

538 F.3d 1172

United States Court of Appeals,

Ninth Circuit.

CENTER FOR BIOLOGICAL
DIVERSITY, Petitioner,

v.

NATIONAL HIGHWAY TRAFFIC
SAFETY ADMINISTRATION,
Respondent.

Sierra Club; Public Citizen, Inc.,
Petitioners,

v.

Department of Transportation,
Respondent.

People of the State of California ex rel.
Bill Lockyer, Attorney General; State of
Connecticut; State of Maine;
Commonwealth of Massachusetts; State
of New Jersey; State of New Mexico;
State of New York; State of Oregon;
State of Rhode Island; State of Vermont;
District of Columbia; City of New York,
Petitioners,

v.

National Highway Traffic Safety
Administration, an Agency Within the
United States Department of
Transportation, Respondents.

Environmental Defense, Petitioner,

v.

Department of Transportation,
Respondent.

Natural Resources Defense Council,
Inc., Petitioner,

v.

Department of Transportation,
Respondent.

State of Minnesota, Petitioner,

v.

National Highway Traffic Safety
Administration, an Agency Within the
United States Department of
Transportation, Respondent.

Nos. 06–71891, 06–72317, 06–72641,
06–72694, 06–73807, 06–73826. |
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On Petition for Review of an Order of the Dept. of Transportation, NTSB. TRAN No. Reg. 17,566, TRAN No. Energy Policy Act, TRAN No. NHTSA 2006–24306.

Before: B. FLETCHER, EUGENE E. SILER, JR.,* and HAWKINS, Circuit Judges.

* * * * *

[Order correcting and vacating prior decision in this case omitted. Note: many footnotes omitted.]

* The Honorable Eugene E. Siler, Jr., Senior United States Circuit Judge for the Sixth Circuit, sitting by designation.

OPINION

BETTY B. FLETCHER,
Circuit Judge:

Eleven states, the District of Columbia, the City of New York, and four public interest organizations petition for review of a rule issued by the National Highway Traffic Safety Administration (NHTSA) entitled “Average Fuel Economy Standards for Light Trucks, Model Years 2008–2011,” 71 Fed. Reg. 17,566 (Apr. 6, 2006) (“Final Rule”) (codified at 49 C.F.R. pt. 533). Pursuant to the Energy Policy and Conservation Act of 1975 (EPCA), 49 U.S.C. §§ 32901–32919 (2007), the Final Rule sets corporate average fuel economy (CAFE) standards for light trucks, defined by NHTSA to include many Sport Utility Vehicles (SUVs), minivans, and pickup trucks, for Model Years (MYs) 2008–2011. For MYs 2008–2010, the Final Rule sets new CAFE standards using its traditional method, fleet-wide average (Unreformed CAFE). For MY 2011 and beyond, the Final Rule creates a new CAFE structure that sets varying fuel economy targets depending on vehicle size and requires manufacturers to meet different fuel economy levels depending on their vehicle fleet mix (Reformed CAFE).

Petitioners challenge the Final Rule under the EPCA and the National Environmental Policy Act of 1969 (NEPA), 42 U.S.C. §§ 4321–4347 (2007). First, they argue that the Final Rule is arbitrary, capricious, and contrary to the EPCA because (a) the agency’s cost-benefit analysis does not set the CAFE standard at the “maximum feasible” level and fails to give due consideration to the need of the nation to conserve energy; [and] (b) its calculation of the costs and benefits of alternative fuel economy

standards assigns zero value to the benefit of carbon dioxide (CO₂) emissions reduction[.]

[Note: a number of issues are redacted in this edited opinion, including NHTSA’s treatment of vehicle weight reductions, “backstop” standards, the transition period between different types of standards, the “SUV loophole,” and the decision to not regulate vehicles weighing between 8,500 and 10,000 pounds.]

Second, Petitioners argue that NHTSA’s Environmental Assessment is inadequate under NEPA because it fails to take a “hard look” at the greenhouse gas implications of its rulemaking and fails to analyze a reasonable range of alternatives or examine the rule’s cumulative impact. Petitioners also argue that NEPA requires NHTSA to prepare an Environmental Impact Statement.

NHTSA argues that the Final Rule is not arbitrary and capricious or contrary to the EPCA, the Environmental Assessment’s evaluation of the environmental consequences of its action is adequate, and an Environmental Impact Statement is not required.

We have jurisdiction under 49 U.S.C. § 32909(a) to review the Final Rule issued by NHTSA. We hold that the Final Rule is arbitrary and capricious, contrary to the EPCA in its failure to monetize the value of carbon emissions, failure to set a backstop, failure to close the SUV loophole, and failure to set fuel economy standards for all vehicles in the 8,500 to 10,000 gross vehicle weight rating (“GVWR”) class. We also hold that the Environmental Assessment was inadequate and that Petitioners have raised a substantial question as to whether the Final Rule may have a significant impact

on the environment. Therefore, we remand to NHTSA to promulgate new standards as expeditiously as possible and to prepare either a revised Environmental Assessment or an Environmental Impact Statement.

I. FACTUAL AND PROCEDURAL BACKGROUND

A. CAFE Regulation Under the Energy Policy and Conservation Act

In the aftermath of the energy crisis created by the 1973 Mideast oil embargo, Congress enacted the Energy Policy and Conservation Act of 1975, Pub. L. No. 94-163, 89 Stat. 871, 901-16. See H.R. Rep. No. 94-340 at 1-3 (1975), as reprinted in 1975 U.S.C.C.A.N. 1762, 1763-65. Congress observed that “[t]he fundamental reality is that this nation has entered a new era in which energy resources previously abundant, will remain in short supply, retarding our economic growth and necessitating an alteration in our life’s habits and expectations.” *Id.* at 1763. The goals of the EPCA are to “decrease dependence on foreign imports, enhance national security, achieve the efficient utilization of scarce resources, and guarantee the availability of domestic energy supplies at prices consumers can afford.” S. Rep. No. 94-516 (1975) (Conf. Rep.), as reprinted in 1975 U.S.C.C.A.N. 1956, 1957. These goals are more pressing today than they were thirty years ago: since 1975, American consumption of oil has risen from 16.3 million barrels per day to over 20 million barrels per day, and the percentage of U.S. oil that is imported has risen from 35.8 to 56 percent. NRDC Cmt. at 11; *see also* 71 Fed. Reg. at 17,644.

In furtherance of the goal of energy conservation, Title V of the EPCA establishes automobile fuel economy standards. An “average fuel economy standard” (often referred to as a CAFE standard) is “a performance standard specifying a minimum level of average fuel economy applicable to a manufacturer in a model year.” 49 U.S.C. § 32901(a)(6) (2007). Only “automobiles” are subject to fuel economy regulation, and passenger automobiles must meet a statutory standard of 27.5 mpg, 49 U.S.C. § 32902(b), whereas non-passenger automobiles must meet standards set by the Secretary of Transportation, *id.* § 32902(a). Congress directs the Secretary to set fuel economy standards at “the maximum feasible average fuel economy level that the Secretary decides the manufacturers can achieve in that model year.” *Id.* § 32902(a). Under this subsection, the Secretary is authorized to “prescribe separate standards for different classes of automobiles.” *Id.* Congress also provides that “[w]hen deciding maximum feasible average fuel economy under this section, the Secretary of Transportation⁵ shall consider technological feasibility, economic practicability, the effect of other motor vehicle standards of the Government on fuel economy, and the need of the United States to conserve energy.” *Id.* § 32902(f).

Under the EPCA’s definitional scheme, vehicles not manufactured primarily for highway use and vehicles rated at 10,000 lbs. gross vehicle weight or more are excluded from fuel economy regulation

⁵ The Secretary of Transportation delegated authority to promulgate average fuel economy regulation to NHTSA. See 49 C.F.R. § 1.50(f) (2007).

altogether because they are not “automobiles.”⁶

* * * * *

Although NHTSA has the authority to regulate the fuel economy of vehicles up to 10,000 lbs. GVWR, *see id.* § 32901(a)(3)(B), the agency has excluded vehicles exceeding 8,500 lbs. (other than medium-duty passenger vehicles manufactured during MY 2011 or thereafter) from its definition of “automobile,” *see* 49 C.F.R. § 523.3(b).

The CAFE standards NHTSA sets for non-passenger automobiles or “light trucks,” as referred to by the agency in its regulations,⁸ are lower than the standards for passenger automobiles. Compare 49 C.F.R. § 533.5(a) (2007) with 49 C.F.R. § 531.5(a) (2007).

* * * * *

The Final Rule sets CAFE standards for “light trucks,” defined by NHTSA to include many SUVs, vans, and pickup trucks, for MYs 2008–2011. *See* 71 Fed. Reg. at 17,568; 49 C.F.R. § 533.5(a), (g), (h).

* * * * *

For MYs 1996 to 2004, Congress froze the light truck CAFE standard at 20.7 mpg. *See* 71 Fed. Reg. at 17,568. After

the legislative restrictions were lifted, NHTSA set new light truck CAFE standards in April 2003: 21.0 mpg for MY 2005, 21.6 mpg for MY 2006, and 22.2 mpg for MY 2007. Light Truck Average Fuel Economy Standards Model Years 2005–2007, 68 Fed. Reg. 16,868, 16,871 (Apr. 7, 2003) (codified at 49 C.F.R. pt. 533).

In response to a request from Congress, the National Academy of Sciences (NAS) published in 2002 a report entitled “Effectiveness and Impact of Corporate Average Fuel Economy (CAFE) Standards.”¹⁰ The NAS committee made several findings and recommendations. It found that from 1970 to 1982, CAFE standards helped contribute to a 50 percent increase in fuel economy for new light trucks. *Id.* at 14. In the subsequent decades, however, light trucks became more popular since domestic manufacturers faced less competition in the light truck category and could generate greater profits. *Id.* at 18–19. The “less stringent CAFE standards for trucks ... provide[d] incentives for manufacturers to invest in minivans and SUVs and to promote them to consumers in place of large cars and station wagons.” *Id.* at 18. When the CAFE regulations were originally promulgated in the 1970s, “light truck sales accounted for about 20 percent of the new vehicle market,” but now they account for about half. *Id.* at 88.

⁶ For example, the Hummer H1 is more than 10,000 lbs. GVWR and thus not subject to CAFE regulation. UCS Cmt. at 33 n. 14 (Union of Concerned Scientists–Comments, NHTSA Docket No. 2005–22223–1978 (Nov. 25, 2005)).

⁸ *See, e.g.*, 49 C.F.R. § 523.5.

¹⁰ U.S. DOT/NHTSA–Report, Effectiveness and Impact of Corporate Average Fuel Economy (CAFE) Standards, NHTSA Docket No. 2005–22223–14 (Aug. 31, 2005) (Committee on the Effectiveness and Impact of Corporate Average Fuel Economy (CAFE) Standards, National Research Council (2002)) (hereinafter “NAS Report”).

This shift has had a “pronounced” effect on overall fuel economy. *Id.* at 19. As the market share of light trucks has increased, the overall average fuel economy of the new light duty vehicle fleet (light trucks and passenger automobiles) has declined “from a peak of 25.9 MPG in 1987 to 24.0 MPG in 2000.” *Id.* Vehicle miles traveled (VMT) by light trucks has also been growing more rapidly than passenger automobile travel. *Id.*

The NAS committee found that the CAFE program has increased fuel economy, but that certain aspects of the program “have not functioned as intended,” including “[t]he distinction between a car for personal use and a truck for work use/cargo transport,” which “has been stretched well beyond the original purpose.” *Id.* at 3. The committee also found that technologies exist to “significantly reduce fuel consumption,” for cars and light trucks and that raising CAFE standards would reduce fuel consumption. *Id.* at 3–4. Significantly, the committee found that of the many reasons for improving fuel economy, “[t]he most important ... is concern about the accumulation in the atmosphere of so-called greenhouse gases, principally carbon dioxide. Continued increases in carbon dioxide emissions are likely to further global warming.” *Id.* at 2. In addition, the committee found “externalities of about \$0.30/gal of gasoline associated with the combined impacts of fuel consumption on greenhouse gas emissions and on world oil market conditions”¹¹ that “are not necessarily taken into ac-

count when consumers purchase new vehicles.” *Id.* at 4.

B. National Environmental Policy Act [NEPA]

NEPA requires a federal agency “to the fullest extent possible,” to prepare “a detailed statement on ... the environmental impact” of “major Federal actions significantly affecting the quality of the human environment.” 42 U.S.C. § 4332(2)(C)(i) (2007); *see also* 40 C.F.R. § 1500.2 (2007). The purpose of NEPA is twofold: “ ‘ensure[] that the agency ... will have available, and will carefully consider, detailed information concerning significant environmental impacts[, and] guarantee [] that the relevant information will be made available to the larger [public] audience.’ ” *Idaho Sporting Cong. v. Thomas*, 137 F.3d 1146, 1149 (9th Cir. 1998) (quoting *Robertson v. Methow Valley Citizens Council*, 490 U.S. 332, 349, 109 S.Ct. 1835, 104 L.Ed. 2d 351 (1989)); *see also* 40 C.F.R. § 1500.1(b) (stating that environmental information must be provided “before decisions are made and before actions are taken.”). “NEPA expresses a Congressional determination that procrastination on environmental concerns is no longer acceptable.” *Found. for N. Am. Wild Sheep v. U.S. Dep’t of Agric.*, 681 F.2d 1172, 1181 (9th Cir. 1982). NEPA “is our basic national charter for protection of the environment.” 40 C.F.R. § 1500.1(a).

If there is a substantial question whether an action “may have a significant effect” on the environment, then the agency must prepare an Environmental Impact Statement (EIS). *See, e.g., Blue Mountains Biodiversity Project v. Blackwood*, 161 F.3d 1208, 1212 (9th Cir. 1998) (in-

¹¹ The committee identified the environmental cost of carbon emissions as \$50/tonne carbon (tC), or \$0.12 of this \$0.30/gal figure. NAS Report at 85.

ternal quotation marks omitted). An EIS should contain a discussion of significant environmental impacts and alternatives to the proposed action. *See* 40 C.F.R. §§ 1502.1, 1502.14, 1508.7. As a preliminary step, an agency may prepare an Environmental Assessment (EA) in order to determine whether a proposed action may “significantly affect[]” the environment and thereby trigger the requirement to prepare an EIS. *See* 40 C.F.R. § 1508.9(a)(1) (2007). An EA is “a concise public document” that “[b]riefly provide[s] sufficient evidence and analysis for determining whether to prepare an environmental impact statement or a finding of no significant impact.”¹² *Id.* An EA “[s]hall include brief discussions of the need for the proposal, of alternatives as required by sec. 102(2)(E), of the environmental impacts of the proposed action and alternatives, and a listing of agencies and persons consulted.” *Id.* § 1508.9(b).

Whether an action may “significantly affect” the environment requires consideration of “context” and “intensity.” *Id.* § 1508.27; *see also Nat’l Parks & Conservation Ass’n v. Babbitt*, 241 F.3d 722, 731 (9th Cir. 2001). “Context ... delimits the scope of the agency’s action, including the interests affected.” *Nat’l Parks & Conservation Ass’n*, 241 F.3d at 731. Intensity refers to the “severity of impact,” which includes both beneficial and adverse impacts, “[t]he degree to which the proposed action affects public health or safety,” “[t]he degree to which the effects on the quality of the human environment are likely to be highly controversial,” “[t]he degree to which the possible effects on the human environment are highly uncertain or involve

unique or unknown risks,” and “[w]hether the action is related to other actions with individually insignificant but cumulatively significant impacts.” 40 C.F.R. § 1508.27(b)(2), (4), (5), (7).

C. NHTSA’s Proposed Rulemaking and Draft Environmental Assessment

On December 29, 2003, NHTSA published an advance notice of proposed rulemaking (ANPRM) that solicited comments on several proposed regulatory changes intended to increase fuel economy, including a proposal to modernize the light truck/car distinction and a proposal to increase the GVWR limit on vehicles subject to CAFE standards. 68 Fed. Reg. 74,908 (Dec. 29, 2003).

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On August 30, 2005, NHTSA issued proposed CAFE standards for light trucks MYs 2008–2011 of 22.5 mpg for MY 2008, 23.1 mpg for MY 2009, and 23.5 mpg for MY 2010.¹⁴ 70 Fed. Reg. 51,414, 51,424 (Aug. 30, 2005). NHTSA determined that these were the “maximum feasible” standards using a marginal cost-benefit analysis. *See id.* For MY 2011 and beyond, NHTSA proposed to adopt a “Reformed CAFE” system, which would set different CAFE standards for vehicles based on size, measured by the vehicle’s footprint (the product of multiplying wheelbase by track width). *Id.* at 51,414, 51,429–41. NHTSA proposed six footprint categories (a step function), *id.* at 51,430, and it proposed a transition period (MY 2008–

¹² A “finding of no significant impact” is known as a “FONSI.”

¹⁴ NHTSA requires manufacturers to meet these average fuel economy standards on a fleet-wide basis.

2010) to Reformed CAFE, during which manufacturers could choose to comply with either Reformed or Unreformed CAFE. NHTSA also proposed not to change the criteria by which vehicles are classified as passenger automobiles or light trucks, *id.* at 51,422, and it proposed to regulate only MDPVs within the 8,500 to 10,000 lb. vehicle class as light trucks, *id.* at 51,455–56.

NHTSA issued a Draft Environmental Assessment in August 2005. The Draft EA integrated much of the text from the Final EA that accompanied NHTSA’s light truck rulemaking for MYs 2005–2007 released in April 2003. *See* Draft Environmental Assessment, NHTSA Proposed Corporate Average Fuel Economy (CAFE) Standards 9 (Aug. 2005) (Draft EA). The Draft EA analyzed three alternatives to the proposed rule. Alternative A (“No Action”) would extend the MY 2007 standard of 22.2 mpg through MY 2011. Alternative B would be Unreformed CAFE in MY 2008–2010 and Reformed CAFE in MY 2011. Alternative C would be Reformed CAFE set at equalized cost with Unreformed CAFE in MY 2008–2010 and Reformed CAFE in MY 2011. *Id.*

The Draft EA noted that “CO₂ ... has started to be viewed as an issue of concern for its global climate change potential.” *Id.* at 18. With regard to biological resources, the Draft EA stated, “emissions of criteria pollutants and greenhouse gases could result in ozone layer depletion and promote climate change that could affect species and ecosystems.” *Id.* at 19. The projected lifetime fuel savings for MY 2008–2011 light trucks under Alternatives B and C would “rang[e] from 1.3% to 1.7% of their fuel compared to the baseline, corresponding to 4.7–6.0 billion gallons.” *Id.* at 25. The

estimated lifetime emissions of CO₂ ranged from 1,341.4 million metric tons (mmt) under baseline to 1,306.4 and 1,304.0 mmt under Alternatives B and C, respectively. *Id.* at 29. The Draft EA concluded that the proposed standards would “result in reduced emissions of CO₂, the predominant greenhouse gas emitted by motor vehicles,” “reductions in contamination of water resources,” and “minor reductions in impacts to biological resources.” *Id.* at 30–31. In addition, “the cumulative effects estimated to result from both the 2005–2007 and 2008–2011 light truck rulemakings over the lifetimes of the vehicles they would affect are projected to be very small.” *Id.* at 34.

NHTSA received over 45,000 comments on the NPRM and Draft EA from states, consumer and environmental organizations, automobile manufacturers and associations, members of Congress, and private individuals. *See* 71 Fed. Reg. at 17,577. Manufacturers argued that reliance on a cost-benefit analysis might not “adequately account for the capabilities of the industry.” *Id.* They also generally opposed subjecting vehicles greater than 8,500 lbs. GVWR to CAFE regulation, arguing that those vehicles are used in a different manner than lighter vehicles and that their regulation would not result in significant fuel savings. *Id.* at 17,577–78. The states and environmental and consumer organizations generally argued that:

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- NHTSA’s use of marginal cost-benefit analysis unlawfully overemphasizes cost at the expense of technological feasibility and energy conservation and is not “technology-forcing,” as EPCA intended. *E.g.*,

NRDC Cmt. at 14–16; Environmental Defense Cmt. at 4–5; Public Citizen Cmt. at 1–2.

- Even if NHTSA’s cost-benefit analysis is permissible, the “maximum feasible” standard cannot be determined properly without taking environmental impacts into account, and the failure to monetize certain benefits such as greenhouse gas (GHG) emissions underestimates benefits of stricter standards. *E.g.*, CBD Cmt. at 1–4,¹⁸ NRDC Cmt. at 8 (suggesting specific figures and sources for the value per ton of CO₂ emissions avoided, from \$8/ton to \$26.50/ton); Environmental Defense Cmt. at 5–6; Environmental Defense Cmt. Re: Carbon Costs at 1–3 (citing new

studies from the United Kingdom that value carbon at \$96–174/ton carbon).¹⁹

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- NHTSA’s draft EA is inadequate and fails to consider the proposed rule’s impact on climate change. States Cmt. at 1–11; CBD Cmt. at 5–12.

See also 71 Fed. Reg. at 17,578–79 (summarizing comments).

Commenters also submitted to NHTSA numerous scientific reports and studies regarding the relationship between climate change and greenhouse gas emissions and the expected impacts on the environment.²⁷ Emissions from light

¹⁸ Center for Biological Diversity—Comments and Attachments A through E, NHTSA Docket No. 2005–22223–1638 (Nov. 22, 2005). Among other things, the Center for Biological Diversity argued, “An estimate of the true costs of the carbon emissions is one of the most important inputs into the NHTSA’s algorithm for determining the maximum feasible average fuel economy level. Estimates of the monetary benefits ... [are] readily available Excluding a monetization of the greenhouse gas emissions from the NHTSA’s light truck fuel economy rulemaking on the basis that the future costs of global warming are uncertain is arbitrary and capricious The NHTSA cannot dismiss these costs as ‘uncertain’ while simultaneously relying upon the uncertain projections of claimed economic hardship recited by the automobile industry for an estimate of the cost of increasing fuel economy.” *Id.* at 3–4.

¹⁹ Environmental Defense Comments, NHTSA Docket No. 2005–22223–2249 (Mar. 13, 2006); Environmental Defense—Report—The Social Costs of Carbon Review: Methodological Approaches for Using SCC Estimates in Policy Assessment, NHTSA Docket No. 2005–22223–2251 (Mar. 13, 2006) (Paul Watkiss, et al., *The Social Cost of Carbon (SCC) Review—Methodological Approaches for Using SCC Estimates in Policy Assessment*, Final Report (Nov. 2005)).

²⁷ *See generally* Attachment A to CBD Cmt. (Global Warming and Its Impacts); Attachment B to CBD Cmt. (Albritton, D.L., et al., *Technical Summary, Climate Change 2001: The Scientific Basis. Contribution of Working Group I to the Third Assessment Report of the Intergovernmental panel on Climate Change (IPCC) (2001)*); Attachment F to CBD Cmt. (Epstein, P.R. and E.

trucks make up about eight percent of annual U.S. greenhouse gas emissions. Final EA at 22 (citing EPA, EPA-430-R-05-003, Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2004 (Draft 2006)). The transportation sectors account for about 31 percent of human-generated CO₂ emissions in the U.S. economy. NAS Report at 14. “Overall, U.S. light-duty vehicles [passenger cars and light trucks] produce about 5 percent of the entire world’s greenhouse gases.” *Id.* at 20. The NAS committee concluded, “Since the United States produces about 25 percent of the world’s greenhouse gases, fuel economy improvements could have a significant impact on the rate of CO₂ accumulation in the atmosphere.” *Id.* at 14.

Mills (eds.), *Climate Change Futures: Health, Ecological and Economic Dimensions* (2005)); Attachment G to CBD Cmt. (Intergovernmental Panel on Climate Change (IPCC), *Climate Change 2001: Synthesis Report (Summary for Policymakers)* (2001)); Attachment L to CBD Cmt. (Overpeck, J.T., et al., “Arctic System on Trajectory to New, Seasonally Ice-free State,” *EOS* (2005)); Attachment M to CBD Cmt. (Parmesan, C. and H. Galbraith, *Pew Center on Global Climate Change, Observed Impacts of Global Climate Change in the U.S.* (Sept. 2004)); Attachment O to CBD Cmt. (Thomas, C.D., et al., “Extinction Risk from Climate Change,” 427 *Nature* 145 (Jan. 8, 2004)); Attachment P to CBD Cmt. (World Health Organization, *The World Health Report 2002* (2002)); Attachment Q to CBD Cmt. (Arctic Climate Impact Assessment, *Impacts of a Warming Arctic: Highlights* (2004)).

The Intergovernmental Panel on Climate Change (IPCC)’s “Third Assessment Report,” published in 2001, presented the consensus view of hundreds of scientists on key issues relating to climate change. The IPCC concluded that “CO₂ concentrations increasing over [the] 21st century[are] virtually certain to be mainly due to fossil-fuel emissions,” and that “[s]tabilization of atmospheric CO₂ concentrations at 450, 650, or 1,000 ppm would require global anthropogenic CO₂ emissions to drop below year 1990 levels, within a few decades, about a century, or about 2 centuries, respectively, and continue to decrease steadily thereafter to a small fraction of current emissions.”²⁸ *Id.* The average earth surface temperature has increased by about 0.6 degree Celsius since the late 19th century, *see* Technical Summary of IPCC Working Group I Report at 26; snow and ice cover have decreased about 10 percent since the late 1960s, *id.* at 30; and global average sea level has risen between 10 to 20 cm during the 20th century, *id.* at 31. The IPCC also developed a range of emissions scenarios as its basis for predicting the environmental effect of increased emissions. *Id.* at 62-63.²⁹

²⁸ “The atmospheric concentration of CO₂ has increased from 280 ppm in 1750 to 367 ppm in 1999.... Today’s CO₂ concentration has not been exceeded during the past 420,000 years and likely not during the past 20 million years. The rate of increase over the past century is unprecedented, at least during the past 20,000 years.” Technical Summary of IPCC Working Group I Report at 39.

²⁹ The draft of the IPCC Fourth Assessment Report, “Climate Change 2007,” was published recently (con-

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D. The Final Rule: CAFE Standards for Light Trucks MYs 2008–2011

NHTSA issued the Final Rule on April 6, 2006. 71 Fed. Reg. at 17,566. NHTSA set the CAFE standards for MY 2008–2010 (Unreformed CAFE) at the same levels as proposed in the NPRM.³⁰ Unreformed CAFE sets a fleet-wide average fuel economy standard “with particular regard to the ‘least capable manufacturer with a significant share of the market.’” 71 Fed. Reg. at 17,580. NHTSA has reformed the structure of the CAFE program for light trucks, effective MY 2011 (Reformed CAFE). Under Reformed CAFE, fuel economy standards are based on a truck’s footprint, with larger footprint trucks subject to a lower standard and smaller footprint trucks subject to higher standards.³¹ 71 Fed. Reg. at

taining reports of the Working Groups and Technical Summaries) (available at <http://www.ipcc.ch>). “The summary ... said that efforts to rein in the billions of tons of annual releases of carbon dioxide and other heat-trapping gases would have to begin soon to limit risks of large changes in the climate and their impact on humans and nature.” Andrew C. Revkin, *Climate Panel Sees Need for New Steps on Emissions*, N.Y. Times, Apr. 27, 2007, at A20.

³⁰ MY 2008: 22.5 mpg; MY 2009: 23.1 mpg; MY 2010: 23.5 mpg.

³¹ The NPRM proposed a step function for Reformed CAFE, with six different footprint categories. The Final Rule establishes target fuel economy

17,566. Instead of six footprint categories (a step function) as proposed in the NPRM, Reformed CAFE would be based on a continuous function, meaning a separate fuel economy target for each vehicle of a different footprint. *See id.* at 17,595–96. “A particular manufacturer’s compliance obligation for a model year will be calculated as the harmonic average of the fuel economy targets for the manufacturer’s vehicles, weighted by the distribution of manufacturer’s production volumes among the footprint increments.” *Id.* at 17,566. A manufacturer’s CAFE compliance obligation will vary with its fleet mix. A manufacturer that produces more large footprint light trucks will have a lower required CAFE standard than one that produces more small footprint light trucks.³²

During MYs 2008–2010, manufacturers may choose to comply with Unreformed CAFE or Reformed CAFE. *See id.* at 17,593–94.

NHTSA used the manufacturers’ preexisting product plans as the baseline for its analyses of technical and economic feasibility under both Unreformed and Reformed CAFE. *Id.* at 17,579. NHTSA made adjustments to the product plans by applying additional technologies in a

levels for each value of vehicle footprint, referred to as a “continuous function.” 71 Fed. Reg. at 17,587. A continuous function reduces the incentive to enlarge the footprints of light trucks in order to shift them into a higher bracket with a lower fuel economy standard. *See id.* at 17,609.

³² *See* 71 Fed. Reg. at 17,608–09 (description of Reformed CAFE formula).

“cost-minimizing fashion,”³³ *id.* at 17,582, and stopping at the point where marginal costs equaled marginal benefits, *id.* at 17,597. NHTSA considered the cost of new technologies and the benefits of fuel savings over the lifetime of the vehicle as the costs and benefits of higher fuel economy standards. *Id.* at 17,585–87, 17,622–23. NHTSA monetized some externalities such as emission of criteria pollutants during gasoline refining and distribution and crash and noise costs associated with driving. *See* Final Regulatory Impact Analysis, Corporate Average Fuel Economy and CAFE Reform for MY 2008–2011 Light Trucks at VIII–60, VIII–74–80 (March 2006) (FRIA). However, NHTSA did not monetize the benefit of reducing carbon dioxide emissions, which it recognized was the “the main greenhouse gas emitted as a result of refining, distribution, and use of transportation fuels.” FRIA at VIII–61 to 62.³⁴ NHTSA acknowledged the estimates suggested in the scientific literature, *see* 71 Fed. Reg. at 17,638; FRIA at VIII–63, but concluded:

[T]he value of reducing emissions of CO₂ and other greenhouse gases [is] too uncertain to support their explicit valuation and inclusion among the savings in environmental externalities from reducing gasoline produc-

tion and use. There is extremely wide variation in published estimates of damage costs from greenhouse gas emissions, costs for controlling or avoiding their emissions, and costs of sequestering emissions that do occur, the three major sources for developing estimates of economic benefits from reducing emissions of greenhouse gases.

71 Fed. Reg. at 17,638; *see also* FRIA at VIII–64 to 65.

* * * * *

Finally, NHTSA declined to change the regulatory definition of cars and light trucks to close the SUV loophole and refused to regulate vehicles between 8,500 and 10,000 lbs. GVWR, other than MDPVs. *See id.* at 17,574.

II. STANDARD OF REVIEW

The Administrative Procedure Act (APA), 5 U.S.C. §§ 701–706 (2007), provides that agency action must be set aside by the reviewing court if it is “ ‘arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law.’ ” *Competitive Enter. Inst. v. NHTSA (CEI III)*, 45 F.3d 481, 484 (D.C. Cir. 1995) (quoting 5 U.S.C. § 706(2)(A)) (applying the APA to review a rulemaking under the EPCA). The scope of review is narrow, but “the agency must examine the relevant data and articulate a satisfactory explanation for its action including a ‘rational connection between the facts found and the choice made.’ ” *Motor Vehicle Mfrs. Ass’n v. State Farm Mut. Auto. Ins. Co.*, 463 U.S. 29, 43, 103 S.Ct. 2856, 77 L.Ed. 2d 443 (1983) (citation omitted).

³³ This means adding technologies “in order of lower to higher costs.” 71 Fed. Reg. at 17,582; *see also* FRIA at VI–13.

³⁴ NHTSA recognized that “[c]arbon dioxide emissions account for more than 97% of total greenhouse gas emissions from the refining and use of transportation fuels.” FRIA at VIII–62 n. 83.

An agency rule would normally be arbitrary and capricious if:

the agency has relied on factors which Congress has not intended it to consider, entirely failed to consider an important aspect of the problem, offered an explanation for its decision that runs counter to the evidence before the agency, or is so implausible that it could not be ascribed to a difference in view or the product of agency expertise.

Id. The reviewing court “ ‘may not supply a reasoned basis for the agency’s action that the agency itself has not given.’ ” *Id.* (quoting *SEC v. Chenery Corp.*, 332 U.S. 194, 196, 67 S.Ct. 1575, 91 L.Ed. 1995 (1947)).

If Congress has spoken directly to the “precise question at issue,” then we must give effect to Congress’s “unambiguously expressed intent.” *Chevron U.S.A., Inc. v. NRDC*, 467 U.S. 837, 842–43, 104 S.Ct. 2778, 81 L.Ed. 2d 694 (1984). However, “if the statute is silent or ambiguous with respect to the specific issue, the question for the court is whether the agency’s answer is based on a permissible construction of the statute.” *Id.* at 843, 104 S.Ct. 2778. We “must reject administrative constructions which are contrary to clear congressional intent.” *Id.* at 843 n. 9, 104 S.Ct. 2778.

NHTSA’s compliance with NEPA is reviewed under an arbitrary and capricious standard pursuant to the APA. *See, e.g., Nat’l Parks & Conservation Ass’n*, 241 F.3d at 730. With respect to NEPA documents, the agency must take a “hard look” at the impacts of its action by providing “ ‘a reasonably thorough discussion of the significant aspects of the probable environmental consequences.’ ”

” *Thomas*, 137 F.3d at 1149 (quoting *Or. Nat. Res. Council v. Lowe*, 109 F.3d 521, 526 (9th Cir. 1997)). We must determine whether the EA “ ‘foster[s] both informed decision-making and informed public participation.’ ” *Native Ecosystems Council v. U.S. Forest Serv.*, 418 F.3d 953, 960 (9th Cir. 2005) (quoting *California v. Block*, 690 F.2d 753, 761 (9th Cir. 1982)).

III. DISCUSSION

A. Energy Policy and Conservation Act Issues

1. NHTSA’s use of marginal cost-benefit analysis to determine “maximum feasible average fuel economy level”

With respect to non-passenger automobiles (*i.e.*, light trucks), the fuel economy standard “shall be the maximum feasible average fuel economy level that the Secretary decides the manufacturers can achieve in that model year.” 49 U.S.C. § 32902(a). “Maximum feasible” is not defined in the EPCA. However, the EPCA provides that “[w]hen deciding maximum feasible average fuel economy under this section, the Secretary of Transportation shall consider technological feasibility, economic practicability, the effect of other motor vehicle standards of the Government on fuel economy, and the need of the United States to conserve energy.” *Id.* § 32902(f).

Petitioners argue that the meaning of “maximum feasible” is plain, and that NHTSA’s decision to maximize economic benefits is contrary to the plain language of the EPCA because “feasible” means “ ‘capable of being done,’ ”

not economically optimal. But even if “feasible” means “ ‘capable of being done,’ ” technological feasibility, economic practicability, the effect of other motor vehicle standards, and the need of the nation to conserve energy must be considered in determining the “maximum feasible” standard. *American Textile Manufacturers Institute v. Donovan* does not support Petitioners’ interpretation of “feasible.” 452 U.S. 490, 101 S.Ct. 2478, 69 L.Ed. 2d 185 (1981). In that case, no other language in the statute modified the phrase at issue: “to the extent feasible.” *Id.*, 452 U.S. at 508–11, 101 S.Ct. 2478. Here, “maximum feasible” standards are to be determined in light of technological feasibility, economic practicability, the effect of other motor vehicle standards, and the need of the nation to conserve energy.³⁸

The EPCA clearly requires the agency to consider these four factors, but it gives

³⁸ Petitioners also cite an earlier NHTSA rulemaking, for light trucks MYs 1992–1994, to support their interpretation of “feasible.” In that rulemaking, the agency stated that it “has in the past interpreted ‘feasible’ to refer to whether something is capable of being done.” 55 Fed. Reg. 3608, 3616 (Feb. 2, 1990). But NHTSA further explained, “a standard set at the maximum feasible average fuel economy level must: (1) Be capable of being done and (2) be at the highest level that is capable of being done, *taking account of what manufacturers are able to do in light of technological feasibility, economic practicability, how other Federal motor vehicle standards affect average fuel economy, and the need of the nation to conserve energy.*” *Id.* (emphasis added).

NHTSA discretion to decide how to balance the statutory factors—as long as NHTSA’s balancing does not undermine the fundamental purpose of the EPCA: energy conservation. In *Center for Auto Safety v. NHTSA*, the D.C. Circuit considered whether NHTSA gave “impermissible weight to shifts in consumer demand” in setting the MY 1985 and 1986 standards for light trucks. 793 F.2d 1322, 1338 (D.C. Cir. 1986). Petitioners in that case challenged NHTSA’s rule that revised the standards downward. *Id.* at 1323–24. The court held that since Congress had not directly spoken to the issue of consumer demand, the court must determine whether the agency’s interpretation represented a “ ‘reasonable accommodation of conflicting policies that were committed to the agency’s care by the statute.’ ” *Id.* at 1338 (quoting *Chevron*, 467 U.S. at 845, 104 S.Ct. 2778). The court reasoned that:

Congress intended energy conservation to be a long term effort that would continue through temporary improvements in energy availability. Thus, it would clearly be impermissible for NHTSA to rely on consumer demand to such an extent that it ignored the overarching goal of fuel conservation. At the other extreme, a standard with harsh economic consequences for the auto industry also would represent an unreasonable balancing of EPCA’s policies.

Id. at 1340 (footnote omitted). The court concluded that NHTSA’s consideration of consumer demand was permissible because Congress did not speak to the precise issue, and “it specifically delegated the process of setting light truck fuel economy standards with broad guidelines concerning the factors that the agency must consider. NHTSA has re-

mained within the reasonable range permitted by those factors.” *Id.* at 1341; *see also Pub. Citizen v. NHTSA*, 848 F.2d 256, 265 (D.C. Cir. 1988) (R. Ginsburg, J.).

* * * * *

In this rulemaking, NHTSA does not set forth its interpretation of the four factors in 49 U.S.C. § 32902(f). It simply states that in determining the “maximum feasible” fuel economy level, NHTSA “assesses what is technologically feasible for manufacturers to achieve without leading to adverse economic consequences, such as a significant loss of jobs or the unreasonable elimination of consumer choice.” 70 Fed. Reg. at 51,425; 71 Fed. Reg. at 17,585 (citing *Pub. Citizen*, 848 F.2d at 264). NHTSA “balance[s]” the four factors in § 32902(f), “along with other factors such as safety,” in determining the CAFE standards. 71 Fed. Reg. at 17,588, 17,655. In earlier rulemakings, NHTSA interpreted “technological feasibility” to mean “whether particular methods of improving fuel economy will be available for commercial application in the model year for which a standard is being established,” “economic practicability” to mean “whether the implementation of projected fuel economy improvements is within the economic capability of the industry,” “effect of other Federal motor vehicle standards on fuel economy” to mean “an analysis of the unavoidable adverse effects on fuel economy of compliance with emission, safety, noise, or damageability standards,” and “the need of the Nation to conserve energy” to mean “the consumer cost, national balance of payments, *environmental, and*

*foreign policy implications*³⁹ of our need for large quantities of petroleum, especially imported petroleum.” 42 Fed. Reg. 63,184, 63,188 (Dec. 15, 1977) (emphasis added); *see also Ctr. for Auto Safety*, 793 F.2d at 1325 n. 12.

NHTSA “recognize[s] that [it] in the past has expressed its belief that the statutory consideration of economic practicability differs from, but does not preclude consideration of, cost/benefit analysis.” 70 Fed. Reg. at 51,435. In its final rule establishing passenger automobile CAFE standards for MYs 1981–1984, NHTSA stated, “not equating cost-benefit considerations with economic practicability is consistent with the goal of achieving maximum feasible fuel economy by allowing economically and technologically possible standards which will improve fuel economy but which an analysis, subject to many practical limitations, might indicate are not cost-beneficial.” *See* 42 Fed. Reg. 33,534, 33,536 (1977). The agency further opined, “A cost-benefit analysis would be useful in considering [economic practicability], but sole reliance on such an analysis would be contrary to the mandate of the Act.”⁴⁰ *Id.* at 33,537. In this

³⁹ *See, e.g.*, App. A to NRDC Cmt. at 4–12 (Natural Resources Defense Council–Appendix A, NHTSA Docket No. 2005–22223–1706 (Nov. 23, 2005) (issue paper examining how oil dependence affects the American economy and national security)).

⁴⁰ One of the Petitioners noted that “[w]hile previous standards have utilized cost-benefit analysis as part of the regulatory impact analysis after the standard was set, the proposed reforms put the cost-benefit analysis

rulemaking, however, NHTSA states that “the cost/benefit analyses conducted today ... are substantially more robust than those conducted in decades past and provide a more substantial basis for consideration of economic practicability.” 70 Fed. Reg. at 51,435.

We agree with NHTSA that “EPCA neither requires nor prohibits the setting of standards at the level at which net benefits are maximized.” *Id.* at 51,435. The statute is silent on the precise question of whether a marginal cost-benefit analysis may be used. *See Chevron*, 467 U.S. at 843, 104 S.Ct. 2778. *Public Citizen* and *Center for Auto Safety* persuade us that NHTSA has discretion to balance the oft-conflicting factors in 49 U.S.C. § 32902(f) when determining “maximum feasible” CAFE standards under 49 U.S.C. § 32902(a).

To be clear, we reject only Petitioners’ contention that EPCA prohibits NHTSA’s use of marginal cost-benefit analysis to set CAFE standards. Whatever method it uses, NHTSA cannot set fuel economy standards that are contrary to Congress’s purpose in enacting the EPCA—energy conservation. We must still review whether NHTSA’s balancing of the statutory factors is arbitrary and capricious. Additionally, the persuasiveness of the analysis in *Public Citizen* and *Center for Auto Safety* is limited by the fact that they were decided two decades ago, when scientific knowledge of climate change and its causes were not as advanced as they are today.⁴¹ The need

front and center.” App. G to NRDC Cmt. at 3.

⁴¹ *See Massachusetts v. EPA*, 549 U.S. 497, 127 S.Ct. 1438, 1447–49, 1455, 167 L.Ed. 2d 248 (2007) (describing

of the nation to conserve energy is even more pressing today than it was at the time of EPCA’s enactment. *See, e.g.*, NRDC Cmt. at 4, 11 (“When fuel economy legislation was first enacted, America consumed 16.3 million barrels of oil per day and 35.8 percent of U.S. oil came from imports. In the nearly 30 years since then, oil consumption has risen to over 20 million barrels per day and 56 percent of U.S. oil is imported. If fuel economy standards are not strengthened, these trends are only expected to get worse, with transportation oil use driving 80 percent of U.S. oil demand growth through 2025 and imports rising to 68 percent of U.S. oil demand. The light duty vehicle fleet currently consumes 8.3 million barrels per day, and in the absence of stronger standards, that is projected to grow to 12.45 million barrels by 2025.”); NAS Report at 13–14, 20. What was a reasonable balancing of competing statutory priorities twenty years ago may not be a reasonable balancing of those priorities today.⁴²

how “the scientific understanding of climate change [has] progressed” since the 1970s and discussing the evidence showing that “[t]he harms associated with climate change are serious and well recognized.”)[. Note: the footnote then goes on to cite a number of scientific studies, including from the IPCC.]

⁴² *Public Citizen* is also factually distinguishable. The *Public Citizen* court based its conclusion that NHTSA’s balancing was reasonable on the evidence in the record showing that (a) severe economic consequences would result from a higher standard and (b) the potential fuel savings from a higher standard

2. Failure to monetize benefits of greenhouse gas emissions reduction

Even if NHTSA may use a cost-benefit analysis to determine the “maximum feasible” fuel economy standard, it cannot put a thumb on the scale by undervaluing the benefits and overvaluing the costs of more stringent standards. NHTSA fails to include in its analysis the benefit of carbon emissions reduction in either quantitative or qualitative form. It did, however, include an analysis of the employment and sales impacts of more stringent standards on manufacturers. *See* 71 Fed. Reg. at 17,590–91.

would be minor in comparison. *Pub. Citizen*, 848 F.2d at 265. Neither of those things are true here. First, NHTSA has provided no evidence that the auto industry would suffer severe economic consequences as a result of higher CAFE standards for light trucks MYs 2008–2011. Second, Petitioners calculated that “standards increasing steadily to an equivalent level of 26 mpg in 2011 would save 940,000 barrels per day of oil by 2020 and achieve a cumulative reduction of 304 million metric carbon equivalent tons (mmtC) by that date, *more than double the amounts offered by NHTSA’s current proposal.*” Environmental Defense Cmt. at 2 (emphasis added); *see also* App. A to NRDC Cmt. at 4 (arguing that the U.S. uses over 20 million barrels of oil per day and that a higher CAFE standard that would save 940,000 barrels per day would amount to 4.7% of U.S. consumption per day). This is far higher than the 0.09% figure in *Public Citizen*.

To determine the “maximum feasible” CAFE standards, NHTSA began with the fuel economy baselines for each of the seven largest manufacturers—that is, “the fuel economy levels that manufacturers were planning to achieve in those years.” *Id.* at 17,581. NHTSA then “add[ed] fuel saving technologies to each manufacturer’s fleet until the incremental cost of improving its fuel economy further just equal[ed] the incremental value of fuel savings and other benefits from doing so.” *Id.* at 17,596. The standard is further adjusted “until industry-wide net benefits are maximized. Maximization occurs when the incremental change in industry-wide compliance costs from adjusting it further would be exactly offset by the resulting incremental change in benefits.” *Id.* NHTSA claims that this “cost-benefit analysis carefully considers and weighs all of the benefits of improved fuel savings,” and that “there is no compelling evidence that the unmonetized benefits would alter our assessment of the level of the standard for MY 2011.” *Id.* at 17,592.

Under this methodology, the values that NHTSA assigns to benefits are critical. Yet, NHTSA assigned no value to the most significant benefit of more stringent CAFE standards: reduction in carbon emissions. Petitioners strongly urged NHTSA to include this value in its analysis, and they cited peer-reviewed scientific literature in support. NRDC cited figures for the benefit of carbon emissions reduction ranging from \$8 to \$26.50 per ton CO₂, based on values assigned by the California Public Utilities Commission, the Idaho Power Company, and the European Union (EU) carbon

trading program.⁴³ NRDC Cmt. at 8. NRDC also cited a study published by the National Commission on Energy Policy, which “found that measures mitigating climate change emissions have estimated benefits of \$3–19 per ton of carbon dioxide equivalent. The Commission recommends a price of \$7 per ton beginning in 2010 and then rising 5 percent each year.” *Id.* at 23 (footnote omitted). Environmental Defense and the Union of Concerned Scientists recommended a minimum value of \$50 per ton carbon (or \$13.60 per ton CO₂), which reflects a mean marginal damage cost developed in 28 peer-reviewed studies.⁴⁴

⁴³ The EU has established carbon emission limits for industrial emitters, thereby creating a market price for carbon emission allowances. NRDC Cmt. at 8; *see, e.g.*, <http://www.pointcarbon.com>.

⁴⁴ Environmental Defense also submitted an additional comment letter after the comment period closed noting a recent study from the Social Cost of Carbon project sponsored by the U.K. Department for Environment, Food and Rural Affairs. Environmental Defense Cmt. Re: Carbon Costs at 1–3. The study found that “[a] lower benchmark of 35 £/tC [about \$60 per ton of carbon] is reasonable for a global decision context committed to reducing the threat of dangerous climate change and includes a modest level of aversion to extreme risks, relatively low discount rates and equity weighting.” *Id.* at 1–2; *see* Social Cost of Carbon Review. The report concluded, “we believe that a value of £55/tC in 2000 [about \$95/tC], but rising more sharply than the current guidance

Environmental Defense Cmt. at 6, A–4;⁴⁵ UCS Cmt. at 16. Valuing carbon emissions at \$50 per ton carbon translates into approximately \$0.15 per gallon of gasoline saved. UCS Cmt. at 16. The NAS committee, on which NHTSA relies for other aspects of its analysis, also

(*i.e.* at a higher rate than the current £1/tC per year), would seem to capture the evidence using a pragmatic approach.’ ” *Id.* at 2. Environmental Defense concluded:

These results support monetizing the carbon benefits of the light truck fuel economy rule using values in the range of \$96 to \$174 per ton of carbon [\$26 to \$47 per ton of CO₂] (at current exchange rates) These values translate into shadow values of 30 to 54 cents per gallon.... Calculating the benefits of these savings at the new values consistent with the SCC study recommendations would yield present value benefits of \$54 billion by 2020 ... and \$82 billion by 2030 ... calculated using a 3% discount rate. On an annual basis, benefits would grow from \$1.1 billion in 2011 to \$5.9 billion in 2030.[¶] These benefits are substantial in relation to the costs estimated by NHTSA for its proposal. Yet [they] were entirely omitted from NHTSA’s calculations....

Id. at 3.

⁴⁵ Citing R.S.J. Tol, *The Marginal Damage Costs of Carbon Dioxide Emissions: An Estimate of the Uncertainties*, 33 *Energy Pol’y* 2064, 2074 (2005).

valued the benefit of carbon emissions reduction at \$50 per ton carbon. NAS Report at 85.

NHTSA acknowledged that “[c]onserving energy, especially reducing the nation’s dependence on petroleum, benefits the U.S. in several ways. [It] has benefits for economic growth and the environment, as well as other benefits, such as reducing pollution and improving security of energy supply.” 71 Fed. Reg. at 17,644. NHTSA also acknowledged the comments it received that recommended values for the benefit of carbon emissions reduction; however, the agency refused to place a value on this benefit. *See id.* at 17,638.⁴⁶ NHTSA stated:

The agency continues to view the value of reducing emissions of CO₂ and other greenhouse gases as too uncertain to support their explicit valuation and inclusion among the savings in environmental externalities from reducing gasoline production and use. There is extremely wide variation in published estimates of damage costs from greenhouse gas emissions, costs for controlling or avoiding their emissions, and costs of sequestering emissions that do occur, the three major sources for developing estimates of economic benefits from reducing emissions of greenhouse gases. Moreover, ...

⁴⁶ NHTSA erroneously states that Environmental Defense expressed its recommended value as \$50 per ton CO₂, rather than \$50 per ton carbon. See 71 Fed. Reg. at 17,638. Fifty dollars per ton carbon is equivalent to \$13.60 per ton CO₂, which is within the range that NRDC suggested. *See id.*

commenters did not reliably demonstrate that the unmonetized benefits, which include CO₂, and costs, taken together, would alter the agency’s assessment of the level of the standard for MY 2011. Thus, the agency determined the stringency of that standard on the basis of monetized net benefits.

Id.; *see also* FRIA, at VIII–64 to 65.⁴⁷

NHTSA’s reasoning is arbitrary and capricious for several reasons. First, while the record shows that there is a range of values, the value of carbon emissions reduction is certainly not zero. NHTSA conceded as much during oral argument when, in response to questioning, counsel for NHTSA admitted that the range of values begins at \$3 per ton carbon. NHTSA insisted at argument that it placed no value on carbon emissions reduction rather than zero value. We fail to see the difference. The value of carbon emissions reduction is nowhere account-

⁴⁷ In the Final Rule, NHTSA did not exclude the value of carbon reduction from its analysis on the ground that it now asserts on appeal: “EPCA does not compel NHTSA to set CAFE levels with reference to carbon dioxide emissions specifically, or environmental effects generally.” NHTSA Br. at 47. We “may only sustain an agency’s action on the grounds actually considered by the agency.” *Nw. Env’t’l Defense Ctr. v. Bonneville Power Admin.*, 477 F.3d 668, 686 (9th Cir. 2007). In any case, this argument has no merit because it misses the point. NHTSA’s chosen methodology for setting CAFE standards is a cost-benefit analysis that purports to take the relevant costs and benefits into account.

ed for in the agency’s analysis, whether quantitatively or qualitatively. This position also contradicts NHTSA’s own explanation in the Final Rule that “the agency determined the stringency of [the MY 2011] standard *on the basis of monetized net benefits*.” 71 Fed. Reg. at 17,638 (emphasis added).⁴⁸ By presenting a scientifically-supported range of values that does not begin at zero, Petitioners have shown that it is possible to monetize the benefit of carbon emissions reduction.

Second, NHTSA gave no reasons why it believed the range of values presented to it was “extremely wide”; in fact, several commenters and the NAS committee recommended the same value: \$50 per ton carbon. The NAS committee selected the value of \$50 per ton carbon although it acknowledged the wide range of values in the literature and the potential controversy in selecting a particular value. NAS Report at 85. NHTSA argues that the problem was not simply “the ultimate value to be assigned, but the wide variation in published estimates of the three major underlying costs of carbon dioxide emissions—the cost of damages caused by such emissions, the costs of avoiding or controlling such emissions, and the costs of sequestering resulting emissions.” NHTSA Br. at 49. But NHTSA fails to explain why those three “underlying costs” are relevant to the question of how carbon emissions should be valued. We are convinced by Petitioners’ response:

⁴⁸ Moreover, we note that guidance from the Office of Management and Budget provides that agencies are to monetize costs and benefits whenever possible. Office of Mgmt. & Budget, Office of the President, OMB Circular A–4, at 27 (2003).

To monetize the benefits of reducing CO₂ emissions from automobiles, NHTSA did not need to calculate the “costs of sequestering emissions.” Carbon capture and sequestration, though a feasible means of reducing emissions from large stationary sources such as coal-fired power plants, was not within the range of actions at issue in this automobile fuel economy rulemaking. Nor were “costs for controlling or avoiding [CO₂] emissions” a genuine methodological barrier here: NHTSA already performed an elaborate analysis of the costs of mandating increases in fuel economy. For purposes of this rulemaking, that was the relevant category of control costs.

EPCA Reply Br. at 10–11.⁴⁹ In sum, there is no evidence to support NHTSA’s conclusion that the appropriate course was not to monetize or quantify the value of carbon emissions reduction at all.

* * * * *

Third, NHTSA’s reasoning is arbitrary and capricious because it has monetized other uncertain benefits, such as the reduction of criteria pollutants, crash, noise, and congestion costs, see FRIA at VIII–73 to 80, and “the value of increased energy security,” 71 Fed. Reg. at

⁴⁹ Since Petitioners filed three sets of opening and reply briefs, the briefs addressing EPCA issues are referred to as “EPCA Br.” or “EPCA Reply Br.,” the brief addressing NEPA issues is referred to as “NEPA Br.” or “NEPA Reply Br.,” and the brief filed by the governmental entities is referred to as “States’ Br.” or “States’ Reply Br.”

17,592. Dr. Michael Wang of the Center for Transportation Research at Argonne National Laboratory stated in his peer review of the CAFE compliance and effect model⁵⁰ used by NHTSA in its rulemaking that the wide range of dollar values per ton of CO₂ “is not a good reason that CO₂ dollar values are not included The same can be said [of] dollar values for criteria pollutants. Yet, monetary values for criteria pollutant emissions are included in the model.” Wang Cmt. at 6.⁵¹

Fourth, NHTSA’s conclusion that commenters did not “reliably demonstrate” that monetizing the value of carbon reduction would have affected the stringency of the CAFE standard “ ‘runs counter to the evidence’ ” before it. *NRDC v. U.S. Forest Serv.*, 421 F.3d 797, 806 (9th Cir. 2005) (citation omitted). The Union of Concerned Scientists concluded that “including [a \$50/tC value] in the determination of cost-efficient fuel economy could increase the 2011 targets by an average of 0.4–1.1 mpg.” UCS Cmt. at 16. Given that the CAFE standards set by NHTSA increase only 1.5 mpg from MY 2008 to 2011,⁵² an additional 0.4 to 1.1 mpg increase by

MY 2011 is significant. In addition, Environmental Defense “calculate[d] the benefits of the cumulative reductions at \$50/tC and 3% discount rate at \$19.7 billion by 2020 and \$28.4 billion by 2030 (current dollars).” Environmental Defense Cmt. at 6.

We agree with Petitioners that the values they suggest, 10–22 cents per gallon of gasoline in NHTSA’s estimation, would not be a small benefit. Under NHTSA’s own calculation that Reformed CAFE will save 2.8 billion gallons of gasoline for MY 2011 light trucks, *see* 71 Fed. Reg. at 17,619, 10–22 cents a gallon of carbon benefits “would yield hundreds of millions of dollars in benefits even after discounting—benefits that by themselves would be substantial in relation to the net benefits that NHTSA calculated for the rule.” EPCA Reply Br. at 12 (citing 71 Fed. Reg. at 17,623 (showing net benefits of \$461 million for MY 2011 under Reformed CAFE)). NHTSA simply did not “ ‘examine the relevant data and articulate a satisfactory explanation for its action including a rational connection between the facts found and the choice made.’ ” *Motor Vehicle Mfrs. Ass’n*, 463 U.S. at 43, 103 S.Ct. 2856 (quoting *Burlington Truck Lines v. United States*, 371 U.S. 156, 168, 83 S.Ct. 239, 9 L.Ed. 2d 207 (1962)).

Finally, there is no merit to NHTSA’s unfounded assertion that if it had accounted for the benefit of carbon emissions reduction, it would have had to account for the adverse safety effects of downweighting, and the two would have balanced out, resulting in no change to the final CAFE standards. No evidence supports this assertion. The assertion is also based on the controversial assumption that higher fuel economy standards

⁵⁰ Known as the “Volpe model.”

⁵¹ U.S. DOT/NHTSA–Dr. Michael Wang–Individual Report (Comments), NHTSA Docket No. 2005–22223–7 (Aug. 30, 2005).

⁵² Since Reformed CAFE does not have pre-set corporate minimums but will depend on manufacturers’ fleet mix, the MY 2011 figure is based on NHTSA’s estimate of the average CAFE level that will be required of manufacturers for MY 2011. *See* 71 Fed. Reg. at 17,568.

for light trucks causes adverse safety effects from downweighting.

Thus, NHTSA's decision not to monetize the benefit of carbon emissions reduction was arbitrary and capricious, and we remand to NHTSA for it to include a monetized value for this benefit in its analysis of the proper CAFE standards.

B. National Environmental Policy Act

1. The EPCA does not limit NHTSA's NEPA obligations

NHTSA argues both that it has broad discretion to balance the factors of 49 U.S.C. § 32902(f) in setting fuel economy standards and that the EPCA constrains it from considering more stringent alternatives in the EA. NHTSA can't have it both ways. Its hands are not tied, as demonstrated by its discretionary, substantive decisions to, among other things, value the benefit of carbon emissions reduction at zero, 71 Fed. Reg. at 17,638, peg its Unreformed CAFE standard to the least capable manufacturer with a substantial share of the market, *id.* at 17,568, apply technologies only until marginal cost equals marginal benefit,⁶⁷ *id.* at 17,589, 17,597, reject weight reduction as a cost-effective technology for vehicles between 4,000 and 5,000 lbs. curb weight, *id.* at 17,627, and not adopt a backstop, *id.* at 17,593.

⁶⁷ As opposed to, for example, setting total costs equal to total benefits, as suggested by some commenters. *See* 71 Fed. Reg. at 17,591 (rejecting the Union of Concerned Scientists' break-even approach).

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In sum, the EPCA does not limit NHTSA's duty under NEPA to assess the environmental impacts, including the impact on climate change, of its rule. EPCA's goal of energy conservation and NEPA's goals of "help[ing] public officials make decisions that are based on understanding of environmental consequences, and take actions that protect, restore, and enhance the environment," 40 C.F.R. § 1500.1(c), and "insur[ing] that environmental information is available to public officials and citizens before decisions are made and before actions are taken," *id.* § 1500.1(b), are complementary. NEPA prohibits uninformed agency action. *Robertson v. Methow Valley Citizens Council*, 490 U.S. 332, 351, 109 S.Ct. 1835, 104 L.Ed. 2d 351 (1989). "The procedures included in § 102 of NEPA are not ends in themselves. They are intended to be 'action forcing.' The unequivocal intent of NEPA is to require agencies to consider and give effect to the environmental goals set forth in the Act, not just to file detailed impact studies which will fill governmental archives." *Env'tl. Def. Fund, Inc. v. Corps of Eng'rs of the U.S. Army*, 470 F.2d 289, 298 (8th Cir. 1972) (citation omitted).

2. Sufficiency of the Environmental Assessment

We examine the EA with two purposes in mind: to determine whether it has adequately considered and elaborated the possible consequences of the proposed agency action when concluding that it will have no significant impact on the environment, and whether its determination that no EIS is required is a reasonable conclusion.

Even though an EA need not “conform to all the requirements of an EIS,” it must be “sufficient to establish the reasonableness of th[e] decision” not to prepare an EIS. *Found. for N. Am. Wild Sheep*, 681 F.2d at 1178 n. 29 (1982);⁶⁹

⁶⁹ The Supreme Court’s recent decision in *National Association of Home Builders v. Defenders of Wildlife*, 551 U.S. 644, 127 S.Ct. 2518, 168 L.Ed. 2d 467 (2007), is not relevant for several reasons. First, NEPA analysis is entirely distinct from analysis under the Endangered Species Act. *See id.* at 2535. Petitioners do not interpret NEPA as “add[ing] another entirely separate prerequisite to th[e] list,” *id.* at 2537, of statutory factors in 49 U.S.C. § 32902(f). NEPA imposes the obligation on every agency to evaluate the environmental impacts of its major actions so that there can be informed agency and public decisionmaking. *See* 40 C.F.R. § 1500.1. Second, unlike the EPA, NHTSA has not taken the position that its actions in setting CAFE standards involve no judgment or discretion. NHTSA asks this court to defer to its discretionary choices (based on its expert judgment) on every issue Petitioners raise under the EPCA. Third, there is no doubt that the fuel economy standards set by NHTSA will have a direct effect on greenhouse gas emissions from light trucks—and that NHTSA is thus a “legally relevant cause.” *See Massachusetts*, 127 S.Ct. at 1457–58 (“[R]educing domestic automobile emissions is hardly a tentative step. Even leaving aside the other greenhouse gases, the United States transportation sector emits an enormous quantity of carbon dioxide

see also 40 C.F.R. § 1508.9(a)(1). An EA “[s]hall include brief discussions of the need for the proposal ... [and] the environmental impacts of the proposed action and alternatives.” 40 C.F.R. § 1508.9(b). An EA “must in some circumstances include an analysis of the cumulative impacts of a project An EA may be deficient if it fails to include a cumulative impact analysis” *Native Ecosystems Council v. Dombeck*, 304 F.3d 886, 895 (9th Cir. 2002); *see also Klamath–Siskiyou Wildlands Ctr. v. Bureau of Land Mgmt.*, 387 F.3d 989, 993–94 (9th Cir. 2004); *Kern v. U.S. Bureau of Land Mgmt.*, 284 F.3d 1062, 1076–78 (9th Cir. 2002).

a. Cumulative impacts of greenhouse gas emissions on climate change and the environment

A cumulative impact is defined as “the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency ... or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively signifi-

into the atmosphere ... more than 6% of worldwide carbon dioxide emissions.... To put this in perspective: Considering just emissions from the transportation sector, ... the United States would still rank as the third-largest emitter of carbon dioxide in the world Judged by any standard, U.S. motor-vehicle emissions make a meaningful contribution to greenhouse gas concentrations and hence, ... to global warming.”).

cant actions taking place over a period of time.” 40 C.F.R. § 1508.7. In *Klamath–Siskiyou Wildlands Center*, this court held that:

Cumulative impacts of multiple projects can be significant in different ways. The most obvious way is that the greater total magnitude of the environmental effects ... may demonstrate by itself that the environmental impact will be significant. Sometimes the total impact from a set of actions may be greater than the sum of the parts.

387 F.3d at 994.

* * * * *

We conclude that the EA’s cumulative impacts analysis is inadequate. While the EA quantifies the expected amount of CO₂ emitted from light trucks MYs 2005–2011, it does not evaluate the “incremental impact” that these emissions will have on climate change or on the environment more generally in light of other past, present, and reasonably foreseeable actions such as other light truck and passenger automobile CAFE standards.⁷⁰ The EA does not discuss the actual environmental effects resulting from those emissions or place those emissions in context of other CAFE rulemakings.

⁷⁰ There are also some inconsistencies. Petitioners point out, for example, that the EA does not explain how the lifetime emissions of MY 2011 vehicles (697 mmt) could be less than MY 2010 (700 mmt) for the baseline alternative, see Final EA at 29, given that fuel economy is held constant and vehicle miles traveled (VMT) are expected to increase each year, *id.* at 8, 34.

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3. NHTSA must prepare either a revised Environmental Assessment or, as necessary, an Environmental Impact Statement

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NHTSA’s finding of no significant impact (FONSI) stated that the agency determined that its Final Rule “will not have a significant effect on the human environment. This finding of no significant impact is based on the attached Final Environmental Assessment (EA)...” Finding of No Significant Environmental Impact for Model Year 2008–2011 Light Truck Fuel Economy Standards, NHTSA Docket No. 2006–24309–3 (Mar. 28, 2006). In the Final EA, NHTSA explained that compared to the “baseline” alternative of extending the MY 2007 light truck CAFE standard through MYs 2008–2011, its evaluated alternatives would have a minor beneficial impact on various environmental resources. Final EA at 26–33, 39–42. NHTSA concluded that “the final rule would produce, compared to U.S. emissions of CO₂, a small decrease in emissions of CO₂, the primary component of greenhouse gas emissions, under the selected alternative. Accordingly, the agency determined that the action we are adopting today will not have a significant impact on the environment.” 71 Fed. Reg. at 17,673 (citing Final EA at 32).

Petitioners argue that the evidence raises a substantial question as to whether the Final Rule may have a significant impact on the environment and that NHTSA

failed to provide a convincing statement of reasons for why a small decrease (rather than a larger decrease) in the growth of CO₂ emissions would not have a significant impact on the environment. Petitioners note that NHTSA has never evaluated the impacts of carbon emissions from light trucks or other vehicles, much less the effect of any reduction or increase in those emissions on climate change. Petitioners presented evidence that continued increase in greenhouse gas emissions may change the climate in a sudden and non-linear way. Without some analysis, it would be “impossible for NHTSA to know ... whether a change in GHG emissions of 0.2% or 1% or 5% or 10% ... will be a significant step toward averting the ‘tipping point’ ” and irreversible adverse climate change. States’ Gray Br. at 6.

NHTSA argues that its “conclusion that a 0.2 percent decrease in carbon dioxide emissions will not have a significant impact upon the environment is self-evidently reasonable and consistent” with *City of Los Angeles v. NHTSA*, 912 F.2d 478 (D.C. Cir. 1990), and *Public Citizen v. NHTSA*, 848 F.2d 256 (D.C. Cir. 1988). NHTSA Br. at 111. NHTSA also argues that the impact of the rule on global warming is too speculative to warrant NEPA analysis.

Petitioners have raised a “substantial question” as to whether the CAFE standards for light trucks MYs 2008–2011 “may cause significant degradation of some human environmental factor,” *Idaho Sporting Cong.*, 137 F.3d at 1149 (internal quotation marks omitted) particularly in light of the compelling scientific evidence concerning “positive feedback

mechanisms” in the atmosphere.⁷⁴ Among the evidence Petitioners presented to the agency was the following:

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[Summary statements about climate science from the IPCC Third Assessment Report, professional scientific societies (AGU, AMS, AAAS), and government researchers (NASA, DOE) omitted.]

* * * * *

In light of the evidence in the record, it is hardly “self-evident” that a 0.2 percent decrease in carbon emissions (as opposed to a greater decrease) is not significant. NHTSA’s conclusion that a small reduction (0.2% compared to baseline) in the growth of carbon emissions would not have a significant impact on the environment was unaccompanied by any analysis or supporting data, either in the Final Rule or the EA. *See, e.g.*, 71 Fed. Reg. at 17,673; Final EA at 32.

Nowhere does the EA provide a “statement of reasons” for a finding of no significant impact, much less a “convincing statement of reasons.” For example, the EA discusses the amount of CO₂ emissions expected from the Rule, but does not discuss the potential impact of such emissions on climate change. In the “Affected Environment” section of the EA, NHTSA states that “[i]ncreasing concentrations of greenhouse gases are likely to accelerate the rate of climate change.” Final EA at 22. The agency notes that

⁷⁴ Petitioners did not waive this “tipping” argument, as NHTSA argues. Evidence concerning “tipping” was presented to the agency during the comment period and is in the administrative record.

“[t]he transportation sector is a significant source of greenhouse gas (GHG) emissions, accounting for approximately 28 percent of all greenhouse gas emissions in the United States.” *Id.* From this, NHTSA jumps to the conclusion that “[c]oupled with the effects resulting from the 2003 light truck rule, the effects resulting from the agency’s current action are expected to lessen the GHG impacts discussed above.” *Id.*

* * * * *

The only reason NHTSA provided for why the environmental impact of the Final Rule would be insignificant is that it results in a decreased rate of growth of GHG emissions compared to the light truck CAFE standard for MY 2007. But simply because the Final Rule may be an improvement over the MY 2007 CAFE standard does not necessarily mean that it will not have a “significant effect” on the environment.

NHTSA has not explained why its rule will not have a significant effect.

In light of the emergent consensus on global warming, Chief Judge Wald’s reasoning in her dissent in *City of Los Angeles* is not only prescient but persuasive:

While NHTSA did the calculations necessary to determine how much extra carbon dioxide would be emitted, it failed completely to discuss in any detail the global warming phenomenon itself, or to explain the benchmark for its determination of insignificance in relation to that environmental danger. Had the emissions been slightly over one percent, would that have been significant? Without some articulated criteria for

significance in terms of contribution to global warming that is grounded in the record and available scientific evidence, NHTSA’s bald conclusion that the mere magnitude of the percentage increase is enough to alleviate its burden of conducting a more thorough investigation cannot carry the day.

912 F.2d at 500.

* * * * *

Finally, we must decide the appropriate remedy given NHTSA’s inadequate EA. We have previously recognized that preparation of an EIS is not mandated in all cases simply because an agency has prepared a deficient EA or otherwise failed to comply with NEPA.

[A discussion over whether to order an EIS or a revised EA is omitted.]

* * * * *

We therefore remand to NHTSA to prepare a revised EA or, as necessary, a complete EIS.

IV. CONCLUSION

NHTSA’s failure to monetize the value of carbon emissions in its determination of the MY 2008–2011 light truck CAFE standards, failure to set a backstop, failure to revise the passenger automobile/light truck classifications, and failure to set fuel economy standards for all vehicles in the 8,500 to 10,000 lb. GVWR class, was arbitrary and capricious and contrary to the EPCA. We therefore remand to NHTSA to promulgate new standards consistent with this opinion as expeditiously as possible and for the earliest model year practicable.

We also hold that the EA was inadequate and Petitioners have raised a substantial question as to whether the Final Action may have a significant impact on the environment. Thus, we remand to NHTSA for the preparation of a revised EA or, as necessary, a full EIS.

REVERSED AND REMANDED.

[Note: Circuit Judge Siler concurred with most of the majority opinion, but wrote separately to dissent from the court's holding that NHTSA acted arbitrarily or capriciously in failing to adopt a "backstop" standard. Because this section of the majority's opinion was omitted here, so too was the dissent.]