Chapter 10 Responses to Public Comments

On June 26, 2008, the National Highway Traffic Safety Administration (NHTSA) submitted to the U.S. Environmental Protection Agency (EPA) a draft Environmental Impact Statement (DEIS) to disclose and analyze the potential environmental impacts of the new Corporate Average Fuel Economy (CAFE) standards for MY 2011-2015 and reasonable alternative standards in the context of NHTSA's CAFE Program pursuant to National Environmental Policy Act (NEPA) implementing regulations issued by Council of Environmental Quality (CEQ), U.S. Department of Transportation (DOT) Order 5610.1C, and NHTSA regulations. On July 2, 2008, NHTSA published a *Federal Register* Notice of Availability of its DEIS. NHTSA's Notice of Availability also made public the date and location of a public hearing, and invited the public to participate at the hearing on August 4, 2008, in Washington, DC. On July 3, 2008, the EPA issued its Notice of Availability of the DEIS, triggering the 45-day public comment period. In accordance with CEQ NEPA implementing regulations, the public was invited to submit written comments on the DEIS until August 18, 2008.

NHTSA mailed approximately 200 copies of the DEIS to interested parties, including federal, state, and local officials and agencies; elected officials, environmental and public interest groups; Native American tribes; and other interested individuals, as listed in Chapter 9 of the DEIS. NHTSA held a public hearing on the DEIS at the National Transportation Safety Board Conference Center in Washington, DC, on August 4, 2008.

NHTSA received 66 written comments from interested stakeholders, including the EPA, the Centers for Disease Control (CDC), state and local agencies, elected officials, automobile trade associations, organizations, and individuals. In addition, NHTSA received one petition with 10,540 signatures expressing support for more stringent CAFE standards and the use of higher gas prices in the Volpe model. *See* Document ID No. NHTSA-2008-0060-0599.1. During the public comment hearing in Washington, DC, 44 people provided oral statements. In this chapter of the final Environmental Impact Statement (FEIS), NHTSA has quoted excerpts from and responded to the comments received.

NHTSA considered and evaluated all written and oral comments received during the public comment period in the preparation of this FEIS. NHTSA changed the EIS, in part, to respond to comments on the DEIS. We also changed the EIS as a result of updated information that became available after issuance of the DEIS.

We appreciate the comments provided during development of the EIS. The transcript from the public hearing and written comments submitted to NHTSA are part of the administrative record, and are available on the Federal Docket, which can be found on the Web at http://www.regulations.gov, Reference Docket No. NHTSA-2008-0060. Written comments and the public hearing transcript can also be viewed in their entirety in Appendix D of this FEIS. Sections 10.1 through 10.4 provide comments on the DEIS and NHTSA's responses to those comments. Table 10-1 lists the topics addressed in this chapter. Table 10-2 is an index of the comments from individuals, federal and state agencies, and private industry and the location in this chapter of NHTSA's responses to those comments.

Table 10-1

Outline of Issues Raised in Public Comments on the DEIS

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Outline of Issues Raised in Public Comments on the DEIS

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Table 10-2

Index of Comments from Individuals, Federal and State Agencies, and Private Industry

Commenter	Document ID Number a/	Location of Comment Excerpts and NHTSA's Responses
Federal Agencies		
Centers for Disease Control and Prevention	0600	10.2.2.2, 10.3.2.4, 10.3.3.1, 10.3.4.3, 10.3.6.3, 10.3.6.4, 10.4.1, 10.4.2
Susan Bromm, Environmental Protection Agency	0596	10.2.2.1, 10.2.2.3, 10.2.2.8, 10.3.1, 10.3.2, 10.3.2.1, 10.3.2.2, 10.3.2.3, 10.3.2.4, 10.3.3, 10.3.3.2, 10.3.3.3, 10.3.3.4, 10.3.6.2, 10.3.6.3, 10.3.6.5, 10.4.3
Industry		
Adam Lee, Lee Auto Malls	TRANS-02	10.2.2.1, 10.2.2.6
Organizations		
Julie Becker, Alliance of Automobile Manufacturers	0574	10.1.1, 10.1.4, 10.1.5, 10.1.6, 10.2.2, 10.2.2.5, 10.2.3.3, 10.2.3.6, 10.4.3,
Julie Becker, Alliance of Automobile Manufacturers	TRANS-01	10.1.4, 10.1.5, 10.1.6, 10.2.2.5, 10.2.3.3, 10.4.5.3
Barry Bernsten, BG Automotive Group	TRANS-17	10.3.2.4
Center for Biological Diversity	0572	10.1.2, 10.2.1, 10.2.2, 10.2.2.1, 10.2.2.3, 10.2.2.4, 10.2.2.6, 10.2.2.8, 10.2.3.1, 10.2.3.2, 10.2.3.3, 10.2.3.4, 10.2.3.6, 10.2.3.7, 10.2.3.8, 10.2.3.10, 10.3.1.1, 10.3.1.2, 10.3.2.2, 10.3.3, 10.3.3.2, 10.3.3.3, 10.3.3.4, 10.3.3.6, 10.3.5.1, 10.3.6.1, 10.3.6.4, 10.4.1, 10.4.4, 10.4.5.1, 10.4.5.4
Ami Greener, American Jewish Committee	TRANS-39	10.2.2.1, 10.2.2.4, 10.2.3.8, 10.2.3.10, 10.3.1.2
Eli Hopson, Union of Concerned Scientists	TRANS-19	10.2.1, 10.2.2.3, 10.2.2.4, 10.2.3.8, 10.2.3.10
James Keck, Environmental Defense Fund	TRANS-32	10.2.1, 10.2.3.8, 10.2.3.10, 10.3.2.4, 10.3.4.3, 10.3.7
Debbie Linick, Jewish Community Relations Council	TRANS-30	10.2.2.1
Elizabeth McGurk, National Counsel of Churches and Christ	TRANS-42	10.2.3.10
Ann Mesnikoff, Sierra Club	TRANS-08	10.2.1, 10.2.2.1, 10.2.2.3, 10.2.2.4, 10.2.3.10, 10.3.1.2
Ben Schreiber, Environment America	TRANS-38	10.2.2.1
David Westcott, NADA	TRANS-04	10.1.4, 10.2.2.2, 10.2.2.6
Consumer Federation of America (and others)	0564	10.1, 10.2.1, 10.2.2.1, 10.2.2.2, 10.2.2.6, 10.2.2.8, 10.2.2.10, 10.2.3.1, 10.2.3.5, 10.2.3.8, 10.2.3.9
Environmental Defense Fund	0596	10.1.2, 10.2.1, 10.2.3.8, 10.3.1.2, 10.3.2.4, 10.3.3.5, 10.3.4.3, 10.4.2
Natural Resources Defense Council	0557	10.2.1, 10.2.2.1, 10.2.2.3, 10.2.2.4, 10.2.2.8, 10.2.2.10, 10.2.3.8, 10.2.3.10
Joan Claybrook, Public Citizen	0576	10.1.1, 10.1.3, 10.2.1, 10.2.2, 10.2.2.1, 10.2.2.2, 10.2.2.3, 10.2.2.4, 10.2.2.6, 10.2.2.9, 10.2.2.10, 10.2.3.1, 10.2.3.3, 10.2.3.4, 10.2.3.8, 10.2.3.10, 10.3.1.2, 10.3.6.4, 10.4.5.4
Caroline Keicher, Sierra Club	0598	10.2.1, 10.2.2.1, 10.2.2.3, 10.2.2.4, 10.2.3.8, 10.2.3.10, 10.3.1.2

Table 10-2 (cont'd)

Index of Comments from Individuals, Federal and State Agencies, and Private Industry

Commenter	Document ID Number a/	Location of Comment Excerpts and NHTSA's Responses
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Union of Concerned Scientists	0575	10.1.3, 10.2.1, 10.2.2, 10.2.2.1, 10.2.2.2, 10.2.2.3, 10.2.2.4, 10.2.2.6, 10.2.2.7, 10.2.2.8, 10.2.2.9, 10.2.2.10, 10.2.3.5, 10.2.3.8, 10.4.4, 10.4.5.1, 10.4.5.2, 10.4.5.4
Mari Castellanos, United Church of Christ	TRANS-26	10.2.3.10
Mark Cooper, Consumer Federation of America	TRANS-05	10.1, 10.1.2, 10.2.1, 10.2.2.6, 10.2.2.10, 10.2.3.1, 10.2.3.8
Private Citizens		
James Adcock	0554	10.1, 10.2.1, 10.2.1.2, 10.2.2.1, 10.2.2.4, 10.3.6.4, 10.4.4, 10.4.5.1, 10.4.5.2
Matthew DuPont	TRANS-16	10.1.3
Catherine Easton	TRANS-41	10.2.1, 10.2.2.6
James Farrelly	0535	10.2.2.1
Emanuel Figueroa	TRANS-25	10.2.2.1, 10.2.3.10
Allison Forbes	TRANS-29	10.2.2.1
Alina Fortson	TRANS-35	10.2.1, 10.2.2.1, 10.2.3.8
Joseph Frewer	TRANS-13	10.2.1, 10.2.2.1
Peggy Gilges	0534	10.2.3.10
Carl Henne	0548	10.2.3.10
Sarah Karlin	TRANS-27	10.2.1
Jazzlin Allen	TRANS-11	10.2.3.10
Caroline Keicher	TRANS-20	10.2.1, 10.2.2.4, 10.2.3.10
Matt Kirby	TRANS-36	10.2.1, 10.2.2.1, 10.3.1.2
Michael Kirchner	0544	10.2.3.10
Marissa Knodel	TRANS-15	10.2.2.4, 10.2.3.10, 10.3.6.6
Sarah Larsen	0550	10.2.1, 10.2.2.4, 10.2.3.10, 10.3.1.2
Julie Locascio	TRANS-22	10.2.2.1
Fred Marshall	0547	10.2.3.10,
Dennis McGinn	TRANS-03	10.2.2.10,
Nancy Miller	0549	10.2.2.1,
Doug Molof	TRANS-09	10.2.1, 10.2.2.1,
Eliza Berry	TRANS-07	10.2.1, 10.2.3.10,
Tara Morrow	TRANS-23	10.2.2.1, 10.2.2.2i, 10.2.2.6, 10.2.3.10
Heather Moyer	TRANS-24	10.2.2.1, 10.2.1, 10.2.3.7, 10.2.3.10
Dale Olson	0530	10.3.3, 10.3.6.4
Jim Pierobon	TRANS-28	10.2.2.1, 10.2.2.4
Mary Hamilton	0545	10.2.3.10
Lena Pons	TRANS-06	10.1, 2.A, 10.2.2.4, 10.2.3.1, 10.2.3.3, 10.2.3.7, 10.2.3.10,

Table 10-2 (cont'd)

Index of Comments from Individuals, Federal and State Agencies, and Private Industry

Commenter	Document ID Number a/	Location of Comment Excerpts and NHTSA's Responses
Private Citizens (cont'd)		
Jim Derzon	0551	10.2.2.1,
Jaafar Rizvi	TRANS-37	10.2.1, 10.2.3.8, 10.2.3.10, 10.3.4.2
John Scheiber	0539	10.2.3.10,
Emily Spear	TRANS-44	10.2.1, 10.2.2.10, 10.2.3.10,
Fred Teal, Jr.	TRANS-34	10.2.2.1, 10.2.2.4, 10.2.3.10,
Pamela Woodward	TRANS-18	10.2.2.1, 10.2.2.6
Sam Blodgett	TRANS-12	10.2.2.1, 10.2.3.8, 10.2.3.10
Christina Marie Yagjian	TRANS-21	10.2.1, 10.2.3.10, 10.3.1.2
Charles Yoder	TRANS-43	10.2.2.10
Ceribon	0536	10.2.3.10
Robert Burchard	0533	10.2.3.10
Annie Chau	TRANS-14	10.1, 10.2.2.1, 10.2.3.9, 10.2.3.10,
Robert Dawes	TRANS-40	10.2.3.10
Matt Dernoga	TRANS-10	10.2.2.1, 10.2.3.10
Fred Dobb	TRANS-33	10.2.2.1, 10.3.4.1
State Agencies		
Attorneys General of the States of California, Massachusetts, New Jersey, New Mexico, New York and Oregon; Pennsylvania Department of Environmental Protection; New York City Corporation Counsel	0585	10.1.3, 10.2.1, 10.2.1.1, 10.2.3.8, 10.2.3.9, 10.3.1.2, 10.3.3, 10.3.3.1, 10.3.3.3, 10.3.3.5, 10.1.3,
Stanley Gee, New York Department of Transportation	0588	10.2.2.1, 10.2.2.2, 10.2.2.3, 10.2.2.4, 10.2.2.8, 10.2.3.6, 10.2.3.10, 10.3.2.1, 10.3.2.3
The Northeast States for Coordinated Air Use Management	0559	10.1.2, 10.2.1, 10.2.2.1, 10.2.2.4, 10.2.2.8, 10.2.3.4, 10.2.3.10, 10.3.1.2

a/ Document Identification Numbers in this column are truncated; comment documents on the Federal Docket contain the EIS docket number (NHTSA-2008-0060) in front of the numbers listed in this column.

10.1 PURPOSE AND NEED

Comments

Comment Number: 0554-10
Organization: Individual
Commenter: James Adcock

Given the uncertainty in future gas prices, as evidenced by the disparity between the EIA [Energy Information Administration] values NHTSA [National Highway Transportation Safety Administration] has used vs. recent gas prices, and recent large decreases in the estimated GHG [greenhouse gas] concentrations necessary to reach tipping point [http://www.columbia.edu/~jehl] NHTSA should reduce the numbers of years its proposed regulations extend forward. The farther one projects into the future, the greater the error in these projections. Given the rapid changes in our understanding of Global Warming and GHG, and the rapid changes in gas prices, it would be rational to extend the regulations forward for fewer years, allowing NHTSA to respond more appropriately once better understanding of these issues have been reached.

Comment Number: 0564-15
Organization: Consumer Federation of America
Commenter: Mark Cooper

Throughout its analysis, NHTSA indicates that certain assumptions were made with incomplete data and without critically important information about the auto market. Nevertheless, for no apparent reason, NHTSA set this low standard for the maximum period allowable under the law. NHTSA excuses the failure to obtain complete and accurate data for its assumptions with a claim that it must promulgate a standard for model year 2011 by mid-2009 in order to give automakers proper advanced notice. While that is correct, there was no need to rush to promulgate standards for later model years, certainly not 2013 through 2015. With numerous important issues still under study, it was incredibly irresponsible for NHTSA to write rules for years that do not require an expedited process, when additional time would afford a much more informed rulemaking. Critical information missing from NHTSA's analysis includes:

- The effectiveness of available technologies for improving fuel economy;
- The cost of technologies for improving fuel economy;
- Market shares of various models in the vehicle fleet; and
- The value of reduced emissions of greenhouse gases.

Unbelievably, NHTSA fully recognized that it did not have reliable and accurate information in these areas and would obtain that information only after the rule was promulgated. Additional and critical information missing from the Administration's analysis resulted in NHTSA making projections that were way ahead of the data available to them. This is, however, data that could be obtained, which would provide a much firmer basis for developing a rule that applies to 2013 vehicles and beyond. Without this critical data, NHTSA's conclusions:

- Relied on old sales data and projections in a time of rapid change in the industry;
- Failed to consider the impact of vehicle mix on safety;
- Did not incorporate technology adoption strategies ("pull ahead") that speed penetration of fuel-saving technology into the vehicle fleet;

- Ignored recent changes in fuel economy and the practices of automakers in adopting fuel economy technologies; and
- Overlooked changes in vehicle usage patterns across time.

Some underlying data used by NHTSA is suspect and would benefit greatly from even a small amount of further research and disclosure by the automakers, including:

- The production plans of automakers;
- Market share and price data;
- The validity of the speed of adoption of technology (phase-in caps) in light of dramatic changes in auto market behavior; and
- Assumptions about the compliance strategies of auto manufacturers.

There is no question that NHTSA needed to get the rulemaking started for 2011, and perhaps 2012, so it could complete the process eighteen months before the model year, as mandated by the new statute, but going beyond that, in light of the incredible importance of this regulation and the woeful lack of knowledge of critical aspects of the analysis, was irresponsible. NHTSA certainly could have moved forward with this rulemaking in light of these uncertainties by providing the minimum notice necessary, thereby keeping its options open for writing fuel economy standards for later years based on better information.

By rushing ahead with imperfect knowledge, faulty assumptions and a bias against fuel savings, NHTSA's approach denies the critical benefits of reduced gasoline and oil consumption to individual consumers and the nation as a whole. Therefore, it was unreasonable for NHTSA to set standards that run so far ahead of its knowledge. Adopting proposed standards for 2013 to 2015 based on such faulty data is arbitrary and capricious and leads to standards that are unreasonable.

The damage of NHTSA's proposed rule goes beyond the immediate impact of lost savings. By relying on a flawed analytic framework and flawed empirical specifications, this rulemaking undermines future rulemakings in two ways.

- First, procedurally, once this framework is set, it will be difficult to change. Inertia and judicial deference make it difficult to reverse agency decisions.
- Second, setting a low standard makes it far more difficult for the industry to meet higher future standards. Requiring large jumps in improvements is always more expensive than gradual improvements toward a goal, so fixing the mistakes later is harder because the industry is farther behind.

Because of the enormous importance of this particular rulemaking, it is critical for NHTSA to get the fundamental framework correct from the start and to set the standard at a reasonable and achievable level.

Comment Number: TRANS-05-4
Organization: Consumer Federation of America
Commenter: Mark Cooper

Our recommendation that you increase the level of the standards for 2011 and 2012, and that you withdraw the 2013 through 2015 proposals so that you can fix the fundamentally analytic flaws in the analytic framework and the erroneous economic assumptions is all the more compelling in light of the mounting evidence that the rule NHTSA has proposed fails to be a reasonable standard that comports with the act.

Comment Number: TRANS-06-9
Organization: Public Citizen
Commenter: Lena Pons

NHTSA has not presented a regulatory alternative that would result in actually reducing greenhouse gas emissions from motor vehicles. This is unacceptable. NHTSA has the responsibility to use its expertise to pose a theory wherein there is a regulatory alternative that could result in producing impacts that actually reduce greenhouse gas emissions from the motor vehicle sector.

And considering again that there is leeway for the agency to consider impacts that are the result of regulations that are outside of the lead agency's jurisdiction, then it could look at things that would address vehicle miles traveled reductions, or other types of policies that might, as a whole, result in reductions that will result in improving the situation in terms of global warming, which again goes to the issue of context.

Comment Number: TRANS-14-3
Organization: U.S. Public Interest Research Group
Commenter: Annie Chau

[NHTSA should rescind] the 2013 to 2015 standards, which are based on incomplete information.

Response

Commenters suggested that NHTSA set model year (MY) 2011-2012 standards in this current rulemaking and postpone the setting of MY 2013-2015 standards until the agency receives additional information. Although we appreciate the commenters' suggestion, we have concluded that the best approach for achieving at least the 35-mile-per-gallon (mpg) level specified in the Energy Policy and Conservation Act of 1975 (EPCA) is to set standards 5 years in advance, a regulatory option Congress has explicitly provided NHTSA in that statute. By doing so, NHTSA also promotes regulatory stability and allows manufacturers appropriate lead time to implement approaches to comply with more ambitious Corporate Average Fuel Economy (CAFE) standards.

NHTSA acknowledges that the amount of information concerning a future model year steadily increases as time passes. If NHTSA waits the maximum amount of time permissible under EPCA (that is, until just 18 months before a model year) to set standards for that model year, NHTSA would have little ability to require the manufacturers to make more than relatively minor improvements to the product plans they would already have established for that year. Changing plans requires lead time. Due to the nature of automobile production, manufacturers generally set production and supply contracts years in advance. While minor changes can be made in 18 months, substantial changes would be economically impracticable in such a short time.

For both the Notice of Proposed Rulemaking (NPRM) and for the alternatives described in this Final Environmental Impact Statement (FEIS), NHTSA used the best available information it could gather, including all the comments it received on its NPRM, and consulted with various experts, inside and outside the Federal Government, to derive the estimates it is using in the Volpe model. Waiting several years to set MY 2013-2015 CAFE standards might enable NHTSA to obtain additional and more up-to-date information regarding, for example, available technologies, product plans and market share, among other Volpe model components and inputs. However, in deciding whether to wait, NHTSA would also have to weigh the fact that the loss of several years of lead time before MY 2013-2015 would mean that, on balance, NHTSA would have to set lower standards than we could set now. The longer NHTSA waited to set the standards, the less ability it would have to require manufacturers to depart from their product plans for those model years, while still satisfying the EPCA factors of technological feasibility and economic practicability. More lead time allows manufacturers to structure their production cycles to meet more aggressive future standards.

Congress has already considered whether it is appropriate to set standards for up to 5 model years. In enacting the Energy Independence and Security Act of 2007 (EISA), Congress granted NHTSA the discretion to set CAFE standards anywhere from 1 model year to 5 model years at a time. See 49 United States Code (U.S.C.) § 32902(b)(3)(B). Further, Congress provided a process in EPCA by which NHTSA may amend previously promulgated CAFE standards if it determines that a different level would be the maximum feasible level for that model year. See 49 U.S.C. § 32902(c). Hence, there is a process to refine the CAFE standards if new information concerning the maximum feasible level becomes available after CAFE standards are initially set. Taking into account these available regulatory strategies in light of the comments raised, NHTSA believes that the best approach is to set CAFE standards for 5 model years. This will provide useful and important lead time information to the manufacturers, while preserving a regulatory tool to make adjustments to CAFE standards if new information should so warrant.

As explained in the NPRM, NHTSA will work with the National Academy of Sciences to update the list of fuel-saving technologies and their associated costs and effectiveness numbers on a 5-year interval, as required by EISA. To ensure that the combined passenger-car and light-truck fleets meet the statutorily mandated floor of 35 mpg in 2020, NHTSA will continue to request product plan updates from manufacturers during the 5 years covered by this rulemaking to assess whether the industry is on track and whether any changes to the standards are needed.

The comment that NHTSA must look at regulatory options that would reduce vehicle miles traveled (VMT) or GHG emissions goes beyond NHTSA's statutory authority. As explained in the NPRM and the Draft Environmental Impact Statement (DEIS), EPCA (as amended by EISA) requires NHTSA to set average fuel economy standards at "the maximum feasible average fuel economy level that [NHTSA] decides the manufacturers can achieve in that model year." VMT is related to fuel economy in that increases in VMT due, for example, to increases in the vehicle population, will increase fuel consumption and carbon dioxide (CO_2) emissions. More stringent standards will generally increase VMT (because they decrease the per-mile cost of fuel). This is known as the "rebound effect" and is considered by the Volpe model. Similarly, increasing fuel prices will generally decrease VMT. Thus, although CAFE standards indirectly affect VMT, NHTSA cannot control the growth of VMT.

10.1.1 NEPA Process

Comments

Comment Number: 0574-1
Organization: Alliance of Automobile Manufacturers
Commenter: Julie Becker

Moreover, as the Alliance [of Automobile Manufacturers] noted in its NEPA [National Environmental Policy Act] scoping comments, to the extent NEPA applies at all to the process of setting fuel economy standards under EPCA and EISA, it is a supplementary tool designed to provide additional information to NHTSA decisionmakers. It cannot be allowed to overtake or misshape the careful balancing of factors mandated by Congress in EPCA and refined in the Reform CAFE approach under EISA. Under bedrock NEPA precedent, the statute is purely procedural in nature and cannot be used to require an agency to act in any particular way. Numerous individuals or organizations testifying at the August 4 public hearing appeared to suggest otherwise. As it proceeds, NHTSA should be careful to maintain a clear distinction between its substantive obligations under EISA and its procedural obligations under NEPA.

Comment Number: 0576-36
Organization: Public Citizen
Commenter: Joan Claybrook

NHTSA has not completed this draft EIS [Environmental Impact Statement] in accordance with the requirements under the National Environmental Policy Act (NEPA) [42 U.S.C. § 4321 et seq., Pub. L. 91-190 (Jan. 1, 1970)]. This document does not put the potential impacts of fuel economy standards in a context that allows for a meaningful comparison of alternatives, which unfairly biases judgment in favor of NHTSA's preferred action. The purpose of the EIS process is to provide an analysis of the environmental impacts that allows decisionmakers to consider whether the preferred action is also the action that produces the greatest environmental benefits.

Comment Number: 0574-16
Organization: Alliance of Automobile Manufacturers
Commenter: Julie Becker

Sierra is flexible about the process NHTSA could employ to answer these questions [regarding clarification of the benefit estimates that NHTSA is assuming for specific technologies]. They could be resolved by way of a written response, or, more profitably, they could be answered by way of a telephonic conference call in which any relevant staff from NHTSA or the Volpe Center [Volpe National Transportation Systems Center] are made available so that Sierra's consultants could have an interactive conversation with them. The Alliance's [Alliance of Automobile Manufacturers's] only interest is that the questions be answered, and that they be answered as expeditiously as possible. Sierra may have additional questions as it continues its analysis, and so I would also suggest that NHTSA establish a means for resolving those questions that will not require further letter-writing.

In sum, consistent with its obligations under the law and with the diligence and thoroughness for which the agency is known, NHTSA should quickly initiate a process with Sierra to resolve Sierra's serious questions, and bring such a process to a conclusion as soon as is practicable. Please let me know expeditiously if for some reason NHTSA disagrees with the need to resolve Sierra's questions.

Response

NHTSA understands the balancing process required under EPCA, as amended by EISA, and the essentially procedural nature of NEPA. However, NEPA independently requires decisionmakers to integrate its requirements into agency decisions to inform them of the potential environmental impacts of these decisions and to present alternatives for consideration. Accordingly, NHTSA has analyzed the environmental impacts of a wide range of alternatives, some of which might weigh one or more of the four EPCA statutory factors (technological feasibility, economic practicability, the effect of other motor vehicle standards of the government on fuel economy, and the need of the Nation to conserve energy) in a manner that NHTSA might not ultimately accept, as it applies its discretion to determining the "maximum feasible" level for CAFE standards. See 49 U.S.C. 32902(f).

NHTSA believes that we have fully met our responsibilities under NEPA and its implementing regulations. NHTSA has completed a comprehensive analysis of the environmental impacts of seven alternatives ranging from the No Action Alternative to the Technology Exhaustion Alternative. In response to comments, NHTSA has expanded the analysis to account for a variety of different input assumptions. NHTSA's results, first set forth in its DEIS and now in this FEIS, are being used to inform the agency of the range of reasonably foreseeable environmental impacts of setting the final CAFE standards for MY 2011-2015.

Regarding the Sierra Research, Inc. letter to which the Alliance of Automobile Manufacturers (AAM) refers, see responses in Section 10.2.2 (Volpe model) of this chapter.

10.1.2 Timing of NEPA Process/Public Participation

Comments

Comment Number: TRANS-05-1
Organization: Consumer Federation of America
Commenter: Mark Cooper

We urge the administration to hold hearings all across the country, not just here in Washington in the dead of August, so the public can weigh in on the issue of fuel economy, which is vital not only to consumer pocketbooks, but also to national security and the environment.

Consumer attitudes and behavior toward fuel economy play a vital role in NHTSA's market model and analysis, and as we show in our comments, NHTSA has completely misjudged the consumer. There would be no better way for NHTSA to correct this flaw than to hear directly, in person, from the people who it has failed to comprehend in its analysis.

Comment Number: 0559-1
Organization: The Northeast States for Coordinated Air Use Management (NESCAUM)
Commenter: Arthur Marin

In our previous comments, we noted that the Proposed Rule was published on May 2, 2008 with a deadline for comments of July 1, 2008, but NHTSA did not release the DEIS until June 24, 2008. Consequently, there was little opportunity to consider the DEIS while reviewing and developing comments on the Proposed Rule. The applicable federal regulations state, "NEPA procedures must insure that environmental information is available to public officials and citizens before decisions are made and before actions are taken." [Footnote: 40 CFR [Code of Federal Regulations] 1500.1 & 1500.2.] Further, these regulations require federal agencies to "[i]ntegrate the requirements of NEPA with other planning

and environmental review procedures…so that all such procedures run concurrently rather than consecutively." In so doing, the effect is to "[e]ncourage and facilitate public involvement in decisions which affect the quality of the human environment." Unfortunately, by separating the review periods for these two actions, the public involvement processes, both for the Proposed Rule and for the DEIS, were not well served.

Comment Number: 0559-10
Organization: The Northeast States for Coordinated Air Use Management (NESCAUM)
Commenter: Arthur Marin

In the context of these stated purposes of NEPA, we take note of the fact that the notice of proposed rulemaking [NPRM] was published on May 2, 2008 with a deadline for comments of July 1, 2008. However, NHTSA did not release the Draft Environmental Impact Statement until June 24, 2008, and NESCAUM did not receive a copy of the DEIS from NHTSA until June 30, 2008, which is only one day before the rulemaking comment deadline. Consequently, NESCAUM and other public commentators have essentially no opportunity to consider the environmental impacts, as stated by NHTSA, while reviewing and developing comments on the proposed rule. To be consistent with legislative intent and regulations implementing NEPA, NHTSA should provide an additional comment period on the proposed rule after the DEIS becomes final.

NHTSA's selection of the $7 per ton value for the social cost of carbon emissions is one example of how the absence of concurrent processes hinders efforts to provide fully informed comments and make better informed decisions. It would have been beneficial to have had the DEIS in hand while assessing the appropriateness of this figure. Considering the late release of the DEIS relative to the comment period for the proposed rule, there simply is not enough time to adequately formulate a comment in this regard.

Comment Number: 0572-2
Organization: Center for Biological Diversity
Commenter: Brian Nowicki, Mickey Moritz, Kassie Siegel

The NHTSA has also violated NEPA because the NEPA analysis has not informed the EPCA balancing and the Volpe model – rather, the NHTSA has done a post-hoc EIS on the "black box" number from the Volpe model. The federal NEPA regulations are clear on the order in which decision-making must proceed:

The statement shall be prepared early enough so that it can serve practically as an important contribution to the decision-making process and will not be used to rationalize or justify decisions already made (§§ 1500.2(c), 1501.2, and 1502.2). For instance: … (d) For informal rulemaking the draft environmental impact statement shall normally accompany the proposed rule. 40 C.F.R. § 1502.5. See also, *Pit River Tribe v. U.S. Forest Service*, 469 F.3d 768, 785 (9th Cir. 2006) (reviewing relevant statutes and holding that a post-hoc EIS does not cure failure to complete an EIS before lease extensions were granted; "The purpose of an EIS is to apprise decisionmakers of the disruptive environmental effects that may flow from their decisions at a time when they retain a maximum range of options").

Comment Number: 0596-8
Organization: Environmental Defense Fund
Commenter: Martha Roberts

Although the EIS assesses a range of CAFE alternatives, NHTSA selected a preferred alternative (the "optimized" alternative) a priori to the environmental analysis. Nowhere does NHTSA provide a reasoned argument for why the findings of the EIS should not alter the choice of the preferred alternative.

This blatantly contravenes the purpose that "[e]nvironmental impact statements shall serve as the means of assessing the environmental impact of proposed agency actions, rather than justifying decisions already made." [Footnote: CEQ [Council on Environmental Quality] 40 CFR Sec. 1502.2 (g).]

Response

NHTSA recognizes the importance of public input in the NEPA process and has provided ample opportunity for interested parties to be heard. In March and in April 2008, NHTSA informed the public through notices in the Federal Register regarding its plans to prepare an EIS. First, on March 28, 2008, NHTSA published a notice announcing its intent to prepare an EIS and requesting scoping comments. See 73 Federal Register (FR) 16615. One month later, on April 28, 2008, NHTSA published a supplemental notice of public scoping providing additional information about the standards, the alternatives NHTSA expected to consider, and inviting further comments. See 73 FR 22913. On May 2, 2008, NHTSA published a notice of proposed rulemaking proposing standards for MY 2011-2015 passenger cars and light trucks, informing the public that an EIS process was underway, and seeking comments on the proposed rule. See 73 FR 24352. On July 3, 2008, EPA published a Notice of Availability of the DEIS, which reflected our careful review and consideration of public scoping comments and the studies suggested by the commenters. See 73 FR 38204. After issuing the DEIS, NHTSA provided a 45-day public-comment period, which closed on August 18, 2008. On August 4, 2008, well before the close of the comment period, NHTSA held a public hearing on the DEIS in Washington, DC, during which interested parties were invited to testify. Forty-four persons and entities testified at that hearing. Sixty-six persons and entities submitted written comments to the DEIS public docket. NHTSA is confident that it has received full and extensive public input and that it has satisfied the public participation requirements of NEPA and the CEQ NEPA implementing regulations.

An agency may formulate a proposal or even identify a preferred course of action prior to completing work on an EIS. See Association of Public Agency Customer, Inc. v. Bonneville Power Administration, 126 F.3d 1158, 1184 (9th Cir. 1997) (citing Natural Resources Defense Council v. Hodel, 624 F. Supp. 1045 (D. Nev. 1985)). NHTSA has carefully considered, individually and collectively, all comments on the DEIS, and our final action will be fully informed by the environmental review process and analysis of alternatives encompassed in this FEIS.

10.1.3 Document Structure/Readability

Comments

Comment Number: 0575-25
Organization: Union of Concerned Scientists
Commenter: Eli Hopson

One of the overarching challenges with commenting on NHTSA's analysis is the opaqueness of its economic practicability analysis. Because of the complexity of the Volpe model, its use of confidential product plans, limited agency explanations of computer model behavior, and general opaqueness of the agency's measurement process in determining economic practicability, a shadow is cast on the credibility of NHTSA's analysis. While UCS [Union of Concerned Scientists] appreciates the great deal of effort put into providing the information in the NPRM and PRIA [Preliminary Regulatory Impact Analysis], more explicit information is necessary to effectively and fully comment on the proposed rule.

The mere *appearance* of wrongdoing by either automakers or the agency can undermine the value of this work. As future fuel economy regulations are set, mechanisms must be instituted to improve transparency of the process. Such options could include, for example, improved documentation and on-

site, third-party access to NHTSA-supplied confidential product plan information. (Signed non-disclosure agreements would be required.)

Comment Number: 0576-28
Organization: Public Citizen
Commenter: Joan Claybrook

Another serious problem with the Volpe Model is that it is not transparent, which significantly undermines the ability of public commenters to provide an opinion as to whether NHTSA has set standards at the maximum feasible level that maximizes public good. Automakers provide the inputs for the Volpe Model through product plans, which are closed from public view as confidential business information. This significantly biases the standards in favor of industry by shutting the public out of the process. NHTSA does not establish what is technological feasible and economically practicable based on an independent assessment of the current vehicle fleet and the available technology to improve the fleet, but rather accepts industry inputs, which are run through the black box of the Volpe Model, and a variety of "optimization" factors, which are tied to maximizing industry-wide benefits (73 *FR* 24416). In the past, rulemaking NHTSA has done its own research and evaluation of these factors which was more transparent.

Thus, the public is foreclosed from real participation in this system. There is intense public interest in new fuel economy standards. These upgrades are the first for passenger cars in over twenty years, and they will dictate the level of fuel economy new vehicles will get until 2015, which affects the new car market and will skew purchase decisions. High gas prices and concern about global warming contribute to increased consumer interest in fuel economy; however, the agency's scheme for setting fuel economy standards leaves them largely in the dark. Consumers must essentially trust that NHTSA has set standards in their interest using information provided by industry.

Comment Number: 0585-2
Organization: Attorneys General of the States of California, Massachusetts, New Jersey, New Mexico, New York, and Oregon, Secretary Of The Commonwealth of Pennsylvania Department of Environmental Protection, and New York City Corporation Counsel
Commenter: Edmund Brown Jr., Joseph Powers, Martha Coakley, Michael Cardozo, Anne Milgram, Gary King, Andrew Cuomo, Hardy Myers

In order to fulfill NEPA's goal of informing the public of the environmental impacts of the agency's decision, the EIS must "be written in plain language and may use appropriate graphics so that decisionmakers and the public can readily understand them" (40 C.F.R. 1502.8). Further, the EIS "must be organized and written so as to be readily understandable by governmental decisionmakers and by interested non-professional laypersons likely to be affected by actions taken under the [FEIS]." *Earth Island Institute v. U.S. Forest Service*, 442 F.3d 1147, 1160 (9th Cir. 2006) (quoting *Oregon Environmental Council v. Kunzman*, 817 F.2d 484, 494 (9th Cir. 1987). The DEIS fails to meet this standard.

Comment Number: TRANS-16-5
Organization: Individual
Commenter: Matthew Du Pont

You have a duty to make that EIS report transparent to the public … it's currently failing to do so.

And this leads to the conclusion that simply by throwing on a very accessible, readable, lower level two to three page summary in addition to what you already have in this report, you can make this much more accessible to the public who demand this information.

So first of all, I think it's not too controversial that people find this issue important, after all this directly impacts global warming which according to a March 2006 *Time* [Magazine] poll, 88 percent of Americans find relevant for future generations.

But more importantly for our purposes here, 49 percent of Americans think that this is one of the issues that is very important to them, one of the issues that they are going out of their way to actually find out information about, instead of just reading it in the papers. So we know it's important, we know it's important to Americans.

And secondly, it's very non-controversial that the EIS is supposed to inform the public, not just policy makers. People look to the CEQ regulations governing the EIS creation, which cite a purpose of the EIS as "to encourage and facilitate public involvement in decisions which affect the quality of the human environment." And there are also several clarity and brevity requirements meant to make them more accessible to the public.

So we've got this demand for information. We've got this EIS with a burden to show the public how that information is being used. It sounds pretty good. But in reality right now, this particular environmental impact statement is failing to make itself accessible to the public.

I mean, first of all there is the length. Now, the CEQ guidelines say that reports should be less than 150 pages in most cases, in very special cases under 300. So if I, as an average citizen who is not getting paid to deal with these issues, am confronted with this 414 page monstrosity, it's highly likely I'm not going to read more than the summary, if I read anything at all.

But this brings us to the second problem. Even if I got to that summary, the very first sentence in the forward, I am confronted with no less than nine acronyms, probably six of which I don't know. It's just not very encouraging for me as an average person trying to vote correctly, to advocate policy, to be able to read this report, although maybe it's applicable to policy makers. But I, you know, as just a regular citizen, it's hard for me to get through.

So, and it doesn't get much better from there on in because the summary assumes knowledge of a lot of things. It assumes that I know why rising sea levels are bad, which admittedly is explained in the report, but I'm probably not going to go to page 270 or wherever that's explained, if I'm not grabbed in the beginning. And so we have this inaccessibility, and I think it's a huge problem. The citizens who are interested but don't have a career as a nonprofit policy wonk or an auto industry lobbyist are simply not going to read a 414 page report, or even a 25 page summary.

And this brings me to the point of my speech, something you could do very easily. It's not a solution, but it's certainly a step in the right direction. By simply providing a short jargon free summary, say just two to three pages long, in addition to what's already in the report, specifically labeled, for average citizens who don't know as much about the issue, you can allow people to make meaningful conclusions from this EIS, to be able to read it and perhaps talk to their neighbor about it, or talk to their Congress person.

Response

A number of commenters asserted that the DEIS failed to inform the public because it lacked transparency, particularly regarding the use of confidential manufacturer product plans and the Volpe

model. NHTSA believes that the least-speculative approach to assessing the costs and benefits of setting CAFE standards entails the use of the product plans of vehicle manufacturers for the periods at issue. These plans enable NHTSA to create standards that are tied to realistic production goals. The Volpe model is a tool we use to apply technologies and assess costs and benefits given a range of input assumptions, including product plan information, technology costs and effectiveness, and economic externalities. NHTSA selects the input assumptions based on the best available information and data at the time of the rulemaking. NHTSA recognizes that some of the assumptions could change over time, and updates these assumptions as new and more-up-to-date information becomes available.

With the exception of manufactures' confidential product plans, which are a crucial part of the process and subject to confidentiality under federal regulation, NHTSA provides interested parties and the public with all relevant data and information used in the Volpe model and the rationale for selecting those inputs. See 5 U.S.C. § 552(b)(4); 18 U.S.C. § 1905; 49 U.S.C. § 30167(a); 49 CFR Part 512; Critical Mass Energy Project v. Nuclear Regulatory Comm'n, 975 F.2d 871 (D.C. Cir. 1992); FEIS Section 3.1.4 (detailing Volpe model inputs); NPRM, 73 FR 24352, 24391 (May 2, 2008); CAFE Compliance and Effects Modeling System Documentation, Docket No. NHTSA-2008-0089-0047; How to Obtain Volpe Model Installation Files, Docket No. NHTSA-2008-0089-0048; PRIA, Docket No. NHTSA-2008-0089-0003.1, pp. V1-V141. In an effort to provide further clarification, Chapter 2 and Section 10.2.2 provide more information about how the Volpe model works.

NHTSA has made every effort to make this FEIS as accessible and reader-friendly as possible. However, the extreme complexity and uncertainty surrounding climate-change science and the difficulty associated with measuring emissions and impacts warrant detailed and technical discussion. Readers should turn to the FEIS Summary, which provides a short, plain-language discussion of the analysis and findings described in the FEIS chapters and appendices.

10.1.4 NHTSA's Decision to Prepare an EIS

Comment

Comment Number: 0574-14
Organization: Alliance of Automobile Manufacturers
Commenter: Julie Becker

For the foregoing reasons [functional equivalence doctrine, NHTSA's pending en banc petition, the Ninth Circuit's en banc *McNair* decision, unlawful consideration of transboundary effects], NHTSA should either determine not to proceed with a NEPA EIS or, alternatively, announce its desire to do so only on a voluntary basis, producing in the alternative an EA/FONSI [Environmental Assessment/Finding of No Significant Impact]. In addition, NHTSA must address the other comments on the DEIS advanced by the Alliance herein and in its scoping comments filed June 2, 2008.

Comment Number: 0574-3
Organization: Alliance of Automobile Manufacturers
Commenter: Julie Becker

"[P]rojected differences among the CAFE alternatives are small — i.e., CO_2 concentrations as of 2100 are within 1.7 to 3.2 parts per million across alternatives . . . — regardless of reference scenario and climate sensitivity." 73 Fed. Reg. at 37,926. NHTSA's analysis of the effects on rainfall and sea level rise are similar. See DEIS 2-17 to 2-18. See also 73 Fed. Reg. at 37,926 (predicting sea level rise by the year 2100 by 0.1 centimeters). All of these impacts are sufficiently small that they fully vindicate NHTSA's

decision in prior CAFE rulemakings to perform environmental assessments ("EAs") in lieu of performing full-blown EIS-level analyses.

Comment Number: 0574-9
Organization: Alliance of Automobile Manufacturers
Commenter: Julie Becker

On February 6, 2008, with the permission of the Solicitor General, NHTSA petitioned for en banc [in full court] review of the Ninth Circuit's decision concerning NHTSA's MY 2008-2011 light truck CAFE rules in *Center for Biological Diversity* [*Center for Biological Diversity v. NHTSA*, 508 F.3d 508 (9th Cir. 2007)]. NHTSA argued that it could not be ordered to complete an EIS, but instead, consistent with limitations on remedies under the Administrative Procedure Act (which provides the only basis for enforcing NEPA in court), NHTSA had to be allowed the choice to exercise its discretion on remand as to whether to prepare an EIS or an EA. That en banc petition remains pending.

It is wholly inconsistent for NHTSA to voluntarily perform an EIS in this CAFE rulemaking while its en banc petition is pending in the Ninth Circuit, absent some explanation of independent reasons for doing so. NHTSA's present course of action risks mooting the en banc petition. (The Alliance points out this issue for NHTSA's consideration without conceding that the voluntary preparation by NHTSA of an EIS in this rulemaking would moot the pending en banc petition. Clearly, the agency would have good arguments that even the voluntary preparation of an EIS on remand would not moot the case.) In order to maintain consistency with the position taken in the Ninth Circuit, NHTSA should issue, in the alternative, an EA/FONSI form of NEPA compliance document. The evidence NHTSA has developed in the DEIS amply supports a conclusion that environmental impacts are minimal. Doing so would ensure that the pending en banc petition in *Center for Biological Diversity* remains unaffected.

In its en banc decision in *Lands Council, Inc. v. McNair*, --- F.3d ---, 2008 WL264001 (9th Cir. July 2, 2008), the Ninth Circuit took a major step to bring its NEPA jurisprudence into greater harmony with the NEPA case law of other Circuits. In *McNair*, the Ninth Circuit overruled a number of its prior panel opinions in the NEPA area. The decision should be carefully considered by NHTSA in connection with finalizing its NEPA analysis for this rulemaking. (In directing NHTSA's attention to the McNair decision, which as mentioned brings the Ninth Circuit more in line with other Circuits, we also note that even if a future final rule emerging from these proceedings were to be challenged, it is not a foregone conclusion that such a challenge would occur in the Ninth Circuit.) One aspect of the decision that NHTSA should particularly note, which is consistent with its approach in the DEIS (but inconsistent with the approach of many in the August 4 public hearing) is the following: "[T]o require the Forest Service to affirmatively present every uncertainty in its EIS would be an onerous requirement, given that experts in every scientific field routinely disagree; such a requirement might inadvertently prevent the Forest Service from acting due to the burden it would impose." (*Lands Council, Inc. v. McNair*, --- F.3d ---, 2008 WL264001 (9th Cir. July 2, 2008) at *17)

Comment Number: TRANS-01-2
Organization: Alliance of Automobile Manufacturers
Commenter: Julie Becker

The next issue relates to NHTSA's ability to defend its position in ongoing or future litigation. Let me explain. NHTSA petitioned the Ninth Circuit to review en banc the *Center for Biological Diversity* decision. One question before the en banc panel would be whether the reviewing Courts lack the power to order the preparation of an EIS as opposed to ordering the agency to reconsider whether an EIS is appropriate.

The en banc petition has not yet been acted upon. Since the position NHTSA took there was sanctioned by the solicitor general, it would seem that NHTSA needs to reserve its right not to perform an EIS at all.

In order to preserve that right, NHTSA should also produce an environmental assessment, a finding of no significant impact for the current rulemaking. If NHTSA decides to proceed in any other manner, it risks wounding its own en banc petition. So it is critical for NHTSA to take this approach.

Comment Number: TRANS-04-2
Organization: National Automobile Dealers Association
Commenter: David Westcott

In the past, NHTSA has consistently and adequately assessed and accounted for the potential environmental impacts of its proposed CAFE standards. NADA [National Automobile Dealers Association] therefore disagrees with the 2007 Ninth Circuit Court of Appeals decision in *Center for Biological Diversity v. NHTSA* which reviewed NHTSA's '06 reform light truck standards, and suggests that it is incumbent upon NHTSA to conduct a formal EIS in conjunction with its model year 2011-2015 proposal, CAFE proposal.

Response

NHTSA agrees that NEPA does not require an agency to evaluate every possible uncertainty. NHTSA disagrees that the proper course is for NHTSA to publish both an EA and an EIS, regardless of circumstances. Such an approach would confuse the analysis. In any case, on August 18, 2008, the Ninth Circuit vacated and withdrew its decision in Center for Biological Diversity v. NHTSA, 508 F.3d 508 (9th Cir. 2007). See Center for Biological Diversity v. NHTSA, 2008 WL 3822966 (9th Cir. 2008). Specifically, the Ninth Circuit vacated its opinion requiring NHTSA to prepare an EIS in connection with its CAFE rulemaking, and remanded to NHTSA to prepare either a revised EA or an EIS, as appropriate. In so doing, the Ninth Circuit denied as moot NHTSA's petition for rehearing with suggestion for rehearing en banc. NHTSA has decided that it is appropriate to prepare an EIS.

10.1.5 Functional Equivalence Doctrine

Comments

Comment Number: 0574-17
Organization: Alliance of Automobile Manufacturers
Commenter: Julie Becker

NHTSA includes several paragraphs in its DEIS arguing that the functional equivalence doctrine does not apply to CAFE standard-setting under EPCA or EISA. See DEIS at 1-16 to 1-17. This attempted rebuttal does not adequately address the Alliance's NEPA scoping comments for several reasons. First, NHTSA does not consider the cases cited by the Alliance and the point made there that the functional equivalence doctrine has been applied by courts to statutes other than the Clean Air Act and Clean Water Act and in favor of agencies other than the EPA [U.S. Environmental Protection Agency]. NHTSA's rebuttal effectively continues to assert that the functional equivalence doctrine applies only in such highly limited situations, without addressing the other authorities brought to its attention.

Second, NHTSA's rebuttal does not attempt to compare the procedures mandated in statutory contexts where the courts have found the functional equivalence doctrine to apply with the statutory procedures created in EPCA and EISA. Without such a comparison, it is empty for NHTSA to simply declare that the functional equivalence doctrine is only narrowly drawn. Moreover, NHTSA's attempted rebuttal

avoids addressing cases like *Portland Cement Ass'n v. Ruckelshaus*, 486 F.3d 375, 384 (D.C. Cir. 1973), *cert. denied*, 417 U.S. 921 (1974) which interprets a vague provision of the Clean Air Act (requiring EPA only to impose "the best system of emission reduction") as requiring the functional equivalent of NEPA analysis.

Third, NHTSA's argument is illogical, because it would render the functional equivalence doctrine useless. Under NHTSA's reasoning, a statute would have to specify a set of procedures that is essentially identical to NEPA (plus the great detail in NEPA's regulations) before it would serve to require the functional equivalent of NEPA analysis. But if that were the case, then the doctrine would serve no purpose at all and would fail to relieve agencies of any kind of compliance burden. Instead, as *Portland Cement* explains, functional equivalence exists whenever a "workable balance is struck between some of the advantages and disadvantages of full application of NEPA." *Portland Cement*. Compare *Center for Biological Diversity v. NHTSA*, 508 F.3d 508, 527-28 (9th Cir. 2007). (EPCA creates a "reasonable" balancing of multiple variables for courts to review deferentially.)

Fourth, NHTSA provides no response at all to subsection III.A.2 of the Alliance's NEPA scoping comments. That subsection makes the point that the passage of EISA and the various directives it gives to NHTSA to consider environmental matters, as well as EISA's legislative history, indicates that environmental issues were in the foreground of Congress's mind in adopting that statute, and on that basis the functional equivalence doctrine can be applied.

Finally, even if NHTSA decides not to rely solely on the functional equivalence doctrine, it should recognize that its invocation in the alternative would help to protect its rulemaking against challenges asserting that the NEPA analysis being performed is defective or insufficient. NHTSA's analysis can be read to suggest that the agency agrees the defense is colorable, but is merely choosing not to invoke it as a discretionary matter. NHTSA should reconsider at least adopting the defense in the alternative, which would permit a court to pass on the issue. There is no downside to the agency acting in that fashion.

Comment Number: 0574-4
Organization: Alliance of Automobile Manufacturers
Commenter: Julie Becker

First, NHTSA argues that the functional equivalence doctrine does not apply to allow NHTSA not to perform an EIS under EPCA and EISA. But NHTSA's analysis in this respect is conclusory and fails to adequately respond to the Alliance's analysis supplied to the agency in its June 2, 2008 comments.

Second, even if the functional equivalence doctrine does not apply, NHTSA has not taken due account of the en banc petition it filed, with the permission of the Solicitor General, in the Ninth Circuit in *Center for Biological Diversity v. NHTSA*, No. 06-71891 (and consolidated cases). Should NHTSA vindicate the position it has taken in that en banc petition, then the agency could viably choose not to perform an EIS on remand. Yet, NHTSA is currently proposing to perform an EIS. NHTSA should not take this position before the pending en banc petition is resolved. Instead, NHTSA should at least decide in the alternative that performing an EA and issuing a finding of no significant impact ("FONSI") would be sufficient NEPA compliance to support the NPRM here.

Third, NHTSA should consider the Ninth Circuit's recent en banc decision in *Lands Council, Inc. v. McNair*, --- F.3d ---, 2008 WL 264001 (9th Cir. July 2, 2008). In that case, the Ninth Circuit overturned several aspects of its aggressive approach to the NEPA statute, bringing its jurisprudence more in line with of that of other circuits.

Comment Number: TRANS-01-3
Organization: Alliance of Automobile Manufacturers
Commenter: Julie Becker

In its comments, the Alliance noted that NHTSA already considers environmental impact and energy conservation when it sets CAFE standards. Therefore, CAFE rulemaking is the functional equivalent of performing an EIS. Under the functional equivalence doctrine, an agency need not prepare an EIS if it has already undertaken the functional equivalent of an EIS as part of its rulemaking process. However, in its draft EIS for the CAFE rulemaking, NHTSA takes the position that it cannot rely on the functional equivalence doctrine. In our view there is a solid argument for the functional equivalence doctrine here, and NHTSA should reconsider its position on this issue. At a minimum, NHTSA should assert the functional equivalence doctrine as an alternative basis that supports its final course of action.

Response

NHTSA has carefully studied the functional equivalence doctrine, the associated case law, and the Alliance of Automobile Manufacturers' (AAM's) arguments that NHTSA should assert the doctrine's applicability under EPCA. NHTSA declines to adopt the AAM's suggestion. NHTSA believes that its response to the AAM's scoping comment on the issue adequately explains the agency's rationale for this conclusion. See DEIS pp. 1-16 and 1-17.

After receiving the AAM's DEIS comments on this same subject, we again reviewed established case law applying the functional equivalence doctrine, including cases cited by AAM. NHTSA reasserts the conclusions reached in the DEIS. Our review of the cases indicates that the functional equivalence doctrine is not a "broad exemption from NEPA for all environmental agencies or even for all environmentally protective regulatory actions of such agencies." See Environmental Defense Fund v. EPA, 489 F.2d 1247, 1257 (D.C. Cir. 1973). Rather, the doctrine is a "narrow exemption from the literal requirements for those actions which are undertaken pursuant to sufficient safeguards so that the purpose and policies behind NEPA will necessarily be fulfilled." Id. This narrowly drawn exemption has been applied outside of EPA actions on environmental statutes in very few circumstances. These rare cases involved situations "where an agency is engaged primarily in an examination of environmental questions, where the substantive and procedural standards ensure full and adequate consideration of environmental issues." See Cellular Phone Taskforce v. Federal Communications Comm'n, 205 F.3d 82, 94 (D.C. Cir. 2000) (quoting Environmental Defense Fund, 489 F.2d at 1257). NHTSA does not believe that its actions in this rulemaking under EPCA are analogous.

The AAM urged NHTSA to compare the procedures mandated in statutory contexts where the courts have found the functional equivalence doctrine to apply with the statutory procedures created in EPCA and EISA. Nothing in EPCA or EISA explicitly directs NHTSA to consider environmental impacts of the CAFE standards, except what can be read into the statutory factor concerning the need of the United States to conserve energy, one of four factors to be considered in setting the standards. When courts apply the functional equivalence doctrine to excuse agencies from NEPA procedures, they first determine that the agency is in some other way explicitly required to analyze the environmental impacts of the proposed action so that the purposes and goals of NEPA are served, a circumstance that is not present here.

10.1.6 Transboundary Effects

Comments

Comment Number: 0574-12
Organization: Alliance of Automobile Manufacturers
Commenter: Julie Becker

In the DEIS, NHTSA disagrees with the Alliance's reading of NHTSA's pronouncement that "the appropriate value to be placed on changes [in] climate damages caused by carbon emissions should be ones that reflect the change in damages to the United States alone." (73 Fed. Reg. at 24,414) For NEPA purposes, NHTSA insists that "[p]otential environmental impacts are global in this instance and the analysis must look beyond the borders of the United States. . . . NHTSA has an obligation under NEPA to 'recognize the worldwide and long-range character of environmental problems.'" DEIS at 1-11 (quoting 42 U.S.C. § 4332(F)).

However, Section 4332(F), like much in the NEPA statute, is precatory. It does not create an obligation that attaches to the EIS requirement in Section 4332(C), which is judicially enforceable. Moreover, NHTSA selectively quotes Section 4332(f). In its entirety, Section 4332(F) reads as follows:

> The Congress authorizes and directs that, to the fullest extent possible: (1) the policies, regulations and public laws of the United States shall be interpreted and administered in accordance with the policies set forth in this chapter and (2) all agencies of the Federal Government shall . . . .
>
> > (F) recognize the worldwide and long-range character of environmental problems and, where consistent with the foreign policy of the United States, lend appropriate support to initiatives, resolutions, and 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(F).

To simply read this provision is to see why it cannot be read to be judicially enforceable, and to our knowledge has not been read by any court to be directly enforceable. Courts cannot police whether agencies have sufficiently "recognize[d] the worldwide and long-range character of environmental problems." Similarly, courts lack the power to decide whether agencies have lent enough support to programs maximizing international cooperation and protecting the world environment. Compare *Norton v. Southern Utah Wilderness Alliance*, 542 U.S. 55, 66-67 (2004) (unanimous) (to be enforceable, statutory mandates must be "discrete," and on that basis refusing to enforce an overly broad "non-impairment mandate" for wilderness study areas in a statute because "[i]f courts were empowered to enter general orders compelling compliance with broad statutory mandates, they would necessarily be empowered, as well, to determine whether compliance was achieved — which would mean that it would ultimately become the task of the supervising court, rather than the agency, to work out compliance with the broad statutory mandate, injecting the judge into day-to-day agency management.").

Finally, the proviso limiting Section 4332(F) to situations not inconsistent with the foreign policy of the United States is very significant. The United States in the past has argued in numerous different forums that the extraterritorial application of NEPA would interfere with the President's foreign policy prerogatives. "It has been the long-standing position of the Justice Department that NEPA was not intended nor can it be invoked to interfere with the President's authority as Commander-in-Chief, or with his exclusive responsibility for the conduct of foreign affairs, regardless of whether the government action

in question affects the United States environment, the global commons, or the environment of foreign nations, because these responsibilities are confided to the President by the Constitution." Letter from Bruce C. Navarro, Deputy Assistant Attorney General, Department of Justice, to Minority Leader Robert Dole, 3 (Oct. 9, 1990), *quoted in* Joan M. Bondareff, *The Congress Acts to Protect Antarctica*, 1 Terr. Sea J. 223 n.64 (1991).

To support its contrary conclusion that NEPA can and does have extraterritorial application, NHTSA also cites a 1997 guidance document issued by the Council on Environmental Quality ("CEQ"). See id. at 1-11 n.29 (referencing CEQ, *Council on Environmental Quality Guidance on NEPA Analyses for Transboundary Impacts* (July 1, 1997), at 3, available at http://ceq.hss.doe.gov/nepa/regs/transguide.html. The Mexican Trucks decision by the Supreme Court recognizes that CEQ regulations are entitled to deference, see *Public Citizen*, 541 U.S. at 770, but a guidance document of this nature is void because it represents a clear shift in policy that occurred in 1997 without compliance with the Administrative Procedure Act's requirement to subject any substantive change in agency policy to notice-and-comment review by the public. See, e.g., *CropLife Am. v. EPA*, 329 F.3d 876 (D.C. Cir. 2003); *General Elec. Co. v. EPA*, 290 F.3d 377 (D.C. Cir. 2002); *Barrick Goldstrike Mines, Inc. v. Browner*, 215 F.3d 45 (D.C. Cir. 2000); *Appalachian Power Co. v. EPA*, 208 F.3d 1015 (D.C. Cir. 2000). Hence, NHTSA cannot rely on this lone guidance document. It has no legal effect.

Moreover, the guidance document reflects a divergence from Justice Department-approved interpretations of NEPA both prior to 1997 and after 1997. The Navarro letter to Senator Dole referred to above accurately summarizes policy predating the 1997 CEQ guidance document. And the current Administration had repeatedly made clear its position that NEPA is not sufficiently unambiguous to overcome the presumption against extraterritoriality, which remains vital. See *Microsoft v. AT&T Corp*., 127 S. Ct.1746, 1758 (2007). (*Microsoft v. AT&T* also notes that the canon of presuming against extraterritoriality is entirely consistent with a presumption that "'legislators take account of the legitimate sovereign interests of other nations when they write American laws.'" *Microsoft*, 127 S. Ct. at 1758 (quoting *F. Hoffmann-La Roche Ltd. v. Empagran S. A.*, 542 U.S. 155, 164 (2004)). This helps to explain why Section 4332(F) of NEPA, with its emphasis on agencies giving some consideration to the world environment is fully consistent with concluding that the NEPA statute's enforceable duties nonetheless apply only to require the consideration of domestic effects.) To name just two examples, the Bush Administration took that position in *NRDC v. Department of the Navy*, No. CV-01-07781 CAS(RSZ)(C.D. Cal.) and *Manitoba v. Norton*, No. 02-cv-02057 (RMC) (D.D.C.). NHTSA nowhere even acknowledges these briefs, which represent the true position of the United States spanning across multiple agencies. See 28 U.S.C. § 516 (Attorney General represents the United States and agencies thereof in litigation). These positions therefore clearly trump the unlawfully issued and procedurally defective CEQ guidance document. At the very least, NHTSA must consider the positions taken in these briefs and others similar cases (by, *inter alia*, consulting with the Department of Justice) before deciding that NEPA applies extraterritorially in a final EIS or other final document issued for purposes of complying with the NEPA statute.

Comment Number: 0574-7
Organization: Alliance of Automobile Manufacturers
Commenter: Julie Becker

NHTSA concludes that NEPA requires it to analyze transboundary effects associated with the NPRM's proposed CAFE standards — especially climate-change effects outside the United States. This runs contrary to longstanding litigation positions approved by the Department of Justice. NHTSA does not even attempt to grapple with those prior positions in the DEIS. Since NHTSA's analysis concludes that the worldwide effects of higher CAFE standards would be very small, then they logically would be reduced even further once those effects are scaled back to effects within the United States alone. The

Alliance has also submitted a study by National Environmental Research Associates ("NERA") bearing on this issue. That study attempts to calculate the magnitude of properly limiting an analysis of the social costs of carbon emissions to impacts within the United States alone. The analysis in that study, if adopted by NHTSA, would buttress the conclusion that the CAFE rulemaking here can be supported by an EA/FONSI in preference to an EIS. Instead, the DEIS makes no mention of this analysis.

Comment Number: TRANS-01-4
Organization: Alliance of Automobile Manufacturers
Commenter: Julie Becker

The draft EIS appears to be setting a significant precedent regarding analysis of the trans-boundary effects.

On page 1-11 of the draft EIS NHTSA argues it should analyze trans-boundary effects of the CAFE standards quoting a 1997 CEQ guidance document stating that agencies must analyze such effects underneath them. The statement seems directly at odds with judicial precedent and agency precedent, and we would like for NHTSA to reconsider this.

Response

The AAM misunderstands NHTSA's analysis in the DEIS. According to the AAM, NHTSA has concluded that "NEPA requires it to analyze transboundary effects associated with the NPRM's proposed CAFE standards – especially climate-change effects outside the United States." In fact, the DEIS and this FEIS consider environmental impacts relevant to the United States that stem from emissions generated in the United States that subsequently would affect both the U.S. and the global environment. As explained in the DEIS, an appropriate discussion of global climate change does not make sense if it is limited to analysis of emissions within the United States, because this environmental problem is inherently global in nature. Climate science focuses on the effects of carbon emissions in the global atmosphere because the atmospheric concentration of greenhouse gases is essentially uniform across the globe. That is, carbon emissions from one nation disperse into the global atmosphere and have impacts in other nations, and conversely, benefits from emissions reductions in one nation are felt in all nations for the same reason. Nevertheless, NHTSA considers the AAM's comment as a suggestion to focus its environmental impacts analysis within the United States. NHTSA agrees that this type of national rulemaking warrants specific discussion of regional U.S. impacts and how global climate change specifically impacts the United States. NHTSA devoted substantial parts of the DEIS and this FEIS to such a discussion.[1]

[1] *See DEIS Sections 3.2, 4.2 (Energy); 3.3, 4.3 (Air Quality); 3.4.2.2.1 (United States Climate Change Effects); 3.5.4 (Safety and Other Human Health Impacts); 3.5.5 (Hazardous Materials and Regulated Wastes); 3.5.7 (Historic and Cultural Resources); 3.5.8 (Noise); 3.5.9 (Environmental Justice); 4.5.3.3.2 (Observed and Projected Impacts of Climate Change on Freshwater Resources in the United States – Freshwater Resources); 4.5.3.3.3 (Precipitation); 4.5.3.3.4 (Surface Water); 4.5.3.3.6 (Water Quality); 4.5.3.3.7 (Extreme Events – Floods and Drought); 4.5.4.1.2 (Terrestrial Ecosystems in the United States); 4.5.4.2.2 (Projected Impacts of Climate Change in the United States – Terrestrial Ecosystems); 4.5.5.2.1 (Projected Impacts of Climate Change for the United States – Coastal Systems and Low-lying Areas); 4.5.6.2.1 (Projected Impacts of Climate Change for the United States – Food, Fiber, and Forest Products); 4.5.7.2.1 (Projected Impacts of Climate Change for the United States – Industries, Settlements, and Society); 4.5.8.3 (Projected Health Impacts of Climate Change on the United States); 4.6.2.2 (Effects of Climate Change in the United States – Environmental Justice). See FEIS Sections 3.2, 4.2 (Energy); 3.3, 4.3 (Air Quality); 3.4.2.2.1 (United States Climate Change Effects); 3.5.4 (Safety and Other Human Health Impacts); 3.5.5 (Hazardous Materials and Regulated Wastes); 3.5.7 (Historic and Cultural Resources); 3.5.8 (Noise); 3.5.9 (Environmental Justice); 4.5.3.3.2 (Observed and Projected Impacts of Climate Change on Freshwater Resources in the United States – Freshwater Resources); 4.5.3.3.3 (Precipitation); 4.5.3.3.4 (Surface Water); 4.5.3.3.6 (Water*

NHTSA does not presume to invoke NEPA in such a way as to interfere with the President's exclusive responsibility for the conduct of foreign affairs. As explained above, the inherently global nature of climate change makes a global-level discussion necessary. Transportation-sector carbon emissions in the United States contribute to global climate change, which in turn affects various resources and regions within the United States. This relationship of U.S. emissions to a global environmental phenomenon and the associated impacts that affect the quality of the human environment in the United States warrant discussion in this FEIS.

The AAM asserts that NHTSA's analysis of the global effects of CO_2 emissions is unlawful because 42 U.S.C. § 4332(F) is not an enforceable statutory mandate, and the CEQ guidance document NHTSA cited in the DEIS was improperly promulgated. NHTSA expresses no opinion as to the enforceability of 42 U.S.C. § 4332(F), but disagrees with the AAM's dismissal of these sources as expressing the purpose and intent of NEPA. The AAM overlooks the more important point that NEPA commands an agency to analyze reasonably foreseeable impacts on the human environment. Such an analysis necessarily includes potential impacts related to global climate change.[2] To conduct a proper analysis of the impacts on the United States, it is necessary to look at global temperature, precipitation, and sea-level change because current climate models are not sensitive enough to enable NHTSA to model unique temperature, precipitation, and sea-level changes for the United States or for particular regions within the United States.

Quality); 4.5.3.3.7 (Extreme Events – Floods and Drought); 4.5.4.1.2 (Terrestrial Ecosystems in the United States); 4.5.4.2.2 (Projected Impacts of Climate Change in the United States – Terrestrial Ecosystems); 4.5.5.2.1 (Projected Impacts of Climate Change for the United States – Coastal Systems and Low-lying Areas); 4.5.6.2.1 (Projected Impacts of Climate Change for the United States – Food, Fiber, and Forest Products); 4.5.7.2.1 (Projected Impacts of Climate Change for the United States – Industries, Settlements, and Society); 4.5.8.3 (Projected Health Impacts of Climate Change on the United States); 4.6.1.2 (Effects of Climate Change in the United States – Environmental Justice).

[2] *The Federal Government (U.S. Climate Change Science Program) has recognized that global climate change is having and will have substantial effects on the United States. See generally http://www.climatescience.gov/Library/default.htm (last visited September 4, 2008).*

10.2 PROPOSED ACTION AND ALTERNATIVES

10.2.1 General Context Comments

Comments

Comment Number: 0557-16
Organization: The Natural Resources Defense Council
Commenter: Luke Tonachel, Brian Siu

The NHTSA CAFE DEIS should distinguish how more aggressive alternatives to the proposed standard put the U.S. on a more certain path for solving global warming.

Comment Number: 0598-7
Organization: Sierra Club
Commenter: Caroline Keicher

Fuel economy is only one policy in the tool bag – one which can be effectively utilized to decrease the 20% of U.S. CO_2 emissions that spew from our cars and light trucks. If we are to achieve the goal of the averting dangerous global warming – which requires an 80% reduction in CO_2 below 2000 levels – then we need to assess the CAFE options in this context. In other words, NHTSA should evaluate which of the "right" scenarios will best help the U.S. reduce its emissions to the levels required to avoid dangerous climate change, not whether any of the scenarios will make a difference if we've already gone too far. We must also take measures now to reduce the rate at which emissions are growing. In this context, faster fuel economy increases will result in faster turnover of the fleet, help drive new fuel saving technologies into vehicles, and put the U.S. on the right path to reducing global warming emissions.

Comment Number: 0550-3
Organization: Individual
Commenter: Sarah Larsen

I feel the most disappointing thing about the Draft Environmental Impact Statement is that it fails to analyze the benefits of greenhouse gas emission reductions in the proper context. When NHTSA tries to determine the difference in global ocean temperature rise in the year 2100 resulting from a 31.6 mpg standard vs. a 35 mpg standard, statistically, there is none; however, this does not mean that raising fuel economy standards faster will not have a significant impact in our struggle to reduce global warming pollution.

Comment Number: 0550-7
Organization: Individual
Commenter: Sarah Larsen

In the United States, emissions from the transportation sector account for roughly 20% of our country's greenhouse gas pollution; therefore, any projected decreases in greenhouse gas emissions arising from increased fuel economy standards can never be greater than 20%. For that reason, reductions should be considered as a proportion of the 20% – not as a proportion of the entire planet's combined carbon emissions.

Comment Number: 0554-7
Organization: Individual
Commenter: James Adcock

"Divide and Conquer" NHTSA's analysis of GHG emission from cars and trucks which only looks at U.S. cars and trucks, only looks at the regulatory delta of those cars and trucks, and only looks at the U.S. part of the SCC [social cost of carbon] value of those cars and trucks is a case of "Divide and Conquer" where each regulatory agency of the government claims its actions are small enough to be considered "negligible" in the global context, whereas the reality is that GHG pollution from cars and trucks worldwide represents a large fraction of the entire GHG problem. On the contrary, NHTSA should be considering vehicle GHG emissions as being part of an overall scheme necessary to reduce total GHG emissions in the U.S. and around the world. For example, if GHG is reduced by 10% by NHTSA's regulations, consider if this was part of scheme to reduce total GHG emissions by 10% in the U.S., and around the world.

Comment Number: 0557-2
Organization: The Natural Resources Defense Council
Commenter: Luke Tonachel, Brian Siu

The inability to differentiate the impacts among alternatives is the result of NHTSA's failure to consider light-duty fuel economy increases in the context of other measures designed to reduce global warming pollution. Fuel economy standards must be evaluated in the context of a comprehensive package of emission reduction measures needed to meet GHG emission reduction targets necessary to solve global warming. To draw an analogy, when a state must clean up its air to meet national ambient air quality standards, a State Implementation Plan, or SIP, must be submitted to EPA describing how pollution reductions will be achieved from a package of regulations on vehicles, fuels and consumer products. To solve global warming, GHG emission reductions are needed beyond the transportation from other energy-intensive sectors of the economy including power generation, industrial, commercial and residential sectors. When considered alongside measures in other sectors, it is clear that fuel economy standards play a critical, substantial role in avoiding dangerous climate change and more stringent standards are critical for achieving the necessary global warming pollution reductions in the transportation sector.

The weak passenger vehicle standard proposed by NHTSA for MY 2011-MY2015 does not ensure that vehicle fuel economy levels will be on a continuous, smooth trajectory to meet the longer term fuel economy necessary to achieve 2050 GHG emission reduction targets. This introduces serious risk because the necessary trajectory gets steeper and steeper the longer we wait.

Reducing global warming pollution 80 percent by mid-century will require the United States to substantially transform its energy economy. NRDC examined multiple strategies to reduce global warming pollution on both the demand (energy consuming) side and the supply (energy producing) side of the equation and pinpointed six major groups of energy sector opportunities that will put America on the path to significantly reducing the pace and magnitude of global warming. [Footnote: These measures achieve three-quarters of the reductions needed by 2050. The remainder would come from non-CO_2 gases, forestry measures, and innovations to address thousands of smaller sources.] In this context, fuel economy standards are a very significant strategy for reducing U.S. emissions. As shown in Figure 1 [See original comment document for Figure 1], when combined with smart growth measures, improved vehicle efficiency can contribute 13% of total reductions needed. [See original comment document for Figure 1.]

In terms of the transportation sector alone, fuel economy improvements comprise an even larger share of the GHG reductions. NRDC estimates that improved efficiency can contribute nearly 60 percent of the

cumulative GHG reductions needed from the passenger vehicle sector. As shown in Figure 2, achieving 80% reductions from current emissions in the light-duty vehicle fleet requires a combination of improved fuel economy, smart growth, increased transit investments and a transition to low carbon alternative fuels such as electricity and biofuels. [See original comment document for Figure 2.] Without significant and early GHG reductions from greater vehicle efficiency, achieving the 80 percent reduction target becomes extremely challenging, if not impossible.

Comment Number: 0559-5
Organization: The Northeast States for Coordinated Air Use Management (NESCAUM)
Commenter: Arthur Marin

The DEIS disregards these factors and NHTSA concludes that the standards will have a negligible impact on climate change. Quoting from the DEIS:

"…because EISA requires average fuel economy of the passenger car and light truck fleet to reach a combined 35 mpg by 2020, the MY 2016-2020 CAFE standards are a reasonably foreseeable future action. Accordingly, the cumulative impacts analysis assumes the minimum MY 2016-2020 CAFE standards necessary to get to 35 mpg by 2020…Overall, the emission reductions for the MY 2011-2015 CAFE alternatives have a small impact on climate change. The emission reductions and resulting climate impacts for the MY 2011-2020 standards are larger, though they are still relatively small in absolute terms."

NHTSA's approach with the DEIS is unfortunately consistent with EPA's discredited argument in *Massachusetts v. EPA* 127 S. Ct. 1438 (2007) as to why that federal agency should not regulate GHGs emissions from new motor vehicles. EPA's rationale was that such regulations would have an insignificant effect on mitigating climate change. The Supreme Court rejected EPA's argument, pointing out that, "Agencies, like legislatures, do not generally resolve massive problems in one fell regulatory swoop. ('[A] reform may take one step at a time, addressing itself to the phase of the problem which seems most acute to the legislative mind' [internal citation omitted].)… And reducing domestic automobile emissions is hardly a tentative step… [T]he United States transportation sector emits an enormous quantity of carbon dioxide into the atmosphere."

Comment Number: 0564-7
Organization: Consumer Federation of America
Commenter: Mark Cooper

Because improvements in fuel economy alone do not solve the climate change problem, they are shown to have zero effect on the damage that global warming will do. Yet, every reasonable analysis of the big picture and the global impacts of greenhouse gas emissions recognizes that reductions of emissions in the transportation sector must play a large role in the overall solution to the problem. [Footnote: See original comment document.]

- Indeed, because of the nature of the sector, it is vital to get the maximum possible contribution to reductions from this sector to achieve a solution.
- Because no individual policy can solve the problem, this approach will reject every policy measure individually, even though taken together they can actually solve the problem.

Unfortunately, in NHTSA's approach, the whole is not even equal to the sum of its parts. NHTSA's approach embodies a myopic bias against action. NHTSA should start from an estimate of what the value

of a solution to the national energy problem would be worth, and then give increases in fuel economy credit for their role in that solution.

Comment Number: 0572-24
Organization: Center for Biological Diversity
Commenter: Brian Nowicki, Mickey Moritz, Kassie Siegel

The NHTSA has failed to present, as it must, information and analysis in a way that provides meaningful insight into the relevant environmental problems and available solutions. The information in the DEIS on climate impacts is presented in a misleading manner and without appropriate context. Under NEPA an EIS must be written in "plain language" so that decisionmakers and the public can readily understand it. 40 CFR § 1502.8. The ultimate purpose of an EIS is to inform decisions. To do so, the information must not only be comprehensible to non-experts, but also present the context for the information in a manner that elucidates and explains the importance of each aspect of the decision.

The DEIS fails in this regard because it presents the information on the impacts of climate change in a way that minimizes the apparent potential for substantial harm. Even more problematic is the minimization of the apparent influence of each alternative on climate change. Throughout the DEIS the impact of each alternative as well as the difference between alternatives is presented as insignificant and meaningless. Although the DEIS mentions many of the potential consequences of increased atmospheric CO_2, the data is presented in a disjointed manner and qualified as "uncertain." Yet it has been decades since there has been any real scientific uncertainty regarding whether climate change is occurring as a result of increasing concentrations of anthropogenic (Oreskes 2004).

The reality is that, as discussed in previous sections, there is a substantial risk of climate disaster if U.S. greenhouse gas emissions continue unchecked. This collision course towards climate disaster can be avoided through efforts to reduce quickly reduce emissions. The transportation sector is one of the largest sources of emissions, and therefore also an essential part of the solution. Stringent CAFE standards can be part of one of the most significant components of a national greenhouse gas emissions reduction program. This substantial opportunity, however, is never explained to the reader, but rather, the reader is left with the impression that NHTSA's actions will make very little difference one way or another. This is profoundly misleading and violates NEPA's disclosure requirements.

Comment Number: 0572-4
Organization: Center for Biological Diversity
Commenter: Brian Nowicki, Mickey Moritz, Kassie Siegel

An agency must regulate even if the result of the regulation will be only an "incremental" step towards solving the climate crisis. The Supreme Court noted that "[a]gencies, like legislatures, do not generally resolve massive problems in one fell regulatory swoop... [t]hey instead whittle away at them over time." *Mass. v. EPA* at 1457. Nonetheless, the court notes that [j]udged by any standard, U.S. motor-vehicle emissions make a meaningful contribution to greenhouse gas concentrations and hence, according to petitioners, to global warming. (*Mass. v. EPA* at 1457-58.)

Comment Number: 0572-41
Organization: Center for Biological Diversity
Commenter: Brian Nowicki, Mickey Moritz, Kassie Siegel

Global warming is the quintessential cumulative impact – the environmental problem caused by all contributing sources of greenhouse gas emissions together is far greater than that caused by any individual source. The purpose of the cumulative impacts section is to discuss the impact of the

NHTSA's rulemaking on the problem overall when considered along with other actions. The NHTSA must place its action in the proper context in order to provide the reader with meaningful information about the impact of its action. For example, the DEIS should answer the question, "to what degree does the NHTSA rulemaking contribute to or hinder the achievement of the greenhouse gas emissions reductions necessary to avoid catastrophic climate change?" The DEIS fails utterly to do so.

The DEIS considered only a single factor in the cumulative impacts section beyond the rulemaking itself – the impact of fuel economy standards for model years 2016-2020. As discussed above, the impact of future fuel economy standards should have been incorporated into the analysis of direct and indirect impacts, as the level chosen by the NHTSA for one year will impact the level achievable in future years. Regardless, however, limiting the cumulative impacts analysis to only considering fuel economy standards for model years 2016-2020 is clearly inadequate on its face to comply with NEPA's requirements.

The DEIS must include a reasonable analysis of the combined impact of the NHTSA's rulemaking on U.S. transportation sector emissions overall, and U.S. emissions overall. For example, is the impact of the current rulemaking sufficient to ensure that the necessary emissions reductions from the U.S. transportation sector overall will be achievable? If the transportation sector does not achieve its "fair share" of necessary emissions reductions, after all, those reductions will have to come from a different sector. While the NHTSA will likely argue that it is difficult to conduct a cumulative impacts analysis for a problem such as greenhouse gas emissions, it is eminently feasible to do so. While the NHTSA has some discretion in choosing the precise methodology of such an analysis, the agency was clearly not free to omit any such analysis altogether.

Comment Number: 0572-65
Organization: Center for Biological Diversity
Commenter: Brian Nowicki, Mickey Moritz, Kassie Siegel

Figure 1-1 on page 24358 of the NPRM is titled "CO_2 tailpipe emissions avoided due to increases in fuel economy 1975-2005." This graphical presentation of estimated reductions from hypothetical emissions levels seriously misrepresents the situation. Global climate change is a result of increasing atmospheric concentrations of greenhouse gases, and greenhouse gas emissions from automobiles has significantly increased over the past thirty years. It would be much more instructive to the public and to NHTSA to consider both annual and cumulative CO_2 tailpipe emissions over that same period of time.

Comment Number: 0575-27
Organization: Union of Concerned Scientists
Commenter: Eli Hopson

If we are the avoid the worst impact of climate change, our nation and the world must adopt a target that will keep global temperature from rising more than 2 ^{o}C above pre-industrial levels. That means stabilizing the concentrations of global warming pollutants in our atmosphere at no more than 450 parts per million carbon dioxide equivalent. Analysis by UCS [Union of Concerned Scientists] shows that one part of achieving this goal means the United States must cut global warming pollution by at least 80% compared to emission levels in 2000. [Footnote: http://www.ucsusa.org/assets/documents/global_warming/emissions-target-report.pdf.] In addition, UCS analysis indicates that in order to effectively achieve such a long-term goal, U.S. global warming pollution must be cut by more than 20% below 2000 levels by 2020, and at least 50% below by 2030. The need for comprehensive climate policy, both in the near and long term is not properly addressed in the draft EIS, nor is the cost of inaction.

Comment Number: 0575-28
Organization: Union of Concerned Scientists
Commenter: Eli Hopson

Major concern with the draft EIS: The analysis done by NHTSA only presents the reductions in the context of their direct impact relative to all man-made global emissions rather than just the emissions from the sector policy targets. Just because higher U.S. fuel economy standards alone won't solve global warming does not discount the fact that they are a vital, necessary part of the solution. By stating them in terms of the percent reduction from covered vehicles (approximately 30 percent) rather than in percent of worldwide reductions (0.8-1.1 percent reduction according to the DEIS) the value of fuel economy in reducing global warming pollution would be clearer, and less misleading to the public. NHTSA's approach in the EIS is like arguing that we shouldn't worry about smoking in 16 year olds because they only represent a small portion of all smokers. This argument could be applied to any sector of the economy to argue for inaction. Instead we must begin to reduce global warming pollution from every sector as soon as possible.

Comment Number: 0576-6
Organization: Public Citizen
Commenter: Joan Claybrook

For this draft EIS to be useful as a decision-making tool, it must compare the impacts of various alternatives in the proper context. Light duty vehicles built for sale in the United States are part of the whole set of greenhouse gas-emitting sources, regulation of which, as NHTSA has stated, cannot alone stop global warming from happening. [Footnote: See original comment document.] However, the agency has not established a meaningful context, instead choosing to extrapolate the benefits of each alternative over the entire globe 90 years into the future. NHTSA must discuss the benefit of any action in terms of its impact on climate change and it must be placed into a context that includes other strategies to reduce greenhouse gas emissions. This perspective allows for decisionmakers and the public to judge whether the agency's proposed action results in emissions reductions that are consistent with the contribution to emissions from light duty transportation in light of the technological feasibility of making those emissions reductions.

The draft EIS states that none of the proposed alternatives actually result in absolute reductions in greenhouse gas emissions, but instead result in a reduced rate of greenhouse gas emissions from light duty passenger vehicles. [Footnote: See original comment document.] NHTSA must therefore consider fuel economy standards as part of a comprehensive strategy to reduce greenhouse gas emissions from light duty transportation that may include policies that are not within its jurisdiction. NEPA requires "considerations of both context and intensity. . . . [Context] means that the significance of an action must be analyzed in several contexts such as society as a whole (human, national), the affected region, the affected interests, and the locality. Significance varies with the setting of the proposed action. For instance, in the case of a site-specific action, significance would usually depend upon the effects in the locale rather than in the world as a whole. Both short- and long- term effects are relevant. (40 CFR 1508.27) In this case, significance requires that NHTSA consider impacts in the context of multiple strategies for reducing greenhouse gas emissions from light duty transportation as part of a comprehensive strategy to achieve atmospheric concentrations of greenhouse gases that will prevent the most harmful effects of global warming.

For the context to be meaningful, NHTSA needs to establish a target for greenhouse gas reductions. It can then show how the various proposed alternatives fit into the reductions that are necessary from the U.S. light duty transportation sector to meet that target. Public Citizen supports reduction of atmospheric concentrations of CO_2 to 350 parts per million (ppm) to prevent the most catastrophic effects of climate

change. [Footnote: See original comment document.] The policy debate surrounding global warming has considered other targets for atmospheric concentrations, such as 450 ppm or 550 ppm. Public Citizen does not seek to resolve the question of a target for atmospheric concentrations of greenhouse gases at this time, nor does it expect that NHTSA resolve this question in the draft EIS. However, NHTSA must present the regulatory alternatives for fuel economy standards required under EISA such a way as to present a clear choice to decisionmakers and the public. The agency must therefore select a target or range of atmospheric concentrations of greenhouse gases to provide a framework within which it can discuss the relative benefit of different regulatory options.

Comment Number: 0585-7
Organization: Attorneys General of the States of California, Massachusetts, New Jersey, New Mexico, New York, and Oregon, Secretary Of The Commonwealth of Pennsylvania Department of Environmental Protection, and New York City Corporation Counsel
Commenter: Edmund Brown Jr., Joseph Powers, Martha Coakley, Michael Cardozo, Anne Milgram, Gary King, Andrew Cuomo, Hardy Myers

Further, in its cumulative impacts analysis, NHTSA takes into account only the impact of its own rulemaking and ignores actions that can be anticipated in the transportation sector overall, and in other energy sectors in the United States and globally. See, e.g., WCI Statement of Regional Goal; Overview of RGGI CO_2 Budget Trading Program, supra. The DEIS then compares the limited changes in the CAFE sector with worldwide emissions to determine the effect of these changes on CO_2 concentrations and temperature. See, e.g., DEIS at 4-24, 4-31. The analysis demonstrates, not surprisingly, that the change in CO_2 concentrations and temperature caused solely by the CAFE rules will be relatively modest, ranging from 3.5 to 4.9 parts per million ("ppm") CO_2 concentration, and 0.012 to 0.018 degrees Celsius temperature. Table 4.4-3 at DEIS 4-31.

This comparison is invalid because it considers only the very limited change from the CAFE rules, while ignoring the cumulative impact of all other reasonably anticipated actions that will reduce GHG emissions both in the United States and globally. A proper cumulative impacts analysis requires the agency to consider reasonably anticipated actions by other agencies along with the impact of the CAFE rules, to determine the impact on GHG emissions and global warming.

We recognize that a cumulative impacts analysis is complex in the context of climate change because the problem is global and is being addressed at many levels worldwide. While it is difficult to determine the expected emissions reductions on a global scale, this uncertainty should not result in NHTSA understating the significance of its role in helping to resolve the climate problem. NHTSA thus must make an effort to determine whether better decision-making on its part, and a more stringent CAFE standard, will help to put this country on a path to climate stabilization, even if the Agency, standing alone, cannot resolve the problem.

Comment Number: 0596-5
Organization: Environmental Defense Fund
Commenter: Martha Roberts

We strongly recommend that NHTSA revise this EIS and incorporate a wedge- type analysis of the cumulative emissions resulting from the proposed CAFE alternatives. The EPA transportation sector analysis can serve as a reference, although we find their stabilization target of 560 ppm CO_2 not sufficient to avoid the 2.6 °C increase in global temperature, IPCC's best current estimate of the threshold that avoids serious climate change effects. We believe the EIS must adopt the 440 ppm CO_2 atmospheric stabilization target identified by the IPCC unless the agency can point to other analyses of equal or greater credibility that justify the use of a higher CO_2 target to reach the same temperature goal.

As a demonstration, we have followed the framework of the EPA's wedge analysis and utilized the predicted future GHG emissions provided in the EIS. We demonstrate in a simplistic manner the contributions of the various CAFE alternatives to a U.S transportation sector target of flattening emissions at 2006 levels. Under the "no action" alternative, cumulative GHG emissions beyond the 2006 baseline total 28,000 MMT [million metric tons] CO_2e [CO_2 equivalent] by the year 2050. The "optimized" alternative results in 21,000 MMT CO_2e and the "technology exhaustion" option releases 18,000 MMT CO_2e. These two options contribute 1.6 wedges ("optimized") and 2 wedges ("technology exhaustion") of 5,000 MMT CO_2e towards flatlining transportation GHG emissions at 2006 levels (figure 2). We note that the EPA's analysis finds 2.4 to 3.0 wedges result from technology exhaustion, while NHTSA claims that this leads to only 2 wedges. We urge NHTSA to account for this difference in their revised EIS, with special attention given to assumptions regarding hybrid vehicle technology.

Increasing fuel efficiency on its own cannot mitigate U.S. transportation-related GHG emissions to an extent that avoids dangerous climate change. However, the transportation sector can stabilize its GHG emissions with a package of approaches. Rapidly increasing fuel efficiency is a key component to reducing cumulative GHG emissions over the next decades, as the EPA recognizes that "[n]ear-term vehicle technologies can have as much of an impact in terms of GHG reductions as future, longer-term technologies." [Footnote: See original comment document.]

Comment Number: 0598-10
Organization: Sierra Club
Commenter: Caroline Keicher

NHTSA should consider the Supreme Court decision in *Massachusetts v. EPA* and that the Court stated, on pages 2 1-23 concerning vehicle emissions, that "reducing domestic automobile emissions is hardly a tentative step." The Court also noted that cars and trucks account "for more than 6% of worldwide carbon dioxide emissions. To put this in perspective: Considering just emissions from the transportation sector, which represent less than one-third of this country's total carbon dioxide emissions, the United States would still rank as the third-largest emitter of carbon dioxide in the world, outpaced only by the European Union and China. Judged by any standard, U.S. motor-vehicle emissions make a meaningful contribution to greenhouse gas concentrations and hence, according to petitioners, to global warming."

This DEIS turns these words on their head – diminishing the differences between the options (which are too low to begin with) and failing to meaningfully express the role fuel economy can have on U.S. emissions. In addition, by allowing that Massachusetts had legal standing in the findings of *Mass. v. EPA*, the Court also recognized the importance of the remedy – that even a small step provides relief from global warming. We would agree that increasing fuel economy, while an important part of this remedy, cannot be the only solution.

Comment Number: 0598-6
Organization: Sierra Club
Commenter: Caroline Keicher

We also have serious concerns that the DEIS fails to meet its primary function to "inform the public that [the agency] has indeed considered environmental concerns in its decision-making process." In this case the agency does not give a fair or reasonable evaluation of the environmental impacts of the proposed standards nor does NHTSA provide a context that reasonably informs the public.

The DEIS takes the real differences between the flawed options considered and runs them so far out – to 2100 – that they cannot meaningfully be differentiated or evaluated. Faster fuel economy increases will help the U.S. cut the 20% of CO_2 emissions that come from vehicles. The difference between 35 in 2015

and 35 in 2020 is real and significant. It creates room for reaching 42 mpg in 2020 – and increases beyond (surpassing 50 mpg by 2030). It would also mean saving an additional 880,000 barrels of oil per day in 2020 and further reductions in emissions.

It is worth noting that the DEIS reveals that this one policy is significant enough that it could affect the climate in 2100 assuming no other action is taken. The problem with NHTSA's analysis is that if we hit 700 plus ppm referenced in the DEIS, then we have not acted to prevent dangerous climate change as provided in Article 2 of Framework Convention on Climate Change.

There is no requirement that NHTSA run its analysis though 2100. NHTSA notes that the VOLPE model estimates emission reductions through 2060. The agency provides that "as a simplifying assumption, annual emissions reductions from 2061-2100 were held constant." NHTSA should assess how the correct scenarios will impact emissions from cars and light trucks in a time frame that is meaningful to the public, within the context of science, and not "simplify" its "assumptions."

Comment Number: 0598-8
Organization: Sierra Club
Commenter: Caroline Keicher

The DEIS fails to analyze the benefits of greenhouse gas emission reductions from various fuel economy standards in the proper context. Not surprisingly, when NHTSA tries to determine the global warming impacts in 2100 resulting from a 31.6 mpg in 2015 standard vs. a 35 mpg in 2015 standard, statistically, the difference is very little. But this does not mean that raising fuel economy standards faster will not have a significant impact in our struggle to reduce global warming pollution.

In order to prevent the worst effects of climate change, the U.S. must decrease its carbon emissions by around 80% by 2050 – with meaningful short-term and interim targets. In order to be on-target for reductions such as these, by 2020 the U.S. needs to reduce its carbon emissions back to at least 1990 levels. The Environmental Protection Agency's (EPA) Greenhouse Gas (GHG) emission inventory reports that 1990 levels were 6,147 Million Metric Tons of CO_2 ($MMTCO_2e$). If our emissions continue to grow, along a "business as usual" trajectory, EPA estimates that by 2020, carbon emissions will have grown to 8,264 $MMTCO_2e$. Therefore, in order to return to 1990 emission levels by 2020, we must cut (=8,264-6,147) 2,116 $MMTCO_2e$ worth of greenhouse gas pollution from various sources by 2020, or equivalent to a 25% decrease in emissions.

Now, considering that the transportation sector is responsible for nearly a third of all GHG emissions in the U.S., with cars and light trucks accounting for 20%, it would make sense that we must proportionally reduce emissions from cars and light trucks to help meet this overall 2,116 $MMTCO_2e$ reduction. Since 20% of emissions come from cars and light trucks, 20% of the 2,116 $MMTCO_2e$ target reduction, or 423 $MMTCO_2e$, should come from cars and light trucks.

Comment Number: TRANS-05-5
Organization: Consumer Federation of America
Commenter: Mark Cooper

The analysis of environmental impact suffers from the same affliction, because improvements in fuel economy alone do not solve the climate change problem. They are shown to have zero effect on the damage that global warming will do. Yet every reasonable analysis of the big picture and the global impact of greenhouse gas emissions recognize that the reduction of emissions in the transportation sector must play a large role in the overall solution. Indeed, because of the nature of the sector, it is vital to get the maximum contribution from transportation sources. NHTSA's approach embodies a myopic bias

against action. Because no individual policy can solve the problem, this approach will reject every policy measure individually, even though taken together they can actually do the job. In NHTSA's view the whole is not even equal to the sum of the parts.

Comment Number: TRANS-06-8
Organization: Public Citizen
Commenter: Lena Pons

Considering that this is a new type of environmental impact statement, because it considers global impacts, it's very important that the agency put the impacts in a proper context. The agency has not put the environmental impacts into a proper context, considering the issues of global warming. Regardless of the target, NHTSA needs to provide some means of comparing the various alternatives. The way the draft environmental impact statement is currently contextualized, NHTSA states that fuel economy standards alone cannot stop global warming. But the issue is not whether fuel economy standards alone can stop global warming. The issue is to evaluate various environmental impacts of the various regulatory alternatives.

Comment Number: TRANS-07-3
Organization: Individual
Commenter: Eliza Berry

The draft environmental impact statement does not use the appropriate scale with which to measure the benefits of an increase in fuel economy standards. This scale has only allowed NHTSA to prove that a 3.4 mile per gallon increase in vehicle efficiency in the U.S. is not going to be the one thing to save the entire planet from global warming. I don't think that very many people would be surprised by this conclusion.

By measuring the importance of a shift in fuel economy standards like this, NHTSA has fundamentally missed something. Few people would claim that there is one silver bullet to solving global warming. Rather, we need to do everything in our power to cut greenhouse gas emissions in all sectors, the transportation sector included.

Together these seemingly small changes will make a major difference. And if the U.S. leads the way in cutting emissions, other countries will follow, thus making an even greater difference on a global scale.

I would like to ask NHTSA to acknowledge the power of collective action and take responsibility for greenhouse gas emissions from the transportation sector. As I have explained, the intergovernmental panel on climate change has emphasized the importance of requiring that greenhouse gas emissions reach their peak in no more than 10 years.

Comment Number: TRANS-08-13
Organization: Sierra Club
Commenter: Ann Mesnikoff

In this case the agency does not give a fair or reasonable evaluation of the environmental impacts of the proposed standards, nor does NHTSA provide a context that reasonably informs the public.

The draft environmental impact statement takes the real differences between the options considered and runs them out so far to 2100 that they cannot meaningfully be differentiated or evaluated. Faster fuel economy increases will help the U.S. cut the 20 percent of CO_2 emissions that come from vehicles.

The difference between 35 in 2015 and 35 in 2020 is real. It is worth noting that the draft environmental impact statement reveals that this one policy could affect climate in 2100. The problem with NHTSA's analysis is that if we hit 700 parts per million plus, referenced in the DEIS, we have not averted dangerous climate change.

There is no requirement that NHTSA run its analysis through 2100. NHTSA notes that its Volpe model estimates emissions reductions through 2060. The agency provides, as a simplifying assumption, annual emission reductions from 2061 to 2100 were held constant. NHTSA should assess how the correct scenarios will impact emissions from cars and trucks in a time frame that is meaningful to the public, and within the context of science, not simplifying assumptions.

Fuel economy is only one policy in the tool bag. It will diminish the 20 percent of CO_2 that comes from cars and trucks, but we must achieve and 80 percent reduction below 2000 levels by 2050 if we are to avert dangerous climate change.

Comment Number: TRANS-09-4
Organization: Individual
Commenter: Doug Molof

NHTSA's draft EIS fails to analyze, also, the benefits of greenhouse gas emissions reductions through various fuel economy standards in the proper context. Not surprisingly, when NHTSA tries to determine the difference in global ocean temperature rise in 2100, resulting from a 31.6 mile per gallon standard in 2015, versus a 35 mile per gallon standard in 2015, statistically there is no difference.

But emissions from the transportation sector in the United States account for roughly 20 percent of our country's greenhouse gas pollution. And as any projection, decreases in greenhouse gas emissions arising from increased fuel economy standards can never be greater than this. These reductions should be considered as a proportion of the 20 percent, not as a proportion of the entire planet's combined carbon admissions.

This can simply overwhelm any measurable progress. Success and progress should be measured by how close these fuel economy improvements get us to reducing the transportation sector's carbon emissions by 80 percent in 2050. To do otherwise fails to realistically evaluate vehicle emission reductions as a key part of the overarching strategy to curb global climate change.

Comment Number: TRANS-13-3
Organization: Individual
Commenter: Joseph Frewer

As you've heard multiple times, the scientific conclusion is that to mitigate the worst effects we really need to cut our carbon pollution by 80 percent by 2050.

And many of us are agreed that the best way to do this is by utilizing every tool we can. We've got to look at every aspect of our economy, not only the transportation sector, which is addressed here, but many other parts, industrial – I don't need to go into them.

But this 20 percent is part of a bigger picture, and we must take that into account when looking at a global solution. Just because it's 20 percent doesn't mean that it's any less important and that it can be ignored, just because when you look at in the context of 100 percent global emissions picture, it doesn't seem that important as it is.

NHTSA's draft environmental impact statement fails to analyze the benefits and reduction for fuel economy standards in the proper context because it is going by the bare minimum. As we have said, I'll try not to go into the same statistics that we've heard, but 31.6 miles per gallon, the bare minimum, just won't cut it. There are already cars being released that promise to offer more than 31.6 miles per gallon of gasoline.

Comment Number: TRANS-19-1
Organization: Union of Concerned Scientists
Commenter: Eli Hopson

The fuel economy standards are being measured for their global impact, even though they only affect a portion of all manmade sources of global warming pollution.

Comment Number: TRANS-19-3
Organization: Union of Concerned Scientists
Commenter: Eli Hopson

Analysis by UCS [Union of Concerned Scientists] shows that one part of achieving that goal means the United States must cut its global warming pollution at least 80 percent compared to emissions levels in 2000. In addition, our analysis indicates that in order to effectively achieve such a long term goal, we have to start now. We have to reduce our pollution 20 percent below 2000 levels by 2020 and at least 50 percent below by 2030. The need for these long term targets and immediate action is not effectively covered in the EIS, and the cost of inaction of the size of this challenge also should be better reflected.

Comment Number: TRANS-19-4
Organization: Union of Concerned Scientists
Commenter: Eli Hopson

Unfortunately, the analysis done by NHTSA only presents the reductions from the fuel economy rule in the context of their direct impact relative to all manmade global emissions, rather than just the emissions from our cars and trucks. Because higher fuel economy standards alone won't solve global warming does not discount the fact that they are a vital, necessary part of the solution. By stating them in terms of their percent reduction from the sector, approximately 30 percent, rather than a percent of world reductions which is .8 to 1.1 percent, according to the draft EIS, the value of the fuel economy in reducing global warming pollution and helping us meet those near term targets will be clear and less misleading to the public.

Comment Number: TRANS-20-2
Organization: Sierra Club
Commenter: Caroline Keicher

In the short term this is going to mean that we need to reduce our emissions between 25 and 40 percent by 2020, so a much sooner time line. This is a much bigger number, and this is what's most relevant with these new CAFE increases.

If we're going to evaluate how an increase in corporate average fuel economy affects global warming, this is the target that we should be focused on, not some obscure number in 2100.

Comment Number: TRANS-20-5
Organization: Sierra Club
Commenter: Caroline Keicher

The scientists made it clear that to avoid the worst effects of global climate change, we must achieve 80 percent reduction in our emissions by 2050. This gives us approximately 40 years to get our act together, and we have no time to lose.

Unfortunately, there is no single thing that we can do, or single sector in our economy that we can cut to get us all the way there. We must instead start making manageable emission reductions from each single carbon emitting sector of our economy. And when considering the benefits of doing so, we must consider each reduction as part of the larger long term goal, both for the United States and globally. Each reduction that we fail to make in one area will have to come from somewhere else.

The most disappointing thing for me about NHTSA's draft environmental impact statement is that it fails to analyze the benefits of greenhouse gas emission reductions from various fuel economy standards in the proper context. Not surprisingly, when NHTSA tries to determine the global warming impacts resulting in 2100 from various standards, 31.6 miles per gallon in 2015 versus 35 miles per gallon, there isn't statistically much of a difference.

And this isn't surprising. It also doesn't mean that raising fuel economy standards faster will not have a significant impact in our struggle to reduce global warming pollution.

Emissions from the transportation sector in the United States account for roughly one-third of our greenhouse gas emissions, with cars and light trucks coming in at about 20 percent. That's a fairly large chunk of our contribution to this global problem.

So what is the proper context? How do we consider these various CAFE increases? Globally the science has called for long term reductions of emissions of about 50 percent for the entire world by 2050. Here in the U.S. as an industrialized nation that accounts for nearly a fourth of world carbon dioxide emissions, this translates for us into about 85, 80 to 95 percent needed reductions below 2000 levels by 2050.

Comment Number: TRANS-21-1
Organization: Individual
Commenter: Christina Marie Yagjian

NHTSA's draft environmental impact statement fails to analyze the benefits of greenhouse gas emissions, emission reductions from fuel economy standards in the proper context. As I mentioned, we know that emissions from the transportation sector account for roughly 20 percent of the country's global warming pollution.

The EIS projected decreases in emissions rising from increased fuel economy standards are analyzed as a proportion of combined global carbon emissions. This figure is more clearly evaluated when presented as a proportion of the current 20 percent of domestic emissions.

Comment Number: TRANS-21-4
Organization: Individual
Commenter: Christina Marie Yagjian

The science has made it clear that to avoid the worst effects of global warming, we must achieve 80 percent reductions in global warming emissions by 2050. As cars and light trucks account for 20 percent

of the country's global warming emissions, the single biggest step that we can take in this country to reduce global warming emissions, save consumers money at the gas pump, and reduce America's dependence on foreign oil is to make our cars and light trucks go further on a gallon of gas.

Comment Number: TRANS-24-7
Organization: Individual
Commenter: Heather Moyer

Although there is no silver bullet to get us to an 80 percent reduction in carbon emissions by 2050, the single biggest step we can take in this country to reduce our global warming emissions, save consumers money at the pump, and reduce our dependence on foreign oil, is to make our cars and trucks go farther on a gallon of gasoline.

Comment Number: TRANS-27-2
Organization: Individual
Commenter: Sarah Karlin

The science has made it clear that in order to avoid the worst effects of global warming, we must achieve an 80 percent reduction in greenhouse gases by 2050. At first glance, this may seem like a daunting task, but if we start now, and if like the Little Engine That Could, we believe we can, the U.S. can achieve the necessary emission cuts to prevent the most tragic impacts of climate change.

Yet NHTSA's draft environmental impact statement fails to analyze the benefits of greenhouse gas emission reductions from various fuel economy standards in the proper context.

Not surprisingly, when NHTSA tried to determine the difference in global ocean temperature rise in 2100, resulting from a 31.6 miles per gallon in 2015 standards, versus a 35 mile per gallon in 2015 standards, statistically there is none.

But this does not mean that raising fuel economy standards faster will not have a significant impact in our struggle to reduce global warming pollution. Emissions from the transportation sector in the United States account for roughly 20 percent of our country's greenhouse gas pollution, and as any projected decreases in greenhouse gas emission arising from increased fuel economy standards can never be greater than this, those reductions should be considered as a proportion of the 20 percent, not as a proportion of the entire planet's combined carbon emission. The latter simply overwhelms any measurable progress.

Adequate fuel economy standards can help the U.S. make a significant dent in our overall carbon emissions by 2050. Sure, other measures will need to be taken to meet the 80 percent reduction by 2050. But the transportation sector must play its part.

Comment Number: TRANS-32-4
Organization: Environmental Defense Fund
Commenter: James Keck

By presenting only the isolated impact of this one set of U.S. regulations upon the entirety of global climate change, and then asserting that health and other impacts are too uncertain to distinguish among the range of alternatives, NHTSA is certainly closing its eyes to the context of this regulation as well as the full set of cumulative impacts relevant to this EIS.

The EIS draws heavily upon the most recent IPCC report in describing the causes of climate change and its impacts on the environment and human welfare. However, the EIS ignores the IPCC's description of

targets for avoiding the most drastic of these impacts. For example, the IPCC states that avoiding a temperature increase of more than 2.6 degrees centigrade from pre-industrial times reduces the risk of key environmental and health vulnerabilities, and to do this greenhouse gas emissions must peak within 10 years, and atmospheric carbon dioxide levels stabilize at less than 440 parts per million.

The absence of this critical context within the EIS leaves the public and policy makers unclear whether the preferred CAFE alternative will support a cumulative strategy to avoid the most serious climate change impacts. Although the IPCC report provides a clear context and benchmark by which NHTSA can assess the alternatives, the EIS has failed to do so.

Comment Number: TRANS-35-4
Organization: Individual
Commenter: Alina Fortson

In order to address climate change, scientists are stressing the importance of achieving an 80 percent reduction in greenhouse gas emissions by the year 2050. This means making small reductions in all of our emission areas, including transportation.

The United States transportation sector amounts to approximately 20 percent of our total greenhouse gas emissions. Therefore, measuring our progress requires considering reductions as a portion of that 20 percent, not as part of the global emissions. In this light, every small improvement does make a difference.

Comment Number: TRANS-36-1
Organization: Individual
Commenter: Matt Kirby

So now the science says we need 80 percent reductions by 2050, as several people have said. And one of the most significant being the cars and light trucks, the 20 percent, the 20 percent of emissions in this country, which emits 25 percent of global emissions. 20 percent of 25 global emissions. That's the power you have. And that's what you can change and significantly alter the course of global warming.

As far as the environmental impact statement goes, we know we need to look at this proportionally to our domestic emissions, to our 20 percent of our domestic emissions, and not as part of the global outreach to get a better idea of how to evaluate it.

Also, NHTSA has picked 2100 as a time line for measuring success, which seems a little ridiculous, considering we have until 2050 to avert catastrophic climate change. So I would urge you to actually set a much closer goal, 2020-25 when you actually are going to begin measuring the success.

Comment Number: TRANS-37-4
Organization: Individual
Commenter: Jaafar Rizvi

While the DEIS report shows very detailed calculations and extensive research, the claims of NHTSA just don't coincide with the claims of other incredibly credible scientific institutions. Like so many people have said, there's a call for 80 percent reductions by 2050, and this report doesn't seem to acknowledge that.

And that's fine, of course, but since, you know, research was done, but there's no description of where the divergence is coming from.

Comment Number: TRANS-41-3
Organization: Individual
Commenter: Catherine Easton

Global warming is happening right now, and reducing greenhouse gas emissions by 80 percent by 2050 will save us from the worst effects of global warming. But unfortunately, as I think we've all noticed, 80 percent is a lot and increasing CAFE standards will not achieve this.

In fact, no individual sector could reach such a dramatic decrease. And this is why we must strive for smaller achievable decreases in all sectors. These small decreases combined could make a substantial difference.

Comment Number: TRANS-44-1
Organization: Individual
Commenter: Emily Spear

Increasing fuel economy standards would be one step in curbing global warming. Scientific reports have concluded that in order to avoid catastrophic effects of global warming, we must reduce our greenhouse gas emissions by 80 percent by 2050, 2050.

This issue is staring us in the face, but I believe that NHTSA can do its part by requiring vehicles to be more fuel efficient. We know that carbon emissions from transportation mechanisms are great at 20 percent, which contribute directly to global warming. However, it concerns me when NHTSA's draft environmental impact statement analyzed the resulting benefits of greenhouse gas emissions from higher fuel economy standards in an improper context, which makes the greenhouse savings appear insignificant, though increasing fuel economy standards to 35 miles per gallon by 2015 would save 280 million metric tons of carbon dioxide.

Response

The comments above share the themes that the DEIS diminished the effect of the CAFE standards by evaluating them in a global context (thus, their effect on climate conditions would be small, and their contribution to total emissions reductions required to meet any of several long-term stabilization goals would be small); that a timeline stretching to 2100 is too long; and that the environmental impacts can only be characterized adequately if this rulemaking is considered in light of all other possible actions to mitigate climate change.

NEPA requires NHTSA to analyze the reasonably foreseeable environmental impacts of a range of alternatives in setting new CAFE standards for MY 2011-2015. According to NEPA, the alternatives are the "heart of the environmental impact statement." 40 CFR § 1502.14. Under EPCA, as amended by EISA, NHTSA is required to set standards at the "maximum feasible" level, considering technological feasibility, economic practicability, the effect of other government motor vehicle standards on fuel economy, and the need of the United States to conserve energy." 49 U.S.C. § 32902(f). NHTSA has a long-standing practice of analyzing regulatory options based on the best available information regarding: (1) the future vehicle market, (2) the technologies expected to be available during the relevant model years, and (3) the key economic factors, such as future fuel prices, and other statutory factors. The Volpe model is a tool NHTSA uses to help balance these factors. NHTSA has rigorously explored and objectively evaluated the range of possible alternatives, including reasonable alternatives not within the agency's jurisdiction, to provide decisionmakers and the public with information on a broad range of

impacts. NHTSA took the requisite "hard look" at environmental impacts, quantified to the degree possible, from these alternatives.

Climate change is a global phenomenon. GHGs persist in the atmosphere, and the effects of a given level of emissions in one location occur no matter the location of the emissions. Thus, the appropriate scale is to evaluate the effects of this rulemaking in relation to global emissions and global climate conditions. This is the standard approach for climate modeling. While Sections 3.4 and 4.4 of this FEIS show that the differences in climate effects (CO_2 concentration, temperature, sea–level rise, precipitation) might seem small when expressed in terms of climate endpoints, NHTSA agrees with commenters that this is likely to be true for any given GHG mitigation strategy when taken alone. NHTSA's hard look at the rule's effect on global climate conditions is not intended to diminish the effectiveness or importance of the regulatory options in reducing CO_2 emissions and global warming impacts, but to quantify these potential reductions using the best available science.

Several commenters stated that NHTSA is claiming a reduction in emissions even though total vehicle emissions are rising over time. Specifically, CBD stated that Figure 1-1 on page 24358 of the NPRM titled "CO_2 tailpipe emissions avoided due to increases in fuel economy 1975-2005" was misleading because total vehicle emissions increase over time. NHTSA does not have the authority to control factors that affect total vehicle emissions, such as the number of vehicle miles traveled. NHTSA's CAFE standards set minimum requirements for the fuel efficiency of the vehicles used in travel. In the absence of these minimum requirements, the actual emissions release (if all other factors stayed the same) would be higher. Consequently, NHTSA states that the CAFE rulemaking results in reduced emissions levels compared to not having implemented the regulations. To help the reader understand that the rulemaking reduces the rate of increase of emissions, NHTSA has included a new analysis and a diagram in Section 3.4.4.1 of this FEIS showing the reduction in emissions rates.

To complement the analysis of climate effects, Section 3.4.4.1 of this FEIS includes a section on emissions reductions, putting them in context by comparing them to other large-scale regional programs in the United States. This indicates that the emissions reductions (in relation to Alternative 1, the No Action Alternative) are indeed quite large compared to the other programs. Even though the initiatives might vary in their approach, goals, and reduction comparisons, this discussion places the contribution of this rulemaking in the context of current CO_2 reduction plans.

A theory on climate change mitigation promulgated by Pacala and Socolow (2004), called the Wedge Theory, shows that by taking numerous actions that reduce CO_2 from various sectors, overall there can be CO_2 reductions great enough to reduce further global warming. As several commenters point out, the alternatives identified in this FEIS serve as another contribution to reduce CO_2 emissions that requires a global effort to be successful. NHTSA has expanded the discussion on this issue. See FEIS Section 3.4.4.1.

On the point that environmental impacts can only be characterized adequately if this rulemaking is considered in light of all other possible mitigation actions, IPCC notes that the momentum in the climate system is enormous, and that it would take large-scale action across many sectors and nations to deflect the current course of climate change. These large-scale actions remain to be determined (specific courses of action are not reasonably foreseeable) and they are outside NHTSA's regulatory purview. As discussed in detail in Section 4.4.4.1, U.S. cars and light trucks account for 19.2 percent of CO_2 emissions in the U.S. and about 2.5 percent of global CO_2 emissions. NHTSA's influence from this rulemaking can only affect this set of emissions, and only a portion of that, because NHTSA does not directly control VMT. Establishing national policy or GHG targets (such as an 80 percent reduction by 2050) exceeds NHTSA's authority. Addressing climate change in a meaningful way would likely require new Congressional legislation in conjunction with that from other nations.

Nevertheless, NHTSA fully appreciates the fact that, despite the complex global nature of the problem, NHTSA still has an obligation to take the requisite "hard look" regarding, the effects of this rulemaking on global warming within the context of other actions that affect global warming. Thus, NHTSA believes that the range of alternatives considered in the DEIS and this FEIS will fully inform the decisionmaker and the public about the environmental impacts, including climate change issues, of any CAFE standard that is reasonable to promulgate.

Contrary to several comments, the emissions analysis provides important information concerning the differences between the alternatives. Table 3.4-2, in particular, provides the emissions impact of each alternative for each decade through 2060.

Many comments appear to draw the conclusion that NHTSA does not think the CO_2 reductions from the rulemaking are important and that NHTSA does not show differences between the alternatives. NHTSA recognizes that merely because the reductions are small in a global context does not mean they are unimportant. In addition, NHTSA's analysis shows clear emissions reductions between the alternatives, even if not every climate effect shows measurable differences. NHTSA's environmental analysis differentiates the various alternatives presented in the DEIS and this FEIS.

On the issue of the timeline used in this analysis, the DEIS and this FEIS present climate effects not only for 2100 (a benchmark commonly used in climate change analysis), but also for 2050 and 2075. See DEIS Section 3.3.2.1.2; FEIS Section 3.3.2.2. Thus, the results at earlier points in time are also available to support decisionmaking. At least one commenter suggested that analysis to the year 2100 is not meaningful. Analysis to the year 2100 is necessary to consider NHTSA's action in light of the IPCC's projections and to the extent possible, to identify climate effects. Recognizing the difficulty of forecasting so far into the future, NHTSA tries to limit the number of moving variables to demonstrate the reduction in impacts associated with the various alternatives, while using IPCC emissions projections.

The effects of CO_2 emissions have been modeled and observed but are still difficult to accurately predict. The likely range of the climate sensitivity, which represents the increase in global warming due to increases in CO_2 emissions, ranges from 2.5 to 4.5 ºC. In this FEIS, NHTSA performs an analysis of variations under climate sensitivities of 2.5 and 4.5 ºC. See Section 4.4.4.2.1. The rate and ultimate levels of sea-level rise due to increases in CO_2 concentrations are also uncertain and estimated within very large ranges in the IPCC's Fourth Assessment Report. Recent literature suggests that the IPCC Fourth Assessment Report might have been low in its estimates of sea-level rise resulting from GHG concentration levels from the Special Report on Emission Scenarios (SRES) scenarios.[3] The different SRES scenarios illustrate the uncertainty in future emissions of greenhouse gases, which affect the impact of the CAFE standard alternatives on global mean surface temperature, sea-level rise, and CO_2 concentrations.

Several of the comments involved the issue of sudden and abrupt climate changes (or tipping points). In Section 3.4.3.2.4 of this FEIS, NHTSA has expanded its consideration of the issue of tipping points to include new research, as suggested by commenters, and has expanded the discussion from the IPCC and CCSP literature. NHTSA also includes paleoclimatic research, as suggested by commenters, which supports the theory that abrupt and severe climate change has occurred in the past, and that these changes could occur in multiple climate systems or other climate-related systems on the planet that affect global climate patterns. Readers are encouraged to review FEIS Section 3.4.3.2.4 and NHTSA's detailed response on the issue of tipping points. See Section 10.3.3.

[3] *The SRES scenarios are long-term emissions scenarios representing different assumptions about key drivers of GHG emissions. They are described in more detail in Section 3.4 of this FEIS.*

Finally, several commenters asked NHTSA to state the projected emissions reductions in terms of the overall U.S. transportation emissions sector. NHTSA has expanded the discussion of emissions in FEIS Section 3.4.4.1 to show the emissions reductions in the context of total emissions from cars and light trucks in the United States and to provide a more detailed description by sector.

10.2.1.1 Clarifying Comparative Reduction Plans

Comments

Comment Number: 0585-3
Organization: Attorneys General of the States of California, Massachusetts, New Jersey, New Mexico, New York, and Oregon, Secretary Of The Commonwealth of Pennsylvania Department of Environmental Protection, and New York City Corporation Counsel
Commenter: Edmund Brown Jr., Joseph Powers, Martha Coakley, Michael Cardozo, Anne Milgram, Gary King, Andrew Cuomo, Hardy Myers

The DEIS must clarify that GHG emissions from passenger cars and light trucks will continue to increase from past levels.

One of the most significant pieces of information that must be clarified in the DEIS is that, under the new CAFE rule, GHG emissions from passenger cars and light trucks will continue to rise over past levels, because the increase in miles per gallon ("mpg") mandated by the rule will not completely offset the increase in vehicle miles traveled ("VMT").

Rather than making this increase clear, the DEIS buries the information in the text of the document (*e.g.*, DEIS at 3-57) and repeatedly refers to the *reductions* in emissions, CO_2 concentration, and temperature. [Footnote: See original comment document.] In fact, the only reduction is in the amount of growth in each of these measures over what would otherwise occur without the new rule. The absolute levels are rising and will continue to rise. This distinction must be made clear both in the labeling of the graphs and figures, and in the text of the DEIS.

Response

NHTSA acknowledges that the absolute level of GHG emissions will continue to rise over current levels. This was expressed throughout the DEIS and remains in this FEIS, explicitly in Figure 3.4-4 and Table 3.4-1. The increase in emissions from factors such as an increase in vehicle miles traveled (VMT) is beyond NHTSA's jurisdiction to control. As explained in the NPRM and the DEIS, EPCA (as amended by EISA) requires NHTSA to set average fuel economy standards at least 18 months before the start of each model year and to set them at "the maximum feasible average fuel economy level that [NHTSA] decides the manufacturers can achieve in that model year." 49 U.S.C. §32902(a). In view of this statutory directive, it is not reasonable for NHTSA to explore strategies related to the quantity of vehicle miles traveled by the public. However, NHTSA notes that VMT is related to fuel economy in that higher stringency standards will generally increase VMT (because the per-mile cost of fuel decreases). This is known as the "rebound effect," and is considered by the Volpe model. Similarly, increasing fuel prices will generally decrease VMT. Thus, although CAFE standards indirectly affect VMT, the agency is not authorized to control the growth of VMT.

NHTSA has framed its analysis in terms of reductions because the levels of fuel savings and emissions are projected to be below what they would be without the new CAFE standards, i.e., compared to the emissions reductions that would occur if CAFE levels remained at their MY 2010 levels (the higher of a manufacturer's plans and the manufacturer's required level of average fuel economy for MY 2010).

CEQ's NEPA implementing regulations require that the alternatives be compared against a "no action" alternative – an alternative that projects what emissions levels would be if the proposed action was not implemented. NHTSA's No Action Alternative assumes that the agency would not issue a rule regarding CAFE standards. The MY 2010 fuel economy level (27.5 mpg for passenger cars and 23.5 mpg for light trucks) represents the standard NHTSA believes manufacturers would continue to achieve, assuming that the agency did not issue a rule.

Comparison to a "no action" alternative is done to draw a clearer, more refined distinction in the analysis of the standards and alternatives. NHTSA has endeavored to address this comment from the Attorneys General through additional discussion in Section 2.3.1 of this FEIS. In addition, NHTSA has performed additional analysis to calculate emissions reductions based on different IPCC emissions scenarios, including more aggressive emissions increase scenarios. See Section 4.4.3.5.

10.2.1.2 Effects on Other Countries' Standards

Comment

Comment Number: 0554-8
Organization: Individual
Commenter: James Adcock

NHTSA's analysis of GHG emissions assumes implicitly these regulatory changes only affect the behavior of vehicles in the United States. However most manufacturers are world-wide and can be expected to apply developed technology world-wide. Further, if the U.S. reduces GHG emissions from vehicles that should be expected to engender at least some amount of goodwill "diplomatic synergy" with other nations, particularly with Europe. If the U.S. reduces vehicle GHG Europe can also be expected to reduce vehicle GHG. If a 10% reduction in U.S. vehicle GHG resulted in a 10% reduction in European vehicle GHG one would have 100% diplomatic synergy between the regions. NHTSA is currently assuming implicitly 0% diplomatic synergy, *i.e.*, "Cowboy Diplomacy" where the U.S. acts alone without any other nation following suit. Since both major candidates for the presidency during the years of these regulations have pledged better cooperation with other nations NHTSA should be assuming something more than 0% diplomatic synergy. Further, U.S. GHG reductions from vehicles can be a starting point for cooperation in reducing GHG in other areas, increasing even more the "diplomatic synergy." NHTSA implicitly is assuming a value of 0% for all these synergies when NHTSA rationally should be expecting a higher value.

Response

One commenter suggested that there is a certain level of "diplomatic synergy" that would occur from NHTSA's rulemaking. The commenter states that NHTSA errs by not including the benefits that would occur if other countries increase their fuel economy because of this rulemaking. The international impacts of this rulemaking remain difficult to assess and are not quantifiable, and the commenter did not suggest how the agency could reasonably do so. NHTSA cannot accurately predict the actions of other countries and would point out that fuel economy standards differ from country to country.

10.2.2 VOLPE MODEL

Comments

Comment Number: 0576-27
Organization: Public Citizen
Commenter: Joan Claybrook

In the fuel economy standards for 1981-1984, set in 1977, NHTSA said "[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 th[e Energy Policy and Conservation] Act." (42 *FR* 33537). But such reliance is precisely what the agency has done — it uses a cost benefit analysis to set the standards based on economic practicability as its first criterion.

NHTSA justifies this approach by citing *Public Citizen v. NHTSA* in its 2005 NPRM on light truck fuel economy standards ". . .in determining the maximum feasible level of CAFE, the agency 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." [Footnote: See original comment document.] Public Citizen acknowledges that Congress in EPCA named economic practicability as one of the four factors, and that the court in *Public Citizen v. NHTSA* said that consumer choice was part of economic practicability; however, in *Center for Biological Diversity v. NHTSA*, the court states:

> 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. . . .The need of the nation to conserve energy is even more pressing today than it was at the time of EPCA's enactment. . . . What was a reasonable balancing of competing statutory priorities twenty years ago may not be a reasonable balancing of those priorities today. (*Center for Biological Diversity v. NHTSA*, 508 F. 3d 508 at 14869-71.)

This shift of priorities is exactly relevant to the current situation. Fuel economy has become a significant public concern as gas prices have risen sharply. [Footnote: See original comment document.] Only NHTSA hasn't appropriately responded to these trends, and the Volpe Model, with its now outdated economic assumptions, would set fuel economy standards at a level that is less than consumers need based on a balancing of the statutory factors that does not reflect the current priorities.

Comment Number: 0576-37
Organization: Public Citizen
Commenter: Joan Claybrook

Public Citizen opposes the use of marginal cost-benefit analysis in estimating the maximum feasible level of fuel economy, as this type of economic analysis structurally fails to set the maximum feasible level.

Comment Number: 0572-37
Organization: Center for Biological Diversity
Commenter: Brian Nowicki, Mickey Moritz, Kassie Siegel

Furthermore, the DEIS fails to consider the economic costs of the collapse of the ocean food web. This cost must be included in any cost-benefit assessment conducted by NHTSA to accurately reflect the proper balance between the costs and benefits of reducing CO_2 emissions.

Comment Number: 0572-40
Organization: Center for Biological Diversity
Commenter: Brian Nowicki, Mickey Moritz, Kassie Siegel

The cost-benefit analysis is incomplete because it does not include a monetization of the impacts of black carbon.

Response

Regarding the potential costs associated with ocean acidification and black carbon expressed by the Center for Biological Diversity (CBD), NHTSA considers the societal costs of carbon dioxide emissions by including a monetary value for the "social cost of carbon emissions" in the Volpe model. That value per ton of carbon is the agency's effort to account for the economic value of reductions in CO_2 emissions. Toward this end, NHTSA took a hard look at numerous published estimates of the social cost of carbon emissions, which assess and monetize future economic damages from climate change. The agency believes that the values in these peer-reviewed studies include damage to the ocean due to carbon emissions, and thus, NHTSA does not explicitly consider ocean acidification's impact on the food web in the Volpe model. However, due to the agency's analysis of peer-reviewed published estimates of social cost of carbon, NHTSA is confident that the social cost of carbon used in the Volpe model addresses CBD's concern.

NHTSA explained in the DEIS that ocean acidification due to increases in CO_2 emissions, the cause suggested by CBD for the collapse of the ocean food web, is difficult to assess quantitatively because the interactions are so complex and difficult to project. See DEIS Section 4.7. Where information presented in the EIA analysis was incomplete or unavailable, NHTSA relied on CEQ regulations regarding incomplete or unavailable information. See 40 CFR § 1502.22(b). The DEIS and this FEIS acknowledge that information on ocean acidification is incomplete, and that the state of the science does not allow for a characterization of how the alternatives considered influence these risks, other than to say that the greater the emissions reductions, the lower the risk of ocean acidification.

Comments

Comment Number: 0572-54
Organization: Center for Biological Diversity
Commenter: Brian Nowicki, Mickey Moritz, Kassie Siegel

The CAFE Compliance and Effects Model, generally referred to as the Volpe model, is designed and used primarily to determine the economic costs and benefits to consumers and automakers with regard to application of technologies. Although an estimate of the social cost of global climate change (estimated by NHTSA at $7 per ton of CO_2) was entered as an input, the Volpe model focuses on the marginal costs and benefits provided to consumers and automakers by each potential technology, under the assumptions of costs and efficiency gains as purported by the automakers. It is much less adept at evaluating costs and benefits to society as a whole.

Comment Number: 0572-58
Organization: Center for Biological Diversity
Commenter: Brian Nowicki, Mickey Moritz, Kassie Siegel

The conclusions of the cost-benefit analyses are highly dependent on the values input into the model, and are particularly sensitive to the estimate of the economic cost of climate change and the projected price of

gasoline. NHTSA has consistently chosen unreasonable input values to minimize the fuel economy level that emerges from the "black box" of the Volpe model. The absurdly low gas prices chosen by NHTSA are perhaps the best example. Increasing the gas price by $0.88 in 2016 leads to a nearly 7 mpg increase in the "socially optimal" fuel economy level. 73 FR 24476. Yet nowhere does NHTSA disclose the model results from simply entering today's average gas price of $4.09 per gallon [Footnote: See original comment document.] or the environmental impacts of running the model with "reality-based" inputs. NHTSA has a legal obligation to do so.

NHTSA, on page 24414 of the NPRM, states that, "[for] most of the analysis it performed to develop this proposal, NHTSA required a single estimate for the value of reducing CO_2 emissions." While it may be true that the Volpe model and the calculations used for the cost-benefit analysis required a single estimate—rather than a range of potential values—for each value for any single calculation, such methodological limitations do not restrict NHTSA from running successive calculations with a range of discrete values. This method should be applied to both the Volpe model and the cost-benefit analyses. In general, the projections for the price of gasoline must, at the very least, incorporate the current price of gasoline, and a range of possible scenarios for future prices. The economic cost of climate change must include the range of values reported in Stern (2007). We note that analysis of a range of values is legally required by the National Environmental Policy Act, which requires the analysis of a reasonable range of alternatives to the proposed action. NHTSA's sensitivity analysis is particularly indefensible as the agency has used $14 per metric ton as an upper bound of economic cost of carbon dioxide. The selection of such a low number as the upper bound is utterly unsupportable. Similarly, NHTSA has failed to analyze a gas price that even approaches today's prices, even in the sensitivity analysis. Today's gas price must form the starting point for the analysis, and calculations must be performed that consider the overwhelmingly likely scenario that gas prices will be significantly higher than the projections used in the NPRM.

Comment Number: 0574-13
Organization: Alliance of Automobile Manufacturers
Commenter: Julie Becker

On May 18, 2008, the Alliance sent a letter to NHTSA posing a series of questions about the Volpe model that Sierra Research had formulated because Sierra found it necessary "to resolve [those questions] in order to be able to understand and fully unpack the technical analysis behind NHTSA's notice of proposed rulemaking, as published at 73 *Fed. Reg.* 24,352 (May 2, 2008), and the accompanying preliminary regulatory impact analysis." Appendix B at 1. NHTSA has still not responded to the questions posed.

As NHTSA knows, courts have interpreted the Administrative Procedures Act and other, analogous sources of law to require agencies to provide opportunities not just to comment, but to comment meaningfully upon the agency's analysis. See, e.g., *Honeywell Int'l, Inc. v. EPA*, 372 F.3d 441, 449 (D.C. Cir. 2004). Moreover, an agency cannot rely on data or analysis known only to itself. See *National Classification Committee v. United States*, 779 F.2d 687, 695 (D.C. Cir. 1985). In addition, agency reliance on its experience cannot overcome evidence that shows a particular methodology to be flawed. See *American Pub. Gas. Ass'n v. FERC*, 567 F.2d 1016, 1043 (D.C. Cir. 1977), *cert. denied*, 435 U.S. 907(1978). Finally, in exploring the validity of the various assumptions that NHTSA made, Sierra needs to be able to test NHTSA's conclusions and its reliance on matters requiring judgment. Therefore, under OMB's [Office of Management and Budget's] aegis, NHTSA has been obligated to ensure that its scientific and technical conclusions are "substantially reproducible." (Guidelines for Ensuring and Maximizing the Quality, Objectivity, Utility, and Integrity of Information Disseminated by Federal Agencies, 67 *Fed. Reg.* 8,452 (Feb. 22, 2002). Sierra Research was not able to replicate NHTSA's analysis in some significant ways because the questions it posed were not answered.

Numerous environmental organizations commented at the August 4 public hearing that the Volpe model was central to NHTSA's NEPA analysis. Hence, for NHTSA's protection both against potential legal challenges by those groups and to provide a rational response to the questions raised by the Alliance, NHTSA must provide answers to the issues posed in the May 18 Alliance letter. NHTSA's use of confidential product plans by manufacturers cannot form the answer to the concerns posed in that letter. See *Riverkeeper, Inc. v. EPA*, 475 F.3d83, 112 (2d Cir. 2007) (approving agency use of confidential information only so long as it did not prevent the public "from commenting on the methodology and general cost data underlying EPA's approach").

Comment Number: 0574-8
Organization: Alliance of Automobile Manufacturers
Commenter: Julie Becker

As several environmental groups and individual commenters noted at the August 4, 2008 public meeting, NHTSA's NEPA analysis relies heavily on its Volpe model analysis. This makes it critical that the public be able to understand how the Volpe model functions. The letter the Alliance sent to NHTSA on May 18, 2008 presenting questions posed by Sierra Research, Inc. concerning the Volpe model has still not been answered. See Appendix B. This violates basic principles of administrative law. As a general matter, NHTSA's use of confidential product plan information also cannot be used to obscure the functioning of the Volpe model.

Response

The AAM referred to a letter it sent NHTSA in which Sierra Research, Inc. raised very specific issues concerning the application of fuel economy-improving technologies in the Volpe model. After receiving that letter, NHTSA contacted the AAM and informed it that if it believed that the agency did not use correct numbers or make the correct assumptions or calculations, AAM should make what it believed were the necessary corrections for the purposes of its analysis of the agency proposal and submit the results to NHTSA as part of its comments, including an explanation of what errors it believed the agency had made and why the AAM's values and approaches were better than the agency's. Further, in developing the FEIS, NHTSA has taken all of AAM's questions in its letter and suggestions in its comments to the docket regarding technology costs and standards analysis into consideration while revising and updating the technology inputs to the Volpe model. NHTSA does not believe that the agency's handling of the AAM's original letter in the amendments to the technology assumptions in the final rule restricted the ability of the AAM to comment meaningfully on the alternatives presented in the DEIS and their environmental impacts. Indeed, the AAM submitted extensive, detailed comments to the dockets for the NPRM and DEIS.

Moreover, CEQ regulations state that the purpose of an EIS is to "provide full and fair discussion of significant environmental impacts and … inform decision makers and the public of the reasonable alternatives which would avoid or minimize adverse impacts or enhance the quality of the human environment." 40 CFR § 1502.1. The agency purposefully analyzed a range of alternatives that would capture a full spectrum of potential impacts from vehicles continuing to maintain their MY 2010 fuel economy to standards based on the maximum technology expected to be available over the period. The various alternatives analyzed create mpg standards that essentially represent several points on a continuum of alternatives. NHTSA has further refined the fuel saving technology cost and benefit assumptions that go into the Volpe model based on numerous comments received on the NPRM and DEIS.

Comments

Comment Number: 0575-26
Organization: Union of Concerned Scientists
Commenter: Eli Hopson

The following examples illustrate the lack of transparency in NHTSA' s work:

Example A. NHTSA's sensitivity analysis shows that the use of higher externality values (gasoline price, CO_2 valuation, etc.) has a much more significant impact on passenger car fuel economy than it does on light truck fuel economy. NHTSA hypothesizes on some possible reasons for this, but provides no evidence for their hypothesis. If NHTSA cannot explain why this happens, their work appears flawed as it is not even transparent to them. Alternatively, if they can explain, they must provide the data and evidence. NHTSA's current approach is not sufficient for providing the public the ability to fully understand the mechanisms behind NHTSA's methodology.

Example B. One of NHTSA's frequent arguments is that their model is based on specific manufacturer product plans, and that because of this, NHTSA can employ the most realistic scenarios of product availably in their modeling efforts. However, certain assumptions NHTSA makes about product plan availability stand in stark contrast to public statements made by manufacturers. For example, despite the fact that General Motors has repeatedly touted the 2010 target release of its Chevy Volt plug-in hybrid (and a target volume in the tens of thousands) [Footnote: See original comment document.], NHTSA has opted to not include this technology in its model.

It appears that either (a) NHTSA is receiving incomplete or, worse, intentionally distorted product plans—thereby leading the agency to erroneous conclusions about technology availability and applicability, or that (b) NHTSA is disregarding manufacturer claims and selectively applying product plan information. Neither option is acceptable.

Example C. NHTSA appears to restrict final mpg levels using an opaque economic practicability assessment. A 5-year "consumer valuation" criterion is employed that appears to restrict deployment of technology that takes more than five years to recoup, and to value only the first five years of fuel savings. However, how or why this criterion was used in NHTSA's model is far from clear. It should be here noted that use of consumer valuation as a way to restrict application of fuel saving technologies, if indeed that is what is occurring, is incorrect and inappropriate.

Example D. NHTSA's sensitivity analysis includes evaluation at low and high fuel prices. While some of the results seem logical (i.e. an increase in fuel economy with the use of higher gasoline prices) others are completely counterintuitive. For example, the passenger car sensitivity analysis indicates that, relative to proposed fuel economy levels, an *increase* of 0.2 mpg can be achieved in 2015 by employing a *lower fuel price*. This type of information contradicts even the most fundamental logic of the Volpe model, and undermines the value of NHTSA's work.

Inconsistent Data

In reviewing the NPRM and PRIA, issues of inconsistent data came up. UCS understands that typos and errors will occur in volumes of its size, but these errors could also contribute to a perception of a hastily-performed analysis.

Example A. NHTSA claims to apply weight reduction technology to light trucks over 5,000 lbs. curb weight only. However, multiple tables in both the NPRM and PRIA, a 6,000 lb. curb weight threshold is also identified.

Example B. Pages 14 and 15 of the NPRM specify proposed passenger car and light truck standards, along with interim year fleet average estimates. Similarly, this information is shown in Table lb and Appendix Table A-l of the PRIA. Oddly, however, some of this information is inconsistent. While passenger car and light truck standards are consistent with the standards proposed in the NPRM, the PRIA indicates a 0.1 mpg higher fleet average fuel economy for both model years 2012 and 2013, as shown in Table 3. [See original comment document for Table 3 and footnotes.]

We assume this was merely a computational oversight; however we do wish to have NHTSA double-check this information to ensure that fleet average requirements are properly set.

Comment Number: 0576-24
Organization: Public Citizen
Commenter: Joan Claybrook

The model used to set fuel economy standards is heavily influenced by the economic assumptions. NHTSA's failure to make the correct assumptions about potential benefits will put downward pressure on the level and rate of the standards, which robs consumers of considerable value from increased standards, through fuel savings, reduced greenhouse gas emissions, and improved energy security and independence.

Comment Number: 0576-25
Organization: Public Citizen
Commenter: Joan Claybrook

The logic behind the restructured CAFE standards is to add the minimum amount of fuel saving technology to bring a manufacturer into compliance with the standard for a given year, with significant latitude given to individual manufacturers for compliance based on the specific fleet mix of a given manufacturer. This approach necessarily undercuts the maximum feasible level of fuel economy. In its November 2007 decision in *Center for Biological Diversity v. NHTSA* the Court of Appeals for the Ninth Circuit said: "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." (*Center for Biological Diversity et al., v. NHTSA.* 508 F. 3d 508. (November 15, 2007)).

NHTSA states in this notice on fuel economy standards: "In striking [a] balance [between costs and benefits], the agency was mindful of the growing need of the nation to conserve energy for reasons that include increasing energy independence and security and protecting the environment." (73 *FR* 24457] However, analysis of the Volpe Model suggests that the assumptions NHTSA uses to set the standards are not sufficiently mindful of the need to conserve energy or environmental protection.

Public Citizen recognizes that since the Ninth Circuit decision there have been changes to the Volpe Model since the 2006 light truck rule: "the set of technologies represented was updated, the logical sequence for progressing through these technologies was changed, methods to account for 'synergies' (*i.e.*, interactions) between technologies and technology cost reductions associated with a manufacturer's 'learning' were added, the effective cost calculation used in the technology application algorithm was modified, and the procedure for calibrating a reformed standard was changed, as was the procedure for estimating the optimal stringency of a reformed standard." (73 *FR* 24396] But these changes have not corrected the problems with the model that prevent it from setting standards at the maximum feasible level. Although Congress authorized NHTSA to restructure the CAFE scheme for passenger cars, but it

did not mandate the NHTSA use Volpe Model. There are other ways the agency could model fuel economy that would set targets at the maximum feasible level and would improve public participation in the process.

Comment Number: 0576-26
Organization: Public Citizen
Commenter: Joan Claybrook

Public Citizen raises the following concerns about the Volpe Model:

- fails to correct the light truck loophole, which is the failure to have one continuous standard for passenger cars and light trucks, and ignores the impact of crossover vehicles
- the claim that the Volpe Model protects safety is based on a misapprehension of the relationship between fuel economy and safety
- potentially erodes the fuel savings when the price of oil drops lower than expected
- allows manufacturers to effectively set their own standards by manipulating product plans
- bases fuel economy increases on industry-biased cost assumptions and underestimates of benefits

Response

EPCA, as amended by EISA requires NHTSA to set separate standards for passenger cars and light trucks. Therefore, the option of "one continuous standard for passenger cars and light trucks" is not available. Before EISA, NHTSA had the discretion to prescribe separate standards for different classes of automobiles between 6,000 and 10,000 pounds, which is how the term "light truck" evolved. Under EISA's new definitions, all vehicles under10,000 pounds are classified as passenger automobiles, non-passenger automobiles, or work trucks, and all are subject to a CAFE standard (including crossover vehicles).[4]

Regarding the rest of this comment, see the general response at the end of Section 10.2.2.

Comments

Comment Number: 0576-28
Organization: Public Citizen
Commenter: Joan Claybrook

Another serious problem with the Volpe Model is that it is not transparent, which significantly undermines the ability of public commenters to provide an opinion as to whether NHTSA has set standards at the maximum feasible level that maximizes public good. Automakers provide the inputs for the Volpe Model through product plans, which are closed from public view as confidential business

[4] *A work truck is a vehicle between 8,500 and 10,000 pounds gross vehicle weight and is not a medium duty passenger vehicle as defined in 40 CFR § 86.1803-01. See 49 U.S.C. § 32901(a)(19). EISA requires NHTSA to set CAFE standards for work trucks after a NAS study on the fuel economy of this class of vehicles. See 49 U.S.C. §§ 32902(b)(1), 32902(k).*

information. This significantly biases the standards in favor of industry by shutting the public out of the process. NHTSA does not establish what is technological feasible and economically practicable based on an independent assessment of the current vehicle fleet and the available technology to improve the fleet, but rather accepts industry inputs, which are run through the black box of the Volpe Model, and a variety of "optimization" factors, which are tied to maximizing industry-wide benefits. (73 *FR* 24416). In the past, rulemaking NHTSA has done its own research and evaluation of these factors which was more transparent.

Thus, the public is foreclosed from real participation in this system. There is intense public interest in new fuel economy standards. These upgrades are the first for passenger cars in over twenty years, and they will dictate the level of fuel economy new vehicles will get until 2015, which affects the new car market and will skew purchase decisions. High gas prices and concern about global warming contribute to increased consumer interest in fuel economy; however, the agency's scheme for setting fuel economy standards leaves them largely in the dark. Consumers must essentially trust that NHTSA has set standards in their interest using information provided by industry.

Comment Number: 0576-29
Organization: Public Citizen
Commenter: Joan Claybrook

The Volpe Model uses incremental cost and incremental benefit estimates to determine the increase in fuel economy model-by-model. However, incremental costs are difficult to estimate accurately; many companies are unable even to produce a complete list of regulations that apply to them. [Footnote: See original comment document.] The GAO concluded that industry often overestimates costs or provided cost estimates that were not incremental. [Footnote: See original comment document.] Inaccurate estimates also plague the benefits side. As described above, many of the economic assumptions NHTSA made in estimating benefits were too low and too conservative. Since the Volpe Model only adds technology until marginal cost balances marginal benefit, the standards will not be set at the maximum feasible level, and consumers will not get the best available technology. (73 *FR* 24416)

Comment Number: 0576-31
Organization: Public Citizen
Commenter: Joan Claybrook

The Volpe Model estimates are also skewed by out-of-date and incomplete product plans. If NHTSA is to rely on product plans as their primary source of information for setting fuel economy standards, then those plans should be as up-to-date and complete as possible. However, not all manufacturers provided NHTSA with complete product plans, and in light of recent shifts in the auto industry in response to high gas prices and consumer demand shifts, the product plans that NHTSA used to run the model for this proposal are now out-of-date. [Footnote: See original comment document.] These insufficiencies in the information stream potentially undercut the potential for NHTSA to set technology-forcing standards which appropriately serve the need of the U.S. to conserve energy.

Comment Number: 0576-13
Organization: Public Citizen
Commenter: Joan Claybrook

The Volpe model also uses incomplete and inaccurate inputs from the auto industry to make projections about the future fleet mix and market preference. NHTSA solicited the automakers to provide product plans with which it could complete the modeling to set the fuel economy standards. However, many of the automakers solicited provided incomplete data, or no data at all. In these cases, NHTSA assumed that

automakers would make no change from model year to model year, which skews the model to prefer no change in vehicle characteristics or fleet mix. In recent months, several major automakers have announced plans to substantially change their product plans. [Footnote: See original comment document.]

Comment Number: 0576-38
Organization: Public Citizen
Commenter: Joan Claybrook

The structure of the Volpe model is such that the standards it prescribes are heavily influenced by the economic assumptions and product plans provided by the auto industry.

Comment Number: 0576-39
Organization: Public Citizen
Commenter: Joan Claybrook

The minimizing effect of the economic assumptions used Volpe model serves to obscure the relative benefits of its proposed alternatives.

Comment Number: 0576-40
Organization: Public Citizen
Commenter: Joan Claybrook

NHTSA has a responsibility to respond to these problems in the most expedient possible manner. The agency estimates that if fuel economy standards are set at the level where total costs balance total benefits (the truly "maximum feasible" level) then passenger cars should reach an average of 43.3 mpg and light trucks should reach an average of 33.1 mpg by model year 2015. [Footnote: See original comment document.] This gets us to a fleetwide average of 37.3 in model year 2015, assuming NHTSA's assumptions that the fleet mix between passenger cars and light trucks stays around 50 percent — a dubious assumption given the flight from these vehicles in the face of high gas prices. This exceeds the goal set by EISA in level and speed; however, Congress mandated a *minimum* level of fuel economy. Gas prices have been rising steadily since 2004. However, the price increases in the last six to 12 months have been especially dramatic, rising by over a third in the past six months, and by nearly 170 percent in five years.

The agency appears to have considered 35 mpg by 2020 to be a ceiling, and has not attempted to strive for the maximum feasible level of fuel economy. "While the agency carefully considered alternative stringencies . . . it tentatively concludes that in stopping at the point that maximizes net benefits, it has achieved the best balancing of all of the statutory requirements, including the 35 mpg requirement." (73 *FR* 24457) NHTSA's conservative estimates for future fuel costs, undervaluation of carbon dioxide, zero valuation of military and strategic costs of oil, and high discount rate all push the outcome of the Volpe Model towards inaction.

If NHTSA increased fuel economy by 4.5 percent per year through the entire period over which standards are set, then the fleetwide fuel economy would reach 33.1 mpg by 2015. In addition, NHTSA's total cost balances total benefit scenario would increase fuel economy by nearly 10 percent per year to reach a fleetwide average above 37 mpg by 2015. This suggests that the technologically feasible pace of increasing fuel economy is much higher than what NHTSA is requiring in this proposal. The agency has given the industry considerable lead time to adjust for higher standards in the later years, yet inexplicably requires a slower pace of increases for these years.

Response

NHTSA recognizes that EISA identifies 35 mpg as a floor and not a ceiling for the combined fleet average statutory fuel economy required by 2020. Accordingly, NHTSA has considered and evaluated the environmental impacts of CAFE standards that reach to at least this level in 2015, such as the Total Costs Equal Total Benefits Alternative and the Technology Exhaustion Alternative. NHTSA also notes that EISA requires the agency to set fuel economy standards "based on 1 or more vehicle attributes related to fuel economy and express each standard in the form of a mathematical function." 49 U.S.C. § 32902(b)(3)(A).

Several reviewers expressed concern – and some have evidenced confusion – regarding NHTSA's approach to establishing the stringency of CAFE standards, the "Volpe model." Some commenters claimed that the Volpe model, by generating standards at levels that maximize net benefits to society, does not comport with EPCA's requirements. The Center for Biological Diversity (CBD) and Public Citizen referred to the Volpe model and its inputs as a "black box." NHTSA does not agree with this characterization.

As required by EPCA, NHTSA sets standards at the maximum feasible level, considering technological feasibility, economic practicability, the effect of other standards of the Government on fuel economy, the need of the nation to conserve energy, as well as other relevant considerations such as safety.

NHTSA has a long-standing practice of analyzing regulatory options based on the best available information regarding (1) the future vehicle market, (2) the technologies expected to be available during the relevant model years, and (3) the key economic factors, such as future fuel prices and the other statutory factors.

Among these categories, all information except NHTSA's forecast of the future vehicle market is made available to the public. The forecast of the future vehicle market is based significantly on confidential product planning information manufacturers submit to the agency. Individual manufacturers are better able than any other entity to anticipate what mix of products they are likely to sell in the future. The submitted product plans contain confidential business information, which the agency is prohibited by federal law from disclosing; making this information publicly available would cause competitive harm to manufacturers. See 5 U.S.C. § 552(b)(4); 18 U.S.C. § 1905; 49 U.S.C. § 30167(a); 49 CFR Part 512; Critical Mass Energy Project v. Nuclear Regulatory Comm'n, 975 F.2d 871 (D.C. Cir. 1992). Notwithstanding this restriction, in its publicly available rulemaking documents, the agency provides aggregated information (compiled from individual manufacturer submissions) regarding its forecasts of the future vehicle market.

All of the other information NHTSA uses to conduct its analysis – such as estimates of economic factors and estimates of the availability, cost, and effectiveness of fuel-saving technologies – is presented in the agency's rulemaking documents and is available to the public. See NPRM, 73 FR 24352, 24391 (May 2, 2008); CAFE Compliance and Effects Modeling System Documentation, Docket No. NHTSA-2008-0089-0047; How to Obtain Volpe Model Installation Files, Docket No. NHTSA-2008-0089-0048; PRIA, Docket No. NHTSA-2008-0089-0003.1, pp. V1-V141. The agency requested and received comment on all of these inputs to its analysis and has addressed these comments in analyses conducted in this FEIS and will do so in the final rule.

Until 2002, when NHTSA began work on CAFE standards for light trucks sold during model years 2005-2007, the agency used tools such as spreadsheets to analyze regulatory options. For that rulemaking and ensuing rulemakings, the agency has supplemented such tools with a modeling system

developed specifically to assist NHTSA with applying technologies to thousands of vehicles and developing estimates of the costs and benefits of potential CAFE standards. The CAFE Compliance and Effects Modeling System, developed by DOT's Volpe National Transportation Systems Center and commonly referred to as "the Volpe model," enables the agency to efficiently, systematically, and reproducibly evaluate many more regulatory options, including attribute-based CAFE standards required by EISA, than was previously possible, and to do so much more quickly.

The Volpe model needs the following types of information as input: (1) a forecast of the future vehicle market, (2) estimates of the availability, applicability, and incremental effectiveness and cost of fuel-saving technologies, (3) estimates of vehicle survival and mileage accumulation patterns, the rebound effect, future fuel prices, the social cost of carbon, and many other economic factors, (4) fuel characteristics and vehicular emissions rates, and (5) coefficients defining the shape and level of CAFE curves to be examined. The model makes no a priori assumptions regarding inputs such as fuel prices and available technology, and does not dictate the form or stringency of the CAFE standards to be examined. The agency makes those selections and, in the case of technology assumptions, has determined that confidential product plans are a vital source of information.

Using the inputs selected by the agency based on best available information and data, NHTSA projects a set of technologies each manufacturer could apply in attempting to comply with the various levels of potential CAFE standards to be examined. The model then estimates the costs associated with this additional technology utilization, as well as accompanying changes in travel demand, fuel consumption, fuel outlays, emissions, and economic externalities related to petroleum consumption and other factors.

NHTSA specifically sought comment on the estimates, which it had developed jointly with EPA, of the availability, applicability, cost, and effectiveness of fuel-saving technologies, and the order in which the technologies were applied. See 73 FR 24352, 24367. While NHTSA asked manufacturers to submit such information in the request for product plans, the agency also conducted its own independent analysis of the all the comments and data—including comments and information from entities outside the automobile manufacturing community—received through the rulemaking process. This involved hiring an international engineering consulting firm that specializes in automotive engineering, and that was used by the EPA in developing its recent Advance Notice of Proposed Rulemaking to regulate greenhouse gas emissions under the Clean Air Act.[5]

NHTSA and its consultants undertook a thorough review of the NPRM technology assumptions and all comments received on those assumptions, based on both old and new public and confidential manufacturer information. NHTSA and its consultants reviewed and compared comments on the availability and applicability of technologies, and the logical progression between them. NHTSA also reviewed and compared the methodologies used for determining the costs and effectiveness of the technologies as well as the specific estimates provided. Relying on the expertise of its consultants and taking into consideration all the information available, NHTSA revised its estimates of the availability and applicability of many technologies, and revised its estimate of the order in which the technologies were applied. In addition, the agency and its consultants generally agreed with commenters who said that in several cases, the technology related costs used in the NPRM and DEIS were underestimated and benefits were overestimated. The agency also agreed with commenters that both sets of estimates were not well differentiated by vehicle class and that the technology decision trees needed to be expanded and refined. Relying on the expertise of its consultants and taking into consideration all the information available, NHTSA revised its technology and effectiveness estimates and used them in analyzing all of the alternatives and scenarios presented in this FEIS. The agency believes that the representation of

[5] *73 FR 44354 (July 30, 2008).*

technologies—that is, estimates of the availability, applicability, cost, and effectiveness of fuel-saving technologies, and the order in which the technologies were applied—used in this action is the best available.

Recognizing the uncertainty inherent in many of the underlying estimates in the model, NHTSA has used the Volpe model to conduct both sensitivity analyses, by changing one factor at a time, and a probabilistic uncertainty analysis (a Monte Carlo analysis that allows simultaneous variation in these factors) to examine how key measures (e.g., mpg levels of the standard, total costs, and total benefits) vary in response to change in these factors. This type of analysis is used to estimate the uncertainty of the costs and benefits of a given set of CAFE standards.

Finally, the model can be used to fit coefficients defining an attribute-based standard, and to estimate the stringency that either (a) maximizes net benefits to society, (b) achieves a specified stringency at which total costs equal total benefits, (c) imposes a specified average required CAFE level, or (d) results in a specified total incremental cost. The agency uses this information from the Volpe model as a tool to assist in setting standards, consistent with the requirements of EPCA.

Model documentation, publicly available in the rulemaking docket, explains how the model is installed, how the model inputs and outputs are structured, and how the model is used. The model can be used on any Windows-based personal computer with Microsoft Office 2003 and the Microsoft .NET framework (the latter available without charge from Microsoft) installed. The executable version of the model, with all of its codes and accompanying demonstration files, is available upon request, and has been provided to manufacturers, consulting firms, academic institutions, nongovernmental organizations, research institutes, foreign government officials, and other organizations. The current version of the model was developed using Microsoft Development Environment 2003, and every line of computer code (primarily in C#.NET) has been made available to individuals who have requested the code. Many of these individuals have run the model using market forecast data that they estimated on their own.[6]

Given the comprehensive disclosure of information about the Volpe model and the fact that many entities and individuals have made use of it, the characterization of the Volpe model as a "black box" is not accurate.

Although NHTSA uses the Volpe model as a tool to inform its consideration of potential CAFE standards, the Volpe model does not determine the CAFE standards NHTSA will propose or promulgate as final regulations. The results it produces are completely dependent on inputs selected by NHTSA, based on best available information and data available at the time standards are set. In addition to identifying the input assumptions underlying its decisions, NHTSA provides the rationale and justification for selecting those inputs. NHTSA also determines whether to use the model to estimate at what stringency net benefits are maximized, or to estimate other stringency levels, such as the point where total costs equal total benefits. NHTSA also determines whether to use the model to evaluate the costs and effects of stringencies that fall outside of the scope of maximum feasible. For example, the standards for the "Technology Exhaustion" Alternative examined by NHTSA were estimated outside the model, which was subsequently used to estimate corresponding costs and effects.[7] Finally, NHTSTA is guided by the statutory requirements of EPCA in ultimate selection of a CAFE standard.

NHTSA does not agree with Public Citizen that the agency "does not establish what is technologically feasible and economically practicable based on an independent assessment of the current

[6] *Resources for the Future (RFF) has run the model and is working under contract with EPA to expand its capability.*

[7] *By definition, the "maximum technology" scenario far exceeds the maximum feasible CAFE standard.*

vehicle fleet and the available technology to improve the fleet, but rather accepts industry inputs, which are run through the black box of the Volpe model and a variety of 'optimization' factors, which are tied to maximizing industry-wide benefits." The manufacturers' plans are only the starting point for the agency's determination of how much technology can and should be required consistent with the statutory factors. NHTSA considers the results of analyses conducted by the Volpe model and analyses conducted outside of the Volpe model, including analysis of the impacts of carbon dioxide and criteria pollutant emissions, analysis of technologies that may be available in the long term and whether NHTSA could expedite their entry into the market through these standards, and analysis of the extent to which changes in vehicle prices and fuel economy might affect vehicle production and sales. Using all of this information—not solely that from the Volpe model—the agency considers the governing statutory factors, along with environmental issues and other relevant societal issues such as safety, and promulgates the maximum feasible standards based on its best judgment on how to balance these factors.

This is why the agency considered seven alternatives, only one of which maximizes net benefits. The others assess alternative standards that in many cases exceed the point at which marginal costs equal marginal benefits. These comprehensive NEPA analyses are intended to inform and contribute to the agency's consideration of the "need of the United States to conserve energy," as well as the other statutory factors. 49 U.S.C. § 32902(f). Additionally, within the model the agency considers the need of the nation to conserve energy by monetizing the economic costs of incremental CO_2 emissions in the social cost of carbon.

CEQ regulations state that the purpose of the EIS is to "provide full and fair discussion of significant environmental impacts and … inform decisionmakers and the public of the reasonable alternatives which would avoid or minimize adverse impacts or enhance the quality of the human environment." 40 CFR § 1502.1. Accordingly, the agency analyzed alternatives that capture a full spectrum of potential impacts, ranging from vehicles continuing to maintain MY 2010 fuel economy levels to standards based on the maximum technology expected to be available over the period. The technology assumptions used in the NPRM produced CAFE standards that went beyond EISA's statutory goal (at least 35 mpg by 2020) in 2015. As a further refinement, NHTSA has updated the fuel-saving technology cost and benefit assumptions that go into the Volpe model based on comments to the NPRM and DEIS and on updated manufacturer product plans. NHTSA acknowledges that these changes affect the CAFE standards.

Volpe Model Input Estimates

Several commenters asserted that NHTSA used inaccurate input variables in the Volpe model, resulting in an underestimation of the projected CAFE standards. Commenters questioned NHTSA's choice of fuel price, social cost of carbon, discount rate, and military costs. The agency recognizes that many of these variables are subject to change based on differing economic circumstances that may or may not exist during the period the CAFE standards are intended to cover, making the estimation process a difficult one. Taking this into account, the agency has expanded its evaluation of the alternatives to account for different valuations of these variables and made this information available in this FEIS. In Section 2.5, Section 3.4.4, and Section 4.4.4, the agency presents the standards and accompanying environmental impacts that occur when the Volpe model is run with varying economic input values.

10.2.2.1 Fuel Price Assumptions

Comments

Comment Number: 0595-1
Organization: Environmental Protection Agency
Commenter: Susan Bromm

The DEIS uses official 2008 AEO [Annual Energy Outlook] Early Release fuel price projections of $2.04- $3.37 per gallon in the relevant timeframe. EPA's work with the Volpe Model, as well as the High Fuel Price sensitivity analyses presented in Section IX of the Preliminary Regulatory Impact Analysis (PRIA) associated with the CAFE Notice of Proposed Rulemaking (NPRM), indicates that the Volpe model is very sensitive to fuel price projections. Using projections at the high end of the AEO range would change the base case (as the market reacts to higher fuel prices) and the projected net benefits, and it would likely increase the level of the "optimized" fuel economy standard. EPA urges NHTSA to carefully consider projections for fuel prices and notes the important nexus between this estimate and future projections for the Final EIS.

Comment Number: 0551-1
Organization: Individual
Commenter: Jim Derzon

I think it is unlikely that gas will be below $3.00 per gallon again in my lifetime, so get busy and strengthen fuel economy standards. Current standards are criminal.

Comment Number: 0535-1
Organization: Individual
Commenter: James Farrelly

As of today the average price per gallon of gas is 4.07 – not 2.25 or 2.60 a gallon. That was what maybe 2006? So auto manufacturers don't feel the need to change fuel efficiency standards when these sorts of numbers are given.

Comment Number: 0549-1
Organization: Individual
Commenter: Nancy Miller

I am writing to protest the ridiculous assertion that we will be paying between $2.25 to $2.60 per gallon for gas through 2020. DOT [Department of Transportation] is calling for fuel economy improvements only if they pay for themselves through fuel savings—the money saved from the gas the cars wouldn't use. This gas price fantasy allows automakers to shave three to four miles per gallon off of the historic new fuel economy requirements that became law in 2007. If accurate gas prices are used, the new requirements would further reduce global warming pollution equivalent to taking about 10 million cars off the road.

Comment Number: 0554-1
Organization: Individual
Commenter: James Adcock

EIA estimates of future gas prices are not rational estimates given the recent run-up in gas prices. The EIA estimates can be compared to the estimate of future gas prices implied in the short-term and long-

term NYMEX [New York Mercantile Exchange] oil and gas futures. If the EIA estimates were correct estimates, and the NYMEX futures greatly differ (which they do) then that difference represents an arbitrage opportunity that traders can exploit, which in turn would drive NYMEX prices back to EIA Estimates. (Modem Arbitrage Theory) This hasn't happened. The conclusion is that EIA estimates cannot be current rational estimates. See attached graph. [See original comment document for graph.] Based on NYMEX future estimates of gas prices during the regulatory time frame I suggest that NHTSA adopt its "HOP - High Oil Price" scenario rather than its current "MOP - Moderate Oil Price" scenario. Or use NYMEX futures values directly rather than outdated EIA estimates.

Comment Number: 0557-7
Organization: The Natural Resources Defense Council
Commenter: Luke Tonachel, Brian Siu

NHTSA relies on the Energy Information Administration's Reference Case forecast for fuel prices. However, both the Reference and High Case forecasts have consistently underestimated fuel prices and NHTSA fails to use a reasonable forecast consistent with likely price trajectories.

Comment Number: 0559-8
Organization: The Northeast States for Coordinated Air Use Management (NESCAUM)
Commenter: Arthur Marin

NHTSA acknowledges that the price of gasoline has the greatest impact on the cost analysis for the standards. Yet, NHTSA assumes fuel prices ranging from $2.26 per gallon in 2016 to $2.51 per gallon in 2030. These numbers are unrealistically low. Currently, the average price of a gallon of gasoline exceeds $4.00 and the principal reason given is high global demand in a supply constricted market. There is little expectation that the gap between supply and demand will be narrowed in the foreseeable future. Therefore, assuming this reasoning is correct, the price of gasoline should remain high; certainly well above the mid-$2.00 range. We urge NHTSA to reevaluate the effect of a wider range of gasoline prices to the $4.00 per gallon level and above. We would expect the results to show that there are more fuel savings technologies capable of cost-effectively achieving greater overall average fuel economy, even according to NHTSA's conservative "net societal benefit" cost-analysis approach.

Comment Number: 0564-9
Organization: Consumer Federation of America
Commenter: Mark Cooper

[NHTSA] used gasoline prices that are far too low — a price of only $2.45 per gallon for 2015 (in 2008 dollars);

Comment Number: 0572-14
Organization: Center for Biological Diversity
Commenter: Brian Nowicki, Mickey Moritz, Kassie Siegel

Another major determinant of the output from the Volpe model is the cost of fuel. DEIS at 2-2. The NHTSA used the EIA's Annual Energy Outlook Early Release Forecast to select fuel prices, and assumes future fuel prices ranging from $2.26 per gallon in 2016 to $2.51 per gallon in 2030.Considering that national average gasoline prices are currently $3.81 per gallon [Footnote: See original comment document.] and over a dollar higher than one year ago, there is every indication that the price of oil will continue to increase over the short term, and there is every indication that the price of oil will continue to remain in the short term higher than projected by the administration, this estimate is impossible to justify. It is important to note that these price projections are based in 2006 dollars, and include Federal, State,

and local taxes. However, the estimated 2008 fuel price of $2.69 per gallon of gasoline in 2006 dollars, adjusted by a 3% estimated annual inflation rate, is approximately $2.85 per gallon of gasoline, far below the current prices and projections. The use of an inappropriate gasoline price projection greatly skews the results, since the savings in fuel expenditures are by far the largest components of the cost-benefit analysis, accounting for $2.27 of the $2.51 in net benefits from each gallon of gasoline reduced, overwhelmingly drives the conclusions of the cost-benefit analysis as constructed by NHTSA.

Comment Number: 0572-57
Organization: Center for Biological Diversity
Commenter: Brian Nowicki, Mickey Moritz, Kassie Siegel

For the purposes of cost-benefit analysis, on page 24449 of the NPRM, NHTSA assumes future fuel prices "ranging from $2.26 per gallon in 2016 to $2.51 per gallon in 2030." Considering that national average gasoline prices are currently over $4.00 per gallon, there is every indication that the price of oil will continue to increase over the short term, and there is no indication that oil prices will subside in the long term, this estimate is impossible to justify. It is important to note that these price projections are based in 2006 dollars, and include Federal, State, and local taxes. [Footnote: See original comment document.] However, the estimated 2008 fuel price of $2.69 per gallon of gasoline in 2006 dollars, adjusted by a 3% estimated annual inflation rate, is approximately $2.85 per gallon of gasoline, far below the current prices and projections. The use of an inappropriate gasoline price projection greatly skews the results, since the savings in fuel expenditures are by far the largest components of the cost-benefit analysis, accounting for $2.27 of the $2.51 in net benefits from each gallon of gasoline reduced, overwhelmingly drives the conclusions of the cost-benefit analysis as constructed by NHTSA in the NPRM.

Comment Number: 0575-2
Organization: Union of Concerned Scientists
Commenter: Eli Hopson

While gasoline prices soared above $3 per gallon this winter and have hovered around $4 per gallon this summer, NHTSA relied on projections of $2.25-$2.50 per gallon.

Comment Number: 0575-29
Organization: Union of Concerned Scientists
Commenter: Eli Hopson

At around $2.50 or lower, the gasoline price projection used by NHTSA dramatically undervalues the savings associated with improved fuel economy. According to NHTSA's own analysis, the use of an undervalued gasoline projection, rather than the Energy Information Administration's High Oil Price projection (which itself falls below today's pump prices), robs the nation of an additional 3-4 mpg. At a minimum, NHTSA should use EIA's High Price projection.

Comment Number: 0575-9
Organization: Union of Concerned Scientists
Commenter: Eli Hopson

Between 2001 and 2008, inflation-adjusted gasoline pump prices nearly doubled [Footnote: See original comment document.], leaving consumers burdened with drastically increased vehicle operating costs. The auto industry, stagnant with a fleet average fuel economy comparable to that of the mid 1980s [Footnote: See original comment document.], offered consumers few fuel-efficient options, and even fewer options from the domestic automakers. Today, gasoline prices continue to break record levels; in

late June, gasoline surpassed a national average of $4 per gallon, with the potential of $5 per gallon fuel in the near future. [Footnote: See original comment document.]

The above facts underscore the importance of properly assessing future fuel prices when setting smart energy policy. Indeed, as noted in the agency's NPRM, "projected future fuel prices are a critical input" (NPRM, p. 186) into the economic analysis used to assess economically practicable CAFE levels. The agency proposes using Annual Energy Outlook (AEO) Reference Case forecasts by the Energy Information Administration (EIA), because they "represent the EIA's most up-to-date estimate of the most likely course of future prices for petroleum products." (NPRM, p. 186) This appears to be a flawed assumption. Nowhere in the Annual Energy Outlook (2007 or 2008 edition) is the Reference Case projection referred to as a "most likely course." In fact, according to EIA, the reference case merely "assumes that current policies affecting the energy sector remain unchanged throughout the projection period." (EIA, 2008. AE02008 Overview, p. 2.)

NHTSA's decision to regard Reference Case gasoline price projections—which have substantially under-predicted the price of gasoline in recent years—as the most likely course of future prices is fundamentally flawed and undervalues the benefits of fuel saving technology in the determination of maximum feasible fuel economy standards. According to NHTSA's own sensitivity analysis, employing a High Price Case would enable application of additional fuel saving technologies on vehicles, increasing passenger car fuel economy between 6.1 – 6.7 mpg over the proposed standards, and increasing light truck fuel economy between 0.1 – 0.8 mpg over the proposed standards. (PRIA, Tables IX-5a and IX-5b) The use of EIA's High Price Case projections would be far more realistic assumption to employ (though, since 2003, even the High Price Case projections have dramatically underestimated the real price of gasoline). [Footnote: See original comment document.]

UCS does not stand alone in this opinion. Even Guy Caruso, Administrator of the EIA—the agency that authors and publishes the AEO—has publicly recommended that NHTSA use the High Price Case in setting fuel economy standards. At a hearing by the House Select Committee on Energy Independence and Global Warming, Mr. Caruso stated, in direct reference to NHTSA's rulemaking process, "We're on the higher price path right now. If you were to ask me today what I would use, I would use the higher price." [Footnote: See original comment document.]

As shown in Figure 1, EIA's Reference Case projections have substantially under-predicted the price of gasoline, falling short of the actual price by as much as 80 cents per gallon. Even near-term Reference Case assessments, such as the 2009 projection, fall well short of today's gasoline price. Moreover, as shown in Figure 2, EIA has consistently predicted a decline in gasoline prices when, in fact, gasoline has faced a precipitous price escalation. [See original comment document for figures and footnote.]

NHTSA points to recent increased fuel prices in AEO 2008 to justify use of AEO Reference Case data. Yet, as shown in Figure 2, even with the upward revision, EIA's 2008 Reference Case projection still falls well below current gasoline prices

NHTSA also points to a comparative assessment of fuel price projections, identifying EIA's Reference Case forecast as providing the highest publicly available estimates: "Comparing different forecasts of world oil prices also shows that EIA's Reference Case forecast reported in Annual Energy Outlook 2007 (AEO 2007) was actually the highest of all six publicly-available forecasts of world oil prices over the 2010-30 time horizon." (NPRM, p. 190)

However, this statement ignores the fact that the same EIA table referenced by NHTSA specifies the High Price Case forecast with oil prices 20 percent higher than the Reference Case in 2010, 60 percent higher

than the Reference Case in 2015, and 71 percent higher than the Reference Case in 2020. (Only 5-year increments are shown.)

Given current gasoline market conditions, gasoline market trends, and the historical inaccuracy of EIA's Reference Case for much of this decade, UCS recommends that NHTSA employ the High Price Case forecast in its cost-benefit assessment. As shown in Figure 2, the High Price Case forecast remedies the predicted decline in gasoline prices. Yet even this projection still falls far below current gasoline prices which reside over $4 per gallon. Without question, the High Price Case is not a prediction of extreme, never-before-seen fuel costs, but rather a modestly more representative projection of the energy-dependent environment that we now live. UCS strongly suggests that NHTSA employ, at a minimum, EIA's High Price Case projection in its analysis.

Comment Number: 0576-18
Organization: Public Citizen
Commenter: Joan Claybrook

NHTSA has assumed retail gas prices of $2.31 per gallon for model year 2015, with a high estimate of $3.19. For 2030, the forecast price is $2.51 per gallon, and the high price is $3.76. (PRIA, X-5) Guy Caruso, administrator of the Energy Information Administration (EIA), recommended in a hearing of the House Select Committee on Energy Independence and Global Warming in June 2008 that NHTSA should use the high price estimate when setting fuel economy standards. [Footnote: See original comment document.] Public Citizen strongly urges NHTSA to base its final rulemaking on a more realistic estimate of future fuel price based on the high estimate and an at-the-pump price that pushes the standard in the direction of real-world gas prices.

Comment Number: 0576-9
Organization: Public Citizen
Commenter: Joan Claybrook

The future fuel price assumptions are unjustifiably low, assuming a 2030 price of gasoline at $2.51. The administrator of the Energy Information Administration has publicly stated that NHTSA should use the high-end estimate in setting fuel economy standards. [Footnote: See original comment document.]

Comment Number: 0588-4
Organization: New York State Department of Transportation
Commenter: Stanley Gee

NHTSA uses unrealistically low predictions of motor fuel prices, thereby underestimating economic benefits, and overestimates the rebound effect, which underestimates fuel savings and underestimates vehicle-related criteria and toxic pollutant emissions.

Comment Number: 0588-7
Organization: New York State Department of Transportation
Commenter: Stanley Gee

The DEIS (page 3-59) states that the Preliminary Regulatory Impact Analysis (PRIA) uses the Energy Information Administration reference price estimate for gasoline in the *AEO 2008 Early Release Forecast*, Please note that the EIA International Energy Outlook Highlights, June 2008 states, "Given current market conditions, it appears that world oil prices are on a path that more closely resembles the projection in the high price case than in the reference case." Therefore, NYSDOT [New York State Department of Transportation] believes that the analysis of alternatives analysis should use EIA's "high

price case" scenarios. In addition, the Final Environmental Impact Statement should specifically explain why *current* market prices are excluded from the factoring process for economic practicability.

Comment Number: 0598-2
Organization: Sierra Club
Commenter: Caroline Keicher

NHTSA' s own analysis shows that between 2011 and 2015, significantly higher standards are technologically feasible and economically practicable when higher gas prices are used ($3.14 per gallon in 2016). NHTSA's final rule should be, at a minimum, consistent with the analysis provided in the PRIA. NHTSA's use of below-cost energy estimates is arbitrary and capricious and violates the agency's statutory charter to impose mandatory maximum feasible fuel economy standards based upon a review of economic and technological feasibility.

Comment Number: TRANS-02-2
Organization: Lee Auto Malls
Commenter: Adam Lee

NHTSA plays a real role in determining what our fuel economy will be. You analyze the impact of CAFE on Detroit. And I think that your assumptions are based on incorrect data. Gas costs $4 a gallon, not $2.

Comment Number: TRANS-08-14
Organization: Sierra Club
Commenter: Ann Mesnikoff

The proposed rule and the PRIA both show that the gas prices are major forces in setting fuel economy. NHTSA short changes America by using gas price assumptions that are far too low, a price for carbon that is randomly selected, and artificially constraining technologies.

Comment Number: TRANS-09-5
Organization: Individual
Commenter: Doug Molof

The agency's proposal assumes future gasoline prices to be only $2.25 per gallon in 2016, when American future gas prices – when American consumers are already paying prices nearly twice as much today. In fact, since NHTSA first released its draft CAFE rulemaking, the price of gasoline has jumped by over a dollar.

NHTSA's own analysis shows that between 2011 and 2015 significantly higher standards are technologically feasible and economically practical when higher gas prices are used. NHTSA's final rule should be, at a minimum, consistent with the analysis provided in the preliminary impact analysis that accompanied the notice of proposed rulemaking.

NHTSA's use of the low cost energy estimates is arbitrary and violates the agency's statutory charter to impose mandatory maximum feasible fuel economy standards based upon a review of economic and technological feasibility.

The high gas price scenario yields cost effective and technologically feasible standards that will help meet the nation's need to conserve energy, and will help lower gas prices for the average American consumer. NHTSA should ensure that final standards are set using this value at a minimum.

Comment Number: TRANS-10-4
Organization: Individual
Commenter: Matt Dernoga

I am baffled that our new CAFE standards are based on the presumption that the cost of a gallon of gas will be only $2.25 by 2016.

Comment Number: TRANS-12-2
Organization: Individual
Commenter: Sam Blodgett

Economists agree $2, even $3 gas price days are over. Your environmental impact statement must reflect this new reality. In your draft EIS you analyze two price projections for the cost of gasoline; one that predicts $2.25 gas prices by 2015, and another that predicts $3.14 gas prices by 2015.

In your EIS you chose to use the lower price estimation. Given current gas prices, this was an obvious misstep. It is only prudent to use the higher cost estimation. Even it undervalues gas by almost a dollar.

According to your analysis, if gasoline is $3.14 by 2015 then higher fuel economy standards are both technologically feasible and economically practicable. If true, then it is nonsensical to continue as planned.

Comment Number: TRANS-13-2
Organization: Individual
Commenter: Joseph Frewer

the current estimation of the price of a gallon of gas, which is, I think $2.25, not counting inflation in 2016, is unrealistic. I mean, we all prices right now, while they've been fluctuating, they're not going to drop back down to what they used to be. They are definitely staying above $3, and I think that's what most economists are saying. So we need to at least take this into account when coming up with what our standards need to be.

Comment Number: TRANS-14-6
Organization: U.S. Public Interest Research Group
Commenter: Annie Chau

NHTSA unrealistically predicts gasoline prices to be only $2.25 per gallon in 2016. But Americans are already paying nearly twice as much today. U.S. PIRG [Public Interest Research Group] research from squandering to stimulus shows that in the last five months American families have spent the entirety of their stimulus checks filling their tanks, while the cost of gasoline skyrocketed more than 40 percent.

Comment Number: TRANS-18-2
Organization: Individual
Commenter: Pamela Woodward

You need to use realistic gas prices, prices that are, that equal the current average, which is much higher than the $2 plus range. It's in the $4 plus range.

Comment Number: TRANS-22-3
Organization: Individual
Commenter: Julie Locascio

Nonetheless, many consumers will look first to the impact on their own finances in assessing the value of increased CAFE standards. A higher priced vehicle will be worth the extra cost to the consumer, if the consumer gets higher fuel efficiency. But if NHTSA is saying that such a consumer will only save about $2.50 for every gallon of gas longer needed, well into the next two decades, this analysis is completely distorted.

As everyone knows the price of gasoline at the pump is current hovering around $4 a gallon, and one would be hard pressed to find a cross-section of economists who would predict that the price of gasoline is going to drop back down below $3 a gallon in the two decades to come.

Indeed, even Guy Caruso, EIA administrator has testified that the CAFE cost benefit analysis should be using an oil price between $2.96 and $3.63 per gallon. I don't see how NHTSA can ignore the expert recommendation of the man responsible for ensuring that the statutory and regulatory requirements for legally performing the environmental impact assessment are fulfilled.

Comment Number: TRANS-23-4
Organization: Greater Washington Interfaith Power and Light
Commenter: Tara Morrow

Another matter for closer examination in the DEIS is the estimate of the price of gasoline used to determine what is cost effective. Many here have already referred to this, but I, too, was quite shocked to see an assumption of only in the $2 range for 2016, that's in terms of 2006 dollars, and it does seem quite unrealistic given current realities.

Comment Number: TRANS-24-2
Organization: Individual
Commenter: Heather Moyer

As others have said, I also was surprised and shocked to see the proposal assuming that future gas prices would be only $2.25 in 2016 using 2006 dollars. I found that shocking and saddening, and also laughable. And I urge you to use realistic gas prices.

Comment Number: TRANS-25-1
Organization: Individual
Commenter: Emanuel Figueroa

It doesn't make sense when we assume that the price of gasoline is $2 or $3, when we go outside and see the first, any gas station, doesn't matter if it's an Exxon, Mobile, Shell, any. You can choose your brand. You can choose the one that you like for your car, but it's way over $4 right now.

Comment Number: TRANS-28-2
Organization: Individual
Commenter: Jim Pierobon

So I urge you, just to quickly conclude here, to use more realistic assumptions about how high future gasoline prices could go. And looking back on how high they've been this year.

Comment Number: TRANS-29-1
Organization: Individual
Commenter: Allison Forbes

The figure you're considering right now for cost of gas is offensive to consumers. And I'm sure you know that, but we definitely need to be considering the higher cost of gas in our analysis. I paid $4.15 a gallon over the weekend driving around, and it's not easy. So please consider that in your rulemaking.

Comment Number: TRANS-30-1
Organization: Jewish Community Relations Council of Greater Washington
Commenter: Debbie Linick (for Ron Halber)

We must regulate fuel economy based on realistic assumptions about the likely future cost of fuel, and with an eye toward encouraging cleaner vehicles, and the pursuit of renewable and alternate sources of energy.

Comment Number: TRANS-33-2
Organization: Individual
Commenter: Fred Dobb

I'm no statistician, but as a citizen and clergy person it seems that whatever method yielded $2.25 or even $2.60 as an estimate for a decade out is an outlier at best, and a statistic beyond [expletive deleted] lies at worse.

Comment Number: TRANS-33-4
Organization: Individual
Commenter: Fred Dobb

I'm particularly concerned about calculations for the likely cost of gas in the future.

Comment Number: TRANS-34-3
Organization: Individual
Commenter: Fred Teal, Jr.

In summary, I wish to say that I disagree strongly with the arbitrarily low future gasoline prices contained in NHTSA's calculations. It's just incredible that you would use mileage figures for gas costs per gallon for gasoline that would be that low. It's just so impractical, considering our current situation.

Comment Number: TRANS-35-3
Organization: Individual
Commenter: Alina Fortson

Your analysis uses assumptions for future gas prices that are simply unrealistic. Today, Americans are paying nearly $4 per gallon and there's currently no reason to expect prices to drop as low as $2.25.

Comment Number: TRANS-36-3
Organization: Individual
Commenter: Matt Kirby

The unrealistic gas price of $2.25 assumption which is, frankly, an insult to my parents and an insult to the students who can't afford to eat.

Your own analysis shows that between 2011 and 2015 significantly higher standards can be achieved if you only up the presumed gas price at $3.14. So the use of these below cost energy estimates, it violates your own charter to impose mandatory maximum feasible fuel economy standards on a review of economic and technological feasibility.

Comment Number: TRANS-38-2
Organization: Environment America
Commenter: Ben Schreiber

You know, we're using a price of gasoline of $2.30 to justify doing the bare minimum on fuel economy standards, and yet at the same time the price of $4 is being justified to open up our very last protected wild spaces to more and more oil and gas exploration. And it's unacceptable.

Comment Number: TRANS-39-3
Organization: American Jewish Committee
Commenter: Ami Greener

Further, the current proposal relies on fanciful gas price assumptions, which result in insufficient fuel economy levels. The proposal assumes future gasoline prices of $2.25 per gallon, when American consumers are already paying prices nearly double that today.

Comment Number: 0599-2
Organization: Center for Biological Diversity
Commenter: Multiple Signatories

Your assumption that gas will cost $2.36 per gallon in 2020 is completely unsupportable and contributed to the ridiculously low proposed standards.

Response

As explained in Section 10.2.2 above, in response to all the comments NHTSA received pertaining to the fuel price forecast used in the Volpe model, this FEIS examines how the alternatives are affected by variations in the economic assumptions input into the Volpe model. Specifically, the agency calculated and analyzed mpg standards and environmental impacts associated with each alternative under both the "Reference Case" for key model inputs, which uses the U.S. Energy Information Administration's (EIA's) Reference Case fuel price forecast, a domestic social cost of carbon, and a 7-percent discount rate; and under a "High Scenario" set of input assumptions, which uses the EIA "High Case" for fuel price forecast, a global social cost of carbon, and a 3-percent discount rate. This FEIS also analyzes the impacts of various other combinations of economic assumptions inputs.

In the DEIS, NHTSA relied on the EIA's Annual Energy Outlook (AEO) forecasts for the estimate of fuel price during the period covered by the agency's action (EIA 2008a). Federal government agencies generally use EIA's projections in their assessment of energy-related policies. In the DEIS and NPRM, the agency selected the EIA's Reference Case fuel price forecast in performing the analysis. The EIA also includes a "High Price Case" and "Low Price Case" in AEO analyses that reflect uncertainties regarding future levels of oil production. Several commenters suggested that the agency apply the AEO "High Price Case" forecast to the Volpe model. In response to these comments, NHTSA has analyzed scenarios using the "High Price Case" and the "Reference Case." The agency declines to apply the current cost of gasoline to the Volpe model, as some commenters have suggested. Applying current fuel prices would be speculative. Indeed, at the time the DEIS was published, market prices for fuel were

generally rising. However, since that time commodity prices for light sweet crude oil have been declining. The current volatility in fuel prices gives NHTSA greater confidence in relying on EIA forecasts, rather than current prices in the marketplace.

NHTSA's modeling incorporates the annual plans of the car manufacturers in the United States. Given the volatility and rapid movement of the market and the resulting decline in demand for large SUVs and pick-up trucks, the car manufacturers have moved quickly to adjust production of vehicles. EIA incorporates these and other economic trends in its AEO 2008 Forecast. In particular, AEO 2008 Forecast includes the impact of the Energy Independence and Security Act of 2007 (EISA 2007) that was enacted in December 2007, reflecting updates to the renewable fuel standard and the influences of higher CAFE standards for new light-duty vehicles. It also includes additional revisions that reflect historical data issued after the early release version of the AEO 2008 was completed, the EIA Short-Term Energy Outlook released in January 2008, a more current economic outlook, and updates to correct modeling problems in the early release version (EIA 2008d).

10.2.2.2 Rebound Effect

Comments

Comment Number: 0564-11
Organization: Consumer Federation of America
Commenter: Mark Cooper

Assumed that consumers irrationally burn up their fuel savings on increased driving, rather than using it to buy other goods and services, and applied this excessive "rebound" effect to analyses where it should not play a role.

Comment Number: 0575-11
Organization: Union of Concerned Scientists
Commenter: Eli Hopson

NHTSA assumes a rebound effect of 15 percent. Yet recent research from Small and Van Dender, [Footnote: See original comment document.] which NHTSA "attaches greater significance" (NPRM, p. 201], notes that the rebound effect in the U.S. is small and has been getting smaller.

"*...the rebound effect declined substantially over time*—which we confirmed by estimating the equation (without the three interaction terms) separately for time periods 1966-1989 and 1990-2004... the short-run rebound fell from 4.8% to 2.9%, while the long run rebound fell from 21.1% to 7.7%" (emphasis added)

Given the Small and Van Dender conclusions, there is no justification for NHTSA's 15 percent rebound effect, especially given the low gas prices used by the agency. [Footnote: See original comment document.] A rebound of up to 10 percent may be reasonable if NHTSA employs the high price gasoline projection (or today's fuel prices). UCS suggests that, in accordance with use of the High Price Case gasoline projection, NHTSA employ a rebound effect no higher than 10 percent.

Comment Number: 0575-31
Organization: Union of Concerned Scientists
Commenter: Eli Hopson

NHTSA assumes a rebound effect of 15 percent. This value is too high, based upon recent research which NHTSA "attaches greater significance to." Along with use of the High Price Case gasoline projection, NHTSA should employ a rebound effect no higher than 10 percent.

Comment Number: 0576-11
Organization: Public Citizen
Commenter: Joan Claybrook

NHTSA has assumed a very high rebound effect, which also influences its assumptions both in the appropriate level of standards and the potential environmental benefits of each of the range of alternatives.

Comment Number: 0576-23
Organization: Public Citizen
Commenter: Joan Claybrook

NHTSA has assumed a very high rebound effect – 15 percent – for this proposal. The rebound effect assumes that the amount of driving will increase as a result of decreased fuel consumption, which reduces the per mile cost of driving. (PRIA VIII-8) NHTSA looks at 29 estimates and attempts to reflect the current conditions; however according to the Small and Van Dender study, "most empirical measurements of the rebound effect rely heavily on variations in the fuel price," which raises again the question of whether NHTSA's assumptions about the rebound effect are colored by the estimates of future fuel price. [Footnote: See original comment document.]

Comment Number: 0588-10
Organization: New York State Department of Transportation
Commenter: Stanley Gee

The rebound effect is defined as an increase in Vehicle Miles Traveled (VMT) in response to decreased operating costs. Such an effect may occur as a result of higher fuel economy. Additional driving uses more fuel; thus, the rebound effect reduces the net fuel savings that accrue to vehicle owners, for a given increase in fuel economy. In chapter VIII of the PRIA, NHTSA summarizes the results of studies done on the rebound effect across the country, and chooses the study performed in 2005 by Dr. Kenneth Small at the University of California, Irvine. That study concluded that California would experience a dynamic rebound effect of 3 percent. NHTSA claims that updating this study for the country as a whole and for the period covered by this rulemaking would yield a rebound effect of at least 15 percent. It seems counterintuitive that the nation as a whole would see a rebound effect that is five times that of California, particularly in the face of significantly higher fuel costs. In a 2003 report, the Congressional Budget Office notes that the U.S. is a "mature market" and that as such, the rebound effect is small. The report also points out that even though the real cost of fuel per kilometer decreased in the U.S. by about 65 percent between 1982 and 1995, that decrease was not accompanied by a strong rebound in VMT. NHTSA's 15 percent downward adjustment to the economic benefits resulting from this fuel economy rulemaking is not warranted by economic research literature, or actual consumer behavior.

Comment Number: 0600-3
Organization: Centers for Disease Control and Prevention
Commenter: Sarah Heaton, Andrew Dannenberg

In Chapter 3, Affected Environment and Consequences, the assumption is stated that, "the tightened CAFE standards would create an incentive to drive more because they would decrease the vehicle's fuel cost per mile. The total amount of passenger car and light truck VMT would increase slightly due to this 'rebound effect'." There is substantial uncertainty in this argument and an insufficient analysis in the DEIS of variables affecting VMT projections, such as current and projected fuel costs. A sensitivity analysis is warranted to examine the implications of higher or lower assumptions about rebound effects.

Comment Number: TRANS-04-4
Organization: National Automobile Dealers Association
Commenter: David Westcott

Similarly, to the extent vehicles regulated by the CAFE proposal are used by NHTSA predicts after introduction into the fleet, the proposal will necessarily fail to achieve its expected level of environmental benefit. Due to the rebound effect, vehicles with lower operating costs predictably will be used more than the vehicles they replace. Environmental impacts that correlate with miles driven, traveled, such as those associated with greenhouse gases will be impacted to the degree of any such rebound effect, reducing any delay or forecast in environmental performance benefits.

Response

To derive an estimate of the rebound effect for use in assessing the fuel savings and other impacts of more stringent CAFE standards, NHTSA reviewed many studies (PRIA pp. VIII-6 and VIII-7). NHTSA then performed a detailed analysis of 66 estimates of the long-run rebound effect reported in these studies. The 66 estimates range from as low as 7 percent to as high as 75 percent, with a mean value of 23 percent. Approximately two-thirds of all 66 estimates reviewed range from 10 to 30 percent, as do two-thirds of all published estimates, and two-thirds of authors' preferred estimates.

In selecting a single value for the rebound effect to use in analyzing the fuel savings and other impacts of stricter CAFE standards for future model years, NHTSA attaches greater significance to studies that allow the rebound effect to vary in response to changes in the various factors that have been found to affect its magnitude. The agency also updated authors' originally reported estimates of variable rebound effects to reflect current conditions. Commenters referred to studies by Small and Van Dender, and NHTSA notes that it considered two papers by Small and Van Dender (2005a & b); however, NHTSA informs its decision with many studies rather than relying on a select few.

Considering the empirical evidence on the rebound effect as a whole, while according greater importance to the updated estimates from studies allowing the rebound effect to vary, NHTSA uses a rebound effect of 15 percent (with a range of uncertainty extending from 10 percent to at least 20 percent) to evaluate the fuel savings and other effects resulting from stricter fuel economy standards for future model year vehicles.

10.2.2.3 Social Cost of Carbon

Comments

Comment Number: 0557-8
Organization: The Natural Resources Defense Council
Commenter: Luke Tonachel, Brian Siu

The social cost of carbon used by NHTSA is based on an arbitrary range of values and incorrectly relies on a central estimate of $7 per metric ton of CO_2. Unmitigated, costs of dangerous climate change are very likely much higher than estimates in standard literature, and NHTSA must use a reasonable risk premium in its calculations.

Comment Number: 0572-15
Organization: Center for Biological Diversity
Commenter: Brian Nowicki, Mickey Moritz, Kassie Siegel

The NHTSA's methodology for the selection of an estimate of the value of reducing greenhouse gas emissions is arbitrary and designed to minimize the estimate. The Volpe model assumes that the value of CO_2 reductions is the midpoint between a so-called "high" of $14/ton CO_2 and a "low" of $0/ton CO_2. DEIS Appx. C at VIII-30. This valuation is flawed because: (1) it is based on an out-dated and otherwise flawed analysis; (2) the use of a $0 low value is unjustified; and (3) simply splitting the difference between two values does not take into account the distribution of economic projections for the cost of carbon.

The NHTSA relies entirely on the 2005 *Energy Policy* article, Tol (2005), as the source for the estimate of $14 per ton of CO_2, but fails to address the much higher estimates also reported by Tol. Tol (2005) states that "The marginal damages caused by a metric ton of carbon dioxide emissions in the near future were estimated in the [IPCC] Second Assessment Report at US$5-125 per tC." In addition, the NHTSA overlooks the fact that the studies cited in the Tol (2005) survey dated back as much as 18years, to 1991, and 25 of the 28 studies cited were published more than five years ago. Considering that the understanding of climate change has expanded dramatically in the past five years, and that impacts of climate change are progressing much more rapidly than were previously projected, this represents a fatal flaw in the analysis. Of the 28 papers cited by Tol (2005), only three were published since 2003, only one of which was peer reviewed. That paper estimated the social cost of carbon as high as $14 per ton of CO_2. (Pearce 2003).

The Fourth Assessment Report of the Intergovernmental Panel on Climate Change also refers to the Tol (2005) survey, but is careful to point out, on page 813 of Yohe (2007), that "[it] is likely that the globally-aggregated figures from integrated assessment models underestimate climate costs because they do not include significant impacts that have not yet been monetized…," and, on page 17 of Adger (2007), that "taken as a whole, the range of published evidence indicates that the net damage costs of climate change are likely to be significant and to increase over time." The NHTSA concedes this point: "[taken] as a whole, recent estimates of the SCC may underestimate the true damage costs of carbon emissions because they often exclude damages caused by extreme weather events or climate response scenarios with low probabilities but potentially extreme impacts, and may underestimate the climate impacts and damages that could result from multiple stresses on the global climatic system." DEIS Appx. C at VIII-28.

In fact, the IPCC, on page 813 of Yohe (2007), estimates the cost of carbon as high as $350 per ton of carbon ($97.67/ton CO_2), and states that "It is virtually certain that the real social cost of carbon and other

greenhouse gases will increase over time; it is very likely that the rate of increase will be 2% to 4% per year."

The DEIS places great weight on the fact that the IPCC Fourth Assessment report cites to Tol (2005). Yet, the DEIS does not acknowledge the many other studies that the IPCC refers to. For example, the IPCC contrasted the Tol estimate of carbon costs with that of Downing (2005), which indicated that the lower benchmark of $50/tC ($13.95/t CO_2) was reasonable. Most importantly, the IPCC gives great weight to the estimates in the Stern Review 2007. As the most recent and most comprehensive analysis of the costs of climate change, the Stern Review is the best available information. As the IPCC notes, the Stern Review 2007 estimates the cost of carbon at $85/t CO_2. The NHTSA must re-calibrate the Volpe model results to reflect the actual range of values in the current literature.

The NHTSA also uses an impermissible value for the lower bound on the cost of carbon dioxide reductions. The DEIS acknowledges that the IPCC indicates that the costs of global climate change will be non-zero. DEIS Appx. C at VIII-30. But then it jumps to the amazing and illogical conclusion that "it does not necessarily rule out low or zero values for the benefit to the U.S. itself from reducing emissions." DEIS Appx. C at VIII-30. This statement is completely erroneous. The evidence is clear that the U.S. will be severely adversely affected by climate change. Just a few examples: some of the most expensive real estate and most densely populated regions are along our expansive coastlines; the desert Southwest is gripped by drought and projected to continue to be; much of our fresh water is supplied by annual snowpack, which is already declining; forest fires are raging through most of the forested regions of the country; and human health, especially in the Southwest where there are large retired populations, will be affected by extreme heat events and in many other ways. Furthermore, our economy depends heavily on imports and exports from other countries. If the rest of the world is economically harmed by climate change, the U.S. will undoubtedly pay. There is no doubt that the U.S. will suffer severe impacts along with the rest of the world: the cost of carbon is most certainly non-zero.

Finally, the DEIS uses an impermissible method for reducing the range of potential carbon costs to a single value. The DEIS takes the midpoint between its chosen "upper" and "lower" bound. But as emphasized by the IPCC there are numerous estimates of carbon cost. This constellation of carbon costs will have some distribution. It is very likely that the estimated values do not fall along a normal "bell" curve. Consequently, taking the midpoint between the extreme values does not reflect the true "consensus" value for the cost of carbon.

The NHTSA must first re-analyze the available and current estimates of the cost of carbon, with particular attention to the leading analyses in the Stern Review 2007. Next, the NHTSA must ascertain a proper non-zero lower bound for its estimates. Finally, the distribution of estimated values should be taken into account when a single value is selected for use in the Volpe model.

Comment Number: 0572-22
Organization: Center for Biological Diversity
Commenter: Brian Nowicki, Mickey Moritz, Kassie Siegel

Furthermore, the NHTSA makes the mistake of elevating the decisional process over the substantive character of the alternatives. As the court in *California v. Block* noted with regard to an EIS prepared under NEPA, "[a]lthough it is worthwhile to consider a broad range of variables in constructing policy alternatives, the procedure becomes meaningless if the variables are assigned numerical values such that only a limited range of outcomes result." 690 F.2d 753, 769 (9th Cir. 1982) Here, NHTSA has limited its consideration, and range of alternatives, to the results of the model, yet those results are meaningless for a number of reasons, including the fact that the input values were simply incorrect. Thus, the range of

values used as inputs to the Volpe model has unreasonably constrained the universe of alternatives under NEPA.

Moreover, as discussed above, the Volpe model arbitrarily constrains the universe of NEPA alternatives. The purpose of NEPA is to inform decision-making, but application of a specialized tool designed for cost-benefit analysis indicates that a decision has already been made by the agency. If the cost-benefit analysis is applied to select alternatives, there is no potential for considering alternatives that may carry less environmental impact. Yet, the Volpe cost-benefit analysis was employed to define all alternatives, including the maximal technology alternative. This alternative was based on what the NHTSA "considered to be available" and based on market penetration rates defined in the Volpe model DEIS at 2-10.

Comment Number: 0572-55
Organization: Center for Biological Diversity
Commenter: Brian Nowicki, Mickey Moritz, Kassie Siegel

Like the Volpe model, this analysis uses an estimate of the economic costs of global climate change, set in the proposed rule at $7 per ton of CO_2. However, this cost-benefit analysis fails to incorporate the full economic costs of global climate change, values that are difficult to monetize, and costs to the world outside the boundaries of the United States. In general, the estimate of the social costs of climate change fails to incorporate the loss of biodiversity, complex and large-scale ecosystem services, and the disproportionate impacts of global climate change on the developing world.

Comment Number: 0572-56
Organization: Center for Biological Diversity
Commenter: Brian Nowicki, Mickey Moritz, Kassie Siegel

NHTSA's methodology for the selection of an estimate of the value of reducing greenhouse gas emissions is arbitrary and designed to minimize the estimate. The proposed rule, on page 24414, explains that NHTSA "elected to use the midpoint of the range from $0 to $14 (or $7.00) per metric ton of CO_2 as the initial value for the year 2011..." However, the range of estimates extends much higher than $14; there is no justification for a value of $0; and simply splitting the difference between two points is not a defensible methodology, particularly when the low point of the range is not part of a valid range but simply an arbitrary selection of zero as an endpoint.

NHTSA relies entirely on the 2005 *Energy Policy* article, Tol (2005), as the source for the estimate of $14 per ton of CO_2, but fails to address the much higher estimates of $95 per ton of CO_2 reported in Tol (2005). Tol (2005) states that "The marginal damages caused by a metric ton of carbon dioxide emissions in the near future were estimated in the [IPCC] Second Assessment Report at US$5-125 per tC." In addition, NHTSA overlooks the fact that the studies cited in the Tol (2005) survey dated back as much as 18 years, to 1991, and 25 of the 28 studies cited were published more than five years ago. Considering that the understanding of climate change has expanded dramatically in the past five years, and that impacts of climate change are progressing much more rapidly than were previously projected, this is a serious limitation. Of the 28 papers cited by Tol (2005), only three were published since 2003, and only one, Pearce (2003), was peer reviewed, and that paper estimated the social cost of carbon as high as $14 per ton of CO_2.

The Fourth Assessment Report of the Intergovernmental Panel on Climate Change also refers to the Tol (2005) survey, but is careful to point out, on page 813 of Yohe (2007), that "[it] is likely that the globally-aggregated figures from integrated assessment models underestimate climate costs because they do not include significant impacts that have not yet been monetized...," and, on page 17 of Adger (2007), that

"taken as a whole, the range of published evidence indicates that the net damage costs of climate change are likely to be significant and to increase over time." [Footnote: See original comment document.] In fact, the IPCC, on page 813 of Yohe (2007), estimates the cost of carbon as high as $350 per ton of carbon, and states that "It is virtually certain that the real social cost of carbon and other greenhouse gases will increase over time; it is very likely that the rate of increase will be 2% to 4% per year."

The IPCC, on page 821 of Yohe (2007), specifically refers to the findings of Stern (2007) with regard to the economics of climate change. Stating, "[most] recently, Stem (2007) took account of a full range of both impacts and possible outcomes (i.e., it employed the basic economics of risk premiums) to suggest that the economic effects of unmitigated climate change could reduce welfare by an amount equivalent to a persistent average reduction in global per capita consumption of at least 5%. Including direct impacts on the environment and human health (i.e., 'non-market' impacts) increased their estimate of the total (average) cost of climate change to 11 % GDP [gross domestic product]; including evidence which indicates that the climate system may be more responsive to greenhouse gas emissions than previously thought increased their estimates to 14% GDP." Ultimately, Stern (2006) estimates the social cost of climate change at $25 to $30 per ton of CO_2, or much higher. In fact, as Stern points out "If consumption falls along a path, the discount rate can be negative. If inequality rises over time, this would work to reduce the discount rate, for the social welfare functions typically used. If uncertainty rises as outcomes further into the future are contemplated, this would work to reduce the discount rate, with the welfare functions typically used." A negative discount rate would dramatically increase the cost of climate change in the cost-benefit analyses in the proposed rule.

For the lower end of the range of values for reducing global warming, NHTSA proposes an estimate of $0 per ton of CO_2. NHTSA, on page 24414 of the NPRM, states, "Although this finding suggests that the *global* value of economic benefits from reducing carbon dioxide emissions is unlikely to be zero, it does not necessarily rule out low or zero values for the benefit to the U.S. itself from reducing emissions..." Presumably, this is meant to imply that the United States might benefit economically by letting other countries bear the costs of unabated American greenhouse gas emissions. Setting aside the tremendous ethical implications of such a position, NHTSA provides absolutely no evidence to support the claim. Furthermore, only one study surveyed in Tol (2005) included central estimates below $0.00; and that was a non-peer-reviewed article, also authored by Tol.

NHTSA, on page 24413of the NPRM, offers a justification for the low valuation by stating, "many studies fail to consider potentially beneficial impacts of climate change, and do not adequately account for how future development patterns and adaptations could reduce potential impacts from climate change or the economic damages they cause." Although this statement is paraphrased from page 2067 of Tol (2005), it is important to note that this is not cited by Tol (2005) as a finding, and is not reported by Tol as one of the factors contributing to the range of estimates. In fact, the sum of the findings of the IPCC, Tol (2005), and the Stern Review, shows that NHTSA's selection of $14 per ton of CO_2 is unreasonably low and completely unsupported by the literature and by reality. In fact, NHTSA itself concedes this point, on page 24413, with the statement that, "[taken] as a whole, recent estimates of the SCC may underestimate the true damage costs of carbon emissions because they often exclude damages caused by extreme weather events or climate response scenarios with low probabilities but potentially extreme impacts, and may underestimate the climate impacts and damages that could result from multiple stresses on the global climatic system."

Comment Number: 0572-61
Organization: Center for Biological Diversity
Commenter: Brian Nowicki, Mickey Moritz, Kassie Siegel

NHTSA, on page 24414 of the NPRM, states that, "[in] order to be consistent with NHTSA's use of exclusively domestic costs and benefits in prior CAFE rulemakings, the appropriate value to be placed on changes climate damages [sic] caused by carbon emissions should be one that reflects the change in damages to the United States alone. Accordingly, NHTSA notes that the value for the benefits of reducing CO_2 emissions might be restricted to the fraction of those benefits that are likely to be experienced within the United States."

This statement indicates that NHTSA fails to fully understand the tremendous threats and challenges posed by global climate change, and the fundamental challenges global climate change presents in comparison to previous approaches to addressing pollution reductions. Unlike other pollutants, the air basin for greenhouse gases, and CO_2, in particular, is the global atmosphere. The impacts of global warming are local, regional, national, international, and global. The cost-benefit analysis should incorporate the social costs of climate change, and the economic benefits of reducing greenhouse gas emissions, wherever those impacts or benefits are experienced. The alternative, in which only the impacts and costs experienced in United States territory are considered, would lead to a dramatic underestimation of the aggregate costs of climate change. In addition, it would carry the terrible and arrogant implication that the people of the United States believe that people in other countries should bear the environmental and economic burdens caused by American consumer preferences. Nothing in EPCA, NEPA, or other applicable law allows NHTSA to artificially constrain the analysis or under report the costs of global warming in this manner.

Comment Number: 0575-13
Organization: Union of Concerned Scientists
Commenter: Eli Hopson

In its NPRM, NHTSA proposes the use of a 2011 value of carbon between $0 and $14 per metric ton. Even the upper end of this range, selected by NHTSA based on a 2005 Tol study, is an unacceptably low valuation of the pollutant. The European Climate Exchange, which provides a futures market value for global warming pollution in Europe's carbon constrained market, indicates 2011 contracts for carbon dioxide at approximately $45 (U.S.) per metric ton – well above the figure cited by NHTSA. [Footnote: See original comment document.]

Further, NHTSA proposes a 2011 value of carbon at $7 per metric ton CO_2, a computed mean average of the proposed $0 and $14 boundaries. This computation places as much weight on the $0 per metric ton value as it does on the $14 per metric ton value. Valuing carbon at $0 was declared by the ninth circuit court to be arbitrary and capricious – and implies the possibility that climate change won't have any negative consequences. This is unrealistic and stands in stark contrast to recent government study findings on U.S. climate change effects and findings from the International Panel on Climate Change and the Academies of Science for the G8+5. [Footnote: See original comment document.]

NHTSA includes a sensitivity analysis using varied valuation of CO_2 emissions, and concludes that "the results of the sensitivity analyses indicate that the value of CO_2... has almost no impact on the level of the standards." (NPRM, p. 364). NHTSA juxtaposes this seemingly insignificant impact with that of a gasoline price sensitivity analysis, which shows significantly higher sensitivity. It is not surprising that NHTSA came to such conclusions. The dollar per gallon price equivalent of a $0-$14 per metric ton CO_2 range is (assuming full in-use and upstream emissions of 24 lbs. of CO_2/gallon consumed) a mere $0.00-

$0.15 per gallon. A sensitivity analysis examining such a confined range will of course arrive at such an erroneous conclusion.

UCS recommends that NHTSA employ a value of at least $45 per metric ton CO_2, the value currently trading on the European Climate Exchange. This value represents a predicted marginal abatement cost (the cost of avoiding global warming pollution), and is likely a conservative estimate of the benefit of reducing global warming pollution since the cost of avoiding climate change is lower than the cost of fixing the damage after it occurs.

The value recommended by UCS for use in this 2008 rule is generally consistent with other recent allowance price estimates, such as the EPA' s assessment of GHG allowance prices under Lieberman-Warner: $22 – $40 in 2015 and $28 – $5 1 in 2020 (EPA figures are in 2005 dollars per ton of CO_2-equivalent). [Footnote: See original comment document.]

Comment Number: 0575-3
Organization: Union of Concerned Scientists
Commenter: Eli Hopson

While carbon dioxide futures are currently trading at more than $40 per metric ton in Europe, NHTSA used a value of $7 per ton. NHTSA even considered $0 per ton to be in the range of possible values. In the face of numerous economic analyses which indicate that combating global warming will greatly reduce the cost of adapting to climate change, factoring a $0 value into the rule is unacceptable.

Comment Number: 0576-10
Organization: Public Citizen
Commenter: Joan Claybrook

NHTSA has set the price of CO_2 arbitrarily and too low. The agency chose a value of $7/ton CO_2 based on a 2005 meta-analysis of estimates of the price per ton of carbon by Richard S. J. Tol, from which NHTSA estimated prices per ton of carbon, and NHTSA converted the range to $0-14 per ton CO_2. In comments to NHTSA's NPRM, Tol commented that NHTSA has improperly indexed the values in the Tol paper, as they were in 1995 dollars instead of 2005 dollars, and also that a 2007 paper he authored found larger estimates than the 2005 paper. [Footnote: See original comment document.]

Comment Number: 0576-21
Organization: Public Citizen
Commenter: Joan Claybrook

NHTSA's estimate for the value of CO_2 is arbitrary and too low. The agency's estimate for the price of CO_2 examines a range of values from $0-14 per metric ton CO_2, based on a 2005 meta analysis of CO_2 valuation. Emissions allowances have recently been trading on the European Climate Exchange at around €30 per allowance (one metric ton CO_2 equivalent). [Footnote: See original comment document.] An analysis done by EPA in March 2008 for the Senate Committee on Environment and Public Works for S. 2191, America's Climate Security Act, estimated the value of CO_2 in 2015 between $22 and $40 per metric ton of CO_2, and cited two other analyses with higher estimates of $48 and $50 per metric ton CO_2. [Footnote: See original comment document.] The agency should extend the range of CO_2 prices considered at least as high as EPA's estimates, which are more recent than the Tol estimate cited in NHTSA's notice. All of the estimates EPA cited for its analysis of Lieberman-Warner exceed the $14 ceiling on carbon price.

The agency provides no justification for selecting the midpoint of the range it took from the Tol study. NHTSA should weight the credibility of each estimate. Averaging the results of multiple studies can substantially skew the result, especially if the estimates are not parallel comparisons. Estimating the value of something like CO_2 requires careful selection of factors considered, and requires subjective determination of assumptions. Failure to make "apples to apples" comparisons by looking at studies based on their assumptions can produce a result that does not reflect the actual value.

In discussing monetized value of CO_2, it is also important to take into consideration the costs of inaction on reducing greenhouse gas emissions and the resultant consequences of global warming. In the EPA notice on the California waiver denial, the agency outlines some of these consequences:

> …along with exacerbating ozone impacts and increasing wildfires. . . declining snowpack and early snowmelt and resultant impacts on water storage and release, sea level rise, salt water intrusion, and adverse impacts to agriculture (e.g., declining yields, increased pests, etc.), forests, and wildlife. . . .In addition, some commenters specifically point to a direct threat to public health (e.g., asthma) since increased temperatures due to increased GHG emissions will lead to increased levels of ozone and other pollutants. [73 *FR* 12156, 12169 (March 6, 2008) at 12164.]

A recent report from the University of Maryland found that economic impacts of global warming will be far-reaching, unevenly distributed, and will put a significant strain on public sector budgets. [Footnote: See original comment document.] It is therefore important that when considering any policy relevant to reducing global warming pollution that the costs of inaction be factored into the decision. NHTSA has not made such an estimate in its proposal or the accompanying economic analysis.

Comment Number: 0588-3
Organization: New York State Department of Transportation
Commenter: Stanley Gee

NHTSA also uses an arbitrary low value for the benefits of avoided greenhouse gas emissions, reducing estimated benefits.

Comment Number: 0588-8
Organization: New York State Department of Transportation
Commenter: Stanley Gee

Under NHTSA's cost-benefit based standard setting methodology, the values assigned to benefits are critical. Higher value benefits justify more stringent standards. NHTSA arbitrarily chose $7.00 per metric ton of carbon dioxide avoided as the benefit of reduced fuel consumption, rather than $13.60 per metric ton of carbon dioxide ($50 per metric ton of carbon) recommended by the National Academy of Sciences Committee on which NHTSA says it relies for this analysis.

Comment Number: 0595-22
Organization: Environmental Protection Agency
Commenter: Susan Bromm

Also, the social cost of a non-CO_2 GHG can be quite different from the social cost of carbon dioxide emissions (IPCC WGII, 2007). NHTSA should estimate the global changes in non-CO_2 GHG emissions and apply, or at least acknowledge, non-CO_2 marginal benefits estimates.

Comment Number: 0595-3
Organization: Environmental Protection Agency
Commenter: Susan Bromm

NHTSA selected a single marginal benefits value of $7.00/tCO$_2$ to represent the social cost of carbon (SCC) for their main analysis. This value and the $0-14/tCO$_2$ range NHTSA considers are characterized as domestic SCC estimates. While OMB [Office of Management and Budget] guidance instructs Agencies to consider benefits that accrue to U.S. residents, it does allow for the additional consideration of global benefits. Given that U.S. emissions have global externalities, NHTSA should analyze global SCC estimates in addition to any domestic estimates to more fully capture all of the externalities. This could be justified from the fact that U.S. citizens may value impacts felt outside our borders. Moreover, to the extent that the United States regards the CAFE standards as a component of its contribution to a global effort to address climate change, a global SCC is needed to accurately characterize that contribution. It is also important that NHTSA recognize that the current monetized estimates of marginal benefits are incomplete and very likely underestimated.

Therefore, EPA recommends that NHTSA do Volpe runs with a range of domestic and global SCC estimates that capture the uncertainty in estimates and the potential risks of significant climate change impacts. The ranges and growth rates should be based in the peer reviewed literature and should cover a substantial range, given the wide uncertainties in estimates of the SCC. For example, see the estimates and discussion in the "Technical Support Document on the Benefits of Regulating GHG Emissions" developed in support of EPA's Advanced Notice of Proposed Rulemaking (found at www.regulations.gov; search on "Technical Support Document – Benefits").

It should also be noted that SCC estimates are only a partial accounting of the social costs of carbon. NHTSA does not currently account for the non-monetized impacts and potential catastrophic risks of climate change in its decision-making approach. The IPCC WGII [Work Group II] (2007) report states that SCC values are "very likely" underestimated, where the report defines "very likely" as a greater than 90% probability. The models used to generate the SCC estimates cited by NHTSA leave out major types of climate change damage that have been identified by the IPCC.

Furthermore, most SCC estimates exclude the value of avoiding or reducing the risk of potential catastrophic effects of climate change, due to scientific and economic uncertainties. It is noteworthy that the risk of such effects is one of the major policy considerations for Congress, the public, and the executive branch in developing a climate change mitigation policy, yet is excluded in most economic analysis. Risk increases with increases in the rate and magnitude of climate change, due to a greater chance to stress systems. NHTSA should clearly note in the DEIS that emissions reductions reduce the probability of higher climate outcomes and therefore reduce the level of associated risk and acknowledge that benefits estimates do not include a risk premium, i.e., the value people have for greater certainty and the reduced risk of more extreme outcomes.

Comment Number: 0598-5
Organization: Sierra Club
Commenter: Caroline Keicher

NHTSA should first use more accurate values for gasoline prices and carbon values and more realistic assumptions about hybrid penetration and an accelerated introduction of PHEVs [plug-in hybrid electric vehicles] and EVs [electric vehicles] – all of which will justify a standard of at least 35 mpg in 2015. NHTSA should then recalibrate its alternative scenarios to reflect these changes.

Comment Number: TRANS-08-14
Organization: Sierra Club
Commenter: Ann Mesnikoff

The proposed rule and the PRIA both show that the gas prices are major forces in setting fuel economy. NHTSA short changes America by using gas price assumptions that are far too low, a price for carbon that is randomly selected, and artificially constraining technologies.

Comment Number: TRANS-19-6
Organization: Union of Concerned Scientists
Commenter: Eli Hopson

The value of carbon dioxide that NHTSA used, they assume $7 per ton. Carbon dioxide is currently trading in the European futures market at $40 per ton.

Comment Number: TRANS-23-3
Organization: Greater Washington Interfaith Power and Light
Commenter: Tara Morrow

While I was glad to see that the DEIS does assign a dollar value greater than zero to CO_2 reductions, I ask you to take another look at the value range and price carbon more accurately given the most recent analysis, as others have referred to here today.

Response

As commenters noted and as shown by a significant body of literature, there is a wide range of values associated with the social cost of carbon (SCC) and extremely wide variations in published estimates for SCC. However, NHTSA has taken a hard look at this issue and the associated literature, and believes its analysis falls within the mainstream views on the issue.

Emissions of CO_2 and other GHGs occur throughout the process of producing and distributing transportation fuels, and from fuel combustion itself. By reducing the volume of fuel consumed by passenger cars and light trucks, higher CAFE standards will reduce emissions generated by fuel use, and throughout the fuel-supply cycle. Quantifying and monetizing the benefits from reducing these emissions first requires an estimate of the resulting effect on the projected pace and extent of future changes in the global climate, and then an estimate of the value of any resulting reduction in future economic damages that changes in the global climate would otherwise have caused.

If projected future changes in the global climate ultimately exceed critical thresholds in the dynamics of global geophysical or biophysical systems, those changes might also lead to large-scale events, such as a sudden large rise in sea levels or irreversible alteration of critical regional ecosystems. By reducing the probability that climate changes with potentially catastrophic economic or environmental impacts will occur, reducing GHG emissions might also confer benefits that extend beyond their resulting reduction in the expected future economic costs caused by more gradual changes in Earth's climatic systems.

The environmental impacts of GHG emissions differ in several important ways from those of conventional air pollutants. Most important, as the IPCC has noted, CO_2 and other GHGs are chemically stable, and therefore remain in the atmosphere for periods of a decade to centuries, or even longer, becoming well-mixed throughout Earth's atmosphere. As a consequence, current emissions of these gases have extremely long-term effects on the global climate, and emissions from the United States

are expected to contribute to changes in the global climate that will affect many other nations. Similarly, emissions occurring in other countries will contribute to changes in Earth's future climate that are expected to affect the well-being of the United States.

Researchers usually estimate the economic benefits from reducing GHG emissions in several steps; the first is to project future changes in the global climate and the economic damages that are expected to result under a baseline projection of net global GHG emissions. These projections are usually developed using models that relate concentrations of GHGs in Earth's atmosphere to changes in summary measures of the global climate, such as temperature and sea levels, and in turn, estimate the reductions in global economic output that are expected to result from changes in climate. Because the effects of GHG emissions on the global climate occur decades or even centuries later, and there is considerable inertia in Earth's climate systems, changes in the global climate and the resulting economic impacts must be estimated over a comparably long future period.

Next, this same modeling process is used to project future climate changes and resulting economic damages under the assumption that GHG emissions will be reduced by some increment beginning in a stated future year. The reduction in projected global economic damages resulting from the lower future trajectory of GHG emissions, which also occurs over a prolonged period extending into the distant future, represents the estimated economic benefit from the assumed reduction in emissions. Discounted to its equivalent present value and expressed per unit of GHG emissions (usually per ton of carbon emissions, with non-CO_2 GHGs converted to their equivalents in terms of carbon emissions), the resulting value represents the global economic benefit from reducing GHG emissions by one unit beginning in a stated future year. This value is often referred to in published research and debates over climate policy SCC.

This process involves multiple sources of uncertainty, including those in scientific knowledge about the effects of varying levels of GHG emissions on the magnitude and timing of changes in the functioning of regional and global climatic and ecological systems. In addition, sunstantial uncertainty surrounds the anticipated extent, geographic distribution, and timing of the resulting impacts on the economies of nations in different regions of the globe. Because the climatic and economic impacts of GHG emissions are projected to occur over the distant future, uncertainty about the correct rate at which to discount these future impacts also substantially affects the estimated economic benefits of reducing GHG emissions.

Finally, researchers have not yet been able to quantify many of the potentially substantial effects of GHG emissions and their continued accumulation in Earth's atmosphere on the global climate. Researchers also have not developed complete models to represent the anticipated impacts of changes in the global climate on economic resources and the productivity with which they are used to generate economic output. As a consequence, the estimates of economic benefits from reducing GHG emissions produced by integrated models of climate and economic activity are likely to exclude some potentially substantial sources of benefits that will result from lower emissions.

Some researchers are concerned that the combination of multiple sources of uncertainty in estimating climate damages and the omission of some potentially substantial economic impacts of climate change limits the usefulness of deterministic estimates of SCC for valuing the economic impacts of GHG emissions and developing policies that are intended to reduce their emissions. They argue that the modeling approach typically used to monetize the impacts of climate change and value reductions in GHG emissions does not appropriately represent or account for risks posed by the possibility of catastrophic changes in climate and the correspondingly large economic damages. This could lead the conventional approach to substantially underestimate the economic benefits resulting from policies that reduce GHG emissions.

While conventional probabilistic uncertainty analysis might be useful in identifying the range of uncertainty surrounding estimates of SCC derived using the typical modeling approach, a risk management approach might be more appropriate in these circumstances. Instead of using estimates of SCC to value reductions in GHG emissions, this approach would specify a maximum acceptable extent of climate change (as measured, for example, by a maximum increase in global mean temperature), and derive from it the maximum permissible level of GHG emissions over the foreseeable future.

Estimates of the costs of achieving the emissions reductions necessary to limit emissions to this maximum level – and thus prevent climate change from proceeding beyond its maximum acceptable extent – would then be developed. The estimated incremental costs for achieving the final emissions reductions necessary to keep emissions below their maximum permissible level would then be used to estimate the value of reducing GHG emissions via policies or regulations.

In developing the fuel economy standards proposed in the NPRM and evaluated in the DEIS, NHTSA used an initial estimate of $7 per metric ton for the value of reducing U.S. CO_2 emissions from fuel production and use. This figure was intended to represent the amount by which the economic value of damages to the United States from potential climate change effects in the United States was likely to be reduced for each ton of CO_2 emissions that would be avoided by producing and consuming less fuel. NHTSA also examined the sensitivity of the optimized CAFE standards and their accompanying environmental impacts to a range of values for reducing CO_2 emissions extending from zero to $14 per metric ton of CO_2.

As discussed in detail in the NPRM, these values were based on Tol's (2005) extensive survey of published estimates of the global economic damage likely to be caused by changes in climate resulting from increased carbon emissions, often referred to as the social cost of carbon (SCC)[8] (Tol 2005). Specifically, NHTSA's estimate of $7 per metric ton for the domestic value of reducing CO_2 emissions, which was intended as an estimate of the reduction in climate-related economic damages that occur within the United States as a consequence of lower CO_2 emissions, was based on Tol's calculation that the mean value of peer-reviewed estimates of the global SCC included in his survey was $43 per metric ton of carbon. Tol's estimate corresponds to a global value for the economic benefits from reducing CO_2 emissions of $14 per metric ton (Tol 2005, Yohe et al. 2007).[9]

NHTSA's estimate implicitly reflected the assumption that approximately half of the global economic damages resulting from climate change would be borne within the United States, thus resulting in the figure of $7 per metric ton of CO_2 emissions. The range from zero to $14 per metric ton used in the NPRM sensitivity analysis reflected the additional assumption that the range of uncertainty surrounding the likely economic benefits to the United States from reducing the threat of climate change extended from a low estimate of zero benefits to a high estimate equal to 100 percent of the $14 per metric ton value derived from Tol's analysis.

NHTSA received numerous comments on the value of reducing CO_2 emissions it employed to develop the standards proposed in the NPRM and DEIS. This FEIS examines how the alternatives are affected by variations in the economic assumptions input into the Volpe model. Specifically, NHTSA

[8] *Richard S. J. Tol, The marginal damage costs of carbon dioxide emissions: an assessment of the uncertainties, Energy Policy 33 (2005), 2064-2074.*

[9] *Carbon itself accounts for 12/44, or about 27 percent, of the mass of carbon dioxide (12/44 is the ratio of the molecular weight of carbon to that of carbon dioxide). Thus, each ton of carbon emitted is associated with 44/12, or 3.67, tons of CO_2 emissions. Estimates of SCC are typically reported in dollars per ton of carbon, and must be divided by 3.67 to determine their equivalent value per ton of CO_2 emissions.*

calculated and analyzed mpg standards and environmental impacts associated with each alternative under both the "Reference Case" for key model inputs, which uses the U.S. Energy Information Administration's (EIA's) Reference Case fuel price forecast, a domestic SCC, and a 7 percent discount rate; and under a "High Scenario" set of input assumptions, which uses the EIA "High Case" for fuel price forecast, a global SCC, and a 3 percent discount rate. This FEIS also analyzes the impacts of various other combinations of economic assumptions to illustrate the variations in environmental impacts and mpg stringency that result from using various combinations of Volpe model inputs. See Sections 3.2.4, 3.3.4, 3.4.5, 4.2.3, 4.3.4, and 4.4.3.

In response to new research on the potential economic costs of climate change that has become available since publication of the recent NPRM, and the many comments NHTSA received, we have evaluated in this FEIS the environmental impacts resulting from standards associated with a substantially higher global estimate of the value of reducing CO_2 emissions. Specifically, this FEIS analyzes environmental impacts under the assumption that the global value of reducing CO_2 emissions is $33 per metric ton, and conducts a sensitivity analysis using a value of $80 per metric ton. This FEIS also presents the environmental impacts resulting from a revised domestic SCC assumption of $2 per metric ton of CO_2 emissions. To develop these new estimates, NHTSA has relied on Tol's (2008)[10] expanded and updated survey of 211 published estimates of SCC, which was published after the completion of the analysis NHTSA performed to develop CAFE standards it proposed in the NPRM.

Tol's 2008 survey encompasses a substantially larger number of estimates for the global value of reducing carbon emissions than its previously published counterpart. Like that author's earlier survey, it represents the only recent, publicly available compendium of peer-reviewed estimates of SCC that has been peer-reviewed and published itself. Thus, NHTSA believes that it is the most reliable source on which to base our own updated estimate of the global value of reducing CO_2 emissions from fuel production and use.

As indicated previously, the long-lived nature of atmospheric GHGs means that emissions of these gases from any location or source can affect the global climate over a prolonged period, and can thus result in economic damage to many nations and over multiple generations. Reducing GHG emissions to an economically efficient level, or one that maximizes the difference between the benefits from limiting the extent of climate change and the costs of achieving the emissions reductions necessary to do so, therefore requires individual nations to limit their own domestic emissions to the point where their domestic costs for further reducing emissions equal the global value of reduced economic damages that result from limiting climate change.

In its Technical Support Document on the Benefits of Regulating GHG Emissions referenced in its comments on the DEIS, EPA argued that if individual nations consider only the domestic benefits they each receive from limiting the pace or extent of climate change, they will each reduce their emissions only to the point where their respective domestic costs for achieving further reductions equal the benefits to their own domestic economies from limiting the impacts of climate change. Because no individual nation is likely to experience a large share of total global damages from climate change, however, none will capture a substantial share of the benefits from limiting it. Thus, the combined global reduction in emissions resulting from individual nations comparing their domestic benefits from limiting climate change to their domestic costs for reducing emissions will likely be inadequate to substantially slow or limit the progress of climate change.

[10] *Richard S.J. Tol (2008), "The Social Cost of Carbon: Trends, Outliers, and Catastrophes," Economics – the Open-Access, Open-Assessment E-Journal, 2 (25), 1-24.*

Tol's updated survey reports that the mean value of the 125 estimates of SCC published in peer-reviewed journals through the year 2007 is $71 per ton of carbon emissions. All of these estimates are intended to represent the global value of reduced economic damage from climate change that would be likely to result from lower carbon emissions. In direct communications with Tol, NHTSA staff confirmed that this value applies to carbon emissions occurring during the mid-1990s, and is expressed in approximately 1995 dollars (Tol 2008, Table 1). The $71 per metric ton estimate of the social cost of increased carbon emissions corresponds to a global value of $19 per metric ton of CO_2 emissions reduced or avoided, also expressed in 1995 dollars.

Separately, the IPCC notes that the climate-related economic damage resulting from an additional ton of carbon emissions is likely to grow at a rate of 2.4 percent annually (Yohe et al. 2008). This growth occurs because the increase in the expected pace and degree of climate change – and thus in the resulting economic damage – caused by growth in emissions rises in proportion to the existing concentration of CO_2 in Earth's atmosphere.

Several comments on the NPRM asserted that the IPCC intended the 2.4-percent growth rate it reports for SCC to instead read "2-4 percent." NHTSA staff reviewed the underlying references from which this figure was derived, and those sources clearly report the growth rate in the future value of SCC as 2.4 percent, rather than the 2-4 percent asserted in various comments (Hope 2006, Hope and Newberry 2006). Applying the 2.4-percent annual rate of increase to the $19 per ton mean value for mid-1990s CO_2 emissions, and expressing the result in 2007 dollars, results in a global value of $33 per metric ton of CO_2 for emissions occurring during 2007. In this FEIS, NHTSA uses this global value for SCC in the Mid-1 and High Scenario combinations of economic assumptions. See Table 2.3-2 and Appendix B.

NHTSA uses this figure, which is assumed to continue increasing from its 2007 value at the 2.4-percent annual rate specified by the IPCC, to estimate the global economic benefits from reducing future CO_2 emissions by establishing higher CAFE standards for MY 2011-2015 cars and light trucks. Continuing growth in the value of reducing CO_2 emissions over the expected lifetimes of those vehicles, which extend through approximately 2050, means that the value of eliminating each ton of CO_2 emissions by reducing fuel production and use averages approximately twice its $33 value during 2007.

Like the underlying estimate from which it is derived, the $33 per metric ton of CO_2 figure represents the estimated world-wide or global economic benefits from reducing U.S. CO_2 emissions during 2007. As indicated previously, there are important reasons for individual nations to take these world-wide benefits into account when deciding the extent of reductions in their domestic emissions to seek or require, because reducing their domestic emissions confers substantial benefits on the large number of other nations for which potential economic damages from climate change are also reduced as a result.

The substantial magnitude of these "external" benefits (EPA estimates that 90 to 95 percent of the total global benefits from reducing U.S. CO_2 emissions will be experienced by other nations) implies that a globally efficient level of total emissions reduction can only occur if individual nations base their respective decisions about how extensively to reduce their own domestic emissions on a comparison of the global benefits from reducing the threat of climate change to their respective costs for reducing domestic emissions. Basing its decisions about emissions reductions on this comparison is particularly likely to be required for the U.S. to achieve reductions that are efficient from a global perspective, since as much as 90-95% of the total global benefits from reducing U.S. CO2 emissions may be experienced by other nations (EPA 2008i; calculated from Table 1).

NHTSA notes that there is a risk for nations that unilaterally attempt to reduce emissions by adopting policies, regulations, or taxes to reduce the threat of climate change. The potential risk is that they will economically disadvantage the domestic industries those policies affect. There is also the possibility of unintended consequences. By doing so, they could induce economic activity – particularly production by emissions-intensive industries – to shift to nations that adopt less stringent or no regulations on emissions. This shift could take either the form of industries relocating production capacity to other nations or the loss of market share by domestic industries to overseas producers.

In either case, the result is likely to be reductions in domestic economic output and employment. Thus, nations attempting to reduce emissions to the levels called for by considering the global benefits from doing so could bear substantial costs, without resulting in comparably valuable reductions in the potential economic damages they face from climate change.

In the specific context of this rulemaking, establishing CAFE standards partly on the basis of the global benefits projected to result from lower GHG emissions would likely impose higher costs on automobile manufacturing activity to serve the U.S. vehicle market, regardless of whether that activity occurs within the U.S. or overseas. If vehicle manufacturers located in the U.S. respond by reducing production, the U.S. economy could bear substantial costs, without resulting in a measurable net reduction in global GHG emissions.

Recognizing this prospect, NHTSA has estimated the economic damage from climate change effects that is likely to be borne within the United States, and employed this value to estimate the domestic benefits to the United States from reducing GHG emissions. NHTSA constructed this value using estimates of U.S. domestic and global benefits from reducing greenhouse gas emissions developed by EPA and reported in that agency's Technical Support Document accompanying its Advance Notice of Proposed Rulemaking on motor vehicle CO_2 emissions[11] (EPA 2008i). Specifically, NHTSA applied the ratio of domestic to global values of reducing CO_2 emissions estimated by EPA using its Climate Framework for Uncertainty, Negotiation, and Distribution (FUND) integrated assessment model to the $33 per metric ton estimate of the global value of reducing CO_2 emissions, which was developed as described above.

EPA's central estimates of domestic and global values for reducing GHG emissions from the FUND model using a 3 percent discount rate are $1 and $17 per metric ton (in 2006 dollars) (EPA 2008i; Table 1, p.12). Applying EPA's ratio to NHTSA's $33 per metric ton estimate of the global value of reducing CO_2 emissions, developed as described above, produces an estimate of $2 per metric ton for the domestic benefit from reducing U.S. CO_2 emissions in 2007. NHTSA have employed this estimate as an alternative to the global value of reducing U.S. CO_2 emissions in establishing CAFE standards for MY 2011-2015 and evaluating their economic benefits.

NHTSA has also applied the 2.4 percent rate of growth to calculate the annual increase in its estimate of the domestic benefits from reducing CO_2 emissions. Over the lifetimes of cars and light trucks subject to the CAFE standards for MY 2011-15, the resulting value averages $4 per metric ton of CO_2 emissions avoided by reducing fuel production and consumption.

In its Technical Support Document, EPA argues that the most appropriate estimate of SCC that can be derived from Tol's 2008 survey is the mean value of the estimates from only those studies that

[11] *EPA Technical Support Document on Benefits of Reducing GHG Emissions, June 12, 2008. EPA Docket No. EPA-HQ-OAR-2008-0318* (http://www.regulations.gov/fdmspublic/component/main?main=DocumentDetail&o=0900006480669358).

were published after 1995 and that do not employ so-called equity weighting.[12] Further, Tol notes that estimates of SCC vary substantially with the rate used to discount increased future economic damages resulting from climate change to the date that the emissions causing that increased damage are assumed to occur.

EPA also suggests that estimates of benefits from reducing emissions should employ the mean of only those estimates of SCC that are derived using the specific rate that will subsequently be used to discount CO_2 emissions from the date they occur to the present.[13] Because NHTSA uses a rate of 3 percent to discount future benefits from reducing CO_2 emissions (see Section 10.2.2.8), EPA's Technical Support Document appears to suggest that the most appropriate estimate of SCC from Tol's 2008 survey for use in NHTSA's analysis of benefits from reducing fuel consumption corresponds to a value of $40 (in 2007 dollars) per metric ton of CO_2 emissions occurring today (EPA 2008i; Table 1, p 12).

However, NHTSA's view is that the mean value of all 125 SCC estimates from peer-reviewed studies reported by Tol provides a more appropriate basis for valuing reductions in CO_2 emissions. This is because NHTSA believes that excluding pre-1995 studies and those that employ equity weighting (which would eliminate 40 of the 125 estimates) could eliminate many studies that produced sound, defensible estimates of SCC, particularly recognizing that those studies have been published in peer-reviewed journals. Including those studies improves the reliability of the resulting average value by reducing the uncertainty surrounding it.

NHTSA also believes that its estimate of the value of reducing CO_2 emissions should not be based solely on estimates developed using a 3-percent discount rate. Instead, NHTSA recognizes that the varying discount rates employed by different researchers are an important source of variation in their resulting estimates of SCC. The discount rate is a parameter about which there is substantial disagreement, analogous to the uncertainty surrounding the many other parameters involved in modeling future climate change and the resulting economic damage.

Thus, NHTSA believes that incorporating estimates of SCC that employ varying discount rates increases the extent to which the resulting average value fairly incorporates the many sources of uncertainty that complicate researchers' attempts to identify the correct value. Another more practical reason for not restricting the sample of estimates to those using a 3-percent discount rate is that this would reduce the number of estimates on whichNHTSAbases the estimate of the value of reducing CO_2 emissions to only 10 of the 125 peer-reviewed estimates included in Tol's recent survey (Tol 2008, Table 1).

The agency also conducted sensitivity analysis using $80 per ton as an estimate of the global value for reducing CO_2 emissions to illustrate the resulting stringencies, fuel savings, and CO2 reductions that result from higher estimates of the global social cost of CO_2 emissions. In his updated survey of SCC estimates, Tol reports that the standard deviation associated with the mean value from 125 peer-reviewed estimates of the global SCC of $71 per ton of carbon emissions is $98 per ton. Like Tol's original $71 estimate, this value applies to mid-1990s emissions of carbon (rather than carbon dioxide), and is expressed in approximately 1995 dollars.

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[12] Equity weighting assigns higher weights per dollar of economic damage from climate change that are expected to be borne by lower-income regions of the globe, in an attempt to make the welfare changes corresponding to those damages more comparable to the damages expected to be sustained by higher-income world regions.

[13] Tol notes that estimates of SCC vary substantially with the rate that is used to discount increased future economic damages resulting from climate change to the date that the emissions causing those increased damages are assumed to occur.

Thus, a range of one standard deviation above and below the $71 mean value extends from minus $27 (i.e., $27 per ton benefit for each ton of carbon emitted) to $169 per ton of carbon. Converting this range to 2007 dollars per ton of CO_2 and applying the same 2.4-percent annual growth rate to these values produces a range of minus $13 to $80 around the $33 per ton mean estimate of the global benefit from reducing CO_2 emissions in 2007.

While NHTSA uses the $80 per ton benefit of reducing CO_2 emissions in its sensitivity analysis, the agency has elected not to employ the minus $13 per ton figure, in part because, based on information from the U.S. Climate Change Science Program and the IPCC, it views the implication that there are measurable economic benefits from climate change as implausible. NHTSA believes that the range extending from the $2 per ton estimate of the domestic value of reducing CO_2 emissions to the $80 per ton upper estimate of the global value is sufficiently broad to illustrate the sensitivity of fuel savings and resulting environmental impacts to differing SCC values.

10.2.2.4 Technologies/Vehicle Attributes Considered

Comments

Comment Number: 0550-8
Organization: Individual
Commenter: Sarah Larsen

NHTSA proposes to raise the fuel economy of cars and light trucks to a combined average of 31.6 mpg for Model Year 2015. While this increase is more than half of what is required to meet the mandate of 35 mpg by 2020, I believe NHTSA fails to take full advantage of available fuel saving technologies, and fails to fully and fairly evaluate the benefits of greenhouse gas emission reductions.

Comment Number: 0554-9
Organization: Individual
Commenter: James Adcock

Plug-in hybrids. Given GM commitment to delivering a plug-in hybrid (Chevy Volt) in this time frame, NHTSA's assumption that plug-in technology will not exist during the regulatory period is troubling, and will lead to higher GHG.

Start/stop mild hybrid on small cars. NHTSA's assumption that this technology is not available for small cars is troubling given that it has already been implemented in Europe (Smart Fortwo mhd.) This assumption results in higher GHG.

Comment Number: 0557-11
Organization: The Natural Resources Defense Council
Commenter: Luke Tonachel, Brian Siu

NHTSA set arbitrary limits on technology availability in the Volpe Model, which biased toward setting a weaker fuel economy standard. Two specific examples include an arbitrary constraint on the use of lightweight materials substitution to improve fuel economy and the exclusion of plug-in hybrid electric vehicles from consideration in the Volpe Model.

Comment Number: 0559-7
Organization: The Northeast States for Coordinated Air Use Management (NESCAUM)
Commenter: Arthur Marin

We urge NHTSA to reevaluate its proposal, taking more of a technology forcing approach to setting standards. Further, we urge NHTSA to consider fuel consumption reducing technologies that by virtue of NHTSA's conservative cost-analysis approach have not been given due consideration. For example, NHTSA notes that "some manufacturers have made public statements regarding hopes to offer plug-in HEVs [hybrid electric vehicles] before MY 2015, but such vehicles are not represented in our analysis." We contend that the prospect for widespread deployment of plug-in HEVs in the near term is more than a simple hope. For example, both Toyota and Chevrolet have announced plans for plug-in HEVs to be available around 2010. [Footnote: See original comment document.]

Comment Number: 0572-18
Organization: Center for Biological Diversity
Commenter: Brian Nowicki, Mickey Moritz, Kassie Siegel

The potential technologies for improving fuel economy are unreasonably limited. The extent to which the technology is unreasonably limited is amply illustrated by the fact that the "technology exhaustion" alternative barely reaches the current fuel economy standards in Japan and Europe, much less the projected fuel economy standards in Europe and Japan for 2015. [Footnote: See original comment document.] A model that predicts maximal technology implementation to be unable to reach even current market standards in other countries is clearly not considering all available technologies.

Concrete examples of technologies that are unreasonably excluded are: electric vehicles, plug-in hybrids, and power-split hybrids. Electric vehicles are entirely excluded from the Volpe model. (73 *Fed. Reg.* at 24381, Table III-3) This is absurd considering that a major U.S. auto manufacturer produced and placed such vehicles on the road in the year 1996. [Footnote 6: See original comment document.] These vehicles were pulled from the market for commercial reasons over loud protests of drivers in 1999, and destroyed in 2003 (Biederman 2005). An auto manufacturer's commercial decision does not render a technology unsuitable for implementation – the only concern should be physical capability, which has been clearly demonstrated. Plug-in hybrids are also categorically excluded on the basis that they are not "market-ready" (73 *Fed. Reg.* at 24381), despite the fact that Toyota is planning to introduce plug-in hybrids by MY 2010 (Maynard 2008). The major U.S. auto manufacturers are also planning to offer similar vehicles around the same time. (Maynard 2008) Power split hybrids, like the Toyota Prius, are considered advanced technology that will not be available under 2014. (73 *Fed. Reg.* at 24381, Table III-3) This assumption is ludicrous given that the Toyota Prius has been sold in the U.S. since MY 2001 and is a top-selling vehicle.

Other technologies that are not yet commercially available, but could be if economy standards were sufficiently high, include replacement of spark-plugs with laser-pulse injection systems and engines that can switch between two-stroke and four-stroke modes (Graham-Rowe 2008). Furthermore, the DEIS makes no mention of alternatives such as compressed-air vehicles (Green Car Congress 2008).

There are abundant potential technologies for improving fuel economy that have not been included in the Volpe model. This leads to misleading and factually incorrect outputs from the model, and a failure to disclose basic relevant information under NEPA.

Comment Number: 0598-5
Organization: Sierra Club
Commenter: Caroline Keicher

NHTSA should first use more accurate values for gasoline prices and carbon values and more realistic assumptions about hybrid penetration and an accelerated introduction of PHEVs and EVs – all of which will justify a standard of at least 35 mpg in 2015. NHTSA should then recalibrate its alternative scenarios to reflect these changes.

Comment Number: TRANS-06-7
Organization: Public Citizen
Commenter: Lena Pons

All of the regulatory alternatives that are considered in the draft environmental impact statement are the result of modeling using the Volpe model. This is problematic because the Volpe model does not completely look at all of the available technologies. It does not look at, and it applies various optimization factors which do not reflect what the most aggressive possible control regulations would be.

Additionally, the Volpe model bars certain types of techniques, such as down weighting and performance reduction, which may seem like strange things to do, because we've traditionally considered them to be problematic. However, given the significant dangers to the environment as a result of global warming, it's important to consider these things as well.

Comment Number: TRANS-08-14
Organization: Sierra Club
Commenter: Ann Mesnikoff

The proposed rule and the PRIA both show that the gas prices are major forces in setting fuel economy. NHTSA short changes America by using gas price assumptions that are far too low, a price for carbon that is randomly selected, and artificially constraining technologies.

Comment Number: TRANS-08-4
Organization: Sierra Club
Commenter: Ann Mesnikoff

NHTSA should first use more accurate values for gasoline prices and other inputs to justify a 35 in 2015 standard, and increases beyond that with greater hybrid penetration, accelerated introduction of plug-in electric hybrid vehicles, and other technologies.

The DEIS is premised upon a flawed proposed standard and the scenarios that must be addressed should be fixed before a final standard is issued and a final EIS is issued.

Comment Number: TRANS-20-7
Organization: Sierra Club
Commenter: Caroline Keicher

NHTSA proposes to raise fuel economy of cars and light trucks to a combined average of 31.6 miles per gallon for model year 2015. While this increase is more than half of what is required to meet the floor set by the EISA, NHTSA fails to take full advantage of the fuel saving technologies, and fails to fully and fairly evaluate the benefits of greenhouse gas emission reductions.

Comment Number: TRANS-39-2
Organization: American Jewish Committee
Commenter: Ami Greener

In proposing a combined average of 31.6 miles per gallon for model year 2015, NHTSA is failing to acknowledge the current technology that could safely and cost effectively make all vehicles reach state-wide fuel economy average of at least 35 miles per gallon by that year.

Comment Number: TRANS-15-4
Organization: Individual
Commenter: Marissa Knodel

In order to reduce oil use and reach the goal of an 80 percent reduction in greenhouse gas pollution by 2050, we can increase fuel economy standards, make sure hybrid and plug-in electric vehicles are available and affordable

Comment Number: 0575-24
Organization: Union of Concerned Scientists
Commenter: Eli Hopson

One of the peculiar findings of the NPRM is light trucks' lack of sensitivity compared to that of passenger cars. The sensitivity analysis using high fuel prices, for example, yields up to a 6.7 mpg difference from NHTSA's proposed scenario for cars, and only a 0.8 mpg difference from the proposed scenario for light trucks. The only explanation given by NHTSA for this lack of truck sensitivity is that marginal technologies for trucks are too expensive to "bring them over the cost-benefit threshold." (NPRM, p. 364-365).

However, that explanation is inconsistent with the technology costs laid out in Table III-1 of the NPRM. Even the 2002 National Academies study, on which NHTSA claims to have based some of its technology costs, show only slightly (approx. 15% to 25%) lower technology expenses for passenger cars than for light trucks [Footnote: See original comment document.] Moreover, given that incremental energy savings are greater at the low end of the fuel economy spectrum (i.e., that a 1 mpg increase from 14 to 15 mpg saves more energy than a 1 mpg increase from 24 to 25 mpg), one would presume that trucks would have an even *easier* time making the marginal cost-effective case.

Based on the opaqueness of the cost-effective judgment criteria, UCS cannot determine with certainty what might be constraining application of fuel saving technologies to light trucks in the Volpe model. However, the explanation provided by NHTSA that light truck technology has tapped out its cost-effectiveness seems highly unlikely.

Comment Number: 0576-33
Organization: Public Citizen
Commenter: Joan Claybrook

This approach to vehicle weight ignores the role of advanced materials to reduce vehicle weight without compromising safety, it discourages manufacturers from considering more aggressive vehicle redesigns, which could achieve a broad range of fuel economy and safety goals, and it preserves the dangerous incompatibility between the heaviest and lightest vehicles. In setting aggressive new fuel economy standards, the agency should encourage manufacturers to rethink how vehicles are built. New standards should promote innovation that drives safety and fuel economy forward. Instead, with the Volpe Model's

approach of merely requiring that the industry do what it was planning to do, there is little to no motivation to make much-needed bold shifts.

Comment Number: 0588-6
Organization: New York State Department of Transportation
Commenter: Stanley Gee

As global warming trends continue, NYSDOT encourages NHTSA to work with the industry to expedite the production of more fuel efficient vehicles, as well as those capable of using alternative fuels, such as compressed natural gas (CNG), liquefied natural gas (LNG), and advanced biofuels. NHTSA should also promote hybrid-electric, battery electric, cleaner diesel, and fuel cell technology.

Comment Number: 0575-21
Organization: Union of Concerned Scientists
Commenter: Eli Hopson

The source of the data for NHTSA's manufacturer-specific learning curves is not provided and the approach appears fundamentally flawed. First, by applying learning curves on a manufacturer-specific basis, NHTSA ignores the fact that many manufacturers engage in joint-venture efforts to produce new technologies. The recent 2-mode hybrid technology enabling more fuel efficient trucks, for example, was the product of a joint venture between Chrysler, General Motors, and BMW. Even when joint ventures are not in practice, manufacturers learn from each other through the standard practice of tearing down competitors products. NHTSA's proposed learning curve methodology does not account for any of these practices.

Further, treating car and truck sales volumes separately when estimating learning curves makes little sense. While certain components will invariably be unique to cars or light trucks separately, that is far from an industry-wide rule of thumb. It makes little sense to assume that the experience gained from, for example, the use of lower cost materials would not subsequently be used in other products. This is especially true today where many "trucks" are, in fact, car-like crossover vehicles with shared components of many sedans and wagons.

In its technical report, *Cost and Effectiveness Estimates of Technologies Used to Reduce Light-duty Vehicle Carbon Dioxide Emissions*, EPA suggests use of a learning curve factor of 20%, with the limited exception of diesel. [Footnote: See original comment document.] UCS recommends that NHTSA remedy the flaws associated with its learning curve assumptions, and adopt EPA's suggestion of a 20% learning factor, to help account for the market realities noted above.

Comment Number: 0559-12
Organization: The Northeast States for Coordinated Air Use Management (NESCAUM)
Commenter: Arthur Marin

Information from a 2004 NESCCAF (NESCCAF is the Northeast States Center for a Clean Air Future, an affiliate organization of NESCAUM) study entitled "Reducing Greenhouse Gas Emissions from Light-Duty Motor Vehicles" is cited in the NHTSA proposal. Some of this information is reported in a way that is either confusing or incorrect. For example, NHTSA applies a 1.5 retail price equivalent (RPE) factor to the manufacturer costs presented in Appendix C of the NESCCAF report, and at other times uses a 1.4 RPE — and presents both costs as NESCCAF costs. In the report, NESCCAF only used a 1.4 RPE. The reporting of costs using the 1.5 multiplier as NESCCAF costs is incorrect and leads to uncertainty as to how the costs were developed. A specific case is the cost of a turbocharger. NHTSA states the NESCCAF turbocharger cost is $600. In this case, NHTSA applied a 1.5 RPE factor to manufacturer

costs presented in Appendix C of the NESCCAF report to arrive at the $600 cost. This is different from the cost that NESCCAF developed. Conversely, on page 24369 of the Federal Register notice, NHTSA accurately states the NESCCAF cylinder deactivation costs ranged from $161 to $210. This cost accurately reflects manufacturer costs presented in Appendix C of the NESCCAF report, multiplied by the 1.4 retail price equivalent used by NESCCAF.

In some cases, information about what specific components were included in the NESCCAF study assumptions is reported incorrectly by NHTSA. For example, the NESCCAF study did not conclude that an air pump is required as part of a turbocharged system, in contrast to NHTSA's statement that NESCCAF assumed a $90 air pump is needed with the turbocharger.

Another example is the statement on p. 24375 of the *Federal Register* notice that the NESCCAF study included costs for high efficiency generators ($56) but failed to account for costs for the electrification of other accessories. In reality, Appendix C of the NESCCAF report assigns a cost of $70 for electrified accessories for a total cost of $126, which is within the range of costs for these technologies cited from a National Academy of Sciences report and used by NHTSA.

We recommend that all reported costs and benefits, attributed to NESCCAF by NHTSA, be reviewed carefully for errors and amended accordingly.

Comment Number: 0572-16
Organization: Center for Biological Diversity
Commenter: Brian Nowicki, Mickey Moritz, Kassie Siegel

Fleet mix is a central component of average fuel economy and yet is absent from the Volpe model cost-benefit analysis. For instance, the Volpe model "does not attempt to account for…intentional over-compliance…" Another possibility NHTSA and Volpe staff have considered but do not yet know how to analyze, is the potential that manufacturers might "pull ahead" the implementation of some technologies in response to CAFE standards that they know will be steadily increasing overtime." Proposed CAFE Standards MY 2011-2015 at 73 *Fed. Reg.* 24352, 24393 (May 2, 2008).

Comment Number: 0575-19
Organization: Union of Concerned Scientists
Commenter: Eli Hopson

In Table 111-3, the NPRM specifies "year of availability" assumptions for various technologies. (NPRM, p. 112) It is unclear where the hybrid technology assumptions come from. Further, the assumptions used do not appear to make sense. All hybrid technologies—ranging from start/stop-based systems to the 2-mode and power-split "full" hybrid systems-are assumed not to appear until 2014, despite the fact that these technologies are on the road today (*i.e.*, Saturn VUE "mild" hybrid, GMC Yukon "2-mode" hybrid, and Toyota Prius "full" hybrid). It is unrealistic to assume, as it appears NHTSA has done, that automakers have cleared their product plans of any other hybrid models until the 2014 model year. This is especially egregious considering that the Toyota Prius is the 9th best selling car in the U.S.

Hybrid Adoption Rates

UCS is concerned about the technology phase-in caps or, as described by NHTSA, "overall constraints on the rates at which each technology can penetrate a manufacturer's fleet." (NPRM, p. 131-132) While many of the caps range from a 4-6 year fleet penetration, NHTSA assumes that hybrid and diesel technologies would see phase-ins as low as 3 percent.

UCS sees no valid reason to assume it will take 33 years for hybrid technology to become ubiquitous. First, and most fundamental, NHTSA applies the same cap to all types of hybrids, from mild start-stop hybrids to full PHEVs alike, despite the fact that the cap is employed "to reflect the major redesign efforts and capital investments required to implement these technologies." (NPRM, p. 132) In contrast, an EPA technical report on which NHTSA relied said the following about integrated starter-generators with idle-off: "their low cost and easy adaptability to existing powertrains and platforms can make them attractive for some applications." [Footnote: See original comment document.]

While hybrids currently only account for about three percent of the U.S. market, they are seeing a dramatic increase in interest from consumers seeking ways to find relief from high gas prices. Furthermore, with more than 10 years of experience from leading manufacturers, hybrids can no longer be considered niche technology. UCS (among numerous other groups and market analysts) expects significant growth in the hybrid market over the coming years.

It appears that, lacking any support to back their decision, NHTSA's hybrid adoption rate was arbitrarily selected, as opposed to based on specific technological findings. Given the fuel savings potential of hybrid-electric technology, limiting its application in this manner is inappropriate. UCS recommends that NHTSA accelerate its hybrid technology adoption rate to 5-7 percent, equivalent to a 15-20 year full market penetration.

Comment Number: TRANS-19-9
Organization: Union of Concerned Scientists
Commenter: Eli Hopson

The recent proposed notice rulemaking actually assumed that hybrids wouldn't be on the road until 2014. Let me just reiterate that. Despite the fact that there are more than 1 million hybrids on the road today, despite the fact that the Toyota Prius is the ninth best selling car in America, the announcements that NHTSA used assume hybrids won't be on the market until 2014.

People are not sitting around waiting for a hybrid to show up on a dealer's lot in six years. They're on six month waiting lists, as we heard today, because they are already that popular.

Comment Number: TRANS-28-3
Organization: Individual
Commenter: Jim Pierobon

I hope you'll recognize how fuel efficient hybrids, as one dramatic example, are becoming more valuable and how quickly and efficiently they can deeply penetrate, especially the consumer automobile market.

Comment Number: TRANS-34-4
Organization: Individual
Commenter: Fred Teal, Jr.

I disagree with your belief that we're not going to have any substantial amount of hybrid vehicles introduced until 2014. They've been around for years, and Ford and General Motors, Honda, Toyota, are making them and selling them today in large quantity. I disagree with your assumption that the rate of adoption of hybrids is going to be as low as you say it is.

Comment Number: 0572-7
Organization: Center for Biological Diversity
Commenter: Brian Nowicki, Mickey Moritz, Kassie Siegel

As discussed in our July 1, 2008 comments on the NPRM, the Volpe model makes a number of assumptions that are unreasonable and conflict with the EPCA statutory scheme. For example, the NHTSA assumes that the U.S. fleet mix will not change in response to consumer demand for more fuel efficient vehicles or due to a change in regulatory requirements. (73 *Fed. Reg.* 24394) This assumption is particularly outrageous. First, auto manufacturers who have for decades deliberately manipulated the market with advertising, incentives, financing schemes, and other methods towards the least fuel efficient vehicles, continue to do so. (See, *e.g.* Chevrolet Tahoe Hybrid website; GreenCar.com 'Chevrolet Tahoe Hybrid Green Car of the Year;' Chrysler $3 gas banner; KCRA.com 'Chrysler $3 gas;' Ford Escape Hybrid website; Lyons 'Ford Guilt Free SUV.') Consumer preferences, nonetheless, are now shifting dramatically towards more fuel efficient vehicles in response to higher gas prices. (Cooper 2008). For a manufacturer to change its fleet mix in response to regulation is a method of compliance that must be considered in both the EPCA and NEPA analyses. Any precedent to the contrary is inapposite.

The NHTSA also assumes that manufacturers will not update their vehicle models more frequently than once every 5 years, and, "in most instances" has simply "accepted the projected redesign periods from the companies who provided them through MY 2013" (73 *Fed. Reg.* 24386) In other words, the underlying analysis for a fuel economy standard which is supposed to conserve energy by pushing manufacturers to develop new technology and innovate to meet challenging standards which may even "appear impossible" today, is constrained by the assumption that manufacturers will do nothing other than what they are already doing, at least for a period of five years. This clearly violates both EPCA and NEPA.

Comment Number: 0576-30
Organization: Public Citizen
Commenter: Joan Claybrook

For this rulemaking, NHTSA has added two more factors that impede transparency, and erode consumer confidence in the Volpe Model: technology phase-in caps and manufacturer learning curves. Public Citizen acknowledges that manufacturers cannot deploy all technologies in all vehicles at once, and that lead-time is necessary for manufacturers to make necessary changes. However, the agency's decision to gear technology additions to the redesign and refresh cycle is unnecessarily lenient. The agency has given the industry over two years of lead time before the 2011 model year. [Footnote: See original comment document.] EISA only requires only 18 months of lead time. For the 2012 to 2015 model years, the agency will have provided ample lead time for automakers to adjust. The industry is already changing plans, and closing plants or stopping work to adjust to changing consumer demand. [Footnote: See original comment document.]

NHTSA claims that it relaxed phase-in caps based on rising fuel prices and rising forecast fuel prices. (PRIA V-50). The agency should re-evaluate the assumptions about phase-in caps, especially with regard to technologies that require a more substantial redesign. NHTSA has given ample lead time for the industry to reconsider its redesign schedule to reflect tumultuous changes in consumer preferences. Public Citizen suggests that NHTSA not constrain the use of technology to achieve the maximum feasible fuel economy level.

Comment Number: 0576-41
Organization: Public Citizen
Commenter: Joan Claybrook

Public Citizen requests that NHTSA rethink its position on dealing with "outliers," or vehicles that get vastly better fuel economy. The agency position is that excluding hybrid electric vehicles "yields initial curves of shapes similar to those proposed, but displaced slightly in the direction of lower fuel consumption. The similarity of the shapes of these curves suggests that optimization against the full fleet (with HEVs) would produce standards whose stringency is similar to that of those proposed today." (73 *FR* 24440) However, automakers will be credited for producing hybrid vehicles which will count for compliance, but not in the stringency of how the curves are set. In an economy-wide standard, the pressure from manufacturers that build more efficient vehicles set the stringency of the economy-wide level of standards. Removing that pressure by excluding highly-efficient vehicles undercuts the maximum feasible level of fuel economy.

Comment Number: 0572-8
Organization: Center for Biological Diversity
Commenter: Brian Nowicki, Mickey Moritz, Kassie Siegel

Volpe model generally does not apply a new technology until a given vehicle is due for a "redesign or refresh," and assumes that some technologies, such as hybrid vehicles, already in use today cannot yet be adopted. (73 Fed. Reg. 24386)

Comment Number: 0575-20
Organization: Union of Concerned Scientists
Commenter: Eli Hopson

Vehicle Redesign Rates

NHTSA assumes that vehicles will be redesigned on five-year cycles, which is inconsistent with recent trade publication information. As reported in Ward's Automotive. Ford intends to shorten its redesign period to three-year cycles. [Footnote: See original comment document.] Given this and past performance from other automakers, NHTSA's product cycle duration assumptions are too long. UCS recommends that NHTSA shorten its modeled redesign period to three-year cycles.

Comment Number: TRANS-02-3
Organization: Lee Auto Malls
Commenter: Adam Lee

The new technologies are coming down in price.

Comment Number: 0572-64
Organization: Center for Biological Diversity
Commenter: Brian Nowicki, Mickey Moritz, Kassie Siegel

both the Volpe model and the economic analyses fail to account for the potential for technologies developed within the automobile industry to be exported to other economic sectors. This exclusion overlooks the potential for technologies developed in the automobile industry to bring significant benefits to the larger economy, resulting in financial returns to the developers of the technologies within the automobile industry, as well as the multiplied economic benefits of increased efficiency in other sectors, and the social and economic benefits of the greenhouse gas reductions. These considerations, by

incorporating additional benefits to both society and to the automakers, would significantly alter the calculation of the CAFE standards and the cost-benefit analyses.

Response

Many commenters stated that NHTSA failed to take full advantage of available fuel saving technologies and that optimization factors used in technology application do not reflect the most aggressive possible regulations. NHTSA specifically sought comment on the estimates, which it had developed jointly with EPA, of the availability, applicability, cost, and effectiveness of fuel-saving technologies, and the order in which the technologies were applied, as well as cost learning curves. See 73 FR 24352, 24367. While NHTSA asked manufacturers to submit such information in the request for product plans, the agency also conducted its own independent analysis of the all the comments and data – including comments and information from entities outside the automobile manufacturing community – received through the rulemaking process. This involved hiring an international engineering consulting firm that specializes in automotive engineering, and that was used by the EPA in developing its recent Advance Notice of Proposed Rulemaking to regulate greenhouse gas emissions under the Clean Air Act.[14]

NHTSA and its consultants undertook a thorough review of the NPRM technology assumptions and all comments received on those assumptions, based on both old and new public and confidential manufacturer information. NHTSA and its consultants reviewed and compared comments on the availability and applicability of technologies, and the logical progression between them. NHTSA also reviewed and compared the methodologies used for determining the costs and effectiveness of the technologies as well as the specific estimates provided. Relying on the expertise of its consultants and taking into consideration all the information available, NHTSA revised its estimates of the availability and applicability of many technologies, and revised its estimate of the order in which the technologies were applied. In addition, the agency and its consultants generally agreed with commenters who said that in several cases, the technology related costs used in the NPRM and DEIS were underestimated and benefits were overestimated. The agency also agreed with commenters that both sets of estimates were not well differentiated by vehicle class and that the technology decision trees needed to be expanded and refined. Relying on the expertise of its consultants and taking into consideration all the information available, NHTSA revised its technology and effectiveness estimates and used them in analyzing all of the alternatives and scenarios presented in this FEIS. The agency believes that the representation of technologies—that is, estimates of the availability, applicability, cost, and effectiveness of fuel-saving technologies, and the order in which the technologies were applied, as well as cost learning curves—used in this action is the best available.

NHTSA appreciates NESCAUM's attention to detail on the retail price equivalents and component inclusion. NHTSA has noted the inaccuracies NESCAUM identified, and will correct them in the final rule.

As to the multitude of comments on hybrid penetration/phase-in rates, there is a general misperception that the technology is cost-effective. The waiting lists for popular hybrid cars are due to limitations in the supply chain, especially in battery production. At present, manufacturers are not able to produce numbers that justify the cost of production. The model incorporates technologies when they are expected to reach the point of cost-effectiveness, but this does not prevent manufacturers from applying the technologies if they choose to do so.

NHTSA has considered comments that we should include advanced materials and allow manufacturers to downweight vehicles; however, NHTSA's analysis still supports our position that

[14] *73 FR 44354 (July 30, 2008).*

downweighting vehicles under 5,000 pounds carries unacceptable risks to public safety. See Section 10.3.6.4 for detailed responses to downweighting and safety comments.

Regarding levels of fuel economy in other countries, there are several important reasons why a direct comparison to U.S. standards is not possible. First, the United States, the European Union (EU), and Japan all use different testing methods to determine a vehicle's mpg. Second, the EU standard is voluntary, and the Japanese fines are minimal. Third, the Japanese standard is weight-based (a practice the United States moved away from for safety reasons). Fourth, the fleet mix is different. Fuel taxes and other incentives are credited with shrinking the average vehicle size in both the EU and Japan, so higher fuel economy standards cannot be attributed to technology alone, as the commenter appears to suggest. Fifth, the EU and Japanese emissions standards are not as stringent as those in the United States with respect to some pollutants (e.g., NO_x). To facilitate the fast penetration of diesel vehicles into its market, Europe made a policy decision not to require fast reductions in NO_x emissions. Diesel vehicles in the United States are more costly because of the higher emissions requirements and the need for installing pollution abatement devices, which are not required in Europe.

10.2.2.5 Fleet Turnover

Comments

Comment Number: 0574-10
Organization: Alliance of Automobile Manufacturers
Commenter: Julie Becker

As Attachment #14 to its substantive comments on NHTSA's CAFE NPRM for MY 2011-2015 (NHTSA Document ID: NHTSA-2008-0089-0170.1), the Alliance submitted the June 15, 2007 study performed by NERA, Sierra Research, and Air Improvement Resource ("AIR") entitled *Effectiveness of the California Light Duty Vehicle Regulations as Compared to Federal Regulations*, which was originally submitted to EPA in connection with its consideration of whether to grant California a waiver of preemption under the Clean Air Act for that State to set its own greenhouse gas emission standards for new vehicles. This study demonstrates how increases in fuel economy standards can, through the fleet turnover effect, delay new vehicle purchases, thereby prolonging the period that vehicles emitting greater levels of traditional criteria and toxic pollutants will be driven on the roads. [Footnote: See original comment document.]

The NERA/Sierra/AIR [Air Improvement Resources, Inc.] study compared the real-world emissions control levels achieved by the California program to the federal program for light-duty vehicles. The analysis compared emissions of the five key pollutants (VOC, NO_x, $PM_{2.5}$, CO, and SO_x), plus effects on an aggregation of five air toxics (acetaldehyde, benzene, 1,3 butadiene, formaldehyde, and acrolein) under the two programs from 2009 through 2023. The study concluded that increases in the relative stringency of fuel economy standards as adopted by California would significantly drive up most criteria pollutant and air toxics emissions levels.

By contrast, NHTSA's analysis in its DEIS concludes that the more stringent CAFE standards become, the fewer criteria pollutants and air toxics are emitted from the vehicle fleet. See DEIS at 2-15 (Table 2.5-2) (moving from right to left on that table, which corresponds to increased CAFE stringency, criteria and toxic emissions generally are shown to decrease). This can only be inconsequence of NHTSA failing to properly take account of the fleet-turnover effect. Failure to rectify this error would be arbitrary and capricious. See *Motor Vehicle Mfrs. Ass'n v. State Farm Mut. Auto. Ins. Co.*, 463 U.S. 29, 43 (1983) ("agency rule would be arbitrary and capricious if the agency has . . . offered an explanation for its decision that runs contrary to the evidence . . . .").

Indeed, NHTSA's discussion in the DEIS makes clear that the agency is refusing to consider fleet-turnover effects. See DEIS at 1-18 ("As these issues [including fleet turnover] raised by the AAM . . . do not relate to the effects on the physical environment, they are not addressed in this document."). This entirely misunderstands the NERA/Sierra/AIR study and the nature of the fleet turnover effect. This effect will cause NHTSA's proposed CAFE standards to increase various criteria pollutant and air toxic emissions. These are direct physical effects on the environment. It is difficult to understand what NHTSA means when it attempts to call the effect on pollutant levels caused by the fleet turnover effect a non-physical effect on the environment. If NHTSA means that it can ignore some physical effect on the environment whenever such an affect occurs based on economic cause and effect, then NHTSA surely errs. If that were the case, NHTSA's use of the Volpe model in connection with NEPA analysis would also be flawed, because the Volpe model is intended as a cost-benefit tool for comparing different fuel economy mandates, and the Volpe model is integral to NHTSA's NEPA analysis.

In fact, agencies are often compelled to consider environmental outcomes resulting from behavioral changes due to economic factors. See *generally Mid States Coalition for Progress v. STB*, 345 F.3d 520, 548-49 (8th Cir. 2003) (STB erred by failing to consider claimed increases in CO_2 emissions by power plants associated with the STB's approval of a new rail line based on a lengthy chain of economic reasoning to the effect that the new rail line would lower the price and increase the availability of low-sulfur coal, and thereby increase emissions from power plants expected to consume the coal being carried). In the case of EISA, the consideration of economic factors is a particularly critical element of the statutory design. It would be nonsensical for NHTSA to ignore technically sound studies demonstrating a direct connection between the economic effects of CAFE standards and resulting environmental impacts.

Comment Number: 0574-5
Organization: Alliance of Automobile Manufacturers
Commenter: Julie Becker

NHTSA finds that more stringent CAFE standards will reduce criteria pollutant and air toxics emissions. Such a conclusion is demonstrably incorrect and ignores the fleet-turnover effect and the study of that effect submitted by the Alliance to EPA in 2007 to explain how California CO_2 emissions standards that represent increases in stringency over the MY 2010 CAFE baseline would increase emissions of most criteria pollutant and air toxics. NHTSA has a duty to consider that submission and revise its analysis accordingly.

Comment Number: TRANS-01-5
Organization: Alliance of Automobile Manufacturers
Commenter: Julie Becker

[T]he draft EIS incorrectly disregards the environmental impact of the fleet turnover effect, and this was explained in our scoping comments. The Alliance asks NHTSA to consider the fleet turnover effect, and the air quality impacts that will result from heightened CAFE standards. Instead, NHTSA is treating this as an economic impact and an indirect one, which we don't think is appropriate.

Response

Under NHTSA's analysis, any effect of higher vehicle prices resulting from stricter CAFE standards on fleet turnover is not likely to have substantial consequences for criteria pollutant emissions. First, NHTSA's research indicates that prices for new vehicles are only one of many factors that vehicle buyers consider in their purchase decisions. Others are likely to include fuel prices, vehicle maintenance and repair costs, household income levels, loan rates for financing new-vehicle purchases, and

macroeconomic cycles. Because all of these factors are likely to change in the future, the potential effect of higher prices for new vehicles on fleet turnover is difficult to anticipate.

Second, there is evidence that manufacturers cannot pass on to buyers the full costs of complying with higher CAFE standards, which would limit their effect on fleet-wide emissions of criteria pollutants. Finally, the dramatic reduction in the rates of tailpipe emissions for late-model vehicles that has resulted from technological advances in emissions controls has substantially narrowed the differences in emissions rates between new and older vehicles, and further reductions emissions rates in new-vehicles will continue to do so over the foreseeable future.[15] This continued narrowing of the difference between emissions from older vehicles and the new vehicles with which they would be replaced has substantially reduced the likely impact of any slowing in fleet turnover on fleet-wide emissions.

10.2.2.6 Consumer Demand/Behavior

Comments

Comment Number: 0564-1
Organization: Consumer Federation of America
Commenter: Mark Cooper

In light of the new evidence on the swift changes by consumers to embrace more fuel- efficient vehicles, we believe that the standard should be set at the highest level in NHTSA's analysis that was economically practicable. (This is the point in the initial analysis where total benefits equal total costs. When NHTSA corrects the many flaws in its approach benefits from this level of fuel economy will far exceed the costs.) This would raise the standard for 2011 to 30.6 miles per gallon, from the proposed level of 27.8 mpg. The attached report shows that consumers are more than willing to purchase such vehicles and the dramatic changes that the automakers have announced in their product plans indicate they can deliver the vehicles necessary to achieve this level of fuel economy.

Comment Number: 0564-3
Organization: Consumer Federation of America
Commenter: Mark Cooper

NHTSA's approach to setting fuel economy standards is to start with automaker product plans, assert that consumers undervalue fuel economy by demanding unrealistic economic returns from fuel saving technologies and assume that automakers are severely constrained in their ability to incorporate new fuel-saving technology into the vehicle fleet. Neither the product plans, nor the assumptions about consumer and automaker behavior relied on in NHTSA's analysis bear any relationship to reality.

- Consumers are looking for higher mileage in the new vehicles today than NHTSA has mandated for seven years from now.
- The product plans on which NHTSA based its rule seven years into the future have already been torn up by the automakers who have belatedly recognized the strong shift in consumer behavior.

[15] *In 1990, for example, NHTSA's estimates indicate that average VOC emissions for a 10-year-old gasoline automobile were 4.75 grams per mile larger than those for a new model-year 1990 car, but by 2005 this difference had narrowed to 1.31 grams per mile; it is projected to decline to 0.23 grams per mile by 2015. These emissions factors were computed using EPA's MOBILE6.2 motor vehicle emissions factor model using the procedures described elsewhere in this FEIS.*

- The mix of cars and trucks that NHTSA projects bears no relationship to the vehicles that consumers are buying.

- Not only did NHTSA assume that consumers are unwilling to buy fuel economy beyond a very narrow economic assumption, but it also assumed that higher fuel economy has no value in the marketplace (particularly in resale value), which is contrary to what is happening in the market.

Our market behavior analysis and public opinion polling show that consumers want more fuel-efficient cars than the automakers are offering them.

Comment Number: 0564-8
Organization: Consumer Federation of America
Commenter: Mark Cooper

The attached study of consumer attitudes and auto market behavior prepared by the Consumer Federation of America has a series of findings that call into question the fundamental approach that NHTSA took to set the standard and compel NHTSA to thoroughly reconfigure its analytic approach before it issues a final rule.

Consumers are deeply concerned about rising gasoline costs and the national security implications of our dependence on foreign oil and are prepared to take actions to remedy these problems. Neither the auto industry in its marketing plans nor NHTSA in its proposed rule has fully comprehended the current state of consumer attitudes toward fuel efficiency and the state of the auto market.

- Eighty-four percent of respondents say they are concerned about rising gasoline prices (70 percent very concerned) and eighty-four percent say this rise in price has placed a financial burden on their household budgets (63 percent say severe).

- Seventy-four percent of respondents say they are concerned about Mid Eastern oil imports (57 percent very concerned).

- Among those who drive and intend to purchase a vehicle, the current average fuel economy of their vehicle is reported at about 24.1 mpg, but they intend to get 32.7 mpg in their next vehicle.

- Thus, the average goal for consumers in the market today is 32.7 mpg above the standard of 31. 6 mpg that NHTSA has set for 2015.

- There is a huge mismatch between consumer demand and models offered by automakers in 2008. Whereas 59 percent of the respondents say they want to get more than 35 mpg in their next vehicle, only 1 percent of the models offered by automakers in the first half of 2008 achieve that mileage.

- About 60 percent of the poii respondents say they are willing to consider major changes to achieve higher fuel economy, including switching to four cylinder engines, small cars and hybrids.

Moreover, as the attached report shows, consumers are not merely considering these measures to achieve higher fuel economy; they are acting on their attitudes.

- Four cylinder engines have increased their market share dramatically.
- Smaller cars are in exceptionally high demand, while trucks and SUVs languish on the lots.
- Hybrids are flying out of the show rooms.

However, in direct contradiction to these market trends, NHTSA's proposed rule restricts the level of the standard because it makes assumptions about consumer behavior or automaker ability to incorporate fuel-saving technology that fail to reflect this market reality. NHTSA refuses to consider vehicle downsizing or different performance characteristics as a means of increasing fuel efficiency. NHTSA's underlying assumptions are so out of touch with reality that they are arbitrary and capricious, resulting in a rule that is unreasonable.

The change in consumer attitudes and purchasing patterns has deeply affected the resale value of vehicles, yet NHTSA's proposed rule does not recognize the impact of fuel economy on the resale value of vehicles. NHTSA erroneously assumes that a gas guzzling SUV has the same resale value (as a percentage of the original purchase price) as a fuel sipping small car.

- Contrary to this assumption, SUVS and pickups are piling up on dealer lots across the country.

- SUVs and trucks, both new and used, have plummeted in value, while small cars have increased sharply.

- The Big 3 U.S. automakers announced plans to discontinue leasing these vehicles precisely because the value at the end of a lease is so much lower than the price they have to pay.

The faulty assumptions on resale value play a critical role in NHTSA's analysis by undervaluing fuel efficiency in its consumer payback analysis and preventing NHTSA from including more fuel savings in the fleet in its evaluation of standards.

The analysis of auto market behavior in the attached report shows that these consumer attitudes and trends were not a sudden development in the early part of 2008. They have been evident and progressing for several years. The auto industry and NHTSA have simply ignored the clear evidence.

- The shift in sales was not sudden, nor is it only the result of a shift from trucks to cars. Consumers have also been demanding greater fuel economy within vehicle categories.

- The structural shift to fuel economy occurred in 2004 for trucks and 2006 for cars.

- The effect has built over time so that by the first half of 2008, the level of fuel economy of a car model accounts for over 40 percent of the variance in the change in sales.

- Simply put, it did not take $4/gallon gas to cause the change in consumer behavior, it started at least three years ago when gas was $2.50 per gallon and has been growing progressively.

The automakers not only missed the shift in consumer behavior, they actually tried to resist it by continuing to pump out gas-guzzlers and trying to bribe consumers to buy them with rebates and low interest. However, the trend has proven too powerful and fundamental to resist. Now that the automakers have recognized that they must change, they are rapidly shifting their operations, retooling plants and adopting new technologies at a pace that is far greater than NHTSA had assumed possible. Thus, NHTSA's auto market model erroneously assumes a slow incorporation of fuel savings technology into the vehicle fleet for several reasons. Not only were the product plans on which NHTSA based its

proposed rule thoroughly outdated, but also the ability of automakers to change was vastly underestimated by NHTSA. A rule based on data that is so out of touch with reality is arbitrary and capricious and unreasonable.

Comment Number: 0575-23
Organization: Union of Concerned Scientists
Commenter: Eli Hopson

As one of the components in assessing sales impacts of increased fuel economy, NHTSA estimates the 5-year resale value of vehicles. First, NHTSA's explanation for choosing five years as the evaluation timeline, namely that "this is the average length of time of a financing agreement" (PRIA, p. VII-41), is unfounded—as that would presume that consumers sell their vehicles as soon as their car and truck loans are paid off.

Moreover, NHTSA computes the resale value of a vehicle as a flat 32.8% of its original value. This assumption ignores the fact that fuel efficient vehicles are valued more than inefficient vehicles on the used vehicle market. According to a 2008 Congressional Budget Office study:

"Average prices of fuel-efficient used vehicles have been rising, and those of less-efficient vehicles have been falling. That is as expected: In both [new and used vehicle markets, consumers' preferences for fuel-efficient vehicles should be similarly affected by rising gasoline prices—which should affect prices similarly in both markets." [Footnote: See original comment document.]

UCS recommends that NHTSA modify its resale value estimate to reflect greater consumer preference for fuel efficient vehicles in the new and used vehicle markets.

Comment Number: 0572-17
Organization: Center for Biological Diversity
Commenter: Brian Nowicki, Mickey Moritz, Kassie Siegel

A recent report by the Consumer Federation of America indicates that the NHTSA's assumed fleet mix does not represent what consumers are actually buying (Cooper 2008). Furthermore, the average consumer desires a car that gets at least 32.7 mpg today (Cooper 2008), yet even the "technology exhaustion" alternative would only require an average fuel economy of 31.1 mpg in 2011.Including this shift in consumer demand in the Volpe model is essential to properly assess the potential for increased fuel economy in the U.S.

The NHTSA does not address the potential implications of a changing automobile market and to embrace its technology forcing mandate. The possibility that increasing consumer demand for more fuel efficient vehicles may affect the calculation of an individual automaker's CAFE under Reformed CAFE, and the opportunities available for individual automakers to take advantage of those changing demands through CAFE credits. (73 Fed. Reg. at 24393 & 24443). However, the proposed CAFE standards completely fail to consider the significant market advantage experienced by automakers that "pull ahead" to offer higher-efficiency vehicles.

In such a market, "over-compliance" can result in significant gains in market share and economic returns for innovative automakers. By failing to consider shifting consumer demand, NHTSA and the Volpe model significantly underestimate the economic benefits of increased efficiency vehicles, and artificially and inappropriately skew the cost-benefit analysis of developing and implementing efficiency technologies. Stated another way, NHTSA has illegally constrained its analysis by locking itself into the

assumption that a manufacturer's fleet mix need not, and will not, change in response to the nation's need to conserve energy.

Comment Number: 0572-46
Organization: Center for Biological Diversity
Commenter: Brian Nowicki, Mickey Moritz, Kassie Siegel

The inadequacy of the proposed CAFE standards is perhaps most clearly seen in comparison to vehicles already available on the market today with fuel efficiencies of 35 mpg and higher. The NPRM, on page 24394, states that the Volpe model, in the development of the CAFE standards, does not account for shifting demand by consumers for higher efficiency vehicles. Thus, the proposed CAFE standards were developed within the context of the automakers current product lines and business plans, and thus rejected or delayed larger increases in fuel efficiency in deference to previous business decisions the automakers have made that have favor lower efficiency vehicles.

Comment Number: 0572-51
Organization: Center for Biological Diversity
Commenter: Brian Nowicki, Mickey Moritz, Kassie Siegel

NHTSA, on page 24393 of the NPRM, states that the Volpe model does not attempt to account for…intentional over-compliance....Another possibility NHTSA and Volpe staff have considered but do not yet know how to analyze, is the potential that manufacturers might "pull ahead" the implementation of some technologies in response to CAFE standards that they know will be steadily increasing over time."

These statements display NHTSA's fundamental failure to understand the potential implications of a changing automobile market and to embrace its technology forcing mandate. The NPRM on page 24393 and 24443 mentions the possibility that increasing consumer demand for more fuel efficient vehicles may affect the calculation of an individual automaker's CAFE under Reformed CAFE, and the opportunities available for individual automakers to take advantage of those changing demands through CAFE credits. However, the proposed CAFE standards completely fail to consider the significant market advantage experienced by automakers that "pull ahead" to offer higher-efficiency vehicles. In such a market, "over-compliance" can result in significant gains in market share and economic returns for innovative automakers. By failing to consider shifting consumer demand, NHTSA and the Volpe model significantly underestimate the economic benefits of increased efficiency vehicles, and artificially and inappropriately skew the cost-benefit analysis of developing and implementing efficiency technologies. Stated another way, NHTSA has illegally constrained its analysis by locking itself into the assumption that a manufacturer's fleet mix need not, and will not, change in response to the nation's need to conserve energy.

Comment Number: 0576-14
Organization: Public Citizen
Commenter: Joan Claybrook

The Volpe model does not estimate market shifts, and therefore cannot predict the experience of recent months, where sales of light trucks have plummeted and sales of small cars have skyrocketed in response to high oil prices (73 FR 24394). The vehicles automakers are offering do not achieve a level of fuel economy consumers want, and vehicles that comply with the 2011-2015 standards will not achieve a level of fuel economy that consumers want. [Footnote: See original comment document.] NHTSA's failure to effectively regulate the industry has resulted in a market that offers too few choices to consumers, and the

Volpe model will exacerbate this problem rather than correct it, by relying on outdated information from the automakers.

Comment Number: 0576-16
Organization: Public Citizen
Commenter: Joan Claybrook

This country is in crisis because of high gas prices, the attendant rise in the price of food and other goods, and the looming prospect of catastrophic consequences of global warming. Failure by the agency to adequately plan for future predictable fuel price increases has contributed to the current fuel price situation. NHTSA must not exacerbate this condition further by failing to ask for the most aggressive implementation of available technology to give consumers the fuel economy they want and need." [Footnote: See original comment document.] In a March 2008 survey, "[s]ixty-one percent of those interviewed said lawmakers should require better fuel efficiency for new cars, trucks and SUVs; 56 percent said the government should increase funding for alternative fuel research." [Footnote: See original comment document.] This came just three months after Congress passed a law to raise fuel economy standards and expand research funding for alternative fuels. This is a strong signal to NHTSA to reconsider the pace and level of these new standards, which will, of course, inform the standards set for model years 2016-2020 and beyond.

Comment Number: TRANS-02-4
Organization: Lee Auto Malls
Commenter: Adam Lee

Consumers have changed their habits and their view of the future.

Comment Number: TRANS-04-3
Organization: National Automobile Dealers Association
Commenter: David Westcott

Importantly, CAFE standards equate the greenhouse gas emissions in that CAFE compliance is measured by capturing greenhouse gases emitted by regulated motor vehicles. Thus the draft EIS appropriately suggests that model year 2011 through '15 proposal likely will result in the overall motor vehicle greenhouse gas emission reduction below what will occur without standards.

Of course, this conclusion assumes that purchasers will buy new vehicles covered by CAFE proposal, and hereby bring them into the fleet at the rate assumed by NHTSA and that once introduced into the fleet, they will be driven to the same degree that NHTSA has assumed.

To that extent, purchasers do not buy – to the extent that purchasers do not buy vehicles regulated by the CAFE proposal and bring them into the fleet as predicted, whether due to their higher cost or lack of desirability, the CAFE proposal will necessarily fail to achieve this hoped for level of environmental performance.

This jalopy affect phenomenon recently was demonstrated by the failed introduction of the '07 model year medium and heavy-duty truck rules governed by the new EPA emissions mandates that increase their costs and arguably compromise their fuel economy and reliability.

Comment Number: TRANS-05-7
Organization: Consumer Federation of America
Commenter: Mark Cooper

Consumers are looking for higher mileage in new vehicles today than NHTSA has mandated for seven years from now. The product plans on which NHTSA based its rule seven years in the future have already been torn up by the automakers, but belatedly recognize the shift in consumer behavior.

The mix of cars and trucks that NHTSA projects, there's no relationship to the vehicles that consumers are buying. Rules that are not connected to reality violate the act and the administrative procedures act.

If you don't think that people will buy and drive more fuel efficient vehicles, you must be living under a rock.

Comment Number: TRANS-18-5
Organization: Individual
Commenter: Pamela Woodward

And you also need to understand how many people would be interested in buying fuel efficient vehicles, were they both accessible and affordable. The technology exists. There are companies that are using successfully, and other companies should be encouraged to develop the technology even further.

Comment Number: TRANS-23-6
Organization: Greater Washington Interfaith Power and Light
Commenter: Tara Morrow

Given the recent soaring gas prices, we are seeing a change in the market by consumer demand for vehicles with greater fuel economy. However, I think the American people are ready for bold action, at least my generation is, and moving forward will take more than responding to market research.

Comment Number: TRANS-41-5
Organization: Individual
Commenter: Catherine Easton

With the price of gas over $4 a gallon, consumers are looking for fuel efficient vehicles.

Comment Number: 0575-23
Organization: Union of Concerned Scientists
Commenter: Eli Hopson

As one of the components in assessing sales impacts of increased fuel economy, NHTSA estimates the 5-year resale value of vehicles. First, NHTSA's explanation for choosing five years as the evaluation timeline, namely that "this is the average length of time of a financing agreement" (PRIA, p. VII-41), is unfounded—as that would presume that consumers sell their vehicles as soon as their car and truck loans are paid off.

Moreover, NHTSA computes the resale value of a vehicle as a flat 32.8% of its original value. This assumption ignores the fact that fuel efficient vehicles are valued more than inefficient vehicles on the used vehicle market. According to a 2008 Congressional Budget Office study:

"Average prices of fuel-efficient used vehicles have been rising, and those of less-efficient vehicles have been falling. That is as expected: In both [new and used vehicle markets, consumers' preferences for fuel-efficient vehicles should be similarly affected by rising gasoline prices—which should affect prices similarly in both markets." (Congressional Budget Office, 2008. Effects of Gasoline Prices on Driving Behavior and Vehicle Markets, p. 20.)

UCS recommends that NHTSA modify its resale value estimate to reflect greater consumer preference for fuel efficient vehicles in the new and used vehicle markets.

Response

NHTSA considers product plans and other data from auto manufacturers, which it believes to be the most accurate source of information about manufacturer capability and future production. In NHTSA's judgment, there is no more accurate source for this information. See the response in Section 10.2.2 for more information. Many factors are considered in these product plans, including fuel-price projections and shifts in buyers' preferences toward higher fuel efficiency. Commenters who pointed to NHTSA's use of out-of-date product plans can be reassured that the recently revised Volpe model relies on updated product plans received after publication of the NPRM.

Regarding comments that the popularity of fuel-efficient vehicles among consumers is justification for promulgating more stringent standards, commenters fail to recognize the influence of economic practicability. The demand might exist, but the supply might not exist if manufacturers cannot realistically be expected to meet it.

While higher fuel prices are currently affecting consumer behavior, NHTSA's assumptions about consumer undervaluation of fuel economy are well supported by peer-reviewed literature. The study that the Consumer Federation of America used to support its arguments relies on a survey in which the consumers are not actually purchasing a vehicle, and that likely overvalues consumer preferences.

Regarding resale value, estimates of resale value are used, not in the Volpe model but in the Regulatory Impact Analysis, to try to predict how the increase in price and fuel economy of vehicles would affect sales. These estimates of resale value have no direct impact on the levels of the CAFE standard, and their indirect impact was negligible because NHTSA did not find a large impact on sales.

Further, NHTSA does not presume that consumers would all sell their cars at the end of the loan period, an average of 5 years. NHTSA uses that as a proxy measure of how consumers make purchasing decisions; that is, how do consumers value increased fuel economy? NHTSA assumes that the average purchaser thinks about how much money he might save in fuel over a 5-year period. In the Regulatory Impact Analysis, NHTSA conducts a marginal cost-benefit analysis. This commenter appears to imply that resale value would increase by more than 32.8 percent of incremental costs because of the improved fuel economy. This implies that first purchasers believe that a second purchaser would place a value on the improvement in fuel economy over the remaining life (beyond the initial first 5 years) of the vehicle. If NHTSA made this assumption, then for the first purchaser who keeps a vehicle, we should value fuel economy savings over the lifetime of the vehicle (or some period longer than 5 years), not just over the first 5 years. However, NHTSA does not believe that the average consumer thinks about payback periods past 5 years; that is, a first purchaser would not consider the second purchaser's payback period. When NHTSA performs the Volpe model cost-benefit analysis, considering costs and benefits from a societal perspective, NHTSA uses fuel economy savings over the lifetime of the vehicle.

However, NHTSA does not believe that the average consumer thinks about payback periods past 5 years; that is, a first purchaser would not consider the second purchaser's payback period. When

NHTSA performs the Volpe model cost-benefit analysis, considering costs and benefits from a societal perspective, the agency uses fuel economy savings over the lifetime of the vehicle.

10.2.2.7 Fleet Composition Assumption

Comments

Comment Number: 0575-22
Organization: Union of Concerned Scientists
Commenter: Eli Hopson

As shown in Figure 3, the assumption of a near-term (i.e., in 2011-2015) increase in light truck market share appears unfounded. While UCS recognizes that computer models and computed projections require assumptions often based upon historical data, UCS requests that NIITSA in general (*i.e.*, across all modeling efforts) check their results and assumptions compared to the changing vehicle market.

Comment Number: 0575-5
Organization: Union of Concerned Scientists
Commenter: Eli Hopson

NHTSA assumed light trucks would grow in market share, but between 2005 and 2008 the market share of light trucks sold from January to May dropped from 54% to 48%.

Response

NHTSA assumes future fleet composition based on manufacturer product plans, for reasons explained in Section 10.2.2. The product plans have been updated in response to NHTSA's request for updated information released concurrent with the NPRM. See 73 FR 24190. These updated product plans showed a shift in the fleet composition along the lines highlighted by Union of Concerned Scientists. It was quite clear from the manufacturers' submissions that they have accounted for the recent market trends and the new requirements in EISA.

10.2.2.8 Discount Rate

Comments

Comment Number: 0557-9
Organization: The Natural Resources Defense Council
Commenter: Luke Tonachel, Brian Siu

NHTSA fails to adhere to standard economic practice and governmental guidelines when it used a discount rate of 7 percent. The agency should use a discount rate that does not exceed 3 percent and should conduct sensitivity analysis for even lower values.

Comment Number: 0559-11
Organization: The Northeast States for Coordinated Air Use Management (NESCAUM)
Commenter: Arthur Marin

NHTSA's stated intent is to use a 7 percent rate for discounting future benefits from increased CAFE standards. We believe this rate is too high and therefore inappropriately devalues the technologies designed to achieve increased fuel economy. In contrast, for the rulemaking on Tier 2 Motor Vehicle

Emissions Standards (*FR*/Vol. 65, No. 28, February 10, 2000). EPA used a discount rate of 5 percent. We recommend that NHTSA use a discount rate of no greater than 5 percent and perhaps consider an even lower discount rate if appropriate.

Comment Number: 0564-10
Organization: Consumer Federation of America
Commenter: Mark Cooper

Discounted the value of fuel savings at an unnecessarily high rate; *i.e.*, after identifying two possible discount rates: 1) a high rate based on the automaker view of capital costs and 2) a low rate based on the consumer view of consumption expenditures. NHTSA failed to choose a rate between the two, instead applying the high "capital" rate.

Comment Number: 0572-13
Organization: Center for Biological Diversity
Commenter: Brian Nowicki, Mickey Moritz, Kassie Siegel

One of the primary flaws is the use of a 7% discount rate. The DEIS acknowledges that discount rate and gasoline price have a significant impact on the cost-benefit analysis. Yet the DEIS adopts a 7% discount rate and does not present even the results for a 3% or lower discount rate. The significant influence of discount rate alone is reflected in the fact that the "optimized" fuel economy standard with a 3% discount rate is more than 50% higher than the "optimized" alternative presented in the DEIS. (PRIA Appx. A at A-2, Table A-1) This important information is only available in the Preliminary Regulatory Impact Assessment (PRIA), which is insufficient. *Grazing Fields Farm v. Goldschmidt*, 626 F.2d 1068,1072 (1st Cir. 1980) ("no indication in the [NEPA] statute that Congress contemplated that studies or memoranda contained in the administrative record, but not incorporated in any way into an EIS, can bring into compliance with NEPA an EIS that by itself is inadequate").

The choice of a 7% discount rate is not supported by the evidence. As the DEIS states, OMB suggests the use of both 3% and 7% discount rates, with the 3% discount rate appropriate where the costs of regulations are likely to be passed on to consumers. (DEIS at 3-60) The Volpe model assumes that costs will be passed to consumers. For instance, the cost of new technology is limited by consumer pay-back periods and willingness to pay higher vehicle prices. See, *e.g.*, DEIS 2-1 (discussing "retail price equivalent"); DEIS Appx. C at V11-41 (discussing impact of higher costs on sales).

Other agencies have assumed discount rates of 3% in similar analyses. The EPA in its recent advance notice of proposed rule making for regulating greenhouse gas emissions under the Clean Air Act noted that changes in GHG emissions are "essentially long-run investments" that "yield returns in terms of avoided impacts over a period of one hundred years and longer. Furthermore, there is a potential for significant impacts from climate change, where the exact timing and magnitude of these impacts are unknown. These factors imply a highly uncertain investment environment that spans multiple generations." [73 Fed. Reg. 44354, 44414 (July 30, 2008)] When there are important benefits or costs that affect multiple generations of the population, EPA and OMB allow for low but positive discount rates (*e.g.*, 0.5–3% noted by U.S. EPA, 1–3% by OMB)."

In recent testimony before the House of Representatives Energy Committee, Sir Nicholas Stern notes the inappropriateness of pure-time discounting in which future generations are valued less than the current generation (Stern 2008). He goes on to distinguish between current market rates, which reflect only near-term benefits, versus the value of "young or unborn" generations.

The DEIS thus makes several crippling errors in its choice of discount rate. First, the NHTSA assumes that a substantial portion of the costs of the regulation will come from foregone capital investments by the auto industry. This is simply incorrect. All capital costs will be passed onto consumers in short order. Furthermore, the largest costs from the regulation come in the form of impacts from catastrophic climate change. This will most certainly be felt by consumers, both in this generation and the next. The choice of a 7% discount rate is based in part on assumptions regarding loan rates. (DEIS Appx. C at VIII-2). Yet, this short-sighted context is entirely inappropriate. Given that the impacts of the alternatives are analyzed out to year 2100, the discount rate must also reflect this long time horizon for impacts.

Comment Number: 0572-50
Organization: Center for Biological Diversity
Commenter: Brian Nowicki, Mickey Moritz, Kassie Siegel

The NPRM, on page 24393 and footnote 7 on page 24355, describes using a 7% and 3% discount rate for societal benefits. While essentially conceding that the 7% discount rate is far too high, NHTSA then appears to use the 7% figure in calculations for the proposed rule. However, the NPRM on page 24393, discusses the Volpe model calculation of societal costs and benefits without identifying which discount rate is used.

In fact, both the 7% and 3% are too high, artificially reducing the value of the future benefits of increasing fuel efficiency. For example, Stern (2007) sets the rate at lower than 1% per year. NHTSA proposes 3% versus 7%. For the purposes of the rulemaking, any calculations performed under a selected discount rate for societal benefits must be compared to the same calculations under standard inflationary discount, but without discounting societal benefits to future generations.

The discount rate is an extremely important factor in determining the "socially optimal" fuel economy level as defined by NHTSA. Use of a 3% discount rate would have resulted in fuel economy standards 2 mpg higher than the proposed standards in MY 2015. NHTSA should have run the calculations with a reasonable range of values and disclosed the outcomes, and should have selected a lower discount rate for primary use in its analysis.

Comment Number: 0575-12
Organization: Union of Concerned Scientists
Commenter: Eli Hopson

As noted in comments from UCS to NHTSA on the 2006 light truck rule, the discount rate used to calculate the present value of future costs and benefits is among the most important factors in determining a fuel economy target. NHTSA's use of a 7% discount rate to determine the proposed standards is inappropriate and contrary to OMB recommendations. A discount rate of 3%, corresponding to the social rate of time preference, should instead be used. While OMB Circulars A-4 and A-94 direct that the default interest rate should be 7%, Circular A-4 advises that:

"The effects of regulation do not always fall exclusively or primarily on the allocation of capital. *When regulation primarily and directly' affects private consumption (e.g., through higher consumer prices for goods and service), a lower discount rate b appropriate*. The alternative most often used is sometimes called the "social rate of time preference." . . . *Over the last thirty years, this rate has averaged around 3 percent in real terms on a pre-tax basis.*" (Office of Management and Budget, 2003. Circular A-4)

This guidance is cited by NHTSA multiple times throughout the NPRM and PRIA, and indeed NHTSA itself acknowledges that "direct benefits to consumers, including fuel savings" account for 84%-85% of

the gross consumer benefits resulting from increased passenger car and light truck CAFE. (PRIA, p. VIII-36 and VIII-37).

A smaller effect of the proposed regulation will be for automakers to invest capital to build cars with more advanced technologies. While automakers will need to allocate some capital to help meet the proposed regulations, the amounts involved will be markedly smaller than the benefits realized by private consumers. The primary effect of the regulation, therefore, will be on private consumption.

It is clear that the proposed regulation will directly affect private consumption of vehicle fuels, and that this benefit is by far the primary effect. Since the regulation "primarily and directly affects private consumption," much more so than the allocation of capital, the regulation should be based on discounting using the social rate of time preference. UCS recommends that a real rate of 3% – as noted in Circular A-4 – be employed.

Comment Number: 0588-2
Organization: New York State Department of Transportation
Commenter: Stanley Gee

NHTSA should also correct several errors in its analysis that artificially reduce the stringency of the proposed CAFE standards by underestimating benefits arid overestimating costs. In particular, NHTSA inflates costs relative to benefits by failing to apply a discount rate to future costs.

Comment Number: 0588-5
Organization: New York State Department of Transportation
Commenter: Stanley Gee

In its analysis, NHTSA discounts economic benefits, but not costs. In any cost-benefit analysis, both future benefits and costs should be discounted using the same discount rate, or time-value of money, to correct for the difference in the value of money in hand today versus money in the future, based on the interest rate and inflation. The Office of Management and Budget specifically instructs NHTSA to discount both costs and benefits, and provides recommended interest rates for that purpose.

Comment Number: 0595-2
Organization: Environmental Protection Agency
Commenter: Susan Bromm

NHTSA uses a 7 percent discount rate to future benefits in determining the "optimized" fuel economy standard. The sensitivity analysis performed in the DEIS using a discount rate of 3 percent shows that a lower discount rate has a substantial effect on future carbon dioxide reductions. As such, using a 3 percent discount rate significantly increases the projected societal benefits, as shown in Section IX of the PRIA, indicating a higher "optimized" fuel economy standard. EPA recommends that NHTSA consider using a 3 percent discount rate for GHG benefits as part of its primary analysis. While a 7 percent discount rate may be reasonable to apply to the cost savings realized by consumers who invest in fuel economy, EPA questions whether such a high discount rate can be justified for the long-term benefits associated with GHG reductions.

Response

Discounting represents the conversion of the economic values of expected future benefits and costs to their equivalent values today, or present values. Discounting is intended to account for the fact that most individuals attach lower values to economic outcomes that are not expected to occur until some

future date, than to equivalent outcomes that are expected to occur sooner. It is particularly important to discount the future values of benefits or costs when they are expected to vary from year to year, or when the time profiles of benefits and costs are not expected to be similar. Discounting enables a consistent comparison of benefits to costs across time, and enables consistent comparison of expected future costs or benefits to those in the present.

In proposing CAFE standards for MY 2011-2015, NHTSA employed a rate of 7 percent to discount future benefits and costs resulting from increased fuel economy to their present values. Discounting the value of future fuel savings and other benefits that result from higher fuel economy, and future costs from added driving due to the fuel-economy rebound effect, accounts for the fact that they will occur over the future lifetimes of MY 2011-2015 vehicles. The discount rate expresses the rate at which the value of these future benefits and costs, as viewed from today's perspective, declines for each year they are deferred into the future.

NHTSA received many comments on the discount rate it employed in analyses in the NPRM and DEIS. Many of these comments suggested that NHTSA use a rate as low as 3 percent to discount future benefits from reduced fuel consumption, and that even lower rates be used to discount the reductions in the future costs of climate change expected to result from reduced emissions of GHGs from fuel production and consumption. In contrast, other comments argued that vehicle buyers discount the value of future fuel savings resulting from higher fuel economy at rates of 12 percent or higher, and suggested that NHTSA should employ a similarly high discount rate to evaluate the fuel savings and other benefits resulting from higher CAFE standards.

In response to these comments, NHTSA has carefully reviewed published research and Office of Management and Budget (OMB) guidance on appropriate discount rates, including "inter-generational" discount rates that should be applied to benefits that are expected to occur in the distant future and, thus, be experienced mainly by future generations. On the basis of this review, NHTSA has have elected to apply separate discount rates to the benefits resulting from reduced emissions of CO_2 and other GHGs, which are expected to reduce the rate or intensity of climate change that will occur 100 or more years in the future, and the economic value of fuel savings and other benefits resulting from lower fuel consumption that will be experienced in the comparatively near future.

In support of this decision, NHTSA notes that OMB guidance on discounting permits the use of lower rates to discount benefits that are expected to occur in the distant future (OMB 2003). The main rationale for doing so is that although most individuals demonstrate a clear preference for current consumption over consumption they expect to experience later within their own lifetimes, it might not be appropriate for society to exercise a similar preference for present over distant-future consumption when developing actions that affect the relative income levels of present and future generations. In addition, while market interest rates provide useful guidance about the rates that should be used to discount future benefits that will be received by present generations, no comparable market rates are available to guide the choice of rates for discounting benefits to be received by future generations.

Specifically, NHTSA has elected to use a rate of 3 percent to discount the benefits resulting from reduced emissions of CO_2 and other GHGs projected to result from decreased fuel production, distribution, and consumption. These benefits, which include reductions in the expected future economic damages caused by increased global temperatures, a rise in sea levels, and other projected impacts of climate change, are anticipated to extend over a period from approximately 50 to 200 or more years in the future.

The 3-percent rate is consistent with those used to develop many of the estimates of the economic costs of future climate change that form the basis for NHTSA's estimate of the economic value of

reducing CO_2 emissions (see Section 10.2.2.3) (Tol 2008). Of the 125 peer-reviewed estimates of SCC included in Tol's 2008 survey, which provides the basis for NHTSA's estimated value of reducing CO_2 emissions, 83 used assumptions that imply discount rates of 3 percent or higher. Moreover, the 3-percent rate is consistent with widely used estimates of the appropriate rate-of-time preference for present versus distant-future consumption, expected future growth in real incomes, and the rate at which the additional utility provided by increased consumption declines as income increases.[16]

The remaining future benefits and costs anticipated to result from higher fuel economy are projected to occur primarily within the lifetimes of vehicles affected by the CAFE standards for MY 2011-2020 vehicles, which extend up to a maximum of 35 years from the date they are manufactured. Thus, a conventional or intra-generational discount rate is appropriate to use in discounting these benefits and costs to their present value when analyzing the benefits and costs of establishing higher CAFE standards.

The correct discount rate to apply to these nearer-term benefits and costs depends on how the costs to vehicle manufacturers of CAFE compliance will ultimately be distributed. If manufacturers are unable to recover their costs for increasing fuel economy in the form of higher selling prices for new vehicles, those outlays will displace or alter other productive investments that manufacturers could make. In this case, the appropriate discount rate is their opportunity cost of investment capital. OMB estimates that the real before-tax rate of return on private capital investment in the U.S. economy averages approximately 7 percent per year, and recommends this figure for use as a real discount rate in cases where the primary effect of a regulation is to displace private capital investment (OMB 2003).

However, if vehicle manufacturers are able to raise selling prices for new vehicles to recover their costs for improving fuel economy, those costs will ultimately affect private consumption rather than capital investment. Under this assumption, a lower discount rate might be appropriate. Specifically, the rate-of-time preference for current versus future consumption, or the annual rate at which consumers must be compensated for deferring current consumption to the future, will be the appropriate rate for discounting future benefits from improved fuel economy.

OMB notes that the real rate of return on long-term government debt, which has averaged about 3 percent over recent decades, provides a reasonable measure of the rate at which typical savers discount future consumption (OMB 2003). The 3-percent rate reflects consumers' average rate-of-time preference, and thus provides an appropriate rate for discounting future benefits of higher CAFE standards if manufacturers are able to recover their costs for complying with those standards by charging higher prices for new vehicles.

Uncertainty about future developments in the international oil market, the U.S. economy, and the U.S. market for new cars and light trucks make it extremely difficult to anticipate the extent to which vehicle manufacturers will be able to recover costs (in the form of higher prices for new vehicles) for complying with higher CAFE standards. If buyers of new vehicles expect fuel prices to remain higher than those NHTSA used to establish CAFE standards for MY 2011-2015, they might be willing to pay the

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[16] The Ramsey discounting rule is widely employed in studies of potential economic damages from climate changes in the distant future; see Tol (2008, p. 3). The Ramsey rule states that $-r = \delta + \eta g$, where r is the consumption discount rate, δ is the pure rate of time preference (the marginal rate of substitution between current and future consumption under the assumption that they are initially equal), g is the expected (percentage) rate of growth in future consumption, and η is the elasticity of the marginal utility of consumption with respect to changes in the level of consumption itself. Commonly used values in climate studies appear to be δ = 1 percent per year, $\eta = -1.0$, and g = 2 percent per year, which yield a value for r of 3 percent per year.

higher prices necessary for manufacturers to recover their costs for complying with those standards.[17] *However, potential buyers who expect future fuel prices to be lower than these levels are likely to resist manufacturers' efforts to raise new vehicle prices sufficiently to recover their costs for compliance with CAFE standards.*

From the manufacturer's perspective, the current financial condition of some car and light-truck producers suggests that they are likely to find it difficult to absorb the costs of complying with higher CAFE standards. Some analysts speculate that because CAFE standards apply to all manufacturers, establishing higher standards provides a ready opportunity for all producers to raise prices for cars and light trucks. However, this opportunity might be restricted if producers that face very low compliance costs (because of higher CAFE standards in their planned model offerings) compete aggressively with others that face substantial costs for increasing their fuel-economy levels in their product plans to comply with higher CAFE standards.

Because the ultimate incidence of the costs for complying with higher CAFE standards is inherently uncertain, NHTSA has employed both the 3-percent and 7-percent rates to discount future benefits from higher CAFE standards other than those benefits resulting from lower CO_2 emissions. Accordingly, NHTSA has analyzed the mpg stringencies associated with varying combinations of discount rates. See Table 2.3-6.

10.2.2.9 Creation of a Backstop

Comments

Comment Number: 0575-15
Organization: Union of Concerned Scientists
Commenter: Eli Hopson

The Ninth Circuit Court of Appeals ruled that, in their recent fuel economy rulemaking for 2008-2011 light trucks, NHTSA was "arbitrary and capricious" in failing to set a backstop, a mechanism that would ensure that the benefits NHTSA's standards provide would not be eroded by a shift in sales to larger, lower fuel economy vehicles. The court also found that the agency failed to address petitioners' "well-founded concerns (given the historical trend) that a floating fleet-mix-based standard would continue to permit upsizing—which is not just a function of consumer demand, but also a function of manufacturers' own design and marketing decisions." [*Center for Biological Diversity v. National Highway Traffic Administration*. No. 06-7 1891 (9th Cir. 2007).]

In NPRM documentation, NHTSA argues that no further action is required of the agency with respect to backstops, as Congress has spoken directly on this issue, and called for an attribute-based system.

It is true that the 35 mpg minimum standard required in 2020 is a backstop of sorts. However, if maximum feasible fuel economy levels are found to exceed 35 mpg, the legislated minimum will not ensure those levels (and, thus, maximum feasible energy savings) are achieved. In essence, the same concerns of the Ninth Circuit court persist, and NHTSA can not be too deferential to the market in the setting of fuel economy standards.

[17] *Whether they will be willing to do so, however, depends partly on how the combined value of the economic and environmental externalities used to determine the standards compares to current fuel taxes. It also depends on whether buyers of new vehicles consider the value of fuel savings resulting from higher fuel economy over the entire expected lifetimes of the vehicles they purchase, or over only some part of that lifetime (such as the period they expect to own new vehicles).*

It is also true that Congress implied an interim-year backstop by requiring ratable increases in the average fuel economy standard from 2011 through 2020. However, it is NHTSA's obligation to ensure that these interim-year backstops are instituted. In effect, NHTSA has failed to follow through on its legal obligations, because while the proposed average fuel economy standards appear to be at or above a ratable level, there is no mechanism to ensure the market does not undermine those standards. For these reasons, UCS recommends that NHTSA implement a regulated backstop that addresses the concerns first raised by the Ninth Circuit Court of Appeals.

Comment Number: 0576-34
Organization: Public Citizen
Commenter: Joan Claybrook

Congress mandated a *minimum* increase in fuel economy standards for passenger cars and light trucks to 35 mpg; however, Congress entrusts the agency to determine the maximum feasible level of fuel economy for cars and trucks. In *Center for Biological Diversity v. NHTSA*, the court held that NHTSA must set a backstop to prevent the erosion of fuel savings due to up sizing of vehicles and manipulation of the fleet mix. (*Center for Biological Diversity v. NHTSA*. at 14841). NHTSA says "[a] relatively flat standard for larger vehicles acts as a de facto 'backstop' for the standard in the event that future market conditions encourage manufacturers to build very large vehicles. Nothing prevents manufacturers from building larger vehicles. With a logistic curve, however, vehicles upsizing beyond some limit face a flat standard that is increasingly difficult to meet." (73 *FR* 24418). Public Citizen is not convinced this approach is sufficient, particularly since NHTSA has chosen not to reevaluate the regulatory definitions.

Response

A "backstop," as NHTSA described it in the NPRM, is a minimum fixed CAFE standard that does not change in response to changes in a manufacturer's vehicle mix. As noted in the NPRM, Congress' enactment of EISA resolved the backstop issue by, among other things, requiring each manufacturer to meet a minimum fuel economy standard for domestically manufactured passenger cars in addition to meeting the standards set by NHTSA. The minimum standard "shall be the greater of (a) 27.5 miles per gallon; or (b) 92 percent of the average fuel economy projected by the Secretary [of Transportation] for the combined domestic and non-domestic passenger automobile fleets manufactured for sale in the United States by all manufacturers in the model year…." 49 U.S.C. § 32902(b)(4). Congress expressly mandated that CAFE standards for automobiles be attribute based. That is, they must be based on an attribute related to fuel economy (e.g., footprint), and they must adjust in response to changes in vehicle mix. Taken by itself, this mandate precludes NHTSA from adopting a fixed minimum standard. The only exception to that mandate is the provision in which Congress mandated a fixed and flat minimum standard for one of the three compliance categories. It required one for domestic passenger cars, but not for either non-domestic passenger cars or light trucks. Congress could have, but did not, enact one for foreign passenger cars or light trucks. Congress was aware of this issue from the MY 2008-2011 light-truck CAFE rulemaking and the Ninth Circuit Center for Biological Diversity case, but it chose not to act.

Given the clarity of the requirement for attribute-based standards and the equally clear narrow exception to that requirement, NHTSA reasonably concludes that had Congress intended backstops to be established for either of the other two compliance categories, it would have specified them. Absent explicit statutory language that provides NHTSA authority to set flat standards, we continue to believe that setting a supplementary minimum flat standard for the other two compliance categories would be contrary to the requirement under EISA to set an attribute-based standard.

NHTSA notes that the minimum 35-mpg requirement in and of itself serves as a backstop. Indeed, the Union of Concerned Scientists concedes in its comments that "[i]t is true that the 35 mpg minimum standard required in 2020 is a backstop of sorts." Under this backstop, NHTSA must set the standards high enough to ensure that the average fuel economy level of the combined car and light-truck fleet achieves the statutory requirement of at least 35 mpg by 2020. If we find that this requirement might not be achieved, we may set standards for MY 2016-2020 early enough (consistent with EPCA's 18-month lead time requirement), and at the appropriate level of stringency to ensure reaching the 35-mpg requirement.

Regarding NHTSA's discussion of why the attribute-based standards would make a backstop unnecessary even without Congress' having spoken to this issue, UCS and Public Citizen appear to argue that the statutory requirement of a combined fleet fuel economy of at least 35 mpg in MY 2020, combined with NHTSA's anti-backsliding measures for the target curves and the inherent lower asymptotic bound of the target curves for each model year, are not sufficient to guarantee that manufacturers will either (1) achieve fuel economy levels higher than 35 mpg in 2020 or (2) be prevented from upsizing their vehicles.

NHTSA reiterates, however, that the 35-mpg minimum statutory requirement for 2020 is absolute. Even if manufacturers so drastically change their fleet mix (by upsizing most or all of their vehicles to gain the benefits of lower targets) to achieve substantially lower fuel economy levels for the model years covered by this rulemaking, NHTSA must still set maximum feasible standards for MY 2016-2020 such that the combined fleet reaches at least the 35-mpg minimum requirement in 2020. Further, NHTSA has the authority to revise standards set in the current rulemaking if necessary to ensure that requirement is met, as long as the statutory minimum lead-time of 18 months is observed. See 49 U.S.C. § 32902(c).

10.2.2.10 Oil Import Externalities

Comments

Comment Number: 0557-10
Organization: The Natural Resources Defense Council
Commenter: Luke Tonachel, Brian Siu

The economic value of military security to protect oil supplies should be non-zero and positive. When NHTSA used zero it ignored the U.S. military security-related benefits of reduced oil consumption, such as enhanced flexibility to respond to supply threats and move the country in the direction of oil being a non-strategic resource.

Comment Number: 0564-5
Organization: Consumer Federation of America
Commenter: Mark Cooper

NHTSA takes a fundamentally flawed approach to its externality analysis. This was evident in the analysis of the military and strategic externalities in the proposed rule, where NHTSA engaged in reasoning that can, at best, be described as blind incrementalism.

Rather than see improvements in fuel economy as a part of a broader solution to the national oil addiction, NHTSA argues that because this rule alone cannot solve the problem, it does not deserve to be counted as making a contribution to the solution.

Implementing a law entitled the Energy Independence and Security Act, NHTSA concluded that oil consumption has no military or strategic value whatsoever.

Comment Number: 0575-4
Organization: Union of Concerned Scientists
Commenter: Eli Hopson

NHTSA left out the military and strategic costs of America's oil addiction.

Comment Number: TRANS-43-3
Organization: Individual
Commenter: Charles Yoder

I've noticed that your EIS puts your actions, proposed actions and alternatives in the context of the world. That was addressed by someone as I came into the hall earlier, in the context of the entire planet, not just in terms of the U.S. If you choose to do that, then I think we need to look at the implications of our national addiction to oil in a world context, in a world wide context. Our country invests enormous treasure and enormous numbers of lives ensuring our access to oil.

Comment Number: 0576-22
Organization: Public Citizen
Commenter: Joan Claybrook

Public Citizen also objects to the zero valuation of military security costs associated with oil consumption. NHTSA states "that while costs for U.S. military security may vary over time in response to long-term changes in the actual level of oil imports into the U.S., these costs are unlikely to decline in response to any reduction in U.S. oil imports resulting from raising future CAFE standards for passenger cars and light trucks." (See PRIA V-90 and 73 *FR* 24411.) NHTSA justifies this claim by stating that there are other national security and foreign policy objectives served by military actions in the Middle East. NHTSA used similar logic to justify assigning zero value to reducing CO_2 emissions in the light truck rule. The Ninth Circuit Court of Appeals rejected this justification in *Center for Biological Diversity v. NHTSA*, finding that uncertainty about how to assign a value was not a justification for setting the value at zero. [*Center for Biological Diversity et al., v. NHTSA*. 508 F. 3d 508 (November 15, 2007).]

Comment Number: TRANS-03-4
Organization: Individual
Commenter: Dennis McGinn

Our continued dependency on oil constitutes a clear and present danger to our national security, economically, militarily, and diplomatically. These dangers involve real, quantifiable costs, and these costs do not appear to be adequately included in your assumptions for the proposed fuel economy rule.

As a result, your draft environmental impact statement is at best incomplete, and more importantly, fundamentally flawed by its reliance on outdated data and unsupported assumptions about the real costs of this nation's ever growing consumption of oil. Erroneous assumptions based on old data inevitably leads to fundamentally flawed conclusions.

Ignoring these costs is just not a mistake. It is a threat to our national security because it precludes fuel savings our citizens and nation critically need at this moment in our history.

Our burgeoning demand for oil weakens U.S. diplomatic leverage around the globe, burdens our armed forces, and leaves the United States' economy vulnerable to unpredictable price spikes and an ever growing trade imbalance.

Taken together, these dynamics create a daunting national security challenge that must be met immediately. With oil at over $130 dollars a barrel, over a million dollars each minute is draining out of our economy, increasing our trade deficit, creating huge opportunity costs, and most significantly, putting money in the hands of regimes that are hostile to our interests.

OPEC [Organization of Petroleum Exporting Countries] recently warned that prices, oil prices would experience an unlimited increase in the event of a military conflict involving Iran over its nuclear program. A very real consequence of such confrontation is that Iran, in a bid to preempt or respond to U.S. military action would close the Straight of Hamus through which 20 percent of the world's oil supply passes. The impact would be swift and sure. Unprecedented spikes in oil costs, and a deep and lasting effect on the U.S. and world economy.

The ongoing impact of our oil dependency already threatens our national security economically. We lose over 35 billion dollars from our economy every month, and oil imports now account for over half of our annual trade deficit. We are exposed on a daily basis to oil price shocks and supply disruptions.

Regardless of how they are caused, by global market dynamics, natural disasters, terrorist attacks, or politically motivated oil embargos, the trends of our growing oil demand in a business as usual mode will make those price shocks much more frequent, deeply felt, and longer lasting.

In addition, there are national security costs and risks involved in addressing climate change. Last year top retired three and four star military leaders in a report from the Center on Naval Analysis, global warming poses a "serious threat to America's national security," acting as a threat multiplier for instability in some of the world's most volatile regions, adding tension to stable regions, worsening terrorism, and likely dragging the U.S. into fights over water and other resource shortages.

Comment Number: TRANS-05-3
Organization: Consumer Federation of America
Commenter: Mark Cooper

The second problem in the draft environmental impact statement stems from the fact that NHTSA takes a fundamentally flawed approach to its externality analysis. This was evident in the analysis of the military and strategic externalities in the proposed rule. There NHTSA engaged in reasoning that can at best be described as blind incrementalism.

Rather than see improvements in fuel economy as part of a broader solution to the national oil addiction, NHTSA argues that the cost to rule alone cannot solve the problem, it does not deserve to be counted as making a contribution to the solution.

Implementing a law entitled the Energy Independence and Security Act NHTSA arrived at the outrageous conclusions that oil consumption has no military or strategic value whatsoever.

Comment Number: TRANS-43-2
Organization: Individual
Commenter: Charles Yoder

But if the U.S. is going to continue our addiction to oil, then we need to address the impacts on a worldwide basis, and the environmental costs of any standard other than the strictest possible standard are enormous simply because there are powerful nations, not just the U.S., there are many powerful nations seeking access to a limited supply of a resource that overwhelmingly is located in an unstable part of the world.

And I think it's only reasonable to assume that there will be additional conflicts over the next generation, and that those conflicts will have enormous environmental impacts.

So if you're going to consider things in a world context, you need to consider the environmental impact of future wars, and those impacts must weight on the balance as you make your decision of the alternatives available to you in this rulemaking process.

Comment Number: TRANS-44-3
Organization: Individual
Commenter: Emily Spear

My second main concern is about America's dependence on oil, as it is a national security issue. Our country feeds off of foreign oil, which causes us to be in the pockets of many non-democratic governments. Increasing our fuel economy standard to 35 miles per gallon by 2015 would save us 300,000 gallons of oil per day by 2020.

Taking this simple and achievable action would help us decrease our dependence on oil, would allow us to take back control, and would help stabilize some issues with security.

Response

One possible component of the external economic costs of importing oil into the United States includes government outlays for maintaining a military presence to secure the supply of oil imports from potentially unstable regions of the world.[18]

In the NPRM, NHTSA tentatively concluded that:

> *[W]hile the costs for U.S. military security may vary over time in response to long-term changes in the actual level of oil imports into the U.S., these costs are unlikely to decline in response to any reduction in U.S. oil imports resulting from raising future CAFE standards for passenger cars and light trucks. U.S. military activities in regions that represent vital sources of oil imports also serve a broader range of security and foreign policy objectives than simply protecting oil supplies, and, as a consequence are unlikely to vary significantly in response to changes in the level of oil imports prompted by higher standards.*

73 FR 24352, 24411. Some commenters took issue with this tentative conclusion, and recommended that NHTSA assign a value to the reduction in military spending or other costs related to energy security that is likely to result from lower U.S. petroleum imports. NHTSA disagrees with commenters who asserted that there is a measurable relationship among higher CAFE standards, U.S. petroleum imports, and energy security costs.

The objective of "U.S. energy security," that reductions in U.S. petroleum imports might help to achieve is primarily a reduction in national political and military risks associated with a failure to adequately defend the Persian Gulf. Although NHTSA agrees that by reducing fuel consumption and U.S. petroleum imports from the Persian Gulf region, higher CAFE standards might reduce these military and political risks to some degree, the agency does not believe there is convincing evidence that this would reduce U.S. military expenditures in the Persian Gulf (or elsewhere). No commenter has presented any

[18] *Oil import externalities encompasses military security costs. For further discussion of what constitutes "oil import externalities," see page 24410 of the NPRM.*

evidence that this would occur, nor do any of the references included in their comments provide such evidence.

NHTSA does not agree with Public Citizen's analogy between energy security and "global warming costs." Although the economic valuation of climate-related benefits from reducing carbon dioxide emissions is uncertain, there is nevertheless a direct causal link between changes in U.S. oil consumption and changes in U.S. carbon dioxide emissions. In contrast, no such causal link – either scientific or empirical – exists between changes in U.S. oil consumption or imports, and changes in U.S. military expenditures in the Persian Gulf or anywhere in the world.

Although one recent economic analysis cited widely by commenters did estimate the value of U.S. military spending attributable to securing oil imports from the Persian Gulf region, this study does not estimate the extent to which U.S. military spending is likely to vary in response to changes in U.S. imports of Persian Gulf oil. Nor does it estimate the potential savings in U .S. military outlays that might result from reductions in U.S. oil imports of the magnitude likely to result from higher CAFE standards.[19]

The study argues that its purpose is to develop "the military cost of highway transportation." Broadly, the authors attempt to do this in four steps:

- *Estimate the amount spent annually to defend all U.S. interests in the Persian Gulf;*
- *Deduct the cost of defending interests other than oil in the Persian Gulf;*
- *Deduct the cost of defending against the possibility of a worldwide recession due to the effects of an oil price shock or supply interruption originating in the Persian Gulf on other countries; and*
- *Deduct the cost of defending the use of oil in sectors of the U.S. economy other than highway transportation.*

This analysis yields an estimate of the annual "military cost of oil use by motor vehicles" in the United States ranging from $5.8 billion to $25.4 billion in 2004. The authors then divide these figures by 2004 U.S. gasoline and diesel consumption by on-road motor vehicles, to arrive at an average "military cost of highway transportation" ranging from $0.03 to $0.15 per gallon of fuel.[20]

However, the authors do not argue that U.S. military spending would be reduced by this – or any other – amount as a consequence of incremental reductions in domestic consumption of transportation fuels. Instead, they describe their estimate in the following terms: "The bottom line of our analysis is that if all motor vehicles in the US (light-duty and heavy-duty) did not use oil, Congress might reduce defense spending by $6–$25 billion annually in the long run. This amounts to about $0.03–$0.15 per gallon ($0.01–$0.04 per liter) of all gasoline and diesel motor fuel in 2004." Id.

Thus, the values they report are clearly intended as estimates of the total and average per-gallon costs of U.S. military activities in the Persian Gulf that might reasonably be related to petroleum consumption by U.S. motor vehicles, and not as estimates of the extent to which those costs might be reduced as a consequence of lower fuel consumption by U.S. motor vehicles. The authors speculate that the proportional reduction in these outlays might be larger than any proportional reduction in U.S. petroleum imports from the Persian Gulf region, but provide no empirical support for this hypothesis.[21]

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[19] *See Mark A. DeLucchi & James J. Murphy, US Military Expenditures to Protect the Use of Persian Gulf Oil Imports, 36 Energy Policy 2253 (2008) (assigning a cost of between $0.03 and $0.15 per gallon).*
[20] *Delucchi and Murphy, p. 2260.*
[21] *Delucchi and Murphy, pp. 2261-62.*

Nor does this study attempt to demonstrate any causal or empirical linkage between domestic consumption of transportation fuels and the level of U.S. military activities or spending in the Persian Gulf (or elsewhere). As the authors clearly acknowledge, achieving any reduction in U.S. military spending that might be facilitated by lower U.S. oil imports would require specific actions by Congress, and would not result automatically or necessarily. However carefully their analysis might be done, defining some fraction of U.S. military expenditures as being allocated to the defense of oil interests in the Persian Gulf, and then dividing the resulting figure by some quantity of petroleum, does not demonstrate any causal linkage between changes in the numerator and denominator of this calculation.

The analysis described above is irrelevant to NHTSA's analysis of fuel economy standards, because NHTSA's cost-benefit analysis is properly concerned with comparing two alternative states of the world: (1) the world as the agency expects it to exist over the next few years, in the absence of any new CAFE standards, compared with (2) an alternative world that is identical in every respect except that new CAFE standards are in place. NHTSA should, therefore, consider how U.S. defense expenditures might vary between these two states of the world. The relevant question for a cost-benefit analysis is: How much would U.S. military expenditures change if U.S. passenger-car and light-truck fuel consumption is several percent lower in the next decade than it otherwise would have been?

Neither the Congress nor the Executive Branch has ever attempted to calibrate U.S. military expenditures, force levels, or deployments to any oil market variable, or to some calculation of the projected economic consequences of hostilities in the Persian Gulf. Instead, changes in U.S. force levels, deployments, and thus military spending in that region have been largely governed by political events, emerging threats, and other military and political considerations, rather than by shifts in U.S. oil consumption or imports. NHTSA thus concludes that the levels of U.S. military activity and expenditures are likely to remain unaffected by even relatively large changes in light duty vehicle fuel consumption.

Nevertheless, the agency decided to conduct a sensitivity analysis of the potential effect of assuming that some reduction military spending would result from fuel savings and reduced petroleum imports in order to investigate its impacts on the standards and fuel savings. Assuming that the preceding estimate of total U.S. military costs for securing Persian Gulf oil supplies is correct, and that approximately half of these expenses could be reduced in proportion to a reduction in U.S. oil imports from the region, the estimated savings would range from $0.02 to $0.08 (in 2007 dollars) for each gallon of fuel savings that was reflected in lower U.S. imports of petroleum from the Persian Gulf. If the Persian Gulf region is assumed to be the marginal source of supply for U.S. imports of crude petroleum and refined products, then each gallon of fuel saved might reduce U.S. military outlays by $0.05 per gallon, the midpoint of this range.

This FEIS analyzes the stringencies of alternative CAFE standards, the resulting fuel savings, and their associated environmental impacts that would result from assuming that each gallon of fuel saved as a consequence of higher fuel economy would reduce U.S. military outlays by $0.05 per gallon, representing the midpoint of the estimated savings range in 2007 dollars. These results are included as part of the Sensitivity Analysis reported in Section 3.4.4.2 of this FEIS.

10.2.3 ALTERNATIVES

10.2.3.1 Introduction

NHTSA received a substantial number of comments related to the choice of the range of alternatives analyzed in the DEIS. These comments are related enough to provide a general response, but also unique enough to warrant individual attention. For this reason, the following paragraphs review

and generally respond to a common element in the comments regarding NEPA alternatives in the context of this rulemaking under EPCA. Following this section, NHTSA provides responses to individual comments.

Commenters specifically suggested that NHTSA did not consider a reasonable range of alternatives. Commenters also suggested that NHTSA use different estimates of various economic inputs to the Volpe model when developing CAFE standards. Several commenters stated that the No Action Alternative was not properly selected. Some commenters also suggested that the Optimized Alternative did not accurately reflect the point at which marginal costs equal marginal benefits because incorrect economic assumptions were input into the Volpe model. In addition, commenters recommended that NHTSA select the Total Costs Equals Total Benefits Alternative as its Preferred Alternative. Commenters also criticized NHTSA's Technology Exhaustion Alternative. As a new alternative, commenters suggested that NHTSA consider GHG regulations as potential alternatives under CAFE. In addition, some commenters stated that NHTSA needs to survey consumer demand and dictate what vehicle fleets manufacturers offer based on those trends. Some commenters further stated that the agency must adopt the "environmentally preferable" alternative as its preferred alternative. Other commenters stated that NHTSA must take into account the looming threat of global warming on the environment and assign further emphasis to energy conservation, thereby setting the CAFE standards at a higher level. Some commenters also asserted that NHTSA did not prioritize the need of the United States to conserve energy. Finally, NHTSA received comments urging the adoption of more "aggressive" fuel economy standards.

Where there is a federal action requiring an EIS, NEPA requires an agency to develop "alternatives to the proposed action." 42 U.S.C. § 4332(2)(C)(iii). CEQ regulations state that consideration of alternatives is the "heart" of an EIS. 40 CFR § 1502.14. However, under CEQ regulations and applicable case law, NHTSA is not required to include every conceivable "alternative" in an EIS, nor necessarily other hypothetical "alternatives" submitted by commenters. Rather, an agency is to consider "reasonable" alternatives. The purpose of and need for the rulemaking determines the range of reasonable alternatives under NEPA. As one circuit court has framed the issue, "an agency must look at every reasonable alternative, with the range dictated by the nature and scope of the proposed action, and sufficient to permit a reasoned choice." Alaska Wilderness Recreation and Tourism Ass'n v. Morrison, 67 F.3d 723, 729 (9th Cir. 1995). NHTSA believes its NEPA analysis of alternatives satisfies this standard.

The CEQ regulations state that the alternatives "should present the environmental impacts of the proposal and the alternatives in comparative form, thus sharply defining the issues and providing a clear basis for choice among options by the decisionmaker and the public." 40 CFR § 1502.14. CEQ guidance also instructs that "[w]hen there are potentially a very large number of alternatives, only a reasonable number of examples, covering the full spectrum of alternatives, must be analyzed and compared in the EIS." Forty Most Asked Questions Concerning CEQ's National Environmental Policy Act Regulations, 46 FR 18026, 18027 (March 23, 1981). The CEQ regulations for EISs further provide that the alternatives section must:

(a) Rigorously explore and objectively evaluate all reasonable alternatives, and for alternatives which were eliminated from detailed study, briefly discuss the reasons for their having been eliminated.

(b) Devote substantial treatment to each alternative considered in detail including the proposed action so that reviewers may evaluate their comparative merits.

(c) Include reasonable alternatives not within the jurisdiction of the lead agency.

(d) Include the alternative of no action.

(e) Identify the agency's preferred alternative or alternatives, if one or more exists, in the draft statement and identify such alternative in the final statement unless another law prohibits the expression of such a preference.

(f) Include appropriate mitigation measures not already included in the proposed action or alternatives.

40 CFR § 1502.14.

As noted above, courts have held that an agency is not required to include every conceivable alternative in NEPA environmental documents. Instead, agencies are required to examine "reasonable" alternatives, and not those that are unlikely or are a "worst case scenario." Robertson v. Methow Valley Citizens Council, 490 U.S. 332, 354-55 (1989). An agency is not required to consider alternatives "whose effect cannot be reasonably ascertained, and whose implementation is deemed remote and speculative." Headwaters, Inc. v. Bureau of Land Management, Medford District, 914 F.2d 1174, 1180 (9th Cir. 1990) (quoting Life of the Land v. Brinegar, 485 F.2d 460 (9th Cir. 1973), cert. denied, 416 U.S. 961 (1974)). An agency is also not required to consider alternatives that are "infeasible, ineffective, or inconsistent with the basic policy objectives" of the proposal. Id. (citing California v. Block, 690 F.2d 753, 767 (9th Cir. 1982)).

Courts have upheld the appropriateness of an agency relying on statutory objectives as a guide for the purpose and need of a project. See Westlands Water Dist. v. U.S. Dep't of Interior, 376 F.3d 853, 866 (9th Cir. 2004) ("Where an action is taken pursuant to a specific statute, the statutory objectives of the project serve as a guide by which to determine the reasonableness of objectives outlined in an EIS."). See also City of New York v. U.S. Dep't of Transp., 715 F.2d 732, 743 (2d Cir. 1983) (statutory objectives provide a "sensible compromise" between unduly narrow objectives and "hopelessly broad societal objectives"); City of Alexandria v. Slater, 198 F.3d 862, 867-68 (D.C. Cir. 1999) (upholding agency's analysis of highway expansion project where purpose and need statement was focused upon factors required by the applicable, substantive statute).

CEQ guidance on this point is similar. "Reasonable alternatives include those that are practical or feasible from the technical and economic standpoint and using common sense, rather than simply desirable from the standpoint of the applicant." Forty Most Asked Questions Concerning CEQ's National Environmental Policy Act Regulations, 46 FR 18026, 18027 (March 23, 1981) (emphasis added).

The "rule of reason" also guides the choice of alternatives and the extent to which the EIS must discuss each alternative. See, e.g., City of Carmel-by-the-Sea v. U.S. Department of Transportation, 123 F.3d 1142, 1155 (9th Cir. 1997). See also American Rivers v. FERC, 201 F.3d 1186, 1200 (9th Cir. 2000) (same, quoting City of Carmel-by-the-Sea, 123 F.3d at 1155). Under the rule of reason, an agency "need not consider an infinite range of alternatives, only reasonable or feasible ones." Id. (citing 40 CFR § 1502.14(a)-(c), as set forth above). "[F]or alternatives which were eliminated from detailed study, [an EIS must] briefly discuss the reasons for their having been eliminated." American Rivers v. FERC, 201 F.3d 1186, 1200 (citing 40 CFR § 1502.14(a)) (emphasis in original).

With this understanding, and as explained in the NPRM and the DEIS, EPCA requires the Secretary of Transportation to establish average fuel economy standards for each model year at least 18 months before the beginning of that model year and to set them at "the maximum feasible average fuel economy level that the Secretary decides the manufacturers can achieve in that model year." When

setting "maximum feasible" fuel economy standards, the Secretary is required to "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." NHTSA construes EPCA's statutory factors as including environmental issues and permitting the consideration of other relevant societal issues, such as safety. "Congress did not prescribe a precise formula by which NHTSA should determine the maximally-feasible fuel economy standard, but instead gave it broad guidelines within which to exercise its discretion." Competitive Enterprise Institute v. NHTSA, 901 F.2d 107, 121 (D.C. Cir. 1990) (citing Public Citizen v. NHTSA, 848 F.2d 256, 265 (DC Cir. 1988)). See also Center for Auto Safety v. NHTSA, 793 F.2d 1322, 1340 (DC Cir. 1986) (same); Competitive Enterprise Institute v. NHTSA, 901 F.2d 107, 121 (D.C. Cir. 1990) (Wald, J.) (same). Thus, EPCA does not require the agency to establish fuel-economy standards at any chosen level, but instead confers on NHTSA broad discretion to balance these factors when setting an appropriate standard.

Although NHTSA has used the Volpe model to inform its consideration of potential CAFE standards, the Volpe model does not determine the CAFE standards NHTSA will propose or promulgate as final regulations. NHTSA considers the results of analyses conducted by the Volpe model and analyses conducted outside the Volpe model, including analysis of the impacts of CO_2 and criteria pollutant emissions, analysis of technologies that might be available in the long term and whether NHTSA could expedite their entry into the market through these standards, and analysis of the extent to which changes in vehicle prices and fuel economy might affect vehicle production and sales. Considering all of this information—not solely that from the Volpe model—NHTSA considers the governing statutory factors, along with environmental issues and other relevant societal issues, such as safety, and promulgates the maximum feasible standards based on its best judgment on how to balance these factors.

This FEIS complies with NEPA and EPCA by informing decisionmakers and the public of the reasonable alternatives and the environmental impacts associated with each alternative. While mindful that EPCA's overall purpose is energy conservation, NHTSA sought to balance the EPCA statutory factors when proposing its Preferred Alternative in the DEIS. After careful consideration of all comments, NHTSA concludes that the Optimized Alternative remains the agency's Preferred Alternative. It is the point at which net benefits are maximized. Further, by limiting the standards to levels that can be achieved using technologies that provide benefits that at least equal their costs, the net benefit maximization approach provides a strong assurance of the marketability of the manufacturers' vehicles and thus economic practicability of the standards. This assurance assumes increased importance in view of current and anticipated conditions in the industry in particular and the economy in general.

With this understanding of the applicable standards for NEPA alternatives in the context of this rulemaking under EPCA, NHTSA turns now to the comments the agency received regarding alternatives. The comments fell into several subcategories, which are set forth below along with NHTSA's response.

10.2.3.2 Reasonable Range of Alternatives

Comments

Comment Number: 0564-2
Organization: Consumer Federation of America
Commenter: Mark Cooper

The analysis underlying the proposed rule is so fundamentally flawed that the agency has not considered an appropriate range of policy options, for which the environmental impact should be evaluated. Erroneous assumptions about market fundamentals have led NHTSA to center its analyses on a level of

fuel economy that is so low that it sheds little light on what the environmental impact of a reasonable fuel economy standard would be. NHTSA has based the proposed rule on flawed assumptions and data on:

- Consumer behavior and attitudes toward fuel economy;
- Automaker capabilities to incorporate fuel savings technologies; and
- The price and value of energy.

Comment Number: 0572-10
Organization: Center for Biological Diversity
Commenter: Brian Nowicki, Mickey Moritz, Kassie Siegel

Even were the Volpe model not fundamentally rigged to provide an unreasonably low result, the inputs used by NHTSA ensured that the fuel economy levels that resulted were artificially low, again resulting in NHTSA failing to analyze a reasonable range of alternatives.

Comment Number: 0572-59
Organization: Center for Biological Diversity
Commenter: Brian Nowicki, Mickey Moritz, Kassie Siegel

The IPCC (2007) provides an extensive description of the different environmental impacts projected under different levels of greenhouse gas emission levels, as summarized in the Synthesis Report, Summary for Policymakers (Bernstein (2007). NHTSA refers to IPCC (2007) repeatedly, as on page 24357 of the NPRM, regarding the need to "take actions to reduce greenhouse gas emissions," and starting on page 24413 of the NPRM, regarding the projection of "specific climate impacts." The IPCC report Bernstein (2007) categorizes global greenhouse gas emission levels into quantitative emissions scenarios with impacts associated with particular levels of emissions. The proposed rule must analyze the impacts of the proposed CAFE standards in relation to the emissions scenarios and their associated impacts.

Comment Number: 0576-1
Organization: Public Citizen
Commenter: Joan Claybrook

To this aim, NHTSA has neither sharply defined the issues, nor has it provided a clear basis for choice among the options. Furthermore, NHTSA has not fulfilled the obligation to "rigorously explore and objectively evaluate all reasonable alternatives," "[i]nclude reasonable alternatives not within the jurisdiction of the lead agency," or "[i]nclude appropriate mitigation measures not already included in the proposed action or alternatives." [Footnote: See original comment document.] NHTSA's range of alternatives is unreasonably constrained by the Volpe model's assumptions regarding the inputs, and NHTSA does not consider other reasonable alternatives out of its jurisdiction.

Comment Number: 0576-4
Organization: Public Citizen
Commenter: Joan Claybrook

The agency also does not include a technology-forcing alternative as required by Energy Policy and Conservation Act (EPCA). [Energy Policy and Conservation Act. Pub. L. 94-163 (Dec. 22, 1975).] While EPCA does not provide explicit guidance, NHTSA has been chided in its interpretation of the balance of the four factors in the statute. In *Center for Biological Diversity v. NHTSA*, the Ninth Circuit Court of Appeals found that NHTSA's weighing the value of consumer choice over the "need of the nation to conserve energy" was arbitrary and capricious. The courts have affirmed the idea that

technology-forcing statutes can impose standards that are at the technology horizon — levels which only the most advanced facilities in an industry may only achieve some of the time." [Footnote: See original comment document.]

Comment Number: 0576-5
Organization: Public Citizen
Commenter: Joan Claybrook

Consideration of alternatives not within the jurisdiction of the lead agency and mitigation measures not included in the proposed action or alternatives are particularly important in addressing the implications of fuel economy standards on reducing greenhouse gas emissions. NHTSA must therefore consider actions that fall outside the scope of the proposed action, and outside of the agency's jurisdiction — something it specifically failed to do when it stated in the draft EIS: "NHTSA emphasizes to the reader of this DEIS that the proposed action does not directly regulate the emissions from passenger cars and light trucks. NHTSA does not have that authority." [Footnote: See original comment document.]

Comment Number: TRANS-05-6
Organization: Consumer Federation of America
Commenter: Mark Cooper

The underlying analysis is so fundamentally flawed that the agency has not considered an appropriate range of policy options for which the environmental impact should be evaluated.

Erroneous assumptions about market fundamentals, about consumer behavior and attitudes towards fuel economy, auto making capabilities to incorporate fuel savings technologies, and the price and value of energy have led NHTSA to center its analysis on a level of fuel economy that is so low that it sheds little light on what the environmental impact of a reasonable fuel economy standard would be.

Comment Number: TRANS-06-1
Organization: Public Citizen
Commenter: Lena Pons

The first is the range of alternatives does not constitute the range of alternatives envisioned under the National Environmental Policy Act, and does not meet the requirements under the regulation.

Under the regulation set forth under the National Environmental Policy Act, agencies are required to consider a range of alternatives that include all reasonable regulatory alternatives. The regulatory alternatives that are considered in this proposal effectively are a confidence bound around the optimized scenario proposed in the regulation.

Response

Commenters state that NHTSA did not consider a reasonable range of alternatives. As noted in detail in the response at 10.2.3, under the applicable standards, NHTSA is not required to include every conceivable alternative in NEPA documents, nor necessarily the alternatives submitted by commenters. See 40 CFR § 1502.14(a). The content and scope of alternatives to the proposed action depends on the purpose and need for the action.

Here, NHTSA considered the environmental impacts of alternatives ranging from taking no action to Technology Exhaustion. The environmental impacts stem from the mpg standard implemented by the decisionmaker. As such, the agency considered a broad spectrum of alternative actions and the

accompanying environmental impacts. Moreover, throughout the NEPA process, NHTSA has sought to give the decisionmaker and the public a thorough understanding of the range of environmental impacts of diverse CAFE standard setting, which is what is meant by a "reasonable range of alternatives" under NEPA. NHTSA has discussed and analyzed in the DEIS and this FEIS a broad spectrum of alternatives. NHTSA's range of alternatives, which analyze the setting of higher CAFE standards, is sufficiently broad to include the likely environmental impacts of potential greenhouse gas regulation approaches, including those proposed by the California Air Resources Board (CARB), other states, and other federal agencies. An analysis of such "other" potential alternatives would not present environmental impacts that fall outside the range of impacts resulting from the analysis of alternatives in this FEIS. Under NEPA's rule of reason, it would not serve a purpose to require NHTSA to evaluate in this FEIS other alternatives, the environmental impacts of which NHTSA has already considered and analyzed for the benefit of the decisionmaker and the public. NHTSA believes it has complied with the letter and the spirit of NEPA by considering a wide range of alternatives that informs the decisionmaker and the public of the potential environmental impacts associated with this rulemaking.

10.2.3.3 Different Economic Inputs to the Volpe Model

Comments

Comment Number: 0572-11
Organization: Center for Biological Diversity
Commenter: Brian Nowicki, Mickey Moritz, Kassie Siegel

The NHTSA also abuses its discretion to balance the four EPCA factors by using inaccurate and unreasonably constrained values in the Volpe model. As discussed below, in each and every instance when NHTSA faced a choice of inputs, it chose the level that would minimize the resulting fuel economy level. Even if one or more of the NHTSA's choices were otherwise lawful under EPCA and the Administrative Procedures Act (APA), which they are not, the NHTSA's failure to disclose in the DEIS the impact of these input choices, and to provide an alternative based on choosing higher input numbers, violates NEPA as well.

Comment Number: 0572-21
Organization: Center for Biological Diversity
Commenter: Brian Nowicki, Mickey Moritz, Kassie Siegel

In summary, in each and every instance discussed above, NHTSA unreasonably chose an input level that would depress the fuel economy level that resulted from the modeling. Then, NHTSA disclosed in the DEIS only the results of the modeling runs using these unreasonable input figures. NHTSA's modeling is arbitrary and capricious and violates NEPA (as well as the EPCA, as described throughout and in our July 1, 2008 comments on the proposed rule). Even if NHTSA's use of the Volpe model were otherwise valid (which it is not, as described above), at a minimum, NHTSA was required to consider alternatives based on modeling with reasonable inputs. In other words, NHTSA should also have disclosed the level of its so called "optimization" and "technology exhaustion" alternatives had the model been run with inputs that would have led to higher fuel economy outputs. NHTSA failed to do so.

Response

Commenters suggested that NHTSA use different data inputs to the Volpe model when developing CAFE standards. While NHTSA continues to report the "Reference Case," the agency recognizes that the commenters' suggested inputs could reflect potential future conditions, depending on the economic situation in the future. Therefore, in response to those comments, and in the interest of informing the

decisionmaker and the public, this FEIS explores what CAFE standards could result when inputting different values into the Volpe model. This FEIS also evaluates the environmental impacts resulting from use of the different economic assumptions. See Section 10.2.2 of this FEIS for discussions of NHTSA's reasoning behind the use of the different economic assumptions. This FEIS now analyzes potential impacts of the alternatives resulting from the Volpe model's use of two separate sets of assumptions: the Reference Case Volpe model inputs and the "High Scenario" Volpe model inputs. NHTSA carefully selected the various economic assumptions used in the Reference Case, and described those values and the process for selecting each of them in detail in Section 7 of Chapter V of the NPRM, and in Chapter VIII of the PRIA. Section 3.4.4.2.2 of the DEIS and Section 10.2.2 of this FEIS also briefly discuss the values assigned to the Volpe model economic assumptions. Specifically, NHTSA calculated and analyzed mpg standards and environmental impacts associated with each alternative under both the Reference Case for key model inputs, which uses the EIA's Reference Case fuel price forecast, a domestic SCC, and a 7 percent discount rate; and under the High Scenario, which uses the EIA High Case for fuel price forecast, a global SCC, and a 3 percent discount rate. NHTSA also examined two additional input scenarios (Mid-1 and Mid-2) to show how various combinations of economic-assumption input values between those used in the Reference Case and High Scenario result in average mpg levels that fall between the required mpg standards associated with the Reference Case and High Scenario input values. See Table 2.3-6 (listing input assumptions for Mid-1, Mid-2 and High Scenarios). Sections 3.4 and 4.4 describe the environmental impacts of the Reference Case and High Scenario alternatives. Appendix B shows the analysis results for the Mid-1 and Mid-2 Scenarios. Because this FEIS analyzes the environmental impacts of the alternatives at different values for Volpe model input assumptions, the decisionmaker and the public are presented with the full range of environmental impacts resulting from the alternatives' range of stringencies, which is derived using varying sets of economic assumptions, some of which were suggested by commenters. Even varying these economic inputs into the Volpe model, the environmental impacts of the resulting CAFE standards still fall within the range of impacts between the No Action Alternative (Alternative 1) and the Technology Exhaustion Alternative (Alternative 7).

The Center for Biological Diversity (CBD) suggested that NHTSA disclose the level of stringency associated with technology exhaustion "had the model been run with inputs that would have led to higher fuel economy outputs." CBD's comment indicates that CBD misunderstands the Technology Exhaustion Alternative. As set forth in the NPRM and the DEIS, the Technology Exhaustion Alternative represents the level at which vehicle manufactures apply all feasible technologies by progressively increasing the stringency of the standard in each model year until every manufacturer (among those without a history of paying civil penalties) exhausts technologies estimated to be available during MY 2011-2015. Except for phase-in constraints, this analysis was performed using the same technology-related estimates (e.g., incremental costs, incremental fuel savings, availability, applicability, and dependency on vehicle freshening and redesign) as used for other alternatives, such as those that maximize net benefits and those that produce total benefits approximately equal to total costs. For the Technology Exhaustion Alternative, NHTSA removed phase-in constraints in order to develop an estimate of the effects of fuel economy increases that might be achieved if manufacturers could apply as much technology as theoretically possible, while recognizing that some technology must still be installed as part of a vehicle freshening or redesign. Thus, the Technology Exhaustion Alternative is not (and could not be under any set of different model data inputs) affected by the economic assumptions used in the Volpe model.

As to CBD's larger point regarding alternate economic inputs, this has been addressed in the FEIS through use of the High, Mid-1 and Mid-2 scenarios, which use different economic inputs from the Reference Case.

10.2.3.4 Alternative 1 (No Action)

Comments

Comment Number: 0572-30
Organization: Center for Biological Diversity
Commenter: Brian Nowicki, Mickey Moritz, Kassie Siegel

The NHTSA compounds the other errors in its analysis by presenting the effect of its action only as an improvement over the "no action" alternative, which NHTSA defines as leaving fuel economy standards unchanged. The true "no action" alternative is the technologically achievable fuel economy level. NHTSA's "action" is to reduce this level, based on its consideration of the other statutory factors. Therefore, NHTSA was required to disclose in the DEIS the additional greenhouse gas emissions that will result from its decision to set fuel economy standards far lower than the technologically feasible level. The NHTSA failed to do so, instead continuing to portray its rulemaking merely as an improvement over the status quo, when in fact the opposite is true: it has proposed standards that are far lower than what is achievable with today's and future technology, and far lower than current levels in other countries. The true effects of this decision must be disclosed.

Comment Number: 0574-11
Organization: Alliance of Automobile Manufacturers
Commenter: Julie Becker

Under the case of *Department of Transportation v. Public Citizen*, 541 U.S. 752(2004), commonly referred to as the "Mexican Trucks" decision—a case in which NHTSA's parent Cabinet Department prevailed unanimously in the Supreme Court—the Court held that NEPA analysis must be framed based on directives from Congress, and must be performed only to the extent that a particular agency has discretion:

> We hold that where an agency has no ability to prevent a certain effect due to its limited statutory authority over the relevant actions, the agency cannot be considered a legally relevant "cause" of the effect. Hence, under NEPA and the implementing CEQ regulations, the agency need not consider these effects in its EA [Environmental Assessment] when determining whether its action is a "major Federal action." Because the President, not FMCSA [Federal Motor Carrier Safety Administration], could authorize (or not authorize) crossborder operations from Mexican motor carriers, and because FMCSA has no discretion to prevent the entry of Mexican trucks, its EA did not need to consider the environmental effects arising from the entry. (*Department of Transportation v. Public Citizen*, 541 U.S. 752 (2004) at 770.),

NHTSA never explains why the Mexican Trucks decision should not alter the no-action alternative the agency proposes, which imagines counterfactually that NHTSA can leave CAFE standards unchanged, contrary to Congress's directives in EISA. Instead, to justify continuing with its own view of how to define the no-action alternative, NHTSA states in a circular fashion that "NHTSA must analyze a scenario where NHTSA does not take this action [i.e., takes no action to increase fuel economy standards]." (DEIS, at 1-11) That assertion is non-responsive to the Alliance's NEPA scoping comments. NHTSA clearly cannot specify a "no action" alternative that incorrectly assumes that the agency has no duty to carry out EISA's directives. Instead, NHTSA must specify a "no action" alternative that is formulated with the congressionally ordered baseline of achieving at least 35 mpg by MY 2020 in mind. Given the time period over which NHTSA is proposing to establish standards (i.e., for half of the model years between MY 2011 and MY 2020), the simplest way for NHTSA to specify a proper baseline is to use the

fuel economy level in MY 2015 that makes half of the progress necessary to achieve the 35 mpg target in MY 2020, and then judge all of its alternatives against that halfway mark. There may also be other defensible ways of defining a "no action" alternative, but pretending that EISA does not exist is not one of them.

Moreover, this debate over how to define the no-action alternative is no tan arid one lacking in practical significance. Properly specifying the baseline for analysis of regulatory alternatives that fall within NHTSA's discretion under EISA is vital. If NHTSA sets the baseline too high, then it will underestimate the benefits of a given set of fuel economy standards. If NHTSA sets the baseline too low, as it has done here by specifying a baseline that falls short of the congressional mandate in EISA, then it will *overestimate* benefits. For instance, using MY 2010 CAFE standards as the no-action alternative, NHTSA might conclude that the agency's preferred set of CAFE standards will reduce the global concentrations of CO_2 that might otherwise obtain by 1 ppm. By contrast, it might find that if the no-action alternative instead were defined to take as a given mandated increases in fuel economy by Congress in EISA, then the same agency-preferred set of CAFE standards might reduce global concentrations of CO_2 by only 0.1 ppm. These numbers are purely illustrative. The point is that by mis-specifying the no-action alternative, NHTSA improperly exaggerates the environmental benefits that its discretionary choices appear to achieve. Furthermore, if NHTSA corrects this error, it would provide further directional support for concluding the NEPA process with an EA/FONSI [Environmental Assessment/Finding of No Significant Impact] (primarily, or in the alternative), as opposed to concluding that process with a final EIS.

Comment Number: 0574-6
Organization: Alliance of Automobile Manufacturers
Commenter: Julie Becker

NHTSA continues to misidentify the so-called "no action" alternative. NHTSA's persistence in making comparisons against a "no action" alternative that uses MY 2010 CAFE standards as a baseline counter factually assumes that EISA was never passed and is based on circular reasoning.

Comment Number: 0576-7
Organization: Public Citizen
Commenter: Joan Claybrook

NHTSA has also influenced the context by choosing a baseline that is too low. The agency's baseline is the no action alternative; however, the agency assumes fuel economy levels of 27.5 mpg for passenger cars and 23.5 mpg for light trucks. [Footnote: See original comment document.] NHTSA's most recent report on the level of fuel economy performance of vehicles estimates that passenger cars are getting 31.2 mpg and light trucks are getting 23.4 mpg. [Footnote: See original comment document.] However, even this level of fuel economy is unlikely to capture a real baseline, considering the intense shift in consumer demand for fuel efficient vehicles and the auto industry's scrambling to produce and market more efficient vehicles. [Footnote: See original comment document.]

Comment Number: TRANS-01-1
Organization: Alliance of Automobile Manufacturers
Commenter: Julie Becker

The first issue relates to NHTSA's inclusion of a no action alternative in its array of options. In our scoping comments, the Alliance noted that the 2007 energy bill does not allow for a no action option. Instead the energy bill sets a clear trajectory for increasing fuel economy standards for the span of a

decade, and requires at least steady progress toward a 35 mile per gallon goal in model year 2020. We do not think it is appropriate for NHTSA to continue to rely on no action as its starting point.

Comment Number: TRANS-06-3
Organization: Public Citizen
Commenter: Lena Pons

Additionally, the no action alternative should not be considered to be an extension of the situation as it stands, but should be a reflection of what would happen were there no regulatory intervention.

Response

NHTSA received several comments contending that we improperly selected our No Action Alternative. In response to these comments, NHTSA clarifies that its No Action Alternative does not assume that NHTSA would issue a rule directing manufacturers to continue to achieve the MY 2010 CAFE standard (the DEIS incorrectly stated this assumption but the analysis was unaffected). Rather, the No Action Alternative simply assumes that NHTSA would not issue a rule regarding CAFE standards. The No Action Alternative assumes that average fuel economy levels in the absence of CAFE standards beyond 2010 would equal the higher of a manufacturer's product plans or the manufacturer's required level of average fuel economy for MY 2010. The MY 2010 fuel economy level represents the standard NHTSA believes manufacturers would continue to achieve, assuming NHTSA does not issue a rule.

Some commenters asserted that the No Action Alternative is not legally available for selection. Other commenters stated that NHTSA did not use the proper fuel-economy standard for the No Action Alternative. NHTSA recognizes the commenters' concern that the current average fuel economy of automobiles and light trucks is rising due to high energy costs and a shifting market.

These commenters misunderstand the NEPA process. Although EISA's recent amendments to EPCA direct NHTSA to increase CAFE standards and do not permit the agency to take no action on fuel economy, CEQ regulations mandate analysis of a no action alternative. See 40 CFR § 1502.14(d). Indeed, CEQ has explained that:

> *[T]he regulations require the analysis of the no action alternative even if the agency is under a court order or legislative command to act. This analysis provides a benchmark, enabling decision makers to compare the magnitude of environmental effects of the action alternatives. It is also an example of a reasonable alternative outside the jurisdiction of the agency which must be analyzed. [See 40 CFR § 1502.14(c).] … Inclusion of such an analysis in the EIS is necessary to inform the Congress, the public, and the President as intended by NEPA. [See 40 CFR § 1500.1(a).] Forty Most Asked Questions Concerning CEQ's National Environmental Policy Act Regulations, 46 FR 18026 (1981) (emphasis added).*

Thus, "[i]n requiring consideration of a no-action alternative, the [CEQ] intended that agencies compare the potential impacts of the proposed major federal action to the known impacts of maintaining the status quo." Custer County Action Assoc. v. Garvey, 256 F.3d 1024, 1040 (10th Cir. 2001) (citing Association of Public Agency Customers v. Bonneville Power Administration, 126 F.3d 1158, 1188 (9th Cir. 1997), and 46 FR 18,026, 18,027 (1981)). Consistent with CEQ regulations, the baseline model year 2010 levels in NHTSA's No Action Alternative represent the level at which manufacturers are meeting the CAFE standards already in effect. Manufacturers are obligated under EPCA to either meet the current CAFE standards or pay a penalty for falling below those standards. Manufacturers are not, however,

mandated to reach a fleet-wide average fuel economy level above 27.5 mpg for passenger automobiles or 23.5 mpg for non-passenger automobiles. Therefore, NHTSA believes that it would be speculative to set the baseline No Action Alternative at a level of fuel economy stringency that not all manufacturers are currently mandated, or able, to meet. In NHTSA's view, a different or modified No Action Alternative is not reasonable and would not aid the decisionmaker or the public in understanding the environmental impacts of the alternatives, because the alternatives would simply be measured from a different reference point. Therefore, this FEIS has maintained the baseline No Action Alternative as set forth in the DEIS. It is consistent with CEQ regulations and applicable law, and provides a logical reference point that serves the purpose of displaying to the decisionmaker and the public the difference between no action (maintaining the status quo) and each of the six action alternatives.

10.2.3.5 Alternative 3 (Optimized Scenario)

Comments

Comment Number: 0559-3
Organization: The Northeast States for Coordinated Air Use Management (NESCAUM)
Commenter: Arthur Marin

Despite these developments which call for bold policy steps to actively pursue significant improvements in fuel economy, NHTSA has chosen to pursue a very conservative course in setting near-term standards. We made this point in our comments submitted on the Proposed Rule, noting NHTSA's initial consideration of seven different fuel economy stringency scenarios (ranging from no-action to technology exhaustion alternatives), and ultimate choice of an "optimized" alternative that maximized net benefits from an economic standpoint. In settling on this alternative for which there is little to no impetus for forcing technology, NHTSA's actions will have a dampening effect on progress toward long term improvements to fuel economy and by extension to progress addressing the environmental impacts brought about by climate change.

Comment Number: 0572-12
Organization: Center for Biological Diversity
Commenter: Brian Nowicki, Mickey Moritz, Kassie Siegel

Moreover, even if NHTSA's choice of the "optimized" alternative were otherwise lawful, the use of incorrect inputs in the model results means that even by the NHTSA's own twisted definitions, this alternative does not actually represent the point at which marginal benefits equal marginal costs. The NHTSA's inaccurate claim that it does violates NEPA's requirement to provide accurate information to the public.

Comment Number: 0576-19
Organization: Public Citizen
Commenter: Joan Claybrook

NHTSA's sensitivity analysis shows that the level of fuel economy standards is highly sensitive to the price of gasoline. The agency's estimate for the high price scenario would set the car standard at 37.4 mpg in 2011, almost 20 percent higher than the agency's "optimized" scenario, and at almost exactly the same level as NHTSA's total costs balance total benefits (TC=TB) scenario. (PRIA A-2) The light truck standards are less responsive to changes in economic assumptions, which NHTSA attributes to a lack of "cost effective" technologies available to raise fuel economy above the level reached in the optimized scenario." (PRIA at IX-10-IX-13)

Response

As noted in the DEIS and in this FEIS, the Optimized Alternative is the agency's Preferred Alternative. This alternative reflects standards based on applying technologies until net benefits are maximized. For a more detailed discussion of the Optimized Alternative, see Section 2.3.4 of the FEIS; Section 2.3.3 of the DEIS; Section X of the NPRM; and Section III-1 of the PRIA.

Commenters suggested that the Optimized Alternative does not accurately reflect the point at which marginal costs equals marginal benefits because incorrect economic assumptions were input into the Volpe model. As noted above, in response to these comments, this FEIS explores what CAFE standards could result from inputting different values into the Volpe model. This FEIS also evaluates the environmental impacts resulting from the use of the different economic assumptions in these alternatives through the High, Mid-1 and Mid-2 Scenarios. See Chapters 3 and 4. Thus, the environmental analysis has been expanded to include the environmental impacts of the alternatives at different values for Volpe model input assumptions. NHTSA selected the various economic assumptions to be used in the Volpe model carefully, and described those values and the process for selecting each of them in detail in Section 10.2.2 of this chapter. Chapter 2 of this FEIS also provides a brief discussion of the values assigned to the Volpe model economic assumptions. Because this FEIS analyzes the environmental impacts of the alternatives at different values for Volpe model input assumptions, the decisionmaker and the public are presented with the full range of environmental impacts resulting from the alternatives' range of stringencies, which is derived using varying sets of economic assumptions, some of which were suggested by commenters.

10.2.3.6 Alternative 6 (Total Costs Equal Total Benefits)

Comments

Comment Number: 0564-13
Organization: Consumer Federation of America
Commenter: Mark Cooper

We believe that the TC=TB [total costs equal total benefits] approach is the proper way to recognize "the need of the nation to conserve energy."

At a minimum, an approach that would reasonably consider "the need to conserve energy" would balance the economic and conservation concerns and set the standard between the two extremes.

NHTSA did not do so. It simply chose to set the standard at the lower level with no consideration of the enormous energy conservation cost of that decision.

Comment Number: 0575-14
Organization: Union of Concerned Scientists
Commenter: Eli Hopson

An MC=MB [maximum costs equal maximum benefits] analysis produces noticeably more conservative findings for maximum cost-effective fuel economy levels. The MC=MB approach is also very sensitive to different valuations of the benefits, making it more error prone. It is therefore critical to accurately identify and account for the benefits associated with fuel-saving technologies. An MC=MB analysis that excludes or undervalues even some of the benefits—such as avoided carbon emissions, reduced oil dependence, or high gas prices—is fundamentally flawed.

Unfortunately, this NPRM contains numerous flaws including undervalued gasoline and carbon prices, among others (see Sections 1 and 2), which vastly underestimate consumers' economic and social savings from reduced fuel use. While NHTSA must fix these flaws, UCS suggests that NUTSA use a TC=TB analysis to determine maximum feasible U.S. fuel economy standards. Such an analysis would reduce the impact of any inaccurate monetizing of the benefits of reduced fuel consumption, such as improved energy security and reduced heat-trapping emissions, and ensure that the agency is doing the most possible to address these issues without negative consequences to U.S. consumers. As shown in Table 1 below, NHTSA's own analysis indicates that employing a TC=TB analysis would increase the economically practicable fleet average between 2.8 and 5.7 miles per gallon. This greater application of technology also produces higher lifetime societal benefits, as noted by NHTSA. Depending on discount rate selected (3% or 7%), opting for a TC=TB analysis over NHTSA's proposed standard would yield between $46.2 and $57.6 billion in additional lifetime benefits over the proposed standard. (Computed from PRIA Tables IX-2a and IX-2b, Passenger Cars and Light Trucks Combined (2006 dollars).]

Table 1: Required Fleet Average MPG Levels [See original comment document.]

NHTSA's decision to base deployment of fuel saving technology on the marginal, rather than total benefits, by definition, fails to reach the maximum feasible fuel economy level needed to address the Department of Transportation's legal requirements. The use of a TC=TB analysis, which would maximize the need to conserve energy while ensuring consumers are as well off as they are today, is a far more pragmatic economic assessment, and one that better meets the intent of Congress in raising fuel economy standards. UCS suggests that NHTSA use a TC=TB analysis to determine maximum feasible U.S. fuel economy standards.

Comment Number: 0575-6
Organization: Union of Concerned Scientists
Commenter: Eli Hopson

NHTSA based its rulemaking on costs and benefits on the margin rather than the total costs and benefits of improved standards.

Response

Another alternative NHTSA evaluated in the DEIS is the Total Costs Equals Total Benefits Alternative (Alternative 6). As an initial matter, the Union of Concerned Scientists and other commenters suggested the Total Costs Equals Total Benefits Alternative during NHTSA's CAFE rulemaking for MY 2008-2011 for light trucks. This alternative reflects standards based on manufacturers applying technologies until total costs equal total benefits, yielding zero net benefits. The Total Costs Equal Total Benefits Alternative is the second most stringent set of mpg standards examined in this FEIS, after the Technology Exhaustion Alternative (which yields negative net benefits). For a more detailed discussion of the Total Costs Equal Total Benefits Alternative, see Section 2.3.7 of the FEIS, Section X of the NPRM, and Section III-1 of the PRIA.

Commenters suggested that NHTSA select the Total Costs Equals Total Benefits Alternative as its Preferred Alternative, arguing that it properly recognizes the need of the nation to conserve energy and is a far more pragmatic economic assessment that better meets the intent of Congress in raising fuel economy standards. Upon a considered analysis of all information available, including all information raised to NHTSA in comments, NHTSA concludes that the Optimized Alternative remains the agency's Preferred Alternative. It is the point at which net benefits are maximized. Further, by limiting the standards to levels that can be achieved using technologies that provide benefits that at least equal their costs, the net benefit maximization approach provides a strong assurance of the marketability of the

manufacturers' vehicles and thus economic practicability of the standards. This assurance assumes increased importance in view of current and anticipated conditions in the industry in particular and the economy in general.

10.2.3.7 Alternative 7 (Technology Exhaustion)

Comments

Comment Number: 0572-6
Organization: Center for Biological Diversity
Commenter: Brian Nowicki, Mickey Moritz, Kassie Siegel

NHTSA's "technology exhaustion" would result in average fuel economy of 31.1 mpg in 2011 to 41.4 mpg in 2015. It is clear that this cannot, by any stretch of the imagination, be equated with what is "technologically feasible." First, cars on the road in the U.S. today already achieve approximately the same or better gas mileage than what NHTSA has defined as the combined fleet "technology exhaustion" for model year 2015. These include the Toyota Prius (48/45; city/highway) and the Honda Civic Hybrid (40/45; city/highway). [Footnote: See original comment document.] Even more vehicles cars already achieve the "technology exhaustion" standard for the combined fleet in MY 2011: smartcar (33/41; city/highway); Mini Cooper(28/31); Toyota Yaris (29/36); Toyota Corolla (28/37); Nissan Altima Hybrid (35/33); Toyota Camry Hybrid (33/34); Hyundai Accent (27/32); Kia Rio (27/32); Mazda Tribute Hybrid 2WD (34/30); and Honda Fit (28/34). [Footnote: See original comment document.]

Second, NHTSA's "technology exhaustion" alternative results in fuel economy standards, even in 2015, which are below current standards in many other countries, and far below Japanese standards for 2015. In contrast, Europe and Japan had average fuel economy standards of approximately 40 mpg in 2006—over 15 mpg higher than U.S. standards (ICCT 2007). Both Europe and Japan are predicted to continue increasing their fuel standards; even their high standards are not the technology maximum. That other countries have achieved higher fuel standards indicates that there are eminently feasible technology options available today that have not been included in the DEIS. (We note the substantial overlap in manufacturers of the European fleet and U.S. fleet (ICCT 2007:13), and that at least one manufacturer, Ford, has already declared its intention to "make big changes to the vehicles it sells domestically" and bring "six small cars made in Europe to the North American market (Smith 2008).")

Figure 1. [See original comment document.]

By contrast, NHTSA's definition of "technology exhaustion" is the level that would "require every manufacturer to apply every feasible fuel saving technology to their MY 2011-2015 fleet." (DEIS at 2-2) By what sleight of hand does NHTSA transform what is "technologically feasible" into something called "technology exhaustion" that is so much lower? The answer lies in the unlawful constraints of the Volpe model itself.

Comment Number: 0574-2
Organization: Alliance of Automobile Manufacturers
Commenter: Julie Becker

The Alliance agrees with much of the analysis presented in the DEIS. For instance, NHTSA's analysis of the fuel economy impacts associated with mandating higher levels of fuel economy under the alternatives studied leads to the conclusion that even if NHTSA were to adopt the so-called "technology exhaustion" alternative, NHTSA would be able to reduce global mean surface temperatures in 2100 by only an additional 0.006°C as compared to the temperature reductions associated with the "optimized" alternative

NHTSA favors in its notice of proposed rulemaking ("NPRM"). [Footnote: See original comment document.]. See DEIS 2-16 (Table 2.5-4 (comparing "Reduction from No Action" for the "Optimized" and "Technology Exhaustion" scenarios). This is obviously a very small change, and is less than both the natural variability in temperature on an annual basis and the error in measuring temperatures from year to year. [Footnote : See original comment document.]

Comment Number: 0588-9
Organization: New York State Department of Transportation
Commenter: Stanley Gee

Tables 3.2-2 and 3.2-3 indicate that the technology exhaustion alternative will yield more incremental benefits for light trucks than it yields for passenger vehicles. Figure 4.2-2 also indicates that the technology exhaustion alternative will yield a significant incremental benefit for light trucks. Certain sections of the DEIS suggest that if the CAFE standards are set too stringent, manufacturers may opt to pay noncompliance penalties rather than meet or exceed the standard. If this is the case, wouldn't the more aggressive alternatives (3-7) yield less benefit than the preferred alternative? The FEIS should explain this in more detail and clearly describe how the Volpe model and other models treat this issue for alternatives 3-7.

Response

NHTSA disagrees with the Center for Biological Diversity's (CBD) comment suggesting that the Technology Exhaustion Alternative is not truly "exhaustive" because some cars sold in the United States achieve higher fuel economy than the fleetwide average NHTSA estimated would be achieved under the technology exhaustion alternative NHTSA performed for MY 2011 and MY 2015. Other commenters contend that NHTSA did not fully explore what is technologically feasible.

As an initial matter, NHTSA developed the Technology Exhaustion Alternative by progressively increasing the stringency of the standard in each model year until every manufacturer (among those without a history of paying civil penalties) exhausted technologies estimated to be available during MY 2011-2015. Except for phase-in constraints, this analysis was performed using the same technology-related estimates (e.g., incremental costs, incremental fuel savings, availability, applicability, and dependency on vehicle freshening and redesign) as used for other alternatives, such as those that maximize net benefits and those that produce total benefits approximately equal to total costs. For the Technology Exhaustion Alternative, NHTSA removed phase-in constraints in order to develop an estimate of the effects of fuel economy increases that might be achieved if manufacturers could apply as much technology as theoretically possible, while recognizing that some technology must still be installed as part of a vehicle freshening or redesign.

In each year, NHTSA increased the stringency until the first manufacturer exhausted available technologies; beyond this stringency, NHTSA estimated that the manufacturer would be unable to comply (NHTSA is precluded from considering manufacturers' ability to use CAFE credits) and would be forced to pay civil penalties. NHTSA then increased the stringency until the next manufacturer would be unable to comply, and continued to increase the stringency of the standard until every manufacturer was unable to apply enough technology to comply.

NHTSA did not, as CBD appears to suggest, estimate the stringency that would force every manufacturer to apply to every single vehicle every theoretically applicable technology. This approach would completely ignore product planning cycles and real constraints on the pace at which technologies can even conceivably be added to manufacturers' fleets. Rather, as mentioned above, NHTSA applies constraints related both to vehicle engineering and to vehicle freshening and redesign schedules.

The Center for Biological Diversity further argues that NHTSA's Technology Exhaustion Alternative is not truly "exhaustive" because other countries achieve higher fuel economy levels. This argument ignores the fact that the United States does not, even setting aside technological differences, have the same fleet profile as other countries, and that average fuel economy is strongly dependent on fleet profile. EPCA requires NHTSA to set maximum feasible CAFE standards for passenger cars and light trucks produced for sale in the United States, not to set standards that force manufacturers to make the U.S. vehicle market have a profile like that of any other country.

In response to the comment suggesting that this FEIS explain how the Volpe model considers manufacturers' election to pay noncompliance civil penalties rather than meet the prescribed CAFE standard, Sections 3.1.4, 3.4.3.1, 3.4.4.2.2, and 4.4.3.1 of this FEIS illustrate how the estimated penalty rate is accounted for in the Volpe model. For additional discussion of how noncompliance civil penalties are accounted for in the Volpe model, see page III-13, V-55-56 of the PRIA.

10.2.3.8 New Alternatives

Comments

Comment Number: 0572-23
Organization: Center for Biological Diversity
Commenter: Brian Nowicki, Mickey Moritz, Kassie Siegel

The EPCA is a "technology-forcing" statute, whereby a challenging standard encourages technological innovation. The EIS must consider alternatives in light of EPCA's technology-forcing character. As the court in *Center for Auto Safety v. Thomas* noted, "[t]he experience of a decade leaves little doubt that the congressional scheme in fact induced manufacturers to achieve major technological breakthroughs as they advanced towards the mandated goal." (847 F.2d 843, 870 (D.C. Cir. 1988) (overruled on other grounds); *see also Green Mt. Chrysler Plymouth Dodge Jeep v. Crombie*, 508 F. Supp. 2d 295, 358-359 (D. Vt. 2007) (discussing technology-forcing character of EPCA and the use of increased fuel efficiency to augment performance rather than mileage). As explained by the court in *Kennecott Greens Creek Min. Co. v. Mine Safety and Health Admin.*, "when a statute is technology forcing, "when a statute is technology forcing, the agency can impose a standard which only the most technologically advanced plants in an industry have been able to achieve-even if only in some of their operations some of the time." (476 F.3d946, 957 (D.C. Cir. 2007) (quoting *United Steel Workers of America, AFL-CIO-CLC v. Marshall*, 647F.2d 1189, 1246 (D.C. Cir. 1980)). With regard to a similarly technology-forcing statute, the Clean Air Act, legislative history indicates that the primary purpose of the Act was not "to be limited by what is or appears to be technologically or economically feasible," which may mean that "industries will be asked to do what seems impossible at the present time." (116 Cong. Rec. 32901-32902 (1970), 1 Legislative History of the Clean Air Amendments of 1970 (Committee Print compiled for the Senate Committee on Public Works by the Library of Congress), Ser. No. 93-18, p. 227 (1974); *see also Whitman v. American Trucking Associations*, 531 U.S. 457, 491 (2001)).

Due to the technology-forcing nature of the statutory scheme, the NHTSA was required to include one or more technology-forcing alternatives in the DEIS. Such an alternative would include standards that may appear impossible today, but that would force innovation as industry strives to meet a challenging standard. NHTSA's "technology exhaustion" alternative, defined by the criteria "whether a particular method of improving fuel economy can be available for commercial application in the MY for which the standard is being established" (DEIS at 1-2) clearly cannot substitute for consideration of a technology-forcing alternative.

While NHTSA will likely argue that it was not required to consider a technology-forcing alternative because it has pre-determined that it would not select such an alternative, it is clear that all reasonable alternatives, even those falling outside the lead agency's jurisdiction, must be considered. *Natural Resources Defense Council. v. Morton*, 458 F.2d 827, 834 (D.C. Cir. 1972). Because EPCA is a technology-forcing statute, the failure to include a technology-forcing alternative was unreasonable and unlawful.

Having failed to include such an alternative, the NHTSA then failed to analyze the environmental impacts of a technology-forcing standard. This omission is particularly significant because such a technology forcing standard would have environmental benefits that not only amplify the ability of automakers to meet higher standards in later years, but that also ripple through the economy. NHTSA's failure to consider this important aspect of the analysis renders the DEIS inadequate.

Comment Number: TRANS-06-2
Organization: Public Citizen
Commenter: Lena Pons

Additionally, under the regulations, agencies may consider regulatory alternatives that are not in the jurisdiction of the lead agency, which would include more protective types of regulations such as greenhouse gas regulations for motor vehicles, such as those envisioned by the State of California and other states, and also part of the EPA's proposed greenhouse case, economy-wide greenhouse gas regulations.

Response

While NHTSA recognizes that under Section 1502.14 of the CEQ NEPA implementing regulations, an agency may consider alternatives not within its jurisdiction, we disagree with commenters who suggested that NHTSA consider the regulation of GHGs as potential alternatives under CAFE. NHTSA can issue CAFE standards, which necessarily have the effect of regulating CO_2, just as EPA can issue CO_2 standards, which necessarily have the effect of regulating CAFE. Indeed, in the Advance Notice of Proposed Rulemaking, EPA published in response to the Massachusetts v. EPA ruling on the regulation of CO_2, vehicle efficiency ranges are comparable to the ranges in NHTSA's proposed rulemaking because both were based on product plans available to both agencies at the time of the analyses.[22] Because regulating CAFE is tantamount to regulating CO_2, it would add nothing to the alternatives to include CO_2 regulations.

Section 1502.14 of the CEQ regulations authorizes an agency to "include reasonable alternatives not within the jurisdiction of the lead agency." An agency, however, need not consider alternatives that are outside its power to implement. See Sierra Club v. Babbitt, 65 F.3d 1502, 1513 (9th Cir. 1995); see also Citizens Against Rails-To-Trails v. Surface Transportation Board, 267 F.3d 1144, 1151 (D.C. Cir. 2001). An agency is also not obligated to consider an alternative that would "override and redefine" the stated purpose of the project. See Crutchfield v. County of Hanover, 325 F.3d 211, 221-223 (4th Cir. 2003). NEPA does not require discussion of an alternative that is not reasonably related to a project's purpose(s). Native Ecosystems Council, 428 F.3d at 1245-1247 (EA case); City of Richfield v. FAA, 152 F.3d 905, 907 (8th Cir. 1998); Citizens Against Burlington, Inc. v. Busey, 938 F.2d 190, 195-196 (D.C. Cir. 1991); Northern Alaska Environmental Center v. Kempthorne, 457 F.3d 969, 978 (9th Cir. 2006) (agency need not discuss alternatives that are infeasible, ineffective, or inconsistent with the objectives of the project).

[22] *73 FR 44354, 44442-43 (July 30, 2008).*

The CBD relies on Natural Resources Defense Council. v. Morton, 458 F.2d 827, 834 (D.C. Cir. 1972) for the proposition that "all reasonable alternatives, even those falling outside the lead agency's jurisdiction, must be considered." This case from the early 1970's must be read in light of more recent Supreme Court and federal case law. In light of Vermont Yankee Nuclear Power Corp. v. Natural Resources Defense Council, Inc., 435 U.S. 519 (1978), and subsequent case law, the District of Columbia Circuit itself has stated that Morton stands only for the proposition that a reasonable alternative is defined by reference to a project's objectives. City of Alexandria v. Slater, 198 F.3d 862, 869 (D.C. Cir. 1999), cert. denied sub nom., Alexandria Historical Restoration and Preservation Com'n v. Federal Highway Admin., 531 U.S. 820 (2000).

Indeed, the District of Columbia Circuit has noted that "[w]e doubt the continuing vitality of the rather expansive view of NEPA we expressed in Morton, since subsequent Supreme Court cases have directly criticized us for overreading that statute's mandate." City of Alexandria, 198 F.3d at 869 n. 4 (citing, among other authorities, Baltimore Gas and Elec. Co. v. Natural Resources Defense Council, Inc., 462 U.S. 87, 97 (1983) and Vermont Yankee, 435 U.S. at 554).

Where, as here, "an action is taken pursuant to a specific statute, the statutory objectives of the project serve as a guide by which to determine the reasonableness of objectives outlined in an EIS." Westlands Water Dist. v. U.S. Dep't of Interior, 376 F.3d 853, 866 (9th Cir. 2004). The purpose and need of this rulemaking is to set maximum feasible average fuel economy levels under EPCA. NHTSA does not have the statutory authority to reduce the total amount of GHGs emitted by all vehicles driven, because NHTSA, under its statutory authority conferred by EPCA, cannot control how many miles citizens elect to drive. Nevertheless, NHTSA appreciates the fact that, despite the complex global nature of the problem, we still have an obligation to take a "hard look" under NEPA and analyze the effects of this rulemaking on global warming within the context of the other actions that affect global warming. Thus, NHTSA believes that the range of alternatives – including that of the Technology Exhaustion Alternative at the highest level of stringency – fully informs the decisionmaker and the public about the environmental impacts of any other reasonable CAFE standard, including climate-change issues.

Moreover, as noted above, NHTSA has discussed and analyzed in the DEIS and in this FEIS a broad spectrum of alternatives. NHTSA's range of alternatives, which analyze the setting of higher CAFE standards, is sufficiently broad to include the likely environmental impacts of potential GHG regulation approaches, including those proposed by the California Air Resources Board (CARB), other states, and other federal agencies. An analysis of such "other" potential alternatives would not present environmental impacts that fall outside of the range of impacts resulting from the existing analysis of the alternatives.

Finally, in response to the CBD's comment that NHTSA did not include a technology-forcing alternative, NHTSA states that other than the No Action Alternative, all of the analyzed alternatives induce manufacturers to implement new technologies to increase the fuel efficiency of their vehicles and are, therefore, technology-forcing. For a discussion of the alternatives, see Section 2.3 of the DEIS and this FEIS, Section X of the NPRM, and Section III-1 of the PRIA. For example, the Technology Exhaustion Alternative represents the level at which vehicle manufactures apply all feasible technologies without regard to costs. NHTSA removed phase-in constraints, in order to develop estimates of fuel economy increases that might be achieved if manufacturers could apply as much technology as theoretically possible, while recognizing that some technologies must still be installed as part of a vehicle freshening or redesign.

10.2.3.9 Alternatives Relationship to Maximum Feasible Fuel Economy Standard

Comments

Comment Number: 0557-6
Organization: The Natural Resources Defense Council
Commenter: Luke Tonachel, Brian Siu

The Draft Environmental Impact Statement is inaccurate because [it] evaluates an unlawful NHTSA CAFE proposal. As explained in NRDC's comments to the proposed rule, NHTSA failed to meet its statutory directive to set the maximum feasible fuel economy levels. [Footnote: See original comment document.] In calculating the required fuel economy level, NHTSA used erroneous assumptions for key input parameters and NHTSA set arbitrary limits on the availability of key vehicle technologies that could significantly improve fuel economy. These assumptions inaccurately characterized technologically feasible and economically practicable fuel economy in NHTSA's NPRM for both the proposed rule and the alternatives and therefore similarly skew the findings in the DEIS.

Comment Number: 0564-14
Organization: Consumer Federation of America
Commenter: Mark Cooper

NHTSA chose to define "feasibility" and "practicability" in a manner that lets the least fuel-efficient automakers drive down the standard. It protects the least capable automakers rather than requiring them to rise up to the level that the industry as a whole could achieve. Ironically, by setting a lower standard, in the face of dramatically rising consumer expectations, the Administration is creating an environment of failure for those companies who are driving down the standard. NHTSA allows the laggards in the industry, who have been trailing farthest behind the shift in consumer behavior, to pull the standard down.

Comment Number: 0564-4
Organization: Consumer Federation of America
Commenter: Mark Cooper

The crucial role of a higher fuel economy standard is to push the automakers to deliver what the public wants and deliver the maximum feasible fuel economy, but NHTSA has failed to do so.

Comment Number: 0572-1
Organization: Center for Biological Diversity
Commenter: Brian Nowicki, Mickey Moritz, Kassie Siegel

The NEPA analysis must be conducted in a way that is both meaningful and appropriate given the underlying statutory scheme. The EPCA requires that NHTSA set fuel economy standards for each model year at the "maximum feasible" level, taking into account four factors: 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. (49 U.S.C. § 32902(f)). The EPCA is a "technology-forcing" statute, whereby a challenging standard encourages technological innovation. [Footnote: See original comment document.] As part of the statutory balancing, NHTSA must necessarily determine what is "technologically feasible." The NHTSA has discretion to set standards somewhere below that level based on its consideration of the three other statutory factors, <u>if it is reasonable to do so.</u>

In December 2007, Congress passed the Energy Independence and Security Act of 2007 (Pub. L.11-140, 121 Sat. 1492 (Dec. 18, 2007) (EISA)). The EISA eliminates the previous 27.5 mpg standard for passenger cars with a mandate that NHTSA set separate passenger car and light truck standards annually at the "maximum feasible level," with a minimum fleet wide fuel economy of 35 mpg by 2020.

Comment Number: 0572-20
Organization: Center for Biological Diversity
Commenter: Brian Nowicki, Mickey Moritz, Kassie Siegel

Manufacturers not only manipulate market demand as discussed above, but also respond to it. When economics demand, a manufacturer would certainly implement a change outside a normal development cycle. Similarly, if regulations required, automakers could make changes outside a normal development cycle. Development cycles are a product of commercial convenience, not practicability. As a result, they have no bearing on the considerations of technology implementation within the cost benefit analysis.

Comment Number: 0572-45
Organization: Center for Biological Diversity
Commenter: Brian Nowicki, Mickey Moritz, Kassie Siegel

The proposed CAFE standards fail to comply with the EPCA's mandate to set the CAFE standards at the "maximum feasible" level that the automakers can achieve for each model year. While the EPCA does authorize the agency to consider technological feasibility and economic practicability when deciding maximum feasible average fuel economy standards, it does not authorize NHTSA to set standards that maximize net economic benefits at the expense of fuel savings that are feasible, practicable, and necessary to meet the nation's acute conservation needs. In fact, the EPCA mandates that NHTSA must maximize feasible fuel savings, even if these fuel savings are not "optimal" by an incremental parsing of costs and benefits. 49 U.S.C. § 32902(a),(f). See also, *Center for Biological Diversity v. National Highway Traffic Safety Administration*, 508 F.3d 508 (9th Cir. 2007).]

Overall, the proposed rule systematically manipulates the analysis, assumptions and modeling inputs such that NHTSA selects proposed CAFE levels far below the statute's technology forcing mandate. The methodologies used by NHTSA in the development of these CAFE standards do not consider the maximum feasible level of fuel efficiency. The Volpe model and economic cost-benefit analyses defer overwhelmingly to the automakers and prioritize the economic benefit of the automakers. In doing so, NHTSA artificially and inappropriately constrained the analysis to exclude available and feasible efficiency technologies, assign low priorities and delayed implementation schedules for individual technologies, and ultimately limit the range of potential efficiency increase analyzed and adopted.

NHTSA defers overwhelmingly to auto manufacturer's preferences and convenience in violation of EPCA's technology forcing mandate. For example, the Volpe model generally does not apply a new technology until a given vehicle is due for a "redesign or refresh." (73 *Fed. Reg.* 24386) The assumption that the manufacturers need apply new technologies only when it is most convenient to do so is completely at odds with the statutory mandate to set fuel economy at the maximum feasible level. NHTSA's use of this and other such assumptions to systematically reduce the maximum feasible fuel economy level violates the statute.

Comment Number: 0572-47
Organization: Center for Biological Diversity
Commenter: Brian Nowicki, Mickey Moritz, Kassie Siegel

NHTSA has manipulated the definition of "technological feasibility" to such an extent that it bears no relation to the plain meaning of those words. This manipulation and artificial constraint of the analysis leads to the perverse result that the "maximum technology" alternative considered by NHTSA of 37.5 mpg in 2011 is far below the fuel economy of many cars on the road today. (73 *Fed. Reg.* 24466) NHTSA's limitation of the regulatory universe to scenarios in which manufacturers' fleet mix remains the same is arbitrary and capricious in light of the nation's urgent need to conserve energy and slow global warming.

Comment Number: 0572-5
Organization: Center for Biological Diversity
Commenter: Brian Nowicki, Mickey Moritz, Kassie Siegel

As part of the statutory balancing, NHTSA must necessarily determine what is "technologically feasible." While NHTSA has discretion to set standards somewhere below that level based on its consideration of the three other statutory factors, if it is reasonable to do so, NHTSA violates both EPCA and NEPA by failing to even consider or disclose what is truly "technologically feasible." An essential component of the DEIS must be disclosure of the "technologically feasible" fuel economy level, along with the environmental impact of choosing this level of fuel economy as compared to the NHTSA's preferred alternative and a reasonable range of additional alternatives. The DEIS fails to provide both the basic starting point for this analysis and the proper analysis that must follow.

"Technologically" is defined by Merriam-Webster's Dictionary as "of or relating to a capability given by the practical application of knowledge." Merriam-Webster Online Dictionary (2008) (definition 1b for technology). "Feasible" is defined as capable of being done or carried out." *Id.* (definition 1). Therefore, NHTSA must disclose what practical application of the knowledge [in the area of engineering] is capable of being done or carried out. NHTSA has failed to do so.

Comment Number: 0575-7
Organization: Union of Concerned Scientists
Commenter: Eli Hopson

NHTSA's own analysis confirms that simply using more realistic gas prices or switching to an analysis based on total benefits would have led them to propose a fleet wide average of at least 35 mpg by 2015—five years earlier than the required minimum. (PRIA Pages III-6, IX-12 and IX-13) Given the urgency of global warming, and the fact that removing CO_2 early on is essential to reducing the risks of dangerous climate change, NHTSA is significantly underestimating the potential environmental impact of increased fuel economy simply because they are failing to exercise their legal obligation to set standards at maximum feasible levels.

Comment Number: 0575-8
Organization: Union of Concerned Scientists
Commenter: Eli Hopson

NHTSA's own analysis proves that technologically feasible and economically practicable fuel economy levels can go well beyond 35 mpg by 2020. In fact, NHTSA's analysis indicates that by employing more sound assumptions, fleet average fuel economy can exceed 35 mpg by even 2015, the final year covered by this rule, setting the stage for even further improvements in fuel economy between 2016 and 2020.

Comment Number: 0576-15
Organization: Public Citizen
Commenter: Joan Claybrook

The agency's mission under EPCA and EISA is to deliver the "maximum feasible" level of fuel economy in a given model year. (See 49 U.S.C. 32902(a).) It is not the agency's responsibility to take into account how the industry could most easily comply. Instead, NHTSA is required to set standards based on "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." (49 U.S.C. at 32902(f))

Comment Number: 0576-25
Organization: Public Citizen
Commenter: Joan Claybrook

The logic behind the restructured CAFE standards is to add the minimum amount of fuel saving technology to bring a manufacturer into compliance with the standard for a given year, with significant latitude given to individual manufacturers for compliance based on the specific fleet mix of a given manufacturer. This approach necessarily undercuts the maximum feasible level of fuel economy. In its November 2007 decision in *Center for Biological Diversity v. NHTSA* the Court of Appeals for the Ninth Circuit said: "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." (*Center for Biological Diversity et al., v. NHTSA*. 508 F. 3d 508. (November 15, 2007).)

NHTSA states in this notice on fuel economy standards: "In striking [a] balance [between costs and benefits], the agency was mindful of the growing need of the nation to conserve energy for reasons that include increasing energy independence and security and protecting the environment." (73 *FR* 24457) However, analysis of the Volpe Model suggests that the assumptions NHTSA uses to set the standards are not sufficiently mindful of the need to conserve energy or environmental protection.

Public Citizen recognizes that since the Ninth Circuit decision there have been changes to the Volpe Model since the 2006 light truck rule: "the set of technologies represented was updated, the logical sequence for progressing through these technologies was changed, methods to account for 'synergies' (*i.e*., interactions) between technologies and technology cost reductions associated with a manufacturer's 'learning' were added, the effective cost calculation used in the technology application algorithm was modified, and the procedure for calibrating a reformed standard was changed, as was the procedure for estimating the optimal stringency of a reformed standard." (73 *FR* at 24396) But these changes have not corrected the problems with the model that prevent it from setting standards at the maximum feasible level. Although Congress authorized NHTSA to restructure the CAFE scheme for passenger cars, but it did not mandate the NHTSA use Volpe Model. There are other ways the agency could model fuel economy that would set targets at the maximum feasible level and would improve public participation in the process.

Comment Number: 0576-8
Organization: Public Citizen
Commenter: Joan Claybrook

The Volpe model for fuel economy is structured in such a way that it undercuts the maximum feasible level of fuel economy statutorily mandated by EPCA. This is because the model is designed to minimize the estimate of what is technologically feasible and economically practicable. The fuel economy targets

set by the Volpe model are a direct product of the economic assumptions made in the inputs to the model. The model also constrains the level of fuel economy by excluding technologies judged not to be cost efficient, and applying phase-in caps on certain technologies, which skews the impacts across the entire range of alternatives.

Comment Number: 0585-1
Organization: Attorneys General of the States of California, Massachusetts, New Jersey, New Mexico, New York, and Oregon, Secretary Of The Commonwealth of Pennsylvania Department of Environmental Protection, and New York City Corporation Counsel
Commenter: Edmund Brown Jr., Joseph Powers, Martha Coakley, Michael Cardozo, Anne Milgram, Gary King, Andrew Cuomo, Hardy Myers

Ultimately, therefore, the DEIS must disclose whether NHTSA has adequately considered the environmental impacts of its new CAFE rule, and determined whether the need to reduce GHG emissions is of such critical importance that it requires the Agency to place more emphasis on energy conservation and to set the CAFE standard at a significantly higher level than proposed. In this case, the higher level would be represented either by the 25% above optimized, 50% above optimized, total cost equal total benefits, or technology exhaustion level alternatives. [Footnote: See original comment document.] The DEIS does not answer this question.

Comment Number: 0596-7
Organization: Environmental Defense Fund
Commenter: Martha Roberts

The statutory mandate in the Energy Policy Conservation Act (EPCA) requires NHTSA to set the "the maximum feasible average fuel economy level" while considering "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." (49 U.S.C. 32902(a), 32902(f)) NHTSA's statutory task is to first determine the "maximum feasible" limits of achievable fuel economy. Then NHTSA has some discretion to require less than the maximum feasible standard if such standard is not "economically practicable," but the agency is not given discretion to balance these statutory factors in a manner that defeats the primary purpose of EPCA. Congress has not given NHTSA discretion to "undermine the fundamental purpose of the EPCA: energy conservation." (p. 14865 *Center for Biological Diversity*)

The EIS fails to properly weigh the statutory factors because it impermissibly relies upon the assumption that economic considerations may be used to reject the "maximum feasible" alternative without a showing that the economic costs associated with an alternative make that alternative not "economically practicable." Merely showing that the estimated mix of economic costs and benefits are optimized at one alternative level of the standard does not establish a basis for concluding that more stringent standards may be rejected as not "economically practicable."

Congress did not establish the optimization of costs and benefits as the controlling factor for setting the standard. The controlling statutory factor is the "maximum feasible" level, but in this rulemaking NHTSA has impermissibly substituted the level at which costs and benefits are optimized as the controlling factor for setting the standard. The statute only gives weight to economic factors to the extent that the maximum feasible standard is not economically practicable. Here, the EIS does not identify economic factors that make the maximum feasible standard not practicable, and fails to explain why alternatives more stringent than the economically optimized level of the standard are not "economically practicable." The failure of the EIS to explore the limits of what is economically practicable is fundamentally arbitrary and capricious because it fails to consider the factors made relevant by the statute.

Comment Number: 0596-9
Organization: Environmental Defense Fund
Commenter: Martha Roberts

The limited findings of the EIS suggest alternatives preferential to the "optimized" alternative. Any of the alternatives with higher fuel efficiency than that of the "optimized" alternative better minimize environmental impacts and foster energy conservation. For example, the "costs = benefits" alternative saves 5.5 billion gallons of fuel annually in 2020 compared to the "optimized" alternative. Furthermore, as described in section II, greater fuel efficiency will prevent thousands of premature deaths a year.

In summary, the EIS supports adoption of the most stringent CAFE standard rather than NHTSA' s preferred "optimized" standard. NHTSA must adopt the feasible standard that achieves the greatest reduction in fuel use because that standard is mandated by the primary objective of EPCA—energy conservation—, unless the agency can show that such standard is not economically practicable. NHTSA must accordingly revise its preferred CAFE alternative to one of greater fuel efficiency.

Comment Number: 0598-2
Organization: Sierra Club
Commenter: Caroline Keicher

NHTSA' s own analysis shows that between 2011 and 2015, significantly higher standards are technologically feasible and economically practicable when higher gas prices are used ($3.14 per gallon in 2016). NHTSA's final rule should be, at a minimum, consistent with the analysis provided in the PRIA. NHTSA's use of below-cost energy estimates is arbitrary and capricious and violates the agency's statutory charter to impose mandatory maximum feasible fuel economy standards based upon a review of economic and technological feasibility.

Comment Number: 0599-1
Organization: Center for Biological Diversity
Commenter: Multiple Signatories

You are required by law to set U.S. fuel-economy standards at the "maximum feasible level." Doing so requires an honest assessment of the real costs and benefits of these standards, but your agency has failed to do so.

Comment Number: 0599-3
Organization: Center for Biological Diversity
Commenter: Multiple Signatories

Your decision to set the "maximum feasible" fuel-economy standard for U.S. automobiles in 2015 at 31.6 mpg, far below what vehicles must achieve today in Europe, Japan, China, Australia, and elsewhere is not only illegal, but also an affront to American ingenuity and resourcefulness.

Comment Number: TRANS-05-8
Organization: Consumer Federation of America
Commenter: Mark Cooper

The crucial rule of higher fuel economy standards is to push the automakers to deliver vehicles that consumers want, and to push the auto industry to the maximum technologically feasible and economically practicable level. NHTSA has failed to do so.

Comment Number: TRANS-12-4
Organization: Individual
Commenter: Sam Blodgett

Failure to utilize the higher cost projection violates NHTSA's statutory charter to impose mandatory feasible fuel economy standards based on economic and technological feasibility.

Comment Number: TRANS-19-8
Organization: Union of Concerned Scientists
Commenter: Eli Hopson

The second problem is with the announcements that the rule is based on. Recent UCS report indicates that auto makers can cut cost effectively their fleet wide average fuel economy of cars and trucks and improve it to 42 miles per gallon by 2020, and up to 50 and more than 50 by 2030, with a modest 25 percent penetration of hybrids by 2020.

Comment Number: TRANS-24-10
Organization: Individual
Commenter: Heather Moyer

NHTSA's own analysis shows that between 2011 and 2015 significantly higher standards are feasible and economically practical when higher gas prices are used. NHTSA's final rule should be, at a minimum, consistent with the analysis provided in the preliminary impact analysis that accompanied this proposed, this notice of proposed rulemaking.

Comment Number: TRANS-24-9
Organization: Individual
Commenter: Heather Moyer

It is time to put existing fuel saving technology to work by increasing fuel economy standards to the levels that reflect the maximum achievable standards for vehicles produced in 2011 and 2015.

Comment Number: TRANS-32-3
Organization: Environmental Defense Fund
Commenter: James Keck

We are also concerned that even though EDFCA requires NHTSA to select the maximum technically feasible fuel economy that is economically practicable, the administration has deviated from this mandate and instead selected the standard that supposedly maximizes economic benefits. This so called optimized standard falls below alternative standards that convey less net economic benefits, but are still economically practicable and better meet the other recognized statutory considerations of energy conservation, environmental, and human health protection.

Comment Number: TRANS-35-6
Organization: Individual
Commenter: Alina Fortson

If we are to take advantage of our best, and most feasible technology, we would be in a position to reduce our oil use, in addition to lessening the impact that the price of gasoline has on families like mine. NHTSA's current proposal hinders this potential.

Comment Number: TRANS-37-6
Organization: Individual
Commenter: Jaafar Rizvi

I am here because I am concerned for several reasons that the fuel economy standards that you all have proposed are not strong enough.

According to the DEIS, fuel economy standards should be set at the maximum feasible average that the Secretary of Transportation decides the manufacturers can achieve in that model year, while simultaneously considering technological feasibility, economic practicability, the effect of other motor vehicle standards of the government on fuel economy, and the need for the U.S. to conserve energy.

And I agree with those guidelines. I think they're good. But I fear that NHTSA didn't properly analyze each of those specifically. For example, when considering economic practicability, the report doesn't really go into all of the economic benefits of lowering emissions, as well as the moral issues, which I won't talk about right now.

Comment Number: TRANS-37-8
Organization: Individual
Commenter: Jaafar Rizvi

And I've heard environmental scientists talk about why they disagree with this report. And I haven't heard any argument about why they are wrong. So basically, I'm left with the position where I feel like something isn't right with the research that's been done here.

And that makes me skeptical about analysis on two of the other categories that were mentioned before, the need for the U.S. to conserve energy and technological feasibility.

Comment Number: TRANS-39-4
Organization: American Jewish Committee
Commenter: Ami Greener

The use of the low cost energy estimates violates the agency's charter to impose mandatory maximum feasible standards based upon a review of economic and technological feasibility. NHTSA must reconsider the proposed standards and use its authority to meet the urgent need of the U.S. to conserve oil and meet the growing demand of American consumers for vehicles that go farther on a gallon of gas.

Response

NHTSA notes that under EPCA, the role of fuel economy standards is to set maximum feasible fuel economy standards. EPCA requires NHTSA to consider "economic practicability," which, as set forth in the NPRM, we have interpreted as not permitting the CAFE standards to cause substantial economic hardship and job loss for automakers. See 49 U.S.C. § 32902(f). Additionally, NHTSA does not have the statutory authority to dictate vehicle fleets. The legislative history of EPCA also demonstrates that Congress was concerned that CAFE standards should not unduly limit consumer choice. See H.R. Rep. No. 94-340, at 87 (1975), reprinted in 1975 U.S.C.C.A.N. 1762, 1849 ("any regulatory program must be carefully drafted so as to require of the industry what is attainable without either imposing impossible burdens or unduly limiting consumer choice as to the capacity and performance of motor vehicles").

Some commenters stated that because specific vehicles currently in production can achieve a fuel economy equal to or greater than EISA's statutory goal of combined fleet fuel economy of 35 mpg by 2020, NHTSA should effectively raise the fuel economy standards to a level that creates innovation among these high-fuel-economy vehicles. These commenters misunderstand how NHTSA measures and calculates CAFE levels under EPCA. CAFE standards are not measured by the performance of a single vehicle in a manufacturer's fleet. Rather, as set forth in the NPRM, they are measured as the average of the manufacturer's fleet-wide fuel economy. As explained in detail in the NPRM, the actual CAFE standards for each manufacturer are a function of their product mix. Vehicles with a larger footprint have a lower fuel economy goal than vehicles with a smaller footprint. NHTSA has, and continues to, set CAFE standards while keeping in mind the preservation of consumer choice, by assuming that manufacturers' product plans reflect this variable. NHTSA uses the manufacturers' product plans to inform what manufacturers' capabilities and capacities will be for any given model year. As stated earlier, NHTSA updated its technology assumptions based on comments received and used these updated assumptions in the Volpe model. NHTSA continues to believe that more stringent standards result in a substantial number of manufacturers falling out of compliance with the standards. This goes to the issue of economic practicability – technological feasibility cannot be viewed independently of this and other EPCA factors. If, for example, a manufacturer chooses to pay civil penalties, NHTSA would not reach the necessary fuel savings goal of achieving a combined fuel economy average for MY 2020 of at least 35 mpg.

Some commenters are concerned with NHTSA's use of purportedly "low" energy costs. As noted above, this FEIS explores CAFE standards resulting when inputting a different fuel price into the Volpe model. This FEIS also evaluates the environmental impacts resulting from the use of other different economic assumptions. See FEIS Sections 3.4.4.2 and 10.2.2. Regarding NHTSA's selection of fuel price in the DEIS, we relied on the most recent fuel price projections from the U.S. Energy Information Administration's (EIA) Annual Energy Outlook (AEO) for this analysis. Specifically, we used the AEO 2008 Early Release forecasts of inflation-adjusted (constant-dollar) retail gasoline and diesel fuel prices, which represent the most up-to-date estimate of the most likely course of future prices for petroleum products. Federal Government agencies generally use EIA's projections in their assessments of future energy-related policies. See 73 FR 24405, May 2, 2008. For a more detailed discussion, see Section 7 of Chapter V of the NPRM, and Chapter VIII of the PRIA. Section 3.4.4.2.2 of the DEIS and Section 3.4.5 of this FEIS also provide a brief discussion of the values assigned to the Volpe model economic assumptions.

Regarding the comments that NHTSA must adopt the "environmentally preferable" alternative as its preferred alternative, neither EPCA nor NEPA require this. As noted above, "Congress in enacting NEPA . . . did not require agencies to elevate environmental concerns over other appropriate considerations." Baltimore Gas and Elec. Co. v. Natural Resources Defense Council, Inc., 462 U.S. 87, 97 (1983). Instead, NEPA requires an agency to develop "alternatives to the proposed action" in preparing an EIS. 42 U.S.C. § 4332(2)(C)(iii).

Other commenters stated that NHTSA must take into account the looming threat of global warming on the environment and give further emphasis to energy conservation by setting the CAFE standards at a higher level. NHTSA's range of alternatives considers the effect of global warming on the environment. Moreover, the purpose of an EIS is to present the reasonably foreseeable environmental impacts of the agency's proposed action to the decisionmaker and to the public, not to force policymakers' decisions. The Supreme Court in Public Citizen v. Department of Transportation found that "NEPA itself does not mandate particular results" but rather, "NEPA imposes only procedural requirements on federal agencies with a particular focus on requiring agencies to undertake analyses of the environmental impact of their proposals and actions." 541 U.S. 752, 756-57 (2004) (citing Robertson

v. Methow Valley Citizens Council, 490 U.S. 332, 349-50 (1989). Accordingly, a normative determination that GHG emissions reduction are of critical importance is not the purpose of an EIS.

10.2.3.10 The Need of the United States to Conserve Energy

Comments

Comment Number: 0564-12
Organization: Consumer Federation of America
Commenter: Mark Cooper

NHTSA failed to give the "need to conserve energy" proper consideration in light of the clear, obvious, and painful national energy crisis currently facing all Americans. In speaking for the American public, Congress was very clear in its requirement that NHTSA set the fuel economy standard at the "maximum feasible level." In doing so, NHTSA was to take into consideration "the four statutory factors underlying maximum feasibility (technological feasibility, economic practicability, the effect of other standards on fuel economy, and the need of the nation to conserve energy)." NHTSA completely failed to give proper consideration to this last and most fundamental reason for the Act: "the need of the nation to conserve energy."

Comment Number: 0585-11
Organization: Attorneys General of the States of California, Massachusetts, New Jersey, New Mexico, New York, and Oregon, Secretary Of The Commonwealth of Pennsylvania Department of Environmental Protection, and New York City Corporation Counsel
Commenter: Edmund Brown Jr., Joseph Powers, Martha Coakley, Michael Cardozo, Anne Milgram, Gary King, Andrew Cuomo, Hardy Myers

Ultimately, however NHTSA chooses to present the data, there must be some analysis that enables the Agency and the public to determine whether the proposed CAFE rule, when combined with other anticipated actions, is sufficiently stringent to reduce, over time, GHG emissions and stabilize CO_2 concentrations at levels that will prevent us from reaching the area of dangerous anthropogenic interference. If the proposed CAFE rule is not sufficiently stringent to reach those goals, then NHTSA has not properly considered whether our need to conserve energy and lower GHG emissions outweighs the remaining factors under EPCA, and requires a stricter CAFE standard and higher fuel economy.

Comment Number: TRANS-14-5
Organization: U.S. Public Interest Research Group
Commenter: Annie Chau

We fully support the comments of the Consumer Federation of American and we agree that NHTSA has failed to prioritize the need to conserve energy, has undervalued the benefits of increased vehicle fuel economy, and has kept standards too low for too long.

Response

Some commenters claimed that NHTSA did not prioritize the need to conserve energy. Throughout this rulemaking and the development of the DEIS and this FEIS, NHTSA did, and continues to, appropriately prioritize the need to conserve energy when balancing the EPCA factors, along with environmental issues and relevant societal issues, in an effort to set maximum feasible fuel economy standards. The extent of such prioritization is within NHTSA's discretion. Notably, "Congress did not prescribe a precise formula by which NHTSA should determine the maximally-feasible fuel economy

standard, but instead gave it broad guidelines within which to exercise its discretion." Competitive Enterprise Institute v. NHTSA, 901 F.2d 107, 121 (D.C. Cir. 1990) (citing Public Citizen v. NHTSA, 848 F.2d 256, 265 (D.C. Cir. 1988)). See also Center for Auto Safety v. NHTSA, 793 F.2d 1322, 1340 (D.C. Cir. 1986) (same); Competitive Enterprise Institute v. NHTSA, 901 F.2d 107, 121 (D.C. Cir. 1990) (Wald, J.) (same). Thus, EPCA does not require NHTSA to establish fuel-economy standards at any particular level, but instead confers on NHTSA broad discretion to balance these factors when setting an appropriate standard. However, in response to comments, NHTSA is presenting the CAFE stringencies and the resulting environmental impacts that would result from using the higher AEO forecast, which increases the value of fuel-saving technology. Thus, higher fuel prices produce model results that imply an increased emphasis on the need for the nation to conserve energy. In this way, NHTSA has acknowledged the commenters' concerns and addressed the scenario of increased need for the nation to conserve energy. For a more detailed discussion of NHTSA's balancing of EPCA's four factors, including the need to conserve energy, along with the environmental issues and relevant societal issues, such as safety, see Section 2.2 of this FEIS.

10.2.3.11 More Aggressive Alternative

Comments

Comment Number: 0533-1
Organization: Individual
Commenter: Robert Burchard

Even the President now recognizes the reality of anthropogenic global warming. This threat to the biosphere combined with increasing acidity of the earth's oceans caused by increasing atmospheric CO_2 necessitates the need for early implementation of rigorous fuel economy standards independent of "paying-for-itself considerations. America's auto industry needs to have its feet held to the fire and quickly. If Japanese manufacturers can do it, why can't "Detroit"?

Comment Number: 0534-1
Organization: Individual
Commenter: Peggy Gilges

Please do the right thing by our great nation and mother earth now– insist on MUCH higher– already implementable – standards that dramatically increase fuel efficiency of U.S. vehicles in the near term.

Comment Number: 0536-1
Organization: Ceribon
Commenter: Unkown

I believe that all efforts should be made to produce an American car and imported car with the highest mpg possible, I don't mean 25, I mean what the Prius is touting 45 mpg. It is also possible to include technologies which can increase this further.

Comment Number: 0539-1
Organization: Individual
Commenter: John Schieber

The need for an aggressive reduction in fuel usage is not only about an attempt to keep the cost down – it's about the need to drastically conserve what remains for future generations.

Comment Number: 0544-1
Organization: Individual
Commenter: Michael Kirchner

I support real world fuel economy standards, and whole heartily support increasing these standards toward the goal of 100 mpg.

Comment Number: 0545-1
Organization: Individual
Commenter: Mary Hamilton

The sensible way to go in this global climate crisis is to increase miles per gallon.

Comment Number: 0547-1
Organization: Individual
Commenter: Fred Marshall

We need to raise cafe standards not erode them. It is insane to drill in environmentally sensitive areas when we can directly reduce demand for oil by mandating that all passenger cars get at least 40 mpg by 2012. It is so clear, double the mpg and you double the fuel supply.

Comment Number: 0548-1
Organization: Individual
Commenter: Carl Henne

The CAFE requirement should be at least 50 mpg for all cars and light trucks by 2018 and an equal proportional improvement for all trucks and busses.

Comment Number: 0550-5
Organization: Individual
Commenter: Sarah Larsen

Although there is no magic antidote to get us to an 80% reduction in CO_2 emissions by 2050, one of the single biggest step we can take in this country to reduce our global warming emissions is to make our cars and trucks go further on a gallon of gasoline. The technology exists today to safely and cost-effectively make all passenger cars and light trucks reach a fleet wide fuel economy average of at least 35 miles per gallon by 2015. Taking this step will achieve the goals of the new fuel economy law and as is most pertinent to this hearing will greatly reduce the global warming emissions from the transportation sector.

Comment Number: 0555-1
Organization: National Counsel of Churches and Christ
Commenter: Elizabeth McGurk

On behalf of the religious organizations we represent, we urge you to increase the Corporate Fuel Economy (CAFE) standards of America's vehicles

Comment Number: 0557-12
Organization: The Natural Resources Defense Council
Commenter: Luke Tonachel, Brian Siu

If NHTSA had used reasonable assumptions for their analysis, the fuel economy levels in the proposed rule and all cost-dependent alternatives would be higher. For example, based on NHTSA's *own* sensitivity analysis presented in the Preliminary Regulatory Impact Assessment, the MY2015 fuel economy standards should be set at least at the level that would result in a combined fleet average of 35 mpg by MY2015 if the fuel savings are more properly valued.

The potential additional public and private benefits of raising the standards to 35 mpg by MY2015 are enormous. Consumer pocketbooks, the nation's energy security, and the environment would all stand to benefit tremendously from a 35 mpg standard. We estimate by 2020, the U.S. would conserve 3 billion barrels of oil, 1.5 times more, if the MY2015 standard was set at a level that resulted in a combined 35 mpg instead of 31.6 mpg. The 35 mpg level in MY2015 also avoids 510 million metric tons of global warming pollution (see Figure 5). [See original comment document for Figure 5.]

The emissions reduction estimates are conservative, however. Beyond 2015, the fuel economy standards could continue to increase to over 40 mpg in 2020, which would result in even greater pollution reductions.

Comment Number: 0557-15
Organization: The Natural Resources Defense Council
Commenter: Luke Tonachel

In the DEIS, NHTSA characterizes the differences in the environmental impacts between the proposed standard and the other evaluated alternatives as small and difficult to distinguish. The fuel economy level proposed by NHTSA in the CAFE rule, referred to as the "Optimized" alternative in the DEIS, reaches a fleetwide fuel economy level of 31.6 mpg in for model year (MY) 2015. Other alternatives reach higher levels; for example the Total Cost Equals Total Benefits (TC=TB) alternative reaches 37.5 mpg for MY 2015. The DEIS concludes that there is almost no difference between the proposed standard and the TC=TB alternative, noting that the two alternatives differ by only 0.2 percent in terms of global warming emissions reductions in 2100. Our analysis of similar alternatives shows that NHTSA's characterization is misleading. In reality, more aggressive alternatives to the proposed rule can have very significant environmental benefits over the proposal. For example, a standard that reaches 35 mpg with MY 2015 instead of MY 2020 could save more than a billion barrels of oil and cut greenhouse gas (GHG) emissions by more than 510 million metric tons of CO_2-equivalent (MMT CO_2e) by 2020. A 35 mpg standard for MY 2015 would also pave the way for future fuel economy increases beyond 2015; these increases would put the U.S. on a path to achieve at least 40 mpg by 2020 and provide further oil and GHG savings not envisioned by the current DEIS.

Comment Number: 0559-6
Organization: The Northeast States for Coordinated Air Use Management (NESCAUM)
Commenter: Arthur Marin

As a general observation, we note that NHTSA has taken a rather conservative approach towards setting fuel economy standards. The proposal emphasizes "available technologies" for achieving fuel economy improvements and reflects a rather strong preoccupation with the ability of individual auto manufacturers to meet more stringent standards, compared to what is proposed. Further, NHTSA's optimized standards are couched almost exclusively in economic terms; emphasizing a perceived need for "maximizing net societal benefits... where the estimated benefits to society exceed the estimated cost of the rule by the

highest amount." NHTSA appears very reluctant to propose more ambitious standards if the effect would be to reduce the consumer payback by any amount.

Comment Number: 0572-52
Organization: Center for Biological Diversity
Commenter: Brian Nowicki, Mickey Moritz, Kassie Siegel

These findings are merely the most recent in a growing body of literature that is refining the scientific understanding of the need to quickly and drastically reduce our greenhouse gas emissions to minimize the impacts of global climate change. This represents a significant advance in the scientific understanding of global climate change, which previously has included the assumption that global atmospheric concentrations of CO_2 must be contained below 450 to 550 parts per million (ppm) in order to avoid the worst impacts of climate change. NHTSA fails to refer to or consider this essential information in the proposed rule. The urgency of the climate crisis and the need to immediately and rapidly reduce greenhouse gas emissions in order to avoid catastrophic climate changes, clearly tops the list of reasons that our nation needs to conserve energy. NHTSA's complete failure to address this information violates the law.

Comment Number: 0575-1
Organization: Union of Concerned Scientists
Commenter: Eli Hopson

Instead of doing the bare minimum to satisfy the law, NHTSA should put cars and trucks on a path to 42 mpg by 2020 and at least 50 mpg by 2030. This would cut global warming pollution from new cars and trucks in half by 2030 and would save about 50 billion barrels of oil through 2050.

A recent UCS report indicates that automakers can cost-effectively boost the fleet wide average fuel economy of cars and trucks to 42 mpg by 2020 and to more than 50 mpg by 2030, with a modest 25% penetration of hybrids by 2020. [Footnote: See original comment document] Yet the recent notice of proposed rulemaking just barely gets cars and trucks on the road to the 35 mpg minimum by 2020, and assumes that hybrids don't enter the market until 2014. [Footnote: See original comment document.] Let me just reiterate that – despite the fact that there are more than one million hybrids on the road today, in 2008, and that the Toyota Prius is the 9th best-selling car in America, the analysis NHTSA used assumes hybrids won't reach the market until 2014.

Comment Number: 0576-2
Organization: Public Citizen
Commenter: Joan Claybrook

NHTSA has obfuscated the relative benefits of the alternatives it considered by not putting the impacts in context.

NHTSA has unreasonably constrained its range of alternatives, omitting a number of reasonable options. For example, NHTSA considered but did not analyze in detail more aggressive or accelerated standards. Instead, the agency asserts that it requires standards be raised by 4.5 percent per year, a rate fast enough that extended to 2020 would exceed the 35 by 2020 mandate of Congress. The agency explains, "other alternatives that would establish higher CAFE standards would result in larger fuel savings and emission reductions than those resulting from the preferred alternative. However, they would also result in lower net benefits than the preferred alternative due to higher costs to society. As such, NHTSA is already considering accelerated fuel economy standards." [Footnote: See original comment document.]

Comment Number: 0588-1
Organization: New York State Department of Transportation
Commenter: Stanley Gee

The transportation sector currently contributes nearly a third of the national carbon dioxide (CO_2) and other greenhouse gas (GHG) emissions, both byproducts of petroleum fuel combustion. There is a need to reduce these emissions to slow the rate of anthropogenic-induced climate change, which is having serious impacts on the global, and regional environment, Due to the global urgency associated with reducing the nation's reliance on imported petroleum and to reduce GHG emissions, the preferred alternative should increase the fuel economy standards beyond 35.7 mpg and 28.6 mpg for MY 2015 passenger cars and light trucks, respectively.

NYSDOT recommends that NHTSA establish a more aggressive standard and achievement timetable for the new CAFE standards. At a minimum, NHTSA should consider a hybrid alternative that is equivalent to the "Technology Exhaustion" alternative for light-duty trucks and "Total Costs Equal Total Benefits" alternative for passenger cars. NYSDOT believes that this approach would provide significantly greater GHG emissions reductions than the proposed preferred alternative, yet would consider the diminishing returns of technology exhaustion for passenger cars as indicated in Tables 3.2-2 and 3.2-3. It is important for environmental, energy and economic reasons to increase the national fuel economy from the proposed rate of increase to a much more rapid yet technologically achievable rate.

Comment Number: 0598-1
Organization: Sierra Club
Commenter: Caroline Keicher

NHTSA must set the right "optimized" standard and then recalibrate the other bounds. The 35 mpg target for 2020 is a floor, not a ceiling — the law directs that the standards should be the maximum that are technologically feasible.

Comment Number: 0598-3
Organization: Sierra Club
Commenter: Caroline Keicher

Because NHTSA' s proposed standards are based upon flawed assumptions, the range of options considered in the DEIS is incorrect. In the DEIS, NHTSA's basic approach to setting new fuel economy standards is to strictly adhere to hitting, but not exceeding, 35 mpg in 2020. At several points in the DEIS, NHTSA recognizes the two critical words "at least," which precede 35 mpg in the 2007 Energy Independence and Security Act. At other points, NHTSA says the standards must be set to merely hit 35 mpg in 2020. NHTSA should recognize that 35 mpg is the floor that Congress provided and set standards that are not improperly bound to meeting a minimum fleetwide average of 35 mpg in 2020. Because NHTSA's proposed standards are too low, the range of options NHTSA considers in the DEIS are also too low.

Comment Number: 0598-9
Organization: Sierra Club
Commenter: Caroline Keicher

If we implement the weak proposed standards that NHTSA has published, which put us on a path to 35 mpg by 2020, we will save around 1.4 million barrels of oil per day in 2020. This is equivalent to keeping almost 220 million metric tons of CO_2 out of the atmosphere. While this is significant, it isn't enough to get us to 423 MMT CO_2e. However, if NHTSA speeds up fuel economy standards to 35 mpg

by 2015, using a more accurate price of gasoline and fully incorporating all of the current available technology advances, and puts us on a path to 42 mpg by 2020, we will save an additional 880,000 barrels of oil a day in 2020. This brings us to a grand total of 2.28 million barrels of oil saved every single day in 2020 – a number that will increase as the fleet turns over – and will keep at least 360 million metric tons of CO_2 out of the atmosphere. While still short of the target cuts from cars and light trucks, 35 mpg by 2015 gets us significantly closer to these goals.

To simplify this even further, to be on track for necessary carbon reductions, we need to reduce the emissions from cars and light trucks by 25%. NHTSA's proposed 35 mpg by 2020 standards only gets us halfway there. Not nearly enough in a global warming context.

Comment Number: 0599-4
Organization: Center for Biological Diversity
Commenter: Multiple Signatories

I call upon you to raise the proposed fuel—economy standards for model years 2011—2015 to at least 50 mpg, in order to challenge automakers to respond to the urgent need to conserve energy and reduce greenhouse pollution.

Comment Number: TRANS-06-4
Organization: Public Citizen
Commenter: Lena Pons

Other reasonable alternatives would include a situation wherein there was additional increases in fuel economy standards beyond the period of the Energy Independence and Security Act, which would require only that vehicles reach a standard of 35 miles per gallon for the combined fleet, cars and light trucks by 2020.

However, given the fact that there are significant market incentive and also environmental incentive to extend the standards beyond that level, then there is a likely, there's likely a reasonable alternative to consider what would happen if you had standards that extended beyond that level.

Comment Number: TRANS-07-2
Organization: Individual
Commenter: Eliza Berry

NHTSA is currently making a decision that will profoundly influence our emissions during the next 10 years and beyond. NHTSA should therefore contribute to the effort to peak emissions sooner rather than later. This means adopting the highest fuel economic standards economically and technologically possible.

In summary, I would like to ask NHTSA to reevaluate the conclusions drawn from their draft environmental impact statement, and encourage NHTSA to require a 35 mile per gallon fuel economy standard by 2015.

Comment Number: TRANS-08-1
Organization: Sierra Club
Commenter: Ann Mesnikoff

Raising fuel economy standards to at least 35 miles per gallon in 2015 is a key step to curing our oil addition and reducing global warming pollution.

Comment Number: TRANS-08-11
Organization: Sierra Club
Commenter: Ann Mesnikoff

The 35 mpg target in 2020 is a floor not a ceiling. The law directs that the standards be what is maximally feasible. How can the public have confidence in NHTSA, that NHTSA is setting the right standards when some of the key inputs in its analysis are flawed.

Second, can the public have confidence in the range of options considered in the DEIS. NHTSA strictly adheres to a 35 by 2020 standard. At several points NHTSA recognizes the two critical words which proceed 35 in the 2007 energy bill, the words at least.

Comment Number: TRANS-10-1
Organization: Individual
Commenter: Matt Dernoga

I find it perplexing that NHTSA would aspire to only a mere 35 miles per gallon by 2020, the bare minimum of what is required by the Energy Independence and Security Act.

Comment Number: TRANS-11-1
Organization: Individual
Commenter: Jazzlin Allen

NHTSA's current proposed standards for cars and light trucks put us on a path to increasing fuel economy to only the bare minimum, 35 miles per gallon by 2020 required by the Energy [Independence] and Security Act of 2007. NHTSA fails to take full advantage of available fuel saving technologies, and must reconsider the proposed standards and use its statutory authority to meet the urgent need of the United States to reduce carbon emissions, conserve oil, and meet the growing demand of American consumers for vehicles that go farther on a gallon of gas.

Comment Number: TRANS-12-1
Organization: Individual
Commenter: Sam Blodgett

I strongly believe that NHTSA must raise CAFE standards to 35 miles per gallon by the year 2015. Failure to do so would be a failure of the American people who are in desperate need of relief from rising gas prices.

Comment Number: TRANS-14-2
Organization: U.S. Public Interest Research Group
Commenter: Annie Chau

Set the 2011 to 2012 standards at a substantially higher level than previously proposed.

Comment Number: TRANS-15-3
Organization: Individual
Commenter: Marissa Knodel

Increasing CAFE standards to 35 miles per gallon by 2015, instead of waiting for 2020 as currently required save 300,000 gallons of oil per day by 2020, which is equivalent to keeping 280 million metric tons of carbon dioxide out of the atmosphere.

Comment Number: TRANS-19-7
Organization: Union of Concerned Scientists
Commenter: Eli Hopson

The other list has been mentioned, but I just want to summarize and say your own analysis showed that if you use a more realistic gas price, or switch to an analysis based on total benefits, each of those would allow us to reach Congressionally mandated minimum five years earlier, so 35 miles per gallon by 2015, and would help us get a head start on solving our global warming problem.

Comment Number: TRANS-20-3
Organization: Sierra Club
Commenter: Caroline Keicher

In addition, the proportion of emissions saved is much less important than the total cumulative carbon savings. The front end reductions are more important and have more cumulative impact than later emission reductions.

Taking this into account, it seems even more obvious that NHTSA should set new fuel economy standards to reach 35 miles per gallon by 2015. Not only is this standard economically and technologically feasible when a more accurate gas price is used, but it gets our cars and light trucks traveling an average of 35 miles per gallon five years sooner, the cumulative carbon savings of which is anything but insignificant.

Comment Number: TRANS-21-3
Organization: Individual
Commenter: Christina Marie Yagjian

In order to ensure that we take the strongest measures available, NHTSA must do its part. They must begin now by evaluating fuel economy standards in the correct context and setting fuel economy standards at the maximum feasible level, at least 35 miles per gallon by 2015.

Comment Number: TRANS-21-5
Organization: Individual
Commenter: Christina Marie Yagjian

It has never been more important that we take the strongest measures available to us to curb global warming emissions, and to do our part to mitigate the effects of global climate change.

Comment Number: TRANS-23-1
Organization: Greater Washington Interfaith Power and Light
Commenter: Tara Morrow

As you set standards to meet the energy independence and security acts mandate to achieve a fleet wide fuel economy outreach of at least 35 miles per gallon by 2020, may you remember that 35 miles per gallon is a minimum, and future generations will applaud us for our boldness in implementing what is technologically feasible, or wonder how we lacked the creativity and will to respond to global warming and the challenges of energy security.

Comment Number: TRANS-24-1
Organization: Individual
Commenter: Heather Moyer

The technology exists today to safely and cost effectively make all passenger cars and light trucks reach a fleet wide fuel economy average of at least 35 miles per gallon by 2015. Taking this step will achieve the goals of the new fuel economy law, and is most pertinent to this hearing, will greatly reduce the global warming emissions from the transportation sector, which as you've heard others say, may currently make up 20 percent of our country's greenhouse gas emissions.

Comment Number: TRANS-25-3
Organization: Individual
Commenter: Emanuel Figueroa

I'm here to the matter of change because you, as NHTSA, have the power and responsibility to enforce fuel efficiency standards of at least 35 miles per gallon. And this is the biggest single step that you can do to create a better world, and this will save a lot of gasoline, and this will save us a lot of money.

Comment Number: TRANS-26-1
Organization: United Church of Christ
Commenter: Mari E. Castellanos

35 miles per gallon by 2015, an 80 percent reduction of greenhouse emissions by 2050, is the minimum that we must achieve, a commitment to their future.

Comment Number: TRANS-32-8
Organization: Environmental Defense Fund
Commenter: James Keck

NHTSA has not provided sufficient transparency to explain why it has departed from more stringent alternatives to better meet the energy conservation goal of EPCA.

Comment Number: TRANS-34-1
Organization: Individual
Commenter: Fred Teal, Jr.

I am here today because I'm very concerned about NHTSA's reluctance to upgrade corporate average fuel economy standards above minimum required levels.

Comment Number: TRANS-37-5
Organization: Individual
Commenter: Jaafar Rizvi

I urge you to increase the standards to 35 miles per gallon by 2015. And I would urge you to consider that this won't cause undue stress on American car manufacturers. In fact, I have tremendous faith in the ingenuity and the ability of the American people, specifically those in Detroit, not only to successfully meet the high standard, but to prosper and thrive and become leaders.

Comment Number: TRANS-39-7
Organization: American Jewish Committee
Commenter: Ami Greener

We cannot overestimate the importance of moving towards tougher fuel economy standards this time. Even if we – we shouldn't underestimate the challenges this and other actions addressing energy security will entail. But we see no alternative if we are to put the United States in a more sustainable energy path, essential to both our nation's security and environmental health.

Comment Number: TRANS-40-1
Organization: Individual
Commenter: Robert Dawes

I hope that NHTSA understands the dire necessity of putting existing fuel saving technology to work by increasing achievable standards for vehicles produced in future years. By doing this alone, these standards would save $54 billion dollars of gasoline over the five years addressed in rulemaking.

Furthermore, by setting standards to 35 miles per gallon in 2015, an additional $22 billion dollars in gasoline would be saved. This translates to 280 million metric tons of CO_2 out of the atmosphere.

Comment Number: TRANS-42-3
Organization: National Counsel of Churches and Christ
Commenter: Elizabeth McGurk

I urge you to strengthen the current proposed standards by setting a new standard of at least 35 miles per gallon by 2015.

Comment Number: TRANS-42-4
Organization: National Counsel of Churches and Christ
Commenter: Elizabeth McGurk

Achieving higher fuel economy standards for U.S. cars and trucks is one of the most important actions we can take to reduce our greenhouse gas emissions which are causing global warming and impacting both God's people and God's planet.

Comment Number: TRANS-44-4
Organization: Individual
Commenter: Emily Spear

The transportation sector has the ability to add their contribution by increasing fuel economy standards, if we know that currently America has the capacity to increase standards to 35 miles per gallon by 2015, what's stopping us?

Response

NHTSA received comments on the DEIS and the NPRM urging more "aggressive" fuel-economy standards. One commenter requested that NHTSA describe how more aggressive alternatives would contribute to reducing global warming. For a discussion of the environmental impacts associated with all of NHTSA's alternatives, including its most aggressive alternatives, see Sections 3.2.3, 3.3.2, 3.4.4, 4.2.2, 4.3.2, and 4.4.4 of this FEIS.

Most commenters emphasized that EISA's goal of at least 35 mpg by 2020 is a floor, or a minimum CAFE requirement by 2020, and argued that 35 mpg in the combined fleet can be reached as the maximum feasible fuel-economy level by 2015. NHTSA has considered the increasing need of the United States to become more energy independent, consistent with EPCA's overarching goal of energy conservation, and the threat of global climate change. NHTSA recognizes that this rulemaking is in a unique position to address both of these concerns. NHTSA takes this opportunity and responsibility very seriously. However, Congress has stated that when setting maximum feasible CAFE standards, NHTSA must consider and balance the four EPCA statutory factors. NHTSA notes that electing to impose more aggressive standards would impose substantial additional costs on the industry at a time when the industry and economy are both facing difficult conditions or induce more manufacturers to pay penalties rather than achieve higher levels of fuel economy. Overly aggressive standards would not achieve the result intended by EPCA, i.e., meeting EPCA's overarching goal of energy conservation while ensuring economic practicability and technological feasibility.

10.3 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

10.3.1 Introduction

Comments

Comment Number: 0595-11
Organization: Environmental Protection Agency
Commenter: Susan Bromm

In several places throughout the DEIS, the text implies that in addition to evaluating several alternatives for model year 2011-2015 CAFE standards, the DEIS also includes analysis of future model year 2016-2020 CAFE standards (for example, in the third paragraph of the June 24, 2008 DEIS cover letter from Deputy Administrator James F. Ports, Jr., and in the titles to Table 2.5-8 and 2.5-9, and the titles to Figures 2.5-3, and 2.5-4). The Environmental Protection Agency (EPA) was unable to determine from reading the DEIS if, in fact, new standards were analyzed for model years 2016-2020. NHTSA should clarify this issue in the final EIS, and to the extent potential CAFE standards were modeled for 2016-2020, such standard scenarios should be described in detail in the final EIS.

Response

NHTSA notes the need for clarification. Because EISA directs NHTSA to increase CAFE standards to reach a combined fleet average CAFE level of at least 35 mpg by model year 2020, MY 2016-2020 CAFE standards are reasonably foreseeable and must be accounted for when analyzing the cumulative impacts of the proposed action. For each alternative, NHTSA assumed that passenger-car and light-truck CAFE standards would continue to increase over model year 2016-2020 at their average annual rate of increase over MY 2011-2015. This assumption results in passenger-car and light-truck CAFE standards under each action alternative that meet or exceed the EISA requirement of a combined fleet average of 35 mpg by model year 2020. NHTSA assumed further that the fuel economy standards for model year 2020 would remain in effect through the end of the analysis period. Because the CAFE standards apply to new vehicles, this assumption results in emissions reductions and fuel savings that continue to grow as new vehicles meeting the CAFE standards for MY 2020 and beyond are added to the fleet in each subsequent year, reaching their maximum values when all passenger cars and light trucks in the U.S. fleet meet these standards. NHTSA included this effect in the analysis. NHTSA has expanded our explanation of these assumptions in the beginning of the FEIS cumulative impacts discussions. See FEIS Sections 4.3.2.1, 4.4 (introduction), 4.4.4.1, and 4.4.4.2.

10.3.1.1 Approach to Scientific Uncertainty and Incomplete Information

Comments

Comment Number: 0572-25
Organization: Center for Biological Diversity
Commenter: Brian Nowicki, Mickey Moritz, Kassie Siegel

The statement of "uncertainty" is overused and abused throughout the DEIS. To avoid further analysis and consideration of environmental impact, the DEIS frequently presents background on climate change, but qualifies the information as "uncertain." In most instances this is uncalled for. The argument could be made that every piece of information in any EIS is uncertain, yet an agency is expected to make a good faith effort to consider impacts that are reasonably certain. While the IPCC may label the intensity of some effects as "likely" as opposed to "very likely," the effects are still just as certain as effects such as

smog due to criteria pollutant emissions. For instance, the IPCC states that "Warming of the climate system is unequivocal, as is now evident from observations of increases in global average air and ocean temperatures, widespread melting of snow and ice, and rising global average sea level." (Alley et al. 2007) By overusing the uncertainty qualification, the DEIS fails to consider important impacts of climate change and obfuscates the issue so that the decisionmakers and public will not be able to adequately evaluate the balance of harms that may occur as a result of different alternatives.

Comment Number: 0572-3
Organization: Center for Biological Diversity
Commenter: Brian Nowicki, Mickey Moritz, Kassie Siegel

Recent court decisions have shaped the context in which the NEPA analysis must be conducted with regard to global warming. The United States Supreme Court held in *Massachusetts v. EPA* that carbon dioxide and other greenhouse gases are "unquestionably 'agents' of air pollution" and unambiguously fall within the Clean Air Act's definition of an air pollutant. 127. S.Ct. 1438, 1460 n. 26(2007). Furthermore, the Court held that the EPA could not avoid its statutory obligation to regulate greenhouse gases merely due to "some residual uncertainty" about the "various features of climate change." 127. S.Ct. 1438, 1463 n. 26 (2007). This holding underscores that priority must be given to addressing climate change despite the lack of some details. The excessive use of "uncertainty" in the DEIS violates this mandate to act on what is already known.

Response

NHTSA appropriately refers to the "Incomplete or Unavailable Information" provision in the CEQ regulations (40 CFR § 1502.22) in its climate modeling discussion. NEPA requires federal agencies to assess the environmental impacts of proposed federal actions. See 42 U.S.C. § 4332(C). CEQ regulations provide a process for evaluating reasonably foreseeable significant adverse impacts when the necessary information is incomplete or unavailable. Under conditions of uncertainty, 40 CFR § 1502.22 requires evaluation of "existing credible scientific evidence" relevant to assessing significant adverse impacts, including catastrophic consequences that have a low probability of occurrence. See 40 CFR § 1502.22(b)(3)-(4). If the agency cannot obtain adequate information to evaluate the impacts, the EIS must explain the relevance of this information to evaluating reasonably foreseeable significant adverse impacts, and evaluate the impacts based on theoretical approaches or research methods generally accepted in the scientific community. See Mid States Coalition for Progress v. Surface Transportation Board, 345 F.3d 520, 549-50 (8th Cir. 2003) (quoting 40 CFR § 1502.22(b)). Where an agency reasonably determines that a risk is too remote or unquantifiable, a qualitative discussion of that risk and potential accompanying environmental impacts is appropriate. See 42 U.S.C. § 4332 (requiring federal agencies to "identify and develop methods and procedures … which will insure that presently unquantified environmental amenities and values may be given appropriate consideration"); 40 CFR § 1502.23 (requiring an EIS to discuss the relationship between a cost-benefit analysis and any analyses of unquantified environmental impacts, values, and amenities); CEQ, Considering Cumulative Effects Under the National Environmental Policy Act (1984), available at http://ceq.hss.doe.gov/nepa/ccenepa/ccenepa.htm (recognizing that agencies are sometimes "limited to qualitative evaluations of effects because cause-and-effect relationships are poorly understood" or cannot be quantified).

NHTSA's determination that distinctions between the alternatives in various areas of the impacts discussion cannot be quantifiably evaluated is also appropriate because the means to obtain the relevant information to accurately quantify these effects are not known. For example, climate modeling is not yet sensitive enough to model temperature, sea-level, or precipitation changes on regional levels or to such a precise order of magnitude as to allow the analysis to distinguish among the alternatives. CBD appears to be saying that NHTSA is labeling as uncertain changes or impacts that are clearly certain (i.e.,

"increases in global average air and ocean temperatures"). NHTSA agrees that these are reasonably foreseeable future impacts. What are uncertain are their timing, degree, and ramifications within regional and global ecosystems. This uncertainty results because the current state of science does not provide a means to obtain this information to accurately quantify these aspects of the impacts. Accordingly, these foreseeable impacts of NHTSA's CAFE rulemaking fall within the meaning of "Incomplete or Unavailable Information," and NHTSA has included the appropriate qualitative analysis required by Section 1502.22 of the CEQ regulations. See Mayo Foundation v. Surface Transportation Board, 472 F.3d 545, 555-56 (8th Cir. 2006) (upholding the Surface Transportation Board's use of 40 CFR. § 1502.22(b) procedures after admitting that their model could not be used to model impacts at a local level, and the Board extensively discussed the potential impacts on air quality that could result from the implementation of the project in the EIS); Lee v. U.S. Air Force, 354 F.3d 1229, 1241-45 (10th Cir. 2004) (upholding EIS as adequately addressing, under NEPA, noise effects of increased overflights, impacts of increased low-level overflights on livestock, and environmental and economic impacts of aircraft accidents, against claims that the Air Force used flawed methodology to analyze noise impacts, used outdated studies to assess livestock impacts, and failed to consider the impact of aerial refueling or the potential secondary effects of aircraft accidents; deferring to Air Force's methodology where it was explained thoroughly in the EIS); Mid States Coalition for Progress v. Surface Transportation Board, 345 F.3d 520 (8th Cir. 2003) (holding that degradation of air quality was a "reasonably foreseeable" indirect effect of proposed rail lines, even if its extent was not; encouraging use of Section 1502.22 for evaluating reasonably foreseeable impacts of CO_2 emissions when necessary information is incomplete or unavailable – the EIS must explain the relevance of this information to evaluating reasonably foreseeable significant adverse impacts, and evaluate the impacts based on theoretical approaches or research methods generally accepted in the scientific community); Sierra Club v. Marita, 46 F.3d 606, 621 (7th Cir. 1995) (upholding U.S. Forest Service's EIS, including its refusal to apply conservation biology science suggested by petitioner, after considering the implications and "determin[ing] that science to be uncertain in application," holding that an agency is entitled to use its own methodology, unless it is irrational); Salmon River Concerned Citizens v. Robertson, 32 F.3d 1346, 1359 (9th Cir. 1994) (upholding U.S. Forest Service's EIS under NEPA, finding agency's accounting of "chemically sensitive persons by including a safety factor" resulted in a reasoned analysis and adequate disclosure of the evidence before it, where agency experts found that the scientific community cannot determine what causes a reaction in a chemically sensitive person, or define discreetly that reaction); cf San Luis Obispo Mothers for Peace v. Nuclear Regulatory Commission, 449 F.3d 1016 (9th Cir. 2006) (holding that the Nuclear Regulatory Commission's categorical refusal under NEPA to consider environmental effects of terrorist attack on proposed interim spent fuel storage installation, or the nuclear facility in general, was not reasonable).

10.3.1.2 Modeling After 2020

Comments

Comment Number: 0550-4
Organization: Individual
Commenter: Sarah Larsen

NHTSA takes a presumed 35-mpg fleet in 2020, assumes that fuel economy stops increasing, and then measures the cumulative CO_2 savings through the year 2100. I believe NHTSA should only be measuring reductions at the 35-mpg fleet level for the life of these vehicles. Fuel economy should not be presumed to stop at 2020 levels. If NHTSA wants to evaluate carbon savings through the year 2100, then they should do so by assuming fuel economy standards continue to increase to the year 2100 at the same rate of increase as between 2011-2015. Furthermore, considering that relevant science is talking about reductions needed by 2050, it again seems out of context for NHTSA to have randomly picked the year

2100 as timeline for measuring success of today's carbon reductions from vehicles. I believe success and progress should be measured by how close these fuel economy improvements get us to reducing the transportation sector's carbon emissions by 80% in time for the 2050 deadline. To do otherwise fails to realistically evaluate vehicle emission reductions as a key part of the strategy to curb global climate change.

Comment Number: 0559-2
Organization: The Northeast States for Coordinated Air Use Management (NESCAUM)
Commenter: Arthur Marin

The DEIS, inconsistent with the regulations and policy guidance on cumulative effects, evaluates the effects of new CAFE standards without consideration of other important factors. For example, while NHTSA asserts the DEIS fully addresses foreseeable impacts through the year 2100, it errs by incorporating an assumption that technological improvements in fuel economy cease after model year 2020. [Footnote: NHTSA's apparent rationale is that the Energy Information and Security Act (EISA) mandates a fuel economy target that extends only through model year 2020.] In reality and in contrast with this approach, technology-forcing requirements historically have spurred technological innovation to meet and even exceed environmental benchmarks. This interrelationship between policy initiatives and technology advancement has been well documented by numerous researchers [Footnote: See original comment document.] for more than thirty years and has even been given a name: *induced technological change*. There is little question that policies and legislative initiatives aimed at reducing carbon emissions are in our future, and these programs will create economic disincentives to continued business as usual, relative to consumption of fossil fuels in the transportation sector. Consequently and according to the principles of induced technological change, business and government will respond by engaging in more extensive research and development, including in the fuel economy arena, with a goal of reducing reliance on conventional fuels. As these research and development efforts bear fruit, technological progress will follow.

Given this principle of induced technological change, coupled with the underlying legislative requirement (i.e., the Energy Policy and Conservation Act – EPCA) for NHTSA to take a technology-forcing approach to future fuel economy requirements, further improvements beyond model year 2020 are, in fact, *reasonably foreseeable*. Thus, the approach taken in the DEIS disregards both precedent and the law. It is also important to note that economics by itself will play a future role, inducing technological change to improve fuel economy. The U.S. Energy Information Administration in its *2008 Annual Energy Outlook* projects in its "high economic growth–high fuel price" scenario that between 2008 and 2030, energy use in the light duty vehicle sector will grow by 13 percent while at the same time, the price of gasoline will grow by 18 percent. As this scenario unfolds, there will be further incentives for investment into research and development for improving fuel economy. Therefore, NHTSA would do well to incorporate such economic factors into its cumulative effects analysis.

Comment Number: 0559-4
Organization: The Northeast States for Coordinated Air Use Management (NESCAUM)
Commenter: Arthur Marin

The DEIS, in its assessment of global benefits, also disregards the principle of technology transfer. If U.S. industries develop technology that markedly improves fuel economy, it's very unlikely that the technology will remain confined to the U.S. fleet. Ultimately, fleets worldwide will incorporate the same technologies. According to the World Resources Institute, energy consumption accounts for 61 percent of total GHG emissions and transport accounts for 22 percent of all energy consumption-related GHG emissions. U.S. transportation, according to the Energy Information Administration, accounts for 18 percent of global GHG emissions from petroleum consumption. Clearly, an aggressive program in the

U.S. to markedly improve fuel economy, coupled with technology transfer, can be a key strategy for reducing GHG emissions globally.

Comment Number: 0572-29
Organization: Center for Biological Diversity
Commenter: Brian Nowicki, Mickey Moritz, Kassie Siegel

One of the ways NHTSA minimizes the apparent impact of its rulemaking is to limit its analysis to a world in which fuel economy levels become fixed beyond the last year of the current rulemaking. To limit the analysis to this assumption is inconsistent with the statutory scheme, which of course requires that (1) fuel standards for the combined fleet reach *a minimum* of 35 mpg by 2020 and (2) the NHTSA set fuel standards must be set at the "maximum feasible level" each year. 49 U.S.C. §32902(a); (b)(2)(C). This regulatory regime requires NHTSA to continue to raise standards each and every year through 2100. While the NHTSA may have been free to calculate and discuss the resulting environmental impact that would result from fixing the standard beyond the current rulemaking, disclosing only this piece of information was clearly not sufficient, especially given the statutory scheme that requires the NHTSA to continue increasing fuel economy to the maximum feasible level each year.

While the DEIS states that the standards for 2011-2015 will impact the 2016-2020 standards, the DEIS improperly limits its analysis to the environmental impacts from the emissions of just those vehicles in MY 2011-2015. Limiting the analysis in this manner allowed NHTSA to minimize the apparent impact of its action, because despite the fact that the lifetime emissions of these five model years of U.S. vehicles will be massive, even this large chunk of emissions can be made to incorrectly appear insignificant if it is compared to a large enough number. In order to give a complete picture of this aspect of the problem, NHTSA should have compared its alternatives for model years 2011-2015 not just to the emissions that would result if fuel economy standards thereafter remained fixed, but also to the emissions that would result if fuel economy standards continued to improve along the trajectories established by each of a reasonable range of alternatives. Had NHTSA done so, the impact of its action would have appeared in a very different light. This is particularly true since technology innovation today will both amplify the gains that can be made in the auto industry in the future, and will also have spillover effects into other sectors of the economy. The NHTSA was required to address these issues in the DEIS, but failed utterly to do so.

Because of the application of technologies developed in response to a valid, technology-forcing CAFE standard to other sectors of the economy and in other countries, there should be a non-linear increase in projected reductions with increased stringency of fuel standards. The DEIS should have included an analysis of continual increases in fuel economy through year 2100. EPCA requires that *each year* the maximal fuel economy standard be established. It is certain that technology will continue to improve and thus that the maximum feasible fuel standards will continue to increase through 2100. As shown in the figure below [See original comment document for figure.], one way to estimate the emissions savings due to a continual increase in fuel economy would be to iteratively sum the projected reduction in CO_2 from the MY 2011-2015 standards (obtained from the difference between the "no action" and "technology exhaustion" alternative emissions in Table 3.4-2 of the DEIS) out to year 2100.

Employing this strategy results in a substantially greater effect than the artificial assumption in the DEIS that fuel economy will not improve after MY 2015. The cumulative carbon savings would be 39 Gigatons of carbon by year 2100, and a 15 ppm difference between "no action" and "technology exhaustion" in CO_2 concentration in 2100.

Comment Number: 0576-3
Organization: Public Citizen
Commenter: Joan Claybrook

NHTSA does not consider impacts of extending fuel economy standards beyond the mandated 35 mpg by 2020, although there is clear need and a Congressional mandate to continue to improve efficiency to make the reductions that are needed, which serves to minimize the value of action when NHTSA extrapolates the benefits to 2100. However, EISA requires that NHTSA set fuel economy standards that are the maximum feasible for each model year from 2021-2030. Standards that exceed the 2020 level should be considered to increase at least until 2030, when the statutory mandate ends. It is also reasonably foreseeable that fuel economy standards or some combination of policies will be employed to continue to reduce oil consumption beyond 2020. [Footnote: See original comment document.]

Comment Number: 0585-5
Organization: Attorneys General of the States of California, Massachusetts, New Jersey, New Mexico, New York, and Oregon, Secretary of the Commonwealth of Pennsylvania Department of Environmental Protection, and New York City Corporation Counsel
Commenter: Edmund Brown Jr., Joseph Powers, Martha Coakley, Michael Cardozo, Anne Milgram, Gary King, Andrew Cuomo, Hardy Myers

NHTSA's cumulative impacts analysis fails to comply with this mandate and is flawed in several respects. On the one hand, in projecting the impact of the CAFE rule through 2100, NHTSA considers only the CAFE rules for 2011-2015 and 2016-2020, and assumes that miles per gallon will remain the same from 2020 through 2100. DEIS at 4-19, 4-27. On the other hand, it appears that NHTSA assumes that VMT will continue to increase through 2100. DEIS at 3-57. The combination of these assumptions understates NHTSA's ability to contribute cumulatively to GHG reduction efforts through more stringent CAFE standards. In the same way that it can be anticipated that VMT will continue to increase after 2020, it can also be anticipated that future CAFE rulemakings after 2020 will continue to increase the miles per gallon required for cars and light trucks, and that improved technology will enable car manufacturers to meet those increases. Thus, NHTSA must recalculate its cumulative projections to take into account the impact of future CAFE rulemakings after 2020 on the anticipated emissions through 2100.

Comment Number: 0596-2
Organization: Environmental Defense Fund
Commenter: Martha Roberts

The EIS fails to account for additional global ramifications of U.S. fuel efficiency standard setting; namely the influence of U.S. CAFE regulations on the global automobile market. Vehicle manufacturers tend to produce cars that comply with one of three dominant regulatory programs, the U.S., the European Union, or Japan, regardless of whether the vehicle is to be sold in that region. Thus U.S. CAFE standards impact the fuel efficiency of vehicles driven in other countries, and subsequently their greenhouse gas emissions. Although we do not have precise figures relating to the influence of the U.S. fuel economy standards on the global automobile market, figures for an analogous impact, that of U.S. vehicle emissions standards, are available. In addition to the approximately 17 million cars and light trucks sold in the U.S. in 2005, another 5.2 million vehicles were sold that year in other countries that met U.S. emissions regulatory standards. [Footnote: See original comment document.] The number of cars sold globally that follow U.S. fuel economy standards could be greater or less than those following emissions standards. The cumulative impacts assessment in this EIS must account for the additional non-U.S. vehicles that follow U.S. CAFE standards and the resulting cumulative effect that more stringent standards will exert on global greenhouse gas (GHG) emissions.

Comment Number: 0598-4
Organization: Sierra Club
Commenter: Caroline Keicher

NHTSA notes that only the 2016-2020 standards are foreseeable in the DEIS and therefore does not consider increases to the standards after 2020. The law clearly provides for maximum feasible standards in the years that follow. Increases beyond 2020 are foreseeable, perhaps just as foreseeable as the vehicle miles traveled (VMT) increases NHTSA presumes through 2100.

Comment Number: TRANS-08-12
Organization: Sierra Club
Commenter: Ann Mesnikoff

NHTSA says the standards must be set to 35 by 2020. NHTSA notes that the 2016 to 2020 standards are foreseeable in the draft environmental impact statement, but the law provides them for the maximum feasible thereafter. Increases beyond 2020 are foreseeable, perhaps just as foreseeable as the VMT increases NHTSA presumes through 2100.

Comment Number: TRANS-21-2
Organization: Individual
Commenter: Christina Marie Yagjian

An issue I would like to highlight is in this draft environmental impact statement is that NHTSA has arbitrarily picked 2100 as a time line for measuring the success of today's carbon reductions. A nearer term goal would help to ensure that the transportation sector does its part to achieve the goal set by the scientific community of 80 percent reductions by 2050.

In the EIS NHTSA presumes that fuel economy standards stop increasing after 35 miles per gallon in 2020. In order to properly evaluate carbon savings through 2100, NHTSA should extrapolate a curve of increasing fuel economy standards that continues to increase to 2100 at the same rate of increase as between 2011 and 2015.

Comment Number: TRANS-36-5
Organization: Individual
Commenter: Matt Kirby

And [NHTSA is] setting the 35 miles per gallon by 2020, but actually to extrapolate this through 2100, to not say that 35 miles per gallon is the be all, end all fuel efficient standard, because it shouldn't be.

Comment Number: TRANS-39-8
Organization: American Jewish Committee
Commenter: Ami Greener

NHTSA should not conclude in its analyses that fuel economy gains are presumed to stop at 2020 levels, but further grow by means of using existing technologies. We see the use of alternative and renewable fuels, new lightweight materials, and electric vehicles taking up a bigger percentage of miles driven in the U.S. in the near future.

Response

Because EISA directs NHTSA to increase CAFE standards to reach a combined fleet average CAFE level of at least 35 mpg by model year 2020, MY 2016-2020 CAFE standards are reasonably foreseeable and must be accounted for when analyzing the cumulative impacts of the proposed action. For each alternative, NHTSA assumed that passenger-car and light-truck CAFE standards would continue to increase over model year 2016-2020 at their average annual rate of increase over MY 2011-2015. This assumption results in passenger-car and light-truck CAFE standards under each action alternative that meet or exceed the EISA requirement of a combined fleet average of at least 35 mpg by model year 2020. NHTSA assumed further that the fuel economy standards for model year 2020 would remain in effect through the end of the analysis period. Because the CAFE standards apply to new vehicles, this assumption results in emissions reductions and fuel savings that continue to grow as new vehicles meeting the CAFE standards MY 2020 and beyond are added to the fleet in each subsequent year, reaching their maximum values when all passenger cars and light trucks in the U.S. fleet meet these standards. NHTSA included this effect in the analysis.

While NHTSA recognizes the possibility that technological advancement could continue absent future regulation, little empirical evidence supports this argument. In fact, from 1985 to 2005, when Congress prohibited NHTSA from promulgating new CAFE standards, in-use fuel economy decreased, despite gains in automobile fuel economy. See John German, Light Duty Vehicle Technologies: Opportunities and Challenges, available at http://www.its.ucdavis.edu/events/outreachevents/asilomar2007/presentations%20list.php. Although vehicle engines became more efficient, manufacturers used this improved technology to make the vehicles more powerful and for other passenger amenities, rather than for additional gains in fuel economy.

Although it might be true that higher fuel prices will promote greater technical innovation and greater fuel savings, whether the current trend in higher fuel prices will persist remains to be seen. Most forecasts, including the EIA's, indicate only moderately high fuel prices in the future, which might not be sufficient to promote greater fuel efficiency without regulation. Recent literature suggests that a large increase in the real price of gasoline is necessary to substantially influence vehicle purchase decisions over the long term. See Small and Van Dender (2005).

Regarding increases in CAFE standards beyond 2020 as reasonably foreseeable, as previously explained, when setting "maximum feasible" average fuel economy levels under EPCA, NHTSA is required to consider economic practicability, technological feasibility, the effect of other motor vehicle standards of the government on fuel economy, and the need of the United States to conserve energy. See 49 U.S.C. § 32902(f). In the 1980s, NHTSA found it necessary to roll back fuel economy standards to lower levels because manufacturers could not meet them. Maximum feasible standards must be economically practicable under EPCA. The requirement to set economically practicable standards is especially important in times of economic uncertainty.

One commenter suggested that if VMT increases are reasonably foreseeable, then fuel economy increases also should be. According to the Federal Highway Administration, which tracks and reports VMT in its "Highway Statistics," the long-term trend of increasing VMT began in the 1950s when the Eisenhower Interstate System was established. Since then, VMT has shown a decline in only a few years. The trend is very clear. Fuel economy, on the other hand, exhibits no such long-term trend, and thus, is much more difficult to forecast.

Due to these complex and sometimes conflicting concerns, NHTSA had to ask: At what point would improving fuel economy no longer be technologically feasible, or should NHTSA assume that no

technological limits would be discovered? NHTSA selected the middle ground – maintaining fuel economy standards that would be constant at the 2020 level.

Other commenters questioned the extension of the analysis through 2100 and expressed concern that extrapolating the impacts that far out minimized the impact of the proposed action. In this FEIS, NHTSA reports substantial reductions in GHGs under the action alternatives; demonstrates that such reductions compare favorably to other emissions-reduction initiatives; and has added a new analysis showing the effect of the alternatives on U.S. passenger vehicle emissions. See Section 3.4.4. NHTSA understands that the small climate effects exhibited for temperature, precipitation, and sea-level rise are functions of the magnitude of a problem that is global in nature. While NHTSA shows these impacts through 2100, we also present analyses for various periods between the present and 2100. While NHTSA might have chosen a shorter final time frame than 2100, we note that shortening the time frame would only serve to demonstrate even smaller climate effects.

Several commenters stated that NHTSA should compare these anticipated emissions reductions with a target reduction of 60 to 80 percent by 2050. See our response to these comments in Section 10.2.1.

10.3.2 Air Quality

Comment

Comment Number: 0595-12
Organization: Environmental Protection Agency
Commenter: Susan Bromm

Chapter 1, pg. 1-6, Lines 26-29:

In order to address the limitations of the air quality modeling in the EIS, EPA recommends that these lines be revised as follows:

"EPA indicated that many of the factors that affect air quality, such as meteorology and atmospheric processes, will not be taken into account when evaluating human health and environmental impacts without a full-scale photochemical air quality modeling analysis. This limitation needs to be acknowledged. NHTSA agrees with EPA's suggestion, and this limitation is acknowledged in Chapters 3 and 4."

There is also no mention of this limitation in Chapter 4. Please repeat the limitation text in that chapter.

Response

NHTSA has revised Section 1.3.2.1 and Section 4.3.2.1 in response to this comment.

10.3.2.1 Affected Environment

Comment

Comment Number: 0588-11
Organization: New York State Department of Transportation
Commenter: Stanley Gee

NHTSA confuses the discussion of emissions impacts (particularly Figure 3.3-1) by including the effects of increased vehicle emission regulation stringency. NHTSA should revise its presentation to ensure that the effects of proposed CAFE standards are clearly differentiated from the effects of vehicle emissions standards and general VMT growth.

Response

NHTSA has revised the text of Section 3.3.1.4 to clarify the differences among effects of the CAFE standards, vehicle emissions standards, and VMT growth.

Comment

Comment Number: 0595-15
Organization: Environmental Protection Agency
Commenter: Susan Bromm

Chapter 3, pg. 3-13, lines 36-40 and pg. 3-14, lines 1-3:

In order to accurately characterize ozone-related health impacts, EPA recommends adding the following sentence to the end of the ozone health effects description:

"There is also highly suggestive evidence that short-term ozone exposure directly or indirectly contributes to non-accidental and cardiopulmonary-related mortality."

Response

NTHSA has added this text to Section 3.3.1.2.

Comment

Comment Number: 0595-9
Organization: Environmental Protection Agency
Commenter: Susan Bromm

In several locations in Section 3.3.1, the description of hazardous air pollutants emitted by mobile sources (mobile source air toxics, or "MSATs") analyzed in the DEIS is mischaracterized and incorrectly cited. EPA recommends the following revisions and clarifications:

Page 3-1 1: As Section 112(b) of the Clean Air Act is not relevant to mobile sources and the analysis in the DEIS does not include all of the hazardous air pollutants, EPA recommends the following edit:

"The air quality analysis assesses the impacts of the alternatives with respect to criteria pollutants and some hazardous air pollutants from mobile sources (also known as mobile source air toxics.) ~~Hazardous~~

~~Air Pollutants (HAPs, also known as toxic air pollutants or air toxics) as defined under Section 112(b) of the CAA."~~ [Strikethrough provided by commenter.]

Page 3-13: As EPA has not identified a specific list of priority MSATs, including in the MSAT final rule, we recommend the following edit to the fourth paragraph:

"~~The relevant air toxics for this analysis are referred to by EPA and Federal Highway Administration (FHWA) as the priority Mobile Source Air Toxics (MSAT). The priority MSATs~~ [Strikethrough provided by commenter.] The MSATs included in this analysis are acetaldehyde, acrolein, benzene, 1,3-butadiene, diesel particulate matter (DPM), and formaldehyde (~~EPA, 2008~~). [Strikethrough provided by commenter.] DPM is a component of exhaust from diesel-fueled vehicles and falls almost entirely within the $PM_{2.5}$ particle size class."

In addition, page 3-13 states that the description of the health effects of the six Federal criteria pollutants is adapted from EPA 2008b. This does not appear to be properly referenced. There is no EPA 2008b listed in the references, and neither of the EPA 2008 references appear to be relevant here.

Page 3-15: Similarly, as EPA has not identified a list of priority MSATs, we request deletion of the word "priority" to describe the MSATS referenced. Furthermore, we believe that Claggett and Houk, 2006 is an inappropriate source for the information presented. A summary of health effects should be referenced to a more primary source (such as EPA's Integrated Risk Information System), or EPA's own synthesis of health effects (such as the 2007 MSAT rule preamble and/or RIA[Regulatory Impact Analysis]).

Page 3-16 cites EPA, 2008 as the reference for EPA's MSAT rule. This is an incorrect reference. The MSAT rule was published in 2007, and the full details of that reference are in footnote 16. [See original comment document for footnote.]

Response

NTSHA has revised and clarified the text in Section 3.3.1 and has revised the references in response to this comment.

10.3.2.2 Methodology

Comment

Comment Number: 0572-39
Organization: Center for Biological Diversity
Commenter: Brian Nowicki, Mickey Moritz, Kassie Siegel

Black carbon is also detrimental to human health. It has been linked to a variety of circulatory diseases. One study found an increased mortality rate was correlated with exposure to black carbon (Maynard 2007). The same is true for heart attacks (Tonne 2007). Another study found that residential black carbon exposure was associated with increased rates of infant mortality due to pneumonia, increased chronic bronchitis, and increased blood pressure (Schwartz 2007).

In developed countries, diesel burning is the main source of black carbon. Diesel emissions include a number of compounds such as sulfur oxides, nitrogen oxides, hydrocarbons, carbon monoxide, and particulate matter. Diesel particulate matter is approximately 75% elemental carbon. (EPA Diesel Health Assessment 2002.) Furthermore, global inventories of emissions rates from a variety of sources exist to

facilitate quantitative estimates. (See, e.g., Bond et al. 2004.) Thus, it is crucial that black carbon be addressed in the DEIS.

Analyzing particulate matter is insufficient to address black carbon.

Particulate matter (PM) refers to the particles that make up atmospheric aerosols. The primary constituents of PM are sulfates, nitrates, and carbon compounds. Sulfates and nitrates form in the atmosphere from the chemical reaction of sulfur and nitrogen dioxides. These may often be present as ammonium sulfate or nitrate salts. Carbon compounds may be directly emitted, e.g., black carbon emitted from combustion, or may form in the atmosphere from other organic vapors, e.g., oxidation of volatile organic compounds.

Because PM can be reduced through mitigation of other constituents of PM than black carbon, it is essential that black carbon emission reduction strategies be considered independently from PM reductions. The proportions of the constituents of PM vary over time and by location (see EPA Particle Pollution Report 2004). According to a recent series of surveys conducted at various U.S. cities under the EPA's "Supersite" program, black carbon was often only about 10% of total measured $PM_{2.5}$. [Footnote: See original comment document.]

In contrast to total $PM_{2.5}$, diesel PM is composed largely of black carbon. Nonetheless, some diesel PM reduction strategies do not affect black carbon. For instance, diesel oxidation catalysts can reduce diesel PM emissions as a whole by approximately 20 to 40%, yet they do not decrease black carbon emissions (Walker 2004). In addition, while low-sulfur fuel will reduce sulfate emissions, in and of itself low-sulfur fuel will not reduce black carbon. Low-sulfur fuel is important because it *allows* for better technology to reduce black carbon. See, e.g., 69 Fed. Reg. 38957, 38995 (June 29, 2004). Yet those reductions can only occur once the technology has been implemented.

Response

EPA is charged under the Clean Air Act with protecting human health from air pollution. EPA has established National Ambient Air Quality Standards (NAAQS) for particulate matter (PM) for the PM_{10} and $PM_{2.5}$ size classes. EPA has identified diesel particulate matter (DPM) as a Mobile Source Air Toxic (MSAT) of concern that should be considered in air quality analyses (EPA 2001). EPA has not established NAAQS for DPM. DPM is composed of an elemental carbon core and adsorbed organic compounds (organic carbon), sulfates, nitrate, metals, and other trace elements (EPA 2004c). EPA provides no special status for elemental carbon, also called carbon black or black carbon. Rather, EPA considers elemental carbon to be a component of $PM_{2.5}$, produced from both gasoline- and diesel-powered vehicles.

The FEIS addresses PM in terms of $PM_{2.5}$ emissions, which are calculated using emissions factors from the EPA MOBILE6.2 model, EPA's required procedure for deriving highway vehicle emissions factors for an EIS. MOBILE6.2 estimates primary $PM_{2.5}$ (i.e., $PM_{2.5}$ that is emitted directly) from three sources: the vehicle tailpipe (the largest source); brake and tire wear; and reentrainment of road dust into the atmosphere. MOBILE6.2 calculates $PM_{2.5}$ and PM_{10} by vehicle type, and NHTSA uses the portion of PM_{10} emitted by light-duty diesel vehicles (cars and trucks) in the FEIS to represent DPM. EPA concluded in the 2002 Health Assessment for Diesel Exhaust Emissions (EPA 2002a) that DPM is "no more likely to be toxicologically potent than any other fine particle constituents that typically make up ambient $PM_{2.5}$" and that based on this "the annual $PM_{2.5}$ standard would also be expected to provide a measure of protection for DPM" (EPA 2002a, p. 6-30).

The FEIS addresses PM_{10} using $PM_{2.5}$ as a surrogate because almost all PM_{10} from light-duty vehicles consists of $PM_{2.5}$. Thus, PM_{10} emissions are very close to the reported $PM_{2.5}$ emissions. The $PM_{2.5}$ emissions analysis and the relationships noted above between $PM_{2.5}$ and black carbon suggest, first, that black carbon emissions associated with the alternatives should be less than $PM_{2.5}$ emissions. Second, black carbon emissions should vary among the alternatives in the same pattern as $PM_{2.5}$.

The elemental carbon component of DPM is only one factor in the human toxicological response, and the human health effects of elemental carbon cannot be considered independent of their PM constituents in relation to PM generated by motor vehicles. The EPA Air Quality Criteria Document for Particulate Matter described research findings about the health effects of elemental carbon independent of particulate matter, and ongoing research further assesses the health effects (EPA 2004c).

In research comparing elemental carbon and DPM, the organic components of DPM have been linked to the generation of reactive oxidative species; elemental carbon alone and diesel particles without organics did not induce apoptosis (cell death) (Hiura et al., as cited in EPA 2002). In addition, DPM has been shown to impair pulmonary defense, while elemental carbon particles alone did not have the same effect (Mundandhara et al. 2006). Elemental carbon particles have been shown to induce an inflammatory response, but this response is similar to the one induced by DPM (EPA 2002a). Elemental carbon particles are also important in the observed carcinogenic response in rats, but DPM containing the elemental carbon particles produced a similar carcinogenic response (EPA 2002a).

In air quality studies, black carbon (elemental carbon) is typically used as a surrogate for PM or DPM when better information is not available (Lewtas 2007). In epidemiological studies such as Maynard et al. (2007), elemental carbon is used as an identifier or an index for PM generated from motor vehicles. In toxicology research similar to that described in Mundandhara et al. (2006), elemental carbon is used as an experimental control to demonstrate the effects of other PM constituents.

Based on the above, NHTSA believes that considering the health effects of inhaled elemental carbon independently of PM or DPM is unnecessary because elemental carbon will not be emitted without the other accompanying components of PM. NHTSA has revised the FEIS to clarify the distinctions among PM as a criteria pollutant, DPM as an air toxic pollutant, and black carbon. See Section 3.3.1.2.

Comment

Comment Number: 0595-16
Organization: Environmental Protection Agency
Commenter: Susan Bromm

Chapter 3, pg. 3-17, lines 40-43 & pg. 3-18, lines 1-2:

In order to better describe the limitations of the air quality analysis performed by NHTSA, EPA recommends the paragraph be revised as follows:

"Full-scale photochemical air quality modeling was not conducted for this analysis; therefore, the EIS is unable to characterize the ambient air quality impacts associated with each alternative. Instead, the action alternatives were analyzed by calculating the emissions from passenger car and light trucks that would occur under each alternative, and assessing the changes in emissions relative to the No Action Alternative. Lower emissions should result in lower ambient concentrations of pollutants on an overall average basis, which should lead to decreased health effects of those pollutants.

"Full-scale photochemical air quality modeling is necessary to accurately project levels of $PM_{2.5}$, ozone and air toxics. A national-scale air quality modeling analysis would analyze the combined impacts of each alternative on $PM_{2.5}$, ozone, and air toxics (i.e., benzene, formaldehyde, acetaldehyde, ethanol, acrolein and 1 ,3-butadiene). The atmospheric chemistry related to ambient concentrations of $PM_{2.5}$, ozone, and air toxics is very complex, and making predictions based solely on emissions changes is extremely difficult."

Response

NHTSA has made the suggested revision to the text in Section 3.3.2.3.

Comment

Comment Number: 0595-17
Organization: Environmental Protection Agency
Commenter: Susan Bromm

Chapter 3, page 3-20, lines 7-16:

EPA recommends the paragraph be revised as follows in order to more clearly indicate that incomplete/unavailable information limitations affect the air quality and health impacts analysis done:

"As noted above, the estimates of emissions rely on models and forecasts that contain numerous assumptions and data that are uncertain. Examples of areas in which information is incomplete or unavailable include future emission rates, vehicle manufacturers' decisions on vehicle technology and design, the mix of vehicle types and model years, emissions from fuel refining and distribution, and economic factors. Furthermore, a full-scale photochemical air quality modeling analysis to estimate the ambient concentrations of PM, ozone, and air toxics was not conducted The lack of air quality modeling data limited the conclusions that could be made about health and environmental impacts associated with each alternative. Instead, a screening-level estimate of monetized health benefits, in the form of dollar-per-ton of criteria pollutant emissions reduced, was used to approximate the health benefits associated with each alternative. The use of such dollar-per-ton numbers, however, does not account for all potential health and environmental benefits, which leads to an underestimate of total criteria pollutant benefits. Where information in the analysis included in the DEIS is incomplete or unavailable, the agency has relied on CEQ's regulations regarding incomplete or unavailable information. See 40 CFR § 1502.22(b). NHTSA has used the best available models and supporting data. The models used for the DEIS were subjected to scientific review and have received the approval of the agencies that sponsored their development. NHTSA believes that the assumptions that the DEIS makes regarding uncertain conditions reflect the best available information and are valid and sufficient for this analysis"

Response

NHTSA has made the suggested revision to the text of Section 3.3.2.3.

Comment

Comment Number: 0595-18
Organization: Environmental Protection Agency
Commenter: Susan Bromm

Chapter 3, pages 3-26 and 3-28:

NHTSA's estimates of criteria pollutant reductions (e.g., 54,000 - 232,000 tons of NO_x in 2020) connected with the proposed CAFE standards appear to be larger than EPA would expect. EPA has not been able to replicate NHTSA's estimate, so we do not know for certain if there is an issue. The magnitude of the resulting inventory reductions suggests that NHTSA may be taking credit for criteria (and possibly toxic) emission benefits that occur internationally during crude oil transport to the U.S., rather than just counting the domestic benefits of reduced refinery and fuel distribution emissions. The lack of details in the DEIS does not allow EPA to comment for certain on how the NHTSA DEIS estimates were calculated, but the text in the Federal Register notice, page 24412, seems to support this suggestion:

"Reductions in domestic fuel refining using imported crude oil as a feedstock are tentatively assumed to reduce emissions during crude oil transportation and storage, as well as during gasoline refining, distribution, and storage, because less of each of these activities would be occurring."

An additional possible cause for the large emission reductions estimated by NHTSA is the use of the GREET model to generate those estimates. EPA has noticed that the heavy-duty truck, rail, and barge emission factors in GREET [Greenhouse Gases, Regulated Emissions, and Energy Use in Transportation] do not reflect the latest round of EPA emission standards that substantially reduce VOC, NO_x, and PM emissions in future years (the heavy-duty highway 2007/2010 standards). Use of these more controlled emission factors would decrease the "No Action" emissions as well as emissions from the various CAFE alternatives, with the net result being smaller benefits from the program than estimated using an unmodified version of GREET. We suggest NHTSA verify what standards are assumed in the version of GREET used for the DEIS, and modify as appropriate for the final EIS.

Response

The commenter is correct that the DEIS counted emissions benefits that occur internationally during crude-oil transport to the United States, rather than just counting the domestic benefits of reduced refinery and fuel-distribution emissions. For the FEIS emissions estimates, NHTSA has revised the upstream emissions factors to reflect the assumption that 90 percent of the reduction in domestic fuel refining reduces imports of crude petroleum (and, thus, does not reduce domestic emissions from petroleum extraction or transportation), while only the remaining 10 percent reduces domestic production of crude petroleum (and, thus, reduces emissions during both petroleum extraction and transportation). NHTSA estimated these percentages by comparing U.S. fuel consumption and petroleum imports under several scenarios from EIA's Annual Energy Outlook (EIA 2008a).

The commenter is also correct that the emissions factors in GREET for heavy-duty truck, rail, and barge do not reflect the latest round of EPA emissions standards (the heavy-duty highway 2007/2010 standards). NHTSA coordinated with EPA to update the emissions factors for heavy-duty truck, rail, and barge processes. NHTSA updated these emissions factors in the modeling for the FEIS. The emissions reductions due to decreases in the amount of transportation and distribution of fuel now reflect the most current emissions factors.

Comment

Comment Number: 0595-10
Organization: Environmental Protection Agency
Commenter: Susan Bromm

Page 3-20: For the section on treatment of incomplete or unavailable information, EPA recommends the following addition, indicating the limitations of the modeling done for upstream emissions of MSATs:

"Data used to estimate upstream emission impacts on air toxics are significantly older than data for criteria pollutants and use of more recent and complete data could affect results. In addition, all upstream toxic emissions were assigned to refinery processes, which could lead to over assignment of air toxic emissions to areas with refineries and an under assignment to areas without them."

Page 3-23 indicates that upstream MSAT emissions were estimated using the DOE [U.S. Department of Energy] GREET model. However, GREET does not include toxics, although in 2000, a version of GREET was developed which estimated air toxics using speciation factors. EPA assumes this was what was used. If that is the case, there are significant limitations which should be discussed. First, ethanol production is not included in the model. The model also used combustion emission factors for vehicles used in transport that are now significantly out of date, and assumed evaporative emissions of benzene were equivalent to levels of benzene in fuel. For refinery processes, the emission factors used are very old. As part of its analyses for last year's draft proposed greenhouse gas rule, and the upcoming rule implementing requirements under EISA, EPA developed air toxic emission factors for upstream processes using the most recent available information. We recommend that NHTSA coordinate with EPA on updating upstream toxic emission factors.

Also, all upstream toxic emissions were assigned to refinery processes. EPA does not believe this assumption is reasonable as it means that there will be an over assignment of emissions to areas with refineries and an under assignment to areas without them.

Page 3-25: In Section 3.3.2.2 "Results of the Emissions Analysis," the text states "As discussed in Section 3.31, pollutant emissions from vehicles have been declining since 1970 and EPA projects that they will continue to decline. This trend will continue regardless of the alternative that is chosen for future CAFE standards" (p. 3-25). A similar statement is in Section 3.3.2.3.2 (p. 3-28): "As with the criteria pollutants, current trends in the levels of air toxics emissions would continue, with emissions continuing to decline due to the EPA emission standards despite a growth in total VMT." In fact, Tables 3.3-3 and 3.3-5 show increases in VOC between 2025 and 2035 (and in the case of DPM, emissions increase in each analysis year in all scenarios, including No Action). The incorrect statements in the text should be deleted, and the trend of increasing emissions in the later analysis years should be acknowledged.

Response

NHTSA has clarified the discussion of upstream air toxic emissions in the FEIS. The following paragraphs respond to the commenter's individual points:

Page 3-20: The commenter is correct that NHTSA assigned all upstream toxic emissions to refinery processes, and that this results in an over-assignment of emissions to areas with refineries and an under-assignment to areas without refineries. As noted in the DEIS, this is a limitation of the GREET model, which does not provide a breakdown of fuel-refining emissions versus transportation, storage, and

distribution emissions. NHTSA has not been able to identify any data that would allow a further breakdown of upstream toxic emissions by source.

Page 3-23: For the DEIS, NHTSA modeled upstream emissions of air toxics using emissions factors from Winebrake et al. (2000). This is the same source used for the 2000 air toxics version of GREET. NHTSA coordinated with EPA to update the air toxic upstream emissions factors for upstream processes. However, EPA stated that it would not be able to supply updated factors. EPA recommended that NHTSA continue to use the air toxic upstream emissions factors it used in the DEIS and that NHTSA revise the text in Sections 3.3.2.1.3 and 3.3.2.1.5 of the FEIS to explain the EPA recommendation. NHTSA has revised the FEIS accordingly. The statuses of some of the specific model limitations the commenter mentioned are as noted below and in the FEIS:

- *Ethanol production not included: This model limitation still exists.*
- *Transport vehicles: These emissions factors have been updated. See also the previous comment response in this section (10.3.2.2).*
- *Evaporative benzene emissions: This model limitation still exists.*
- *Refinery process emissions factors: These emissions factors have been updated. See also the previous comment response in this section (10.3.2.2).*
- *Updating of air toxic upstream emissions factors for upstream processes: As noted above, NHTSA coordinated with EPA to update the air toxic upstream emissions factors for upstream processes. However, EPA stated that it would not be able to supply updated factors. EPA recommended that the NHTSA continue to use the air toxic upstream emissions factors it used in the DEIS and that NHTSA revise the text in Sections 3.3.2.1.3 and 3.3.2.1.5 of the FEIS to explain the EPA recommendation. NHTSA has revised the FEIS accordingly.*

Page 3-25, page 3-28, Tables 3.3-3 and 3.3-5: NHTSA has updated the text and emissions tables in Section 3.3.

10.3.2.3 Consequences

Comment

Comment Number: 0588-12
Organization: New York State Department of Transportation
Commenter: Stanley Gee

Figures 3.3-3, 3.3-4, and 3.3-5 should show the effects of the proposed alternatives on light duty cars and light duty trucks separately. This would help to distinguish the differential effect that the various alternatives will have on the various components of the nation's light duty fleet.

Response

NHTSA has added a table to Section 3.2.2 to show the effects of the alternatives on cars and light-duty trucks separately.

Comment

Comment Number: 0595-19
Organization: Environmental Protection Agency
Commenter: Susan Bromm

Chapter 3, pg 3-27, Figure 3.3-2:

This figure, and others like it, suffers from a scale mismatch related to the tons associated with CO versus each of the other criteria pollutants. The different reductions between alternatives for PM, NO_x, SO_x, and VOCs are not minor. However, the scale of the table gives this misimpression. EPA recommends that CO be decoupled from this table, shown separately, and the scale of the existing table be revised to more accurately show differences in the alternatives for the other criteria pollutants.

Response

NHTSA has revised the relevant figures in Section 3.3.2.3 to more clearly show the differences among the pollutants.

10.3.2.4 Health

Comment

Comment Number: 0595-14
Organization: Environmental Protection Agency
Commenter: Susan Bromm

Chapter 3, pg. 3-13, line 34:

EPA recommends the following sentence be added to the beginning of the paragraph, to clarify that a formal health impact analysis was not done:

"Though we did not conduct a formal analysis of health impacts, the alternatives considered in this EIS will contribute to reductions in criteria pollutants that will improve public health and welfare."

Response

NHTSA acknowledges the request and has added this sentence to Section 3.3.1.2.

Comment

Comment Number: 0595-25
Organization: Environmental Protection Agency
Commenter: Susan Bromm

Chapter 1, pg. 1-7, Lines 20-28:

It does not appear that NHTSA undertook a complete health impacts analysis in its analysis of alternatives. Instead, the Volpe model substitutes $/ton values which reflect a measure of the monetized health related benefits associated with criteria pollutant emission reductions. The $/ton numbers omit a number of unquantified health and environmental effects, and are therefore an underestimate of total

benefits. A complete health and environmental impacts analysis would begin with full-scale photochemical air quality modeling to demonstrate the changes in ambient air pollution exposure related to the emission changes associated with each alternative scenario. These ambient concentrations would then be fed through a health impacts model (EPA's Environmental Benefits and Mapping Analysis Program – BenMAP) to characterize population exposure and the change in health response associated with various health impact functions derived from the epidemiological literature.

Response

NHTSA has expanded the discussion of dollars-per-ton values to better explain how the emissions changes associated with the alternatives would produce these economic and health outcomes. NHTSA has added data to show, at a screening level, the health outcomes implied by the dollars-per-ton values. See Section 3.3.2.4.2.

Comment

Comment Number: 0596-10
Organization: Environmental Defense Fund
Commenter: Martha Roberts

NHTSA acted in an arbitrary and capricious manner by justifying attribute-based standards as a means to "eliminate the incentive for manufacturers to respond to CAFE standards in ways harmful to safety," while simultaneously ignoring the health consequences presented by the lower fuel efficiency permitted in larger vehicles. [Footnote: See original comment document.]

NHTSA purports to consider human health in developing CAFE standards through the use of attribute-based standards and rules in the VOLPE model that limit vehicle downweighting as a fuel efficiency technology. However this same health safety concern is not evident in the choice of fuel efficiency standards. Particularly egregious are the lower fuel efficiencies permitted to larger vehicles, which increase the harm to human health through increased emissions of air pollutants.

NHTSA refers to several reports on safety and vehicle weight reduction and quotes the National Academy of Science's finding that in 1993 between 1,300 and 2,600 traffic accident fatalities occurred as a result of earlier vehicle downsizing and weight reductions. [Footnote: See original comment document.] This is less than the estimated number of deaths attributable to air pollution from a less stringent CAFE standard, as compared to a more stringent one [see Table 1 in original comment document].

We request that NHTSA give the same attention to protecting human health from air pollution as it does to protecting human health in its analysis of crashworthiness. A more stringent CAFE standard will better balance the benefits of health protection with the other statutory considerations and better align with NHTSA's attribute-based safety justifications.

Response

The air quality analysis compares the health outcomes of the alternatives, as noted in the previous comment response in this section (10.3.2.4). These can be compared with the safety analysis in Section 3.5.4.

More specifically, it is important to note the context in which the action will occur, because the commenter appears to misconstrue the legal requirements under EPCA, as amended by EISA. NHTSA does not have the discretion to decide whether to adopt an attribute-based standard. Congress, in the

language of EPCA, required NHTSA to adopt an attribute-based standard. The National Academy of Sciences (NAS) also recommended an attribute-based standard. Different fuel economy targets for different sized vehicles are a necessary consequence of an attribute-based standard. In fact, different fuel economy targets by vehicle attributes are the reason why the NAS recommended, and Congress directed, NHTSA to address perceived disadvantages of the existing fuel-economy standards.

One commenter stated that, as a policy choice, a more stringent CAFE standard represents a better balance between the health outcomes (mortality and illnesses) avoided by emissions reductions and the health outcomes (fatalities and injuries) avoided by improved crashworthiness. The preeminent goal of EPCA is energy conservation. While greater human health benefits from the more stringent alternatives would certainly be desirable (as would greater fuel savings or GHG reductions), NHTSA must act within the requirements of economic practicability and technological feasibility established under EPCA.

Comments

Comment Number: 0600-5
Organization: Centers for Disease Control and Prevention
Commenter: Sarah Heaton

Transportation-related emissions contribute to climate change. CAFE standards can promote the use of alternative technologies in the U.S. and abroad that reduce harmful emissions and, in turn, reduce contributors to climate change and improves human health outcomes. Although some health outcomes of climate change are difficult to predict, others are supported by considerable evidence. Health impacts affected by increasing or reducing contributors to climate change are appropriate for analysis of the human environment pursuant to NEPA.

Health outcomes from climate change, for which quantitative or qualitative impact analysis is possible, should be included in predictive modeling.

Automobile contributions to criteria air pollutants are affected by CAFE standards and such emissions directly affect human health outcomes. Asthma, bronchitis, chronic obstructive pulmonary disease, and cardiovascular disease are some of the most common health outcomes triggered or exacerbated by air pollutants from motor vehicles. Reducing ozone forming emissions, NOx, and hydrocarbons can improve human health outcomes and reduce medical care costs. The DEIS fails to discern among alternatives regarding the health impacts from emissions/air pollutants. For adequate analysis of impacts to the human environment pursuant of NEPA:

Analysis of the potential health effects from fleet emissions, both acute and chronic, is critical to include in the analysis of alternatives pursuant to NEPA.

Adequate cost/benefit analysis of alternatives should include health costs associated with the acute and chronic effects from auto emissions at each level in the range of alternatives to show both current associated costs and potential savings from reduced emissions.

Comment Number: 0596-6
Organization: Environmental Defense Fund
Commenter: Martha Roberts

NHTSA fails to comply with the NEPA regulations requiring agencies to “present the environmental impacts of the proposal and the alternatives in comparative form, thus sharply defining the issues and

providing a clear basis for choice among options by the decisionmaker and the public" (CEQ 40 CFR 1502.14) in this EIS. In particular, the EIS fails to disclose the likely adverse health effects of conventional air pollutants associated with each alternative, fails to compare alternatives based on their impact on human health, and fails to identify how each alternative considered will eliminate or minimize these health effects. The EIS completely ignores the responsibility under NEPA to provide useful information to the decision maker regarding the degree to which each alternative will protect the public from the adverse health effects of air pollution from the transportation fuel cycle.

Council for Environmental Quality (CEQ) regulations require that an EIS assess both the direct and indirect effects of proposed actions and their significance (CEQ 40 CFR 1502.16 (a) and (b)), which include those effects related to human health (CEQ 40 CFR 1508.8) and requires that an EIS consider the "degree to which the proposed action affects public health or safety." (40 CFR 1508.27(b)(2)). Because the proposed alternatives will each significantly change human exposure to transportation fuel cycle emissions for the American public, and the adverse health effects resulting therefrom, a comparison of alternatives based on public health impacts is required. Under the CEQ regulations and settled case law, NHTSA cannot exclude these effects, which are obviously related to the proposed standards, from its EIS analysis.

The proposed CAFE alternatives result in varying levels of future air pollutant emissions that will differentially affect human health. NHTSA asserts that "assessing emissions is a valid approach to assessing air quality impacts because emissions, concentrations, and health effects are connected. Lower emissions should result in lower ambient concentrations of pollutants on an overall average basis, which should lead to decreased health effects of those pollutants." [Footnote: See original comment document.] However, the magnitude of this effect requires quantification, even if that quantification is subject to some uncertainty. The rote description of the various air pollutants and their related health impacts provided by the EIS does not satisfy NEPA. In the words of the Ninth Circuit court, "[g]eneral statements about "possible" effects and "some risk" do not constitute a "hard look" absent a justification regarding why more definitive information could not be provided." [Footnote: See original comment document.]

The EIS provides the relative future reduction of criteria air pollutants and hazardous air pollutants (HAPs) across the range of proposed CAFE alternatives. Unlike recent EPA regulatory impact analyses (RIAs) [Footnote: See original comment document.] however, this EIS fails to specify the relative human health impacts resulting from each emissions scenario.

To demonstrate that such a linkage is possible and to suggest the relative magnitude of the health effects of the various CAFE alternatives, we have used a simple methodology to estimate multiple health outcomes. This method quantifies the relationship between the amount of emitted pollutant and human health effects. Our approach, although slightly different methodologically from that used by the EPA, relies upon much of the same scientific literature and appears to provide similar results. We use the predicted future tonnage of conventional air pollutants in the EIS in association with the intake fraction, a unitless measure of the percent of an emitted pollutant that is inhaled or ingested by the population at large. [Footnote: See original comment document.] These two variables, in conjunction with empiric measures of exposure-response relationships, allow us to characterize the health effects related to different quantities of pollutant emissions. Basically the amount of emitted pollutant is multiplied by the intake fraction (calculated for the U.S. using spatial statistics to account for the locations and densities of emissions and people). We then multiply this number by a series of different exposure-response coefficients for different health outcomes, such as lung cancer, cardiovascular mortality, etc. The final product is the number of attributable health events for each pollutant over a year.

We found striking and troubling differences in the health impacts of the proposed CAFE alternatives, measured in thousands of avoided premature deaths. For example, in comparing the "optimized" (NHTSA' s preferred standard) alternative with the more stringent "total costs equals total benefits" ("costs = benefits") alternative, over 1,400 excess infant deaths per year result under the "optimized" alternative by 2020. In addition, the "optimized" alternative leads to more than 2,800 additional adult premature deaths, 8,800 children's emergency room visits for asthma, and 640,000 lost work days yearly by 2020. See Table 1 [See original comment document for Table 1.] for more details on the health impacts of the various proposed CAFE alternatives.

Our analysis examined the health effects of only two pollutants, particulate matter ($PM_{2.5}$) and nitrogen dioxide (NO_x), of the more than ninety harmful air pollutants emitted by light vehicles. [Footnote: See original comment document.] Thus we significantly underestimate the true health protection of higher fuel efficiency.

The EIS, by omitting quantified health benefits, disregards one of its core purposes, namely, to "inform decisionmakers and the public of the reasonable alternatives which would avoid or minimize adverse impacts or enhance the quality of the human environment" (CEQ 40 CFR Sec. 1502.1). NHTSA must revise the EIS to include calculations of meaningful health outcomes, such that policy makers and the public more fully understand the implications of the proposed CAFE alternatives.

Response

The FEIS approach of relating relative reductions in emissions to relative reductions in health effects supports the primary NEPA purposes of informing the selection of an alternative, informing the decisionmaker of potential effects to human health and the environment, and ensuring public disclosure of information. Given these purposes, one objective of NEPA is generally to disclose adverse health outcomes. However, the outcomes of the CAFE rule will generally reduce emissions and be beneficial to human health, even though not all alternatives reduce emissions for all input scenarios and analysis years. The FEIS follows NEPA guidance by analyzing all impacts, even when the effects would be positive.

One commenter compares this EIS to EPA's RIAs for its air quality rulemakings. A rulemaking in which the primary purpose is to reduce health risks, such as those promulgated by EPA, might need to be more explicit than this EIS about the health impacts that would be avoided through implementation of a proposed action. However, the CAFE rule is substantially different from EPA rules. Most significantly, EPA rules are designed for the express purpose of improving health through pollution reduction, as mandated by the Clean Air Act and other statutes. In contrast, the purpose of CAFE standards, as mandated by EPCA, is to reduce fuel use.

EPA, in the technical support documents to its "Advance Notice of Proposed Rulemaking: Regulating Greenhouse Gas Emissions under the Clean Air Act" of July 2008 (EPA 2008g), used a similar approach to NHTSA's that also examined the benefits, rather than the harm, of GHG reductions.

To provide more detailed information on the projected health benefits by alternative, NHTSA has expanded the discussion of air quality and health effects with more quantitative information on the relative impacts of the alternatives. Sections 3.3.2.4.2 and 4.3.3.2.3 of the FEIS provide estimates of the number of cases avoided for various health outcomes and the dollar value of avoided costs associated with the emissions reductions under each alternative.

NHTSA disagrees with the Environmental Defense Fund's (EDF's) characterization that the Optimized Alternative results in "over 1400 excess infant deaths" and "leads to more than 2800

additional adult premature deaths." None of the alternatives would cause premature mortality. All of the alternatives are estimated to reduce adverse health outcomes to differing degrees; from this result it cannot be concluded that all alternatives except the most stringent would cause "excess," "additional," or "premature" outcomes. All of the action alternatives, including the Optimized Alternative, would reduce emissions of NO_x, $PM_{2.5}$, SO_x, VOC, DPM, benzene, and 1,3-butadiene and thus should lead to reduced mortality.

Comment

Comment Number: TRANS-17-1
Organization: BG Automotive Group
Commenter: Barry Bernsten

What I did not read in the 414 pages of the environmental impact statement as it clearly relates to air quality, was the direct associated cost with the 1.5 million emergency room visits for asthma patients, or the $14 billion in health care costs related just to asthma related illnesses.

The report also did not include the direct costs associated with emphysema and/or chronic bronchitis due to CO_2 emissions or greenhouse cases. Why didn't the environmental impact statement consider the direct health costs associated with their study, and the quality of life costs associated with such an important report?

Response

NHTSA has expanded the discussion of air quality and health effects to provide more quantitative information on the relative impacts of the alternatives. See Sections 3.3.2.3.2 and 4.3.3.2.3.

Comment

Comment Number: TRANS-32-1
Organization: Environmental Defense Fund
Commenter: James Keck

EDF, while supporting the inclusion of climate change health impacts within the EIS is deeply concerned by the assertion that the agency and its consultants were unable to determine the magnitude of these impacts across the proposed CAFE alternatives, not only on the basis of climate change, but also regarding conventional pollutant health impacts.

Response

Two federal agencies, EPA and Centers for Disease Control and Prevention (CDC), commented on the human health discussions in the DEIS. EPA noted that NHTSA did not perform a complete health analysis. Rather than calling for additional analyses, EPA suggested that NHTSA insert text that would explain the level of analysis performed. EPA stated that a "complete health and environmental impacts analysis would begin with a full scale photochemical air quality modeling to demonstrate the changes in ambient air pollution exposure… These ambient concentrations would then be fed through a health impacts model… to characterize population exposure and the change in health response…." EPA provides text describing what NHTSA did and did not perform. By contrast, CDC called for more extensive modeling analysis, recommending that NHTSA include economic analysis of health costs and commenting that mitigation analysis is necessary. CDC draws on the wedge analysis described by Pacala and Socolow in Science magazine in 2004. CDC also had specific recommendations regarding

human health impacts associated with changes in fleet emissions, fuel consumption, and fleet design. Other parts of this chapter address these specific suggestions.

Sections 3.5.4, 3.3.1.2, 3.3.1.3, and 4.5.8 discuss impacts to human health. NHTSA has provided a thorough description of how emissions can affect human health, specific assessments of the changes in emissions due to the standards, and discussions of impacts to human health from direct, indirect, and cumulative impacts perspectives based on information from the IPCC and the U.S. Climate Change Science Program (USCCSP). NHTSA has enhanced the information provided in the FEIS by including data on the potential health outcomes and costs reduced under each of the alternatives. NHTSA's reasoning is explained further below.

NHTSA appreciates and adopts the language EPA suggested to clarify the level of health analysis performed. NHTSA also notes EPA's description of the extensive photochemical, exposure, and health analysis that would be required to conduct a full-scale health-impacts analysis. NHTSA believes that adopting the text clarifications EPA suggested is a better approach than attempting to conduct more extensive health-impacts modeling, for two main reasons. First, the estimated health impacts resulting from the CAFE standards are beneficial. Because the alternatives would reduce GHGs and health costs (see Sections 3.4, 3.5, 4.4, and 4.5), the damage to human health is estimated to be similarly reduced. Although this does not relieve NHTSA from explaining the potential impacts to human health, it reduces the need for enhanced analytical rigor when compared to a case in which human health might be negatively affected.

Although one might argue that enhanced analysis might still be necessary even if the impacts were beneficial, NHTSA would note that improving human health is not the purpose of the proposed rulemaking. If it were, greater credence could be given to the need for enhanced analysis. The statutory purpose of the proposed rulemaking is to save energy, which according to the analysis in the DEIS and this FEIS, is expected to improve human health.

Second, the differences in emissions (GHGs, criteria pollutants, and air toxics) and in health costs avoided among the alternatives provide ample information for the decisionmaker, as required under NEPA. It is reasonable to anticipate that human health impacts will mirror these indicators. The information to be gained through the very extensive process of health modeling would not add substantial new information because the differences in estimated climate effects (temperature, precipitation, and sea-level rise) are small; therefore, changes in the health impacts related to these will also be small. Further, the differences among the alternatives will be smaller still, due to the global nature of the climate problem. Similarly, the screening-level analysis of avoided adverse human health outcomes and avoided health costs of criteria pollutants among the alternatives provides ample information for the decisinomaker, as required under NEPA.

To address CDC's request for additional economic/health-impacts analysis, NHTSA has provided more information in the FEIS regarding the relative health effects of criteria air pollutant emissions associated with the alternatives. Specifically, NHTSA has expanded the discussion in Sections 3.3.2.4.2 and 4.3.3.2.3 to include estimates of the number of cases avoided for various health outcomes and the dollar value of avoided costs associated with the emissions reductions with each alternative. This analysis is limited to the criteria air pollutants, because health damage estimates are not available for MSATs.

In suggesting further modeling, CDC cites the wedge analysis by Pacala and Socolow and might, therefore, misconstrue the action NHTSA is taking. NHTSA's action is limited to the CAFE rulemaking. The proposed rulemaking would result in substantial reductions in GHG emissions from passenger cars and light trucks in the United States, which when considered in a global context, would result in small

changes in temperature, precipitation, and sea-level rise. The proposed rulemaking also would result in substantial reductions in national emissions of NO_x, $PM_{2.5}$, SO_x, VOC, DPM, benzene, and 1,3-butadiene from passenger cars and light trucks in the United States, which would lead to incremental reductions in adverse health outcomes and costs. Under NEPA, the proposed rulemaking is the action that must be evaluated for environmental impacts. The FEIS does not, and should not in NHTSA's opinion, account for other emissions-reduction strategies beyond those reasonably foreseeable, as NEPA requires. Because the United States has not established in law or regulation other emissions-reduction strategies (except the MY 2016-2020 CAFE targets specified in EISA), including presumed improvements in energy efficiency, would be speculative. Accordingly, NHTSA continues to believe that the appropriate context for analysis of human health impacts is limited to the reduction in emissions resulting from the alternatives specified in the proposed rule. To provide more detailed information on the projected health benefits by alternative in the FEIS, NHTSA has expanded the discussion of air quality and health effects of criteria and toxic pollutants to provide more quantitative information on the relative impacts of the alternatives. Section 3.3.2.4.2 of the FEIS provides estimates of the number of cases avoided for various health outcomes and the dollar value of avoided costs associated with the emissions reductions with each alternative.

Comment

Comment Number: TRANS-32-6
Organization: Environmental Defense Fund
Commenter: James Keck

The EIS notes that health costs are included within the Volpe model, used to select optimized alternative, but it fails to include estimates of adverse health events in its statement. And while the EIS provides the future relative reductions in tons of air pollutants across the different CAFE alternatives, it does not link these air pollutant reductions to health in a transparent and meaningful way.

To demonstrate that such a linkage is possible, we used a simple methodology to estimate the changes in meaningful health outcomes associated with a different CAFE alternatives. Although I do not have the time to relay all of the specific details of our findings, the health protection resulting from, for example, the pollutant reductions in the cost equals benefits alternative versus the optimized CAFE alternative is measured in thousands of avoided deaths, and thousands of avoided asthma visits to the emergency department per year by the year 2020.

Response

NHTSA has expanded the discussion of air quality and health effects to provide more quantitative information on the relative impacts of the alternatives. See Section 3.3.2.4.2.

10.3.3 Climate

Comment

Comment Number: 0530-2
Organization: Individual
Commenter: Dale Olson

Over 32,000 scientists have signed the "Oregon petition" stating they see no convincing scientific evidence that humans are causing catastrophic climate change. They have been joined by the American Physical Society, which recently announced that it was reassessing its prior position - that evidence for

global warming was "incontrovertible" - because many of its 50,000 physicist members disagree strongly with climate chaos claims.

Response

The American Physical Society (APS) released a statement clarifying that the contrary viewpoint espoused by some of its members was not the official position of the APS. The APS states in a position adopted on November 18, 2007 that "The evidence is incontrovertible: Global warming is occurring." National Policy 07.1 Climate Change, available at http://www.aps.org/policy/statements/07_1.cfm. NHTSA uses the best available science from IPCC and CCSP in its analyses. Both of these groups, along with most scientists around the world, agree that human-induced climate change is occurring.

Comments

Comment Number: 0572-26
Organization: Center for Biological Diversity
Commenter: Brian Nowicki, Mickey Moritz, Kassie Siegel

One prime example of inadequate context and information is the analysis of abrupt climate change, or tipping points. The CEQ regulations require that an agency "describe the consequences of a remote, but potentially severe impact" based on credible scientific information. 50 Fed. Reg. 32234, 32237 (August 9, 1985). The DEIS acknowledges that the possibility of abrupt climate change exists, yet by asserting uncertainty downplays the significance of tipping points. This approach is untenable. While no one may be able to predict with certainty on exactly which date a threshold for abrupt climate change may be reached, there is ample evidence that unchecked greenhouse emissions will result in abrupt climate change. In fact, various studies have attempted to quantify when such a threshold may be reached. The most recent estimate by Hansen and colleagues is that prolonged time spent over 350 ppm CO_2 will result in catastrophic impacts. (Although the climate literature often refers to "dangerous" levels of climate change to denote CO_2 concentrations above which climate impacts will be severe and irreversible, we use the term "catastrophic" here because current CO_2 levels have already surpassed the "dangerous" level of 350 ppm.) Previous estimates considered 450 ppm the threshold for catastrophic climate change.

Given the certainty that abrupt climate change will occur above some level of atmospheric concentration, the alternatives must be analyzed in the context of avoiding catastrophic climate change.

The DEIS does not adequately address climate tipping points.

Among the many consequences of climate change, "tipping points" carry the greatest threat to wildlife, human welfare, and economic security. As such, it is of paramount importance that any federal action be executed in a manner that reduces the possibility of abrupt climate change.

The Volpe model is the sole decision-making tool used to balance the factors set out in the EPCA. It does not capture the costs of abrupt climate change or tipping points. One of the factors that NHTSA considers under EPCA when setting the fuel standards is "the need of the United States to conserve energy." Environmental implications of the need for large quantities of petroleum are included in this factor. One of the environmental effects of continued heavy petroleum consumption is the possibility of passing over "tipping point" thresholds, or catastrophic climate change.

Because this is an acknowledged possibility, it must be included in the NEPA analysis and the balancing of the EPCA factors. The DEIS concludes that the science surrounding tipping points is too uncertain to be included in the analysis. This is simply not true. It is well-accepted that there will be tipping points.

(Meehl et al. at 775, 2007) A recent analysis of "tipping elements" indicates that contrary to the IPCC's conservative projections, there is a strong chance that tipping points will be crossed within this century (Lenton et al. 2008). This study also indicates that it may be possible to identify thresholds for tipping points for the purposes of policy making.

Furthermore, a recent study by Weitzman, an economics professor at Harvard, indicates that while traditional cost-benefit analysis can not properly capture the costs of climate change, including tipping points, a different analysis is more likely to capture the costs (Weitzman 2007).

The economic impacts of climate change are astounding. The much-respected Stern Review, published in 2007, estimates that the costs of climate change will range from 5% to 20% of GDP. (Stern 2007). In contrast, the Stern Review estimated that rapid action to address climate change would only cost approximately 1% of GDP. [Footnote: See original comment document.] In 2007, this would have corresponded to approximately $138 billion. [Footnote: See original comment document.] In contrast, the cost of inaction—abrupt climate change—has been estimated at over $400 billion. [Footnote: See original comment document.] The message is clear: the U.S. can not afford to gamble with abrupt climate change.

Under all scenarios considered in the DEIS the atmospheric CO_2 concentrations would reach 550 ppm or greater—the "optimized" alternative would reach over 700 ppm. This is well above the threshold for abrupt and catastrophic climate change. As a result, no alternatives adequately address the need for deep reductions in CO_2 emissions.

The DEIS erroneously dismisses the potential for tipping points as an impact that will not occur this century and thus does not require consideration. The basis for this conclusory statement that abrupt climate change will not occur this century is a statement in the IPCC Fourth Assessment Report that "[a]brupt climate changes … are not considered likely to occur in the 21st century, *based on currently available model results*." See DEIS at 3-53 (emphasis added; citing Meehl et al. 2007). Yet, it is well accepted that climate models can not capture the dynamical processes that lead to climate instabilities and rapid shifts such as occur during abrupt climate change. See, e.g., DEIS at 3-52.

Model predictions consistently underestimate observed climate change, and thus very likely also underestimate when tipping points will occur. For a discussion and examples, see Hansen et al., *Target CO_2* at page 10 (2008). There are numerous examples of accelerated changes occurring well in advance of model predictions. One is the rapid rate of sea ice loss in the Arctic. The summer sea ice extent in 2007 shattered all records, dropping below the level that most models predicted would not occur until 2050. [See original comment document for figures.]

More recent models of Arctic sea ice predict that the Arctic could be sea-ice free by the summer of 2013. In a recent conference presentation, Professor Maslowski from the Naval Postgraduate School showed if current trends continue, the Arctic will be sea-ice free by 2013. (Maslowski et al. 2008) The summer sea ice predictions for 2008 suggest that the same precipitous decline may occur again [Footnote: See original comment document.], with some scientists suggesting a 50:50 chance that the North Pole will be ice-free this summer. [Footnote: See original comment document.] Arctic sea ice is important both because of the albedo feedback effect and because sea ice melt leads to a warmer Arctic Ocean, which in turn accelerates the melt rate of the Greenland ice sheets.

The best basis for determining tipping points may be the use of paleoclimate data. Based on such data, Hansen and colleagues have estimated that remaining at CO_2 concentrations above 350 for a prolonged period of time is likely to invoke tipping points (Hansen et al. 2008). Paleoclimate data also indicate that in the past, at temperatures expected to be reached by 2100, Greenland and Antarctica contributed several

meters to sea level. (Overpeck et al. 2006) The rate of rise at this temperature was approximately 1.6 m/century. (Rohling et al. 2008) Thus, the current CO_2 level of 385 ppm is not only "dangerous," but catastrophic and could lead to tipping points this century. No models, including those used by the IPCC, can capture the dynamic response of ice sheets or adequately predict current observations of sea level rise. (DEIS at 3-75; Rignot 2008)

Comment Number: 0572-53
Organization: Center for Biological Diversity
Commenter: Brian Nowicki, Mickey Moritz, Kassie Siegel

In addition, the Ninth Circuit recently observed, in Center for *Biological Diversity v. National Highway Traffic Safety Administration*, that incremental increases in CO_2 can lead to abrupt, catastrophic, and irreversible changes, and that "even a small increase in greenhouse gases could cause abrupt and severe climate changes" (U.S.C. § 32902(a),(f)). [Footnote: See original comment document.] As such, NHTSA must consider not just the significant environmental, social, and economic benefit to achieving the maximum technologically feasible fuel economy and, therefore, greenhouse gas emissions reductions, but also the high premium associated with achieving dramatic reductions in the near-term.

Comment Number: 0585-8
Organization: Attorneys General of the States of California, Massachusetts, New Jersey, New Mexico, New York, and Oregon, Secretary of the Commonwealth of Pennsylvania Department of Environmental Protection, and New York City Corporation Counsel
Commenter: Edmund Brown Jr., Joseph Powers, Martha Coakley, Michael Cardozo, Anne Milgram, Gary King, Andrew Cuomo, Hardy Myers

The DEIS fails to present the data in a meaningful context. The DEIS fails to consider the scientific consensus that CO_2 concentrations must be kept below the level of "dangerous anthropogenic interference"

While the DEIS provides a significant amount of raw data, the data are meaningless unless they are put into context. For example, simply reporting that the new CAFE rule puts us on a trajectory to reaching CO_2 levels of over 700 ppm and an increase in temperature of over 2 degrees Celsius by 2100 (DEIS at 4-3 1), is meaningless to the uninitiated because it does not provide the context related to the "tipping point" beyond which devastating and irreversible climate change impacts may occur.

While the DEIS mentions the concept of a climate "tipping point" and the fact that some climate scientists believe that a CO_2 level exceeding about 450 ppm is dangerous (DEIS at 3-52 to 3-53), it then dismisses these concepts as "still a matter of scientific investigation" (DEIS at 1-10), and claims that "the state of the science does not allow for a characterization of how the CAFE alternatives influence these risks, other than to say that the greater the emission reductions, the lower the risk of abrupt climate change." DEIS at 3-53 to 3-54, 4-26.

This perfunctory discussion is unacceptable. To put the raw data into a meaningful context, the DEIS should emphasize the scientific consensus that we must lower our GHG emissions significantly in order to keep CO_2 concentrations in the atmosphere below a threshold that represents "dangerous anthropogenic interference" ("DAT"). In the words of the Ninth Circuit, there is "compelling scientific evidence concerning 'positive feedback mechanisms' in the atmosphere" that could lead to abrupt and non-linear changes. Center for Biological Diversity, 508 F.3d at p. 554. While the precise level for DAT is not known, scientists generally agree that the threshold is below 550 ppm CO_2. [Footnote: See original comment document.] At higher levels it is likely we will have reached an irrevocable "tipping point" and the Greenland ice sheet and part of the west Antarctic ice sheet will ultimately melt, causing a 5 to 10

meter rise in global sea level, which will cause flooding of all major coastal cities, and ensure global cataclysm. Further, it is plausible that DAT will be reached even at CO_2 concentrations of 450 ppm or substantially lower. [Footnote: See original comment document.] The risk of environmental cataclysm, even if uncertain, is so enormous, that it cannot simply be ignored, as NHTSA does.

At the very least, the DEIS must inform the agency and the public that scientists agree that there is an area of dangerous anthropogenic interference in the range of 500 ± 50 ppm $C0_2$, or possibly lower, that must be avoided. This information must be incorporated into and direct the analysis. Without such information, it is clear that NHTSA has, in fact, not considered the issues in a meaningful way.

Comment Number: 0595-6
Organization: Environmental Protection Agency
Commenter: Susan Bromm

EPA recommends that the DEIS discussion of climate change tipping points be expanded somewhat in the FEIS to include a brief discussion of the impacts associated with a given tipping element, and to include a reference to additional tipping elements identified by the scientific community (see Lenton, T. M., Held, H., Kriegler, B., Hall, J. W., Lucht, W., Rahmstorf, S. and Schelinhuber, H. J. (2008). Tipping elements in the Earths climate system. Proceedings of the National Academy of Sciences, Online Early Edition. February 4, 2008), including:

- Increase in the El Nino Southern Oscillation
- Collapse of the Indian summer monsoon
- Greening of the Sahara/Sahel and disruption of the West African monsoon
- Dieback of the Amazon rainforest
- Dieback of the Boreal Forest

Response

Commenters asked NHTSA to consider the issue of tipping points in the climate system in more detail. NHTSA has expanded its consideration of the issue of tipping points to include new research, as suggested by commenters, and expanded the discussion from the IPCC and CCSP literature. See Section 3.4.3.2.4. NHTSA also has included paleoclimatic research, as suggested by commenters, which supports the hypothesis that abrupt and severe climate change has occurred in the past, and that these changes could occur in multiple climate systems or other climate-related systems on the planet that affect global climate patterns. While the expanded research NHTSA analyzed in response to comments appears to confirm that there is general agreement that there are thresholds in the climate system that might produce severe and abrupt climate changes and impacts, there is still substantial uncertainty surrounding the existence of a singular tipping point (whether that point is 450 ppm CO_2 concentration or a 2 ºC temperature increase). There is evidence of multiple tipping points within various global systems, supported in scientific observations, peer-reviewed scientific literature, and paleoclimatic data. These points might occur when CO_2 concentrations are lower than 450 ppm and would have varying direct and indirect impacts. However, there is also uncertainty about exactly what levels of CO_2 emissions or temperatures might trigger these thresholds.

Commenters also requested that NHTSA examine the alternatives in relation to reaching tipping points triggered by CO_2 emissions. While NHTSA considered the potential to explore this suggestion in greater detail, we believe that such an analysis is not meaningful. Indeed, due to the uncertainty about what the impacts of this action are in delaying or mitigating the triggering of tipping points in any quantitative manner, it is impossible for NHTSA to relate the reductions in CO_2 emissions, sea-level rise, precipitation changes, and temperatures to tipping-point thresholds or to what extent the different

alternatives would affect tipping points. This action alone, even as analyzed for the most stringent alternative, does not produce enough of a CO_2 emissions reduction to prevent abrupt and severe climate change. The issue of abrupt and severe climate change tipping points must be addressed with many more CO_2-reduction initiatives and will require a global effort to address. Under NEPA and applicable law, due to the incomplete and unavailable nature of the information surrounding this issue, the only non-speculative conclusion NHTSA can reach is that the reduction in CO_2 emissions expected under this rulemaking will lower the risk of abrupt climate change.

10.3.3.1 Methodology

Comments

Comment Number: 0585-10
Organization: Attorneys General of the States of California, Massachusetts, New Jersey, New Mexico, New York, and Oregon, Secretary of the Commonwealth of Pennsylvania Department of Environmental Protection, and New York City Corporation Counsel
Commenter: Edmund Brown Jr., Joseph Powers, Martha Coakley, Michael Cardozo, Anne Milgram, Gary King, Andrew Cuomo, Hardy Myers

In making this determination, the DEIS could also make use of the concept of "stabilization wedges," first advanced by Pacala and Socolow. [Footnote: See original comment document.] Pacala and Socolow envisioned the 50-year reductions scenario as a triangle, with the sides of the stabilization triangle delineated by a flat emissions trajectory of 7 gigatons carbon per year ("GtC/year") by 2054, with a decline to zero emissions by sometime after 2100, and a "business as usual" scenario represented by a straight-line ramp rising to 14 GtC/year in 2054. (Footnote: See original comment document.] (We note, however, that the analysis was performed in 2004. Four years later, the amount of emissions reductions per wedge will have increased, so that the 7 GtC/year is likely too low an estimate. They then divided the stabilization triangle into seven equal wedges representing reductions in GHG emissions. Filling all seven wedges results in reducing GHG emissions sufficiently to stabilize CO_2 concentrations at 500 ppm. [Footnote: See original comment document.] In particular, they note that we will achieve one wedge of the stabilization triangle if cars in 2054 averaged 60 miles per gallon globally. [Footnote: See original comment document.]

The wedge analysis was applied by the EPA in discussing GHG emissions from the U.S. transportation sector. The EPA calculated that nine transportation wedges, each representing a reduction of 5,000 million metric tons of CO_2 equivalents ("MMTCO2e") between now and 2050 would be enough to flatten emissions in the transportation sector. Of the nine wedges, about half (4.3) would be enough to flatten emissions from passenger vehicles. EPA Transportation Wedge Analysis at 2. The EPA analysis notes that the reductions in emissions from passenger vehicles will come from vehicle technology, alternative fuels, and travel demand reduction, acting in concert. The document then presents various vehicle technologies and the "reduction potential" for the technology in terms of wedges. [Footnote: See original comment document.]

NHTSA could, consistent with the EPA analysis, compare the GHG emissions from the proposed CAFE alternatives with the 4.3 wedges of reductions needed from the passenger car sector to reach emission stabilization by 2054 and begin the necessary decline in emissions. (Additional reductions may be created by other actions, such as those that reduce travel demand or VMT. However, these further reductions will be necessary to lower GHG emissions even further in order to reduce CO_2 concentrations below 500 ppm.) [Footnote: See original comment document.] This will enable the Agency to determine whether the proposed alternative will slow emissions growth sufficiently from the passenger

car and light truck sector to flatten emissions as anticipated by the EPA analysis. If it will not, NHTSA must reassess the alternatives.

Comment Number: 0600-2
Organization: Centers for Disease Control and Prevention
Commenter: Sarah Heaton, Andrew Dannenberg

CAFE standards' impact on climate change deserves special attention. In the magazine *Science* (2004), S. Pacala and R. Socolow articulate the concept of an orchestrated approach to solving climate change with existing technologies, policy change, and behavioral changes. Each component in such an approach is referred to as a *Stabilization Wedge* (Pacala and Socolow, "Stabilization Wedges: Solving the Climate Problem for the next 50 Years with Current Technologies" *Science* 2004 Aug 13;305: 968-972). CAFE standards that increase fuel efficiency is a critical and necessary component in the wedge approach and ought to be assessed in this context.

Response

NHTSA recognizes that several approaches have been put forth for developing comprehensive, multi-sector strategies to reduce GHG emissions. The stabilization wedge concept is one that many analysts have found useful in illustrating that no individual policy or technology is likely to be sufficient to achieve stabilization of atmospheric GHG concentrations, and that investment in a portfolio of strategies across key emissions-emitting sectors will be necessary to limit GHG concentrations in the atmosphere compared to a business-as-usual approach. However, NHTSA's regulatory authority in the context of this rulemaking is limited to choosing an appropriate standard for CAFE, based on the four statutory factors mandated in EPCA. Thus, a comparison of various CAFE alternatives to other GHG mitigation approaches (e.g., those conceptualized as wedges) is beyond the scope of the EIS (as mandated by NEPA) and the rulemaking.

10.3.3.2 MAGICC Model

Comments

Comment Number: 0572-31
Organization: Center for Biological Diversity
Commenter: Brian Nowicki, Mickey Moritz, Kassie Siegel

MAGICC [Model for Assessment of Greenhouse Gas-induced Climate Change] is used to estimate the increase in CO_2 concentration, global mean temperature, and sea level rise. The DEIS uses the SRES A1B-AIM scenario as a "baseline." The only comparisons in the DEIS are among the three SRES "business as usual" scenarios: B1, A1B, and B2. This analysis, however, is incomplete because it ignores the fact that in order to avoid catastrophic climate impacts greenhouse gas concentrations must be quickly reduced back to below 350 ppm. SRES A1B-AIM results in CO_2 concentrations of 715 ppm in year 2100—far above dangerous CO_2 levels. A more appropriate comparison would be one of the "WRE" stabilization scenarios that are included in the MAGICC software. These stabilization scenarios are provided for 350 to 750 ppm stabilization.

Regardless of the baseline that is selected, the numerical results do not accurately reflect the state of the science. The DEIS relies heavily on the IPCC's Fourth Assessment Report, published in 2007. The model version used for numerical analysis, however, is calibrated to the Third Assessment Report, which was published in 2001. The MAGICC software has been updated to reflect the values reported in the

Fourth Assessment report; the newest version is MAGICC 5.3. This update has important changes from version 4.1. These changes include:

- Values for climate forcings were updated and two new forcings for nitrates and land use were included
- The stabilization scenarios now include stabilization strategies for non-CO_2 gases as well as CO_2
- The method of sea level rise was improved to be more consistent with the IPCC Fourth Assessment Report
- Default climate sensitivity was changed from 2.6 °C to 3.0 °C, in conformance with the Fourth Assessment Report.

Most importantly, the modeling results should be presented with the disclaimer that non-linear responses are not included in the predictions. Emphasis should be placed on the fact that (1) the model does not capture actual sea level rise predictions because it does not include ice sheet dynamics and (2) the model does not include the impact of rapid increases in methane from widespread loss of permafrost.

Comment Number: 0572-33
Organization: Center for Biological Diversity
Commenter: Brian Nowicki, Mickey Moritz, Kassie Siegel

The "scaling approach" as applied to sea level is also misleading. First, MAGICC 5.3 reports increments of sea level rise of 0.1 mm – not 1 mm as reported in the DEIS. Thus, the MAGICC results can resolve sea level rise to the same precision as the "scaling approach."

Comment Number: 0595-23
Organization: Environmental Protection Agency
Commenter: Susan Bromm

While EPA believes that the overall methodology used by NHTSA to model climate effects for the different CAFE scenarios using MAGICC is sound, EPA does have some recommendations that would strengthen the analysis performed. EPA would recommend re-running the analysis using the revised version (5.3) of MAGICC, which incorporates climate models used in IPCC's Fourth Assessment Report. We would also suggest running MAGICC using a range of climate sensitivities to reflect the 2.0-4.5 °C range projected in the IPCC report.

Response

NHTSA has updated the analysis using MAGICC 5.3 (which was not available when analysis for the DEIS started) and has run other baseline scenarios and climate sensitivities (2.5 ºC, 3.0 ºC, and 4.5 ºC for doubled CO_2) to illustrate the uncertainty of the emissions reductions on key climate effects such as global temperature increase, CO_2 concentrations, and sea level. NHTSA recognizes that MAGICC 5.3 does not incorporate the latest information on sea-level rise, and has noted this in the FEIS.

NHTSA included the scaling approach in the DEIS because MAGICC 4.1 did not reflect the latest results in the IPCC Fourth Assessment Report. Because the FEIS uses MAGICC 5.3 (which is updated to

reflect Fourth Assessment science), it eliminates the scaling approach, but includes an expanded comparison of MAGICC 5.3 and the Fourth Assessment results.

Given that MAGICC 5.3 generates sea-level rise estimates in increments of 0.1 mm, rather than 1 mm, the FEIS provides outputs at this level of resolution, as recommended by the commenter.

In terms of stabilization targets, the FEIS expands the discussion of tipping points to include a brief review of the European Union's recent proposed target of 450 ppm CO_2 equivalent and 2 ºC. The discussion notes that improvements in vehicle efficiency will be only one of many steps required to meet such a target. See Section 3.4.3.2.4.

Regarding non-linear climate responses and abrupt changes in climate, the FEIS includes an expanded discussion of tipping points that acknowledges the limitations in current simulations of sea-level rise (particularly in relation to ice-sheet dynamics), and the incomplete characterization of positive feedbacks (such as CH_4 [methane] emissions from permafrost). See Section 3.4.3.2.4.

10.3.3.3 IPCC Scenarios

Comments

Comment Number: 0572-32
Organization: Center for Biological Diversity
Commenter: Brian Nowicki, Mickey Moritz, Kassie Siegel

The "scaling approach" used in the DEIS is intended to test the effect of intermediate emissions scenarios. This is accomplished through linear interpolation between the relative outputs of three SRES scenarios: B1, A1B, and A2. This same estimate can be obtained by designating a "GAS" file in MAGICC that has intermediate CO_2 emissions.

From the skeletal description in the DEIS, it appears that (in a nutshell) the process involves taking the difference between the annual emissions (inputs) and the outputs (temperature, sea level, CO_2 concentration) associated with each of the SRES scenarios. The percentage change from "baseline" emissions for each alternative is then used to scale the outputs from the baseline scenario. See DEIS at 3-50. At a minimum, the calculation explanation must be improved, preferably with step-by-step examples to make the calculation accessible to the general public, as required by NEPA.

The underlying assumption to this process is that a linear transform will adequately describe the response to a change in emissions levels. Yet, as acknowledged in the DEIS at 3-52, climate interactions are non-linear. To test the linearity of the change between SRES scenarios, we ran an intermediate scenario in which the input annual carbon emissions were set at the midpoint between B1and A1B. We then plotted the output variables. Examples are shown below. [See original comment document for examples.] The numerical differences between each of the SRES scenarios and the intermediate scenario were not symmetrical. This indicates that climate outputs are not linearly related to emissions levels, violating the assumption of linearity upon which the scaling approach is based.

As acknowledged in the DEIS, the climate system is non-linear. DEIS at 3-52. Thus, it is not surprising that a linear transform between SRES scenarios is an inaccurate approximation of climate response.

Of course, comparing the scaling approach to MAGICC outputs assumes that MAGICC has accurately approximated the dynamics of the climate system. It seems likely, however, that MAGICC is the superior approximation. The MAGICC simulation routine has been extensively used by the IPCC and subjected to

peer review. In contrast, no citations are provided in the DEIS that indicate the "scaling approach" has been subjected to similar scrutiny. Thus, the NHTSA should consider the MAGICC outputs more reliable. Furthermore, the DEIS provides no explanation why the "scaling approach" was deemed necessary.

Comment Number: 0572-35
Organization: Center for Biological Diversity
Commenter: Brian Nowicki, Mickey Moritz, Kassie Siegel

The scaling approach purports to correct for "overstatements" due to inertia in the climate system. Yet an apparent "bias" is *created* by applying the "scaling approach" from the DEIS. If an accepted model such as MAGICC is employed, the effects of climate inertia will be properly accounted for without being overly represented in the results. Thus, the solution to "overstatements" of climate inertia is to avoid using the scaling approach.

The scaling approach as applied to sea level change uses inaccurate values from Table 3.4-7, the temperature "scaling approach" results. When compared to the results from MAGICC at differing climate sensitivities, the scaling approach results in smaller differences in temperatures between alternatives. This in turn pollutes the results from the sea level scaling approach, making the sea level differences seem smaller.

Comment Number: 0585-9
Organization: Attorneys General of the States of California, Massachusetts, New Jersey, New Mexico, New York, and Oregon, Secretary of the Commonwealth of Pennsylvania Department of Environmental Protection, and New York City Corporation Counsel
Commenter: Edmund Brown Jr., Joseph Powers, Martha Coakley, Michael Cardozo, Anne Milgram, Gary King, Andrew Cuomo, Hardy Myers

The DEIS does not answer the ultimate question of whether the agency has adequately considered our need to reduce GHG emissions and to stabilize CO_2 concentrations.

In the end, neither the Agency nor the public can assess the impact of the CAFE rule on global warming unless the data are put into a meaningful context, which the DEIS has failed to do. One way to remedy this fundamental defect would be to refer to the various emissions scenarios modeled by the IPCC as a kind of a comparative baseline. These scenarios include the "business as usual" scenario, usually represented by the IPCC's A1B scenario, which assumes rapid economic growth, peak population by 2050, declining thereafter, rapid introduction of new, more efficient technologies, and a balanced use of both fossil and non-fossil fuels. [Footnote: See original comment document. The A1B scenario stabilizes CO_2 concentrations at 720 ppm by 2100 and is associated with additional warming of 2 to 4 degrees Celsius [Footnote: See original comment document.], which puts us well into the region of likely dangerous anthropogenic interference. [Footnote: See original comment document.]

The IPCC's "alternative" scenarios are those in which human inputs to global warming are constrained to varying degrees and the effects of global warming are mitigated to greater and lesser extent. In particular, the B1 scenario will reduce GHG emissions below 1990 levels well before 2100 and will maintain CO_2 concentrations below 550 ppm. [Footnote: See original comment document.] Under this alternative scenario, GHG emissions could continue to increase briefly, but would need to level out quickly, and decline before 2050, in order to allow for the possibility of adaptation that will avoid a catastrophic disruption of life on Earth. In order to stabilize CO_2 concentrations below 450 ppm, emissions would have to be lowered even sooner, with emission levels peaking by 2020 and then declining sharply. Even

at this level, scientists predict warming of 2.0 degrees Celsius and sea level rise of half a meter or more by 2100. [Footnote: See original comment document.]

In the DEIS, NHTSA views the IPCC A1B scenario as representing the "no-action alternative." DEIS at 3-51, 4-24. As noted above, NHTSA simply subtracts the changes in GHG emissions attributable to the various CAFE alternatives from the A1B emissions scenario to determine the effect on CO_2 concentration and temperature. See DEIS at 4-22, 4-51.

This analysis, however, is not meaningful, because it does not inform the reader whether the actions of the Agency, coupled with anticipated actions of other agencies, will be sufficient to change our trajectory from the A1B "no-action" scenario, to the B1 scenario of stabilized CO_2 concentration and temperature. Thus, neither the agency nor the public can determine whether NHTSA has considered and given sufficient weight to the dangers of global warming in setting the CAFE standard at the "optimized" level, rather than at a higher level.

In order to answer the latter question, NHTSA must consider its actions within the context of the steps that are being taken or are reasonably foreseeable to be taken by all agencies, organizations, nations, and localities to prevent CO_2 concentrations in the atmosphere from reaching a level of dangerous anthropogenic interference. As noted above, it is generally agreed that, in order to maintain CO_2 concentrations at the 500 ± 50 ppm level, emissions must stabilize and begin to decline either by 2020 or 2050. Given this consensus, the DEIS should calculate what CAFE mileage standard would have to be reached by those dates, taking into account anticipated increases in VMT, in order to stabilize and reduce GHG emissions from passenger cars and light trucks. The DEIS must then determine whether the new CAFE rule moves us forward sufficiently so that we will be poised to reach the required future goals. If the proposed CAFE rule will not enable us to stabilize and begin to reduce emissions by 2020 or 2050, then what CAFE standard is necessary now to enable us to achieve the future reductions?

Comment Number: 0595-24
Organization: Environmental Protection Agency
Commenter: Susan Bromm

For the emissions scenarios analyzed, EPA would suggest using A2, A1B, A1FI, and B2. We would suggest adding some text indicating that recent socioeconomic and emissions trends are higher than those captured by SRES and even more recent scenarios.

Additionally, EPA has the following questions and comments regarding the climate projections used by NHTSA:

1. Why was the SRES MB chosen as the baseline scenario? How does it compare to current trends? Other potential futures should be considered.
2. What climate sensitivity was used? If only a climate sensitivity of 3 was considered, then NHTSA has ignored the implications for the distribution of potential climate outcomes in 2030, 2060, and 2100.
3. There are inconsistencies in the treatment of climate and other analyses:

    a. NHTSA is using an SRES A1B emissions scenario for climate projections, yet using a mean SCC estimate based on a variety of climate projections;

    b. NHTSA is combining a domestic estimate of the SCC with global climate variables; and

c. NHTSA is using SRES A1B emissions for global climate, yet is using U.S. EPA emissions for transportation which are not consistent with A1B.

Response

For the FEIS analysis, NHTSA used MAGICC Version 5.3. NHTSA also has responded to the suggestions to use multiple scenarios from the Special Report on Emission Scenarios (SRES) to simulate the base case (the No Action Alternative) emissions corresponding to a variety of socioeconomic and emissions trends, and comments suggesting running other baseline scenarios and climate sensitivities (2.5 ºC, 3.0 ºC, and 4.5 ºC) to illustrate the uncertainty of the emissions reductions on key climate effects such as global temperature increase, CO_2 concentrations, and sea-level rise.[23] Section 3.4 of the FEIS incorporates all of these results to show the sensitivity of results to different assumptions on base-case emissions and climate sensitivity. In addition, by definition, the IPCC SRES scenarios exclude any global policy to reduce emissions and avoid climate change but might include other policies that could impact GHG emissions. Even the B1 family of scenarios is defined as follows in the IPCC SRES report: "[t]he emphasis is on global solutions to economic, social, and environmental sustainability, including improved equity, but without additional climate initiatives." (Nakicenovic et al. 2000).

Regarding attaining stabilization of atmospheric CO_2 concentrations below 500 ppm (or any other target suggested by commenters), GHG reductions in any one sector and any one nation will not be sufficient to stabilize at these levels, and it is clear that none of the alternatives evaluated in the FEIS would meet such an objective. NHTSA recognizes that several approaches have been put forth for developing comprehensive, multi-sector strategies to reduce GHG emissions. However, NHTSA's regulatory authority in the context of this rulemaking is limited to choosing an appropriate CAFE standard, based on the four statutory factors mandated in EPCA. Thus, a comparison of various CAFE alternatives to other GHG mitigation approaches (e.g., those conceptualized as wedges) is beyond the scope of the EIS and the rulemaking.

NHTSA included the scaling approach in the DEIS because MAGICC Version 4.1 did not reflect Fourth Assessment Report science. Because the FEIS uses MAGICC Version 5.3, it eliminates the scaling approach and includes an expanded comparison of MAGICC Version 5.3 and Fourth Assessment Report results.

10.3.3.4 Non-CO_2 GHGs

Comments

Comment Number: 0572-38
Organization: Center for Biological Diversity
Commenter: Brian Nowicki, Mickey Moritz, Kassie Siegel

Although the DEIS quantifies CO_2 emissions, it utterly fails to address black carbon, an important short-lived pollutant that contributes to global and regional warming. Black carbon is produced by incomplete combustion and is the black component of soot. Although combustion produces a mixture of black carbon and organic carbon, the proportion of black carbon produced by burning fossil fuels, such as diesel, is much greater than that produced by burning biomass. The CAFE standards will affect both gas and diesel engines, and may result in a higher percentage of diesel-fueled vehicles. Thus, it is essential to consider the impact of the new standards on black carbon emissions.

[23] *The SRES scenarios are long-term emissions scenarios representing different assumptions about key drivers of GHG emissions. Section 3.4 of the FEIS describes the SRES scenarios in more detail.*

Black carbon heats the atmosphere through a variety of mechanisms. First, it is highly efficient at absorbing solar radiation and in turn heating the surrounding atmosphere. Second, atmospheric black carbon absorbs reflected radiation from the surface. Third, when black carbon lands on snow and ice, it reduces the reflectivity of the white surface which causes increased atmospheric warming as well as accelerates the rate of snow and ice melt. Fourth, it evaporates low clouds. Notably, black carbon is often complexed with other aerosols such as sulfates, which greatly increases its heating potential. (Ramanathan & Carmichael 2008; Jacobson 2001)

Due to black carbon's short atmospheric life span and high global warming potential, decreasing black carbon emissions offers an opportunity to mitigate the effects of global warming trends in the short term (Ramanathan & Carmichael 2008). Black carbon is considered a 'short-lived pollutant'(SLP) because it remains in the atmosphere for only about a week in contrast to carbon dioxide, which remains in the atmosphere for over 100 years. Furthermore, the global warming potential of black carbon is approximately 760 times greater than that of carbon dioxide over 100 years (Reddy & Boucher2007) and approximately 2200 times greater over 20 years (Bond & Sun 2005). It is estimated that black carbon is the second greatest contributor to global warming behind carbon dioxide (Ramanathan & Carmichael 2008).

Unlike traditional greenhouse gases, which become relatively uniformly distributed and mixed throughout the Earth's atmosphere, black carbon exerts a regional influence. The impacts of black carbon on a regional level include both atmospheric heating, as discussed above, and hydrological changes. Hydrological changes occur due to alterations in cloud formation and heat gradients (Ramanathan & Carmichael 2008). For instance, aerosol pollution has been linked to decreases in the summer monsoon season in tropical areas as well as the drought in the Sahel region of Africa (Ramanathan & Carmichael 2008). Black carbon also impacts the drought-fire cycle. The more drought conditions prevail, the more forest fires burn, and the forest fires in turn emit massive quantities of black and organic carbon. The release of these aerosols intensifies the drought effect.

Another impact of black carbon is accelerated snowmelt; for instance, black carbon is likely contributing to the retreat of Himalayan glaciers and the resulting water shortage in areas of Asia (Ramanathan & Carmichael 2008). When black carbon settles on snow, it makes the snow darker so that it absorbs more solar radiation. This directly leads to snow melt. In addition, local atmospheric heating due to black carbon increases the melting rate. These same effects may well be operating on mountain ranges in the U.S. such as the Sierra Nevada, which would reduce water availability throughout California, a highly populated region, at crucial times of the year.

Comment Number: 0572-60
Organization: Center for Biological Diversity
Commenter: Brian Nowicki, Mickey Moritz, Kassie Siegel

NHTSA states, on page 24413 of the NPRM, that "[for] purposes of this rulemaking, NHTSA estimated emissions of vehicular CO_2 emissions, but did not estimate vehicular emissions of methane, nitrous oxide, and hydroflourocarbons. Methane and nitrous oxide account for less than 3 percent of the tailpipe GHG emissions from passenger cars and light trucks, and CO_2 emissions accounted for the remaining 97 percent. Of the total (including non- tailpipe) GHG emissions from passenger cars and light trucks, tailpipe CO_2 represents about 93.1 percent, tailpipe methane and nitrous oxide represent about 2.4 percent, and hydroflourocarbons (i.e., air conditioner leaks) represent about 4.5 percent." Although these emissions make up a relatively small portion of the total greenhouse gas emissions from automobiles, they nonetheless represent large amounts of greenhouse gases and must be included in both the economic

and environmental analyses. For example, nitrous oxide emissions with greenhouse gas impacts equivalent to 29 million metric tons of CO_2 are far from insignificant.

Comment Number: 0595-21
Organization: Environmental Protection Agency
Commenter: Susan Bromm

Finally, EPA is concerned that NHTSA has not accounted for non-$C0_2$ GHG emissions changes that would be expected with the policy, e.g., changes in fuel use will bring changes in non-$C0_2$ GHG emissions associated with fossil fuel extraction, production, transportation, refining, and combustion.

Response

NHTSA has added a discussion of black carbon to the FEIS. See Section 3.4.4.4.2. This discussion notes that while MAGICC 5.3 estimates radiative forcing from black carbon, emissions trends for black carbon are assumed to bear a fixed relationship to emissions of SO_2 and cannot be specified separately in the model. The tailpipe emissions factors derived by Volpe using MOBILE6.2 include both "elemental carbon" and "organic carbon" as components of both $PM_{2.5}$ and DPM emissions, although emissions of individual PM components were not estimated or reported separately.

The FEIS includes estimates of methane and nitrous oxide emissions, and the emissions reductions (related to the No Action Alternative) were included in the climate modeling analysis. NHTSA did not estimate emissions from HFCs, which are not expected to change substantially as a result of the CAFE rule. NHTSA has revised Section 3.4.3.1 of the FEIS to make clear that emissions estimates include non-CO_2 gases (CH_4 and N_2O) and include upstream sources of emissions of CO_2 and these non-CO_2 gases. In addition, NHTSA has clarified that the following non-GHGs were also estimated by the Volpe model and accounted for in the climate modeling: SO_2, NO_x, CO, and VOCs.

10.3.3.5 Consequences

Comment

Comment Number: 0585-4
Organization: Attorneys General of the States of California, Massachusetts, New Jersey, New Mexico, New York, and Oregon, Secretary of the Commonwealth of Pennsylvania Department of Environmental Protection, and New York City Corporation Counsel
Commenter: Edmund Brown Jr., Joseph Powers, Martha Coakley, Michael Cardozo, Anne Milgram, Gary King, Andrew Cuomo, Hardy Myers

The DEIS improperly compares the decrease in growth of emissions from the CAFE rule with the absolute decrease in emissions from the U.S. regional programs, creating a false impression of the benefits of the rule.

The DEIS further misleads the public by setting up a false comparison between the reduction in growth of GHG emissions from the CAFE alternatives, and the absolute decrease in emissions from the climate programs created by groups of states such as the Western Climate Initiative ("WCI") and the Regional Greenhouse Gas Initiative ("RGGI"). DEIS at 3-57, 4-28 to 4-29. For example, in the cumulative impacts section, the DEIS states that the WCI has a goal of reducing CO_2 equivalent emissions by 350 million metric tons ("MMT") from 2009 to 2020, and the CAFE rule will reduce CO_2 emissions by 455-830 MMT over the same time period. The DEIS further states that the RGGI will reduce CO_2 emissions by 268 MMT from 2006 to 2024 and the CAFE rule will reduce CO_2 emissions by 1,100-1,834 MMT

over the same time frame. The DEIS therefore concludes that "the alternatives analyzed here deliver GHG emission reductions that are on the same scale as many of the most progressive and ambitious GHG emission reduction programs underway in the United States." DEIS at 4-29.

The above analysis, and in particular, the latter statement, are affirmatively misleading. The regional goals represent absolute reductions from prior levels. In reducing CO_2 equivalents by 350 MMT, the WCI is actually committed by 2020 to bringing its level of emissions 15% below the levels that existed in 2005. See Western Climate Initiative, Statement of Regional Goal, 2007 at 1. [Footnote: See original comment document.] Similarly, the RGGI will result in a 2018 emissions budget that is 10% smaller than the 2009 emissions budget. See Overview of RGGI CO2 Budget Training Program, October 2007 at 2. [Footnote: See original comment document.] In contrast, the emission figures cited by NHTSA as attributable to the CAFE rule actually represent a significant increase above previous levels. In order to be "on the same scale as many of the most progressive and ambitious GHG emission reduction programs underway in the United States," the CAFE rule would have to reduce the level of GHG emissions below existing levels. Clearly, no such reduction is envisioned. In fact, a more accurate statement would be to say that the increase in GHG emissions from previous levels allowed by the CAFE rule would wipe out reductions in emissions achieved by the various regional climate coalitions.

Response

NHTSA has added more analysis to Section 3.4.4.1 of the FEIS to illustrate the change in GHG emissions due to each measure (RGGI and WCI) in terms of percent change from the baseline and percent change from the beginning of each measure. The additional text clarifies that while the RGGI and WCI measures are designed to reduce emissions in relation to both expected future emissions and levels in a base year, the CAFE alternatives reduce emissions from the expected future emissions from cars and light trucks in the United States, and result in continued increases in relation to any given base year that might be chosen. That is, CAFE standards do not reduce GHG emissions from cars and light trucks from base-year emissions levels.

Emissions from cars and light trucks are a function of both fuel economy and vehicle miles traveled. NHTSA's assumptions on growth in future VMT are based on historical trends. Despite the improvement in fuel economy resulting from this rulemaking, the growth in VMT traveled is anticipated to outweigh the improvement in fuel economy, and thus emissions from cars and light trucks are expected to continue increasing.

Nevertheless, it cannot be argued that the alternatives would result in an absolute increase in emissions. Emissions under the alternatives would surely be lower than under the No Action Alternative, and thus, represent a verifiable improvement to the environment.

Comments

Comment Number: 0585-12
Organization: Attorneys General of the States of California, Massachusetts, New Jersey, New Mexico, New York, and Oregon, Secretary of the Commonwealth of Pennsylvania Department of Environmental Protection, and New York City Corporation Counsel
Commenter: Edmund Brown Jr., Joseph Powers, Martha Coakley, Michael Cardozo, Anne Milgram, Gary King, Andrew Cuomo, Hardy Myers

The DEIS fails to make clear the connection between anticipated CO_2 concentrations and extreme environmental impacts.

The DEIS contains a qualitative discussion in chapter 4 of the potential impacts of global warming, but avoids linking the CAFE rule with particular impacts, noting that the impacts from the rule in isolation are too small to quantify. DEIS at 2-13. While technically correct that the GHG emissions from the CAFE rule in isolation cannot be linked to particular environmental impacts, the DEIS should make clear that the levels of CO_2 concentrations and temperature increase that it anticipates, more than 700 ppm CO_2 and 2.7 degrees Celsius (Table 4.43 at DEIS 4-31), are directly associated with some of the more extreme environmental effects.

One way to explain the connection between the atmospheric concentrations of CO_2 and the increased temperatures anticipated by the DEIS on the one hand, and the real environmental effects on the other, would be to rely on the materials presented by the IPCC. For example, Figure SPM.2 [Footnote: See original comment document.] illustrates graphically how various extreme environmental effects become increasingly likely as temperature rises. Notably, the figure demonstrates that the increase in temperature of 2.7 degrees Celsius anticipated by the DEIS may result in the extinction of more than 20 to 30% of the species on earth, coastal flooding affecting millions of people, increasing burdens from malnutrition and disease, and increased mortality from heat waves, floods, and droughts. This type of graphic representation will, consistent with the purposes of NEPA, enable the reader to understand that, in setting the CAFE standard, NHTSