highway Traffic Safety Admin.*, 538 F.3d 1172, 1198–1203 (9th Cir. 2008). EPA, under the George W. Bush Administration, then endorsed the use of a global climate-damage value at discount rates of 2–3%. EPA, *Technical Support Document on Benefits of Reducing GHG Emissions* 13 (2008); Regulating Greenhouse Gas Emissions Under the Clean Air Act, 73 Fed. Reg. 44,354, 44,414–16 (July 30, 2008) (endorsing a "global analysis").

In 2009, President Obama convened the Working Group to ensure that the federal government used consistent, scientifically rigorous values to estimate climate damages. The Working Group, which includes EPA, released estimates in 2010 and updated them in 2013 and 2016. Interagency Working Grp., *Technical Support Document: Social Cost of Carbon, Methane, and Nitrous Oxide* 2 (2021) ("2021 TSD"). The Working Group based these estimates, which were subject to public comment, on three widely used independent models of climate change. *Id.* at 2–3. All these models appeared in peer-reviewed economic journals; one earned William Nordhaus the Nobel Prize in Economics.

In developing its climate-damage estimates, the Working Group applied several discount rates, settling on a central discount rate of 3%. *Id.* at 17. The Working Group also chose to estimate climate damages on a global basis because U.S. emissions reductions spur reciprocal foreign emissions reductions and many climate damages that begin in other countries "spill over" into the United States due to the interconnected nature of global markets, migration patterns, and health effects. *Id.* at 14–16. The Seventh Circuit upheld a federal agency's use of these values. *Zero Zone, Inc. v. U.S. Dep't of Energy*, 832 F.3d 654, 679 (7th Cir. 2016). The National Academies also endorsed the Working Group's approach and offered recommendations for future updates. Nat'l Acads. Scis., Eng'g & Med., *Valuing Climate Damages: Updating Estimation of the Social Cost of Carbon Dioxide* 2 (2017) ("NAS 2017").

For years, EPA used the Working Group's climate-damage estimation methodology in various rulemakings, including its 2010 and 2012 tailpipe standards. 75 Fed. Reg. at 25,592–95; 77 Fed. Reg. at 63,004–06. Other agencies applied these valuations in dozens of rulemakings. Peter Howard & Jason A. Schwartz, *Think Global: International Reciprocity as Justification for a Global Social Cost of*

Carbon, 42 Colum. J. Env't L. 203, 270–84 (2017) (listing uses through mid-2016).

Despite federal agencies' consistent use of the Working Group's climate-damage estimates, President Trump disbanded the Working Group and withdrew its technical support documents. Exec. Order No. 13,783 §§ 5(b)–(c), 82 Fed. Reg. 16,093, 16,095–96 (Mar. 28, 2017). Agencies began to use the previously rejected 7% discount rate and omitted all climate impacts that originate outside U.S. borders, resulting in significantly lower damage estimates. *E.g.*, EPA, *Regulatory Impact Analysis for the Repeal of the Clean Power Plan* 7-1 (2019). These estimates departed from the Working Group's rigorous methodology, and a federal court vacated an agency action that used them because it disregarded the "best available science about monetizing the impacts of greenhouse gas emissions." *California v. Bernhardt*, 472 F.Supp.3d 573, 611–12 (N.D. Cal. 2020).

In 2021, President Biden reconvened the Working Group. Exec. Order No. 13,990 § 5(a), 86 Fed. Reg. 7037, 7040 (Jan. 25, 2021). Soon after, the Working Group readopted its previous estimates on an interim basis and began a process to update them to account for advances in

science and economics. 2021 TSD 3, 36. EPA continues to participate in the Working Group and independently evaluated the group's interim estimates, concluding that they were appropriate for use in this rulemaking. RIA 3-31, JA867.[7]

This history demonstrates that, contrary to Petitioners' assertions, State Br. 24–25, EPA's use of the Working Group's estimates is not unprecedented. Rather, the estimates used in this rulemaking mark a return to the collaborative, science-based approach EPA took across the George W. Bush and Obama Administrations.

And EPA thoroughly explained this return to form. The Regulatory Impact Analysis accompanying the Final Rule explains that the estimates used in the 2020 Rule "fail[ed] to reflect the full impact of GHG emissions in multiple ways" because they ignored that (1) climate impacts beyond U.S. borders affect the welfare of U.S. citizens and

[7] In a proposed rule published in late 2022, EPA conducted a sensitivity analysis using an updated social cost of methane figure. Standards of Performance for New, Reconstructed, and Modified Sources and Emissions Guidelines for Existing Sources, 87 Fed. Reg. 74,702, 74,843 (Dec. 6, 2022). This value, which EPA derived using the latest scientific and economic research, is larger than the Working Group's value for methane, indicating that the climate-damage valuation EPA applied here is a conservative underestimate. *Id.*

residents, (2) U.S. climate change mitigation activities affect other countries' mitigation activities, and (3) climate damages should be discounted using the consumption rate of interest (3%), not the social rate of return on capital (7%). RIA 3-31 to -33, JA867–69. The rest of this brief elaborates on these points in the context of Petitioners' objections.

B. EPA appropriately used global climate-damage estimates.

Petitioners argue that EPA's use of global climate-damage estimates renders the Final Rule arbitrary and capricious. State Br. 24–25. According to Petitioners, Circular A-4, the Clean Air Act, and the presumption against extraterritoriality forbid EPA from considering climate harms that initially occur outside U.S. borders. Petitioners also claim that EPA considered global effects inconsistently. Each argument fails. As this section explains, it was reasonable—perhaps required—for EPA to use global damage estimates, and its use of these estimates ensured that EPA captured impacts that "accrue to citizens and residents of the United States." Off. of Mgmt. & Budget, Circular A-4: Regulatory Analysis 15 (2003) ("Circular A-4"), JA802.

1. Transboundary climate damages directly and indirectly affect U.S. interests.

National interests extend beyond a country's borders, particularly for a superpower like the United States. Climate change impacts that initially occur abroad will have both direct and indirect effects on U.S. citizens and residents and physical and financial assets. Regarding direct effects, around nine million U.S. citizens live overseas, thousands of whom serve in the military. 2021 TSD 15; *Bernhardt*, 472 F.Supp.3d at 613. U.S. companies possess billions of dollars' worth of assets abroad, and U.S. citizens own trillions of dollars in foreign equity and debt. *Id.*; 2021 TSD 15. The effects of climate change abroad will directly harm these people and valuable resources, recommending consideration of transboundary climate impacts.

As the Working Group also recognized, climate change will indirectly implicate U.S. national security, trade, and population health. The Department of Defense views climate change as an "existential threat" with "physical and social impacts" that "transcend political boundaries, increasing the risk that crises cascade beyond any one country or region." Dep't of Def., *Climate Risk Analysis* 4–5 (2021). The same report describes how climate change will affect migration patterns,

global supply chains, food availability, political instability, and the spread of vector-borne diseases, each of which could pose grave challenges to the United States. *Id.* at 9. EPA discussed these issues and cited the Working Group's analysis, which fleshes out the effects of "global" climate harm on the United States. RIA 3-31, JA867; 2021 TSD 15 (describing the potential for global climate damage to negatively impact the U.S. economy, which exports $2 trillion and imports $3 trillion worth of goods and services each year).

2. Domestic emissions reductions spur reciprocal behavior by other nations.

Accounting for global climate damages offers another benefit: If the United States reduces its greenhouse gas emissions, foreign nations are more likely to reduce their own emissions, which in turn will benefit U.S. citizens and residents. As the Working Group explained, "the only way to achieve an efficient allocation of resources for emissions reduction on a global basis is for all countries to base their policies on global estimates of damages." 2021 TSD 16. By using a "global" climate-damage value, EPA rightfully accounted for the benefits that will accrue to the United States because of its commitment to reducing greenhouse gases.

Relying on principles of game theory and reciprocity, extensive economic scholarship supports taking a global approach to climate damages. *See id.* (citing, *inter alia*, Howard & Schwartz, *supra*; Robert E. Kopp & Bryan K. Mignone, *Circumspection, Reciprocity, and Optimal Carbon Prices*, 120 Climatic Change 831 (2013)). One report finds that, in response to U.S. emissions-reduction pledges, other nations have pledged to reduce their emissions more than sixfold. *Id.* (citing Trevor Houser & Kate Larsen, Rhodium Grp., *Calculating the Climate Reciprocity Ratio for the U.S.* (2021)). Another report estimates that the United States could gain over $10 trillion in benefits over the next three decades from other nations reducing emissions. Peter Howard & Jason Schwartz, Inst. for Pol'y Integrity, *Foreign Action, Domestic Windfall* 2 (2015). In fact, many countries have adopted the Working Group's climate-damage valuation methodology and accounted for global climate impacts. Jason Schwartz, Inst. for Pol'y Integrity, *Strategically Estimating Climate Pollution Costs in a Global Environment* 10–11 (2021); *see also* EPA, *EPA External Review Draft of Report on the Social Cost of Greenhouse Gases: Estimates Incorporating Recent Scientific Advances* 14–15 (2022).

Although EPA started using a global climate-damage valuation in 2008, it considered international reciprocity in earlier decisionmaking and cost-benefit analysis, including in rulemakings under the Clean Air Act. Among other examples, when EPA began its highly successful program of stratospheric ozone regulation under the Reagan Administration, the agency recognized that it could "consider . . . other countries' willingness to take regulatory action" in "deciding whether and how to regulate." Protection of Stratospheric Ozone, 53 Fed. Reg. 30,566, 30,569 (Aug. 12, 1988). "Consideration of the international ramifications of United States action" was also warranted when "analyzing the cost and feasibility of controls." *Id.* In its corresponding Regulatory Impact Analysis, EPA estimated program benefits based on international participation rates and the influence that EPA regulation would have on those rates. 1 EPA, *Regulatory Impact Analysis: Protection of Stratospheric Ozone* 5-4 to -12 (1988). EPA's use of global climate-damage estimates similarly acknowledges that the domestic benefits of a regulation depend partly on how other countries respond.

3. The presumption against extraterritoriality does not apply to domestic actions, and agencies frequently consider transboundary effects.

As Petitioners note, "[a]bsent clearly expressed congressional intent to the contrary, federal laws will be construed to have only domestic application." State Br. 25 (quoting *RJR Nabisco, Inc. v. Eur. Cmty.*, 579 U.S. 325, 335 (2016)). True enough. But Petitioners overlook that the presumption against extraterritoriality applies only when the regulated conduct at issue occurs beyond U.S. borders; it does not apply when "the conduct regulated by the government occurs within the United States." *Env't Def. Fund, Inc. v. Massey*, 986 F.2d 528, 531 (D.C. Cir. 1993); *see also WesternGeco LLC v. ION Geophysical Corp.*, 138 S.Ct. 2129, 2137 (2018) ("If the conduct relevant to the statute's focus occurred in the United States, then the case involves a permissible domestic application of the statute." (quotation omitted)). While the presumption would likely forbid EPA from regulating foreign vehicle markets, it has no bearing on whether EPA can consider the extraterritorial impacts of domestic standards.

Furthermore, the National Environmental Policy Act directs all federal agencies to "recognize the worldwide and long-range character of

environmental problems and . . . lend appropriate support to . . . programs designed to maximize international cooperation in anticipating and preventing a decline in the quality of mankind's world environment." 42 U.S.C. § 4332(2)(F). Interpreting that language, this Court has required agencies to consider transboundary environmental impacts, *Massey*, 986 F.2d at 536, and agencies have done so for decades, *see* Exec. Order No. 12,114, § 2-3, 44 Fed. Reg. 1957, 1957 (Jan. 4, 1979) (instructing agencies to consider the effects of their actions on the "environment of a foreign nation" and "the global commons"). Petitioners would have EPA disregard transboundary climate impacts despite the federal government's longstanding policy of considering them.

4. EPA accounted for other global effects in its analysis.

Petitioners also accuse EPA of conducting an "inconsistent" cost-benefit analysis that monetized global climate benefits while disregarding other global effects. State Br. 26. This argument fails because, as explained above, climate change presents unique spillover and reciprocity issues that affect U.S. welfare.

Regardless, EPA's use of global climate-damage estimates is consistent with the rest of its cost-benefit analysis, as its analysis also

included transboundary costs. Specifically, much of the Final Rule's compliance costs are likely to accrue to the owners of regulated vehicle manufacturers, many of whom are presumably foreigners because foreigners own about 40% of U.S. corporate equity. Steve Rosenthal & Theo Burke, Urban-Brookings Tax Pol'y Ctr., *Who's Left to Tax? US Taxation of Corporations and Their Shareholders* 1 (2020). And many of the country's largest automakers—Toyota, BMW, Nissan, Mercedes, Stellantis (Fiat Chrysler), Volkswagen, and others—are headquartered abroad. The Final Rule's compliance costs will therefore fall partly on foreign actors, but EPA did not break out these "global" costs separately from "domestic" costs. Perhaps for this reason, Petitioners do not identify any "global" costs or benefits that EPA failed to include in its analysis.

C. EPA used an appropriate range of discount rates.

Petitioners' final critiques of EPA's cost-benefit analysis—that EPA (1) did not explain its choice of discount rate and (2) used discount rates inconsistently, State Br. 25–26—similarly fall short.

In economics, a discount rate translates impacts that occur at different times into a common present value. Because individuals have a positive time preference—meaning we value present welfare over future

welfare—a discount rate reduces the value of future impacts. Circular A-4 at 32, JA812. Circular A-4 recommends that, in general, agencies use discount rates of 3% (the estimated rate at which society discounts future versus present consumption) and 7% (the anticipated rate of return to capital). *Id.* at 33–34, JA812–13. When regulation primarily affects private consumption—i.e., when it affects consumer prices for goods—the lower discount rate is more appropriate. *Id.*, JA812–13; *see also* 2021 TSD 18.

While these base discount rates are helpful benchmarks, Circular A-4 recognizes that they may be inappropriate for estimating all future costs and benefits. When accounting for costs and benefits that will accrue to future generations, it is appropriate to use lower discount rates because (1) personal time preferences should not dictate how society treats future generations and (2) market-based discount rates become increasingly uncertain further in time. Circular A-4 at 35–36, JA814.

Outside the climate context, EPA has used lower discount rates when accounting for long-term impacts. For example, when promulgating regulations to protect the ozone layer from chlorofluorocarbons, EPA, under the Reagan Administration, used a central discount rate of 2%. 53

Fed. Reg. at 30,595 tbl.4. As EPA explained, the rule's extended time horizon called for a "more refined selection" of discount rates. 2 EPA, *Regulatory Impact Analysis: Protection of Stratospheric Ozone* app. H-20 (1988). EPA again used a 2% discount rate under the George W. Bush Administration when it amended its regulations on refrigerant recycling to further protect the ozone layer. Protection of Stratospheric Ozone, 69 Fed. Reg. 11,946, 11,975 (Mar. 12, 2004). And in 2005, EPA applied a 1% discount rate as part of its analysis of the Clean Air Mercury Rule "due to the potential for intergenerational effects" from mercury pollution. Standards of Performance for New and Existing Stationary Sources, 70 Fed. Reg. 28,606, 28,642 (May 18, 2005).

In calculating the Final Rule's climate benefits, EPA reasonably used a central rate of 3%. Citing the Working Group's analysis, EPA stated that, based on Circular A-4 and the academic literature, "the use of 7 percent is not considered appropriate for intergenerational discounting." RIA 3-33, JA869 (quotation omitted). As the Working Group explained, climate-damage values are estimated in terms of consumption, and related benefits should therefore be discounted using

a consumption-based rate; here, 3%.[8] 2021 TSD 18–19. Additionally, economic research finds that uncertainty over long-term economic conditions counsels for a "discount rate that declines over time," meaning a 7% rate is particularly inappropriate for long-term effects. *Id.* at 21. If anything, "the latest data . . . indicates that the 3 percent discount rate . . . is likely an overestimate." *Id.* at 17.

Thus, it was appropriate for EPA to use a lower set of rates to calculate climate benefits than to calculate other costs and benefits, which accrue over a shorter time period. The National Academies endorsed that very approach. NAS 2017 at 182. In any event, EPA *did* conduct an analysis in which it used a consistent 3% discount rate across all costs and benefits; it found net benefits of $190 billion. Final Rule, 86 Fed. Reg. at 74,511 tbl.48.

CONCLUSION

For the foregoing reasons, this Court should deny the petitions.

[8] EPA and the Working Group used discount rates of 5% and 2.5% in sensitivity analyses to account for the possibility that (1) the return to investments in climate mitigation are correlated with the overall market rate of return and (2) interest rates are uncertain over time. 2021 TSD 17.

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Respectfully submitted,

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CERTIFICATE OF COMPLIANCE

This brief complies with the type-volume limitations of Federal Rule of Appellate Procedure 29(a)(5) because this brief contains 6,485 words as counted by counsel's word processing system, excluding the parts of the brief exempted by Federal Rule of Appellate Procedure 32(f). This brief complies with the typeface requirements of Federal Rule of Appellate Procedure 32(a)(5) and the type-style requirements of Federal Rule of Appellate Procedure 32(a)(6) because it has been prepared in a proportionally spaced typeface using Microsoft Word in Century Schoolbook 14-point font.

DATED: April 26, 2023

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CERTIFICATE OF SERVICE

I hereby certify that on this 26th day of April 2023, a true and correct copy of the foregoing Final Brief of the Institute for Policy Integrity at New York University School of Law as *Amicus Curiae* in Support of Respondents was filed with the Clerk of the United States Court of Appeals for the District of Columbia Circuit via the Court's CM/ECF system. Counsel for all parties are registered CM/ECF users and will be served by the appellate CM/ECF system.

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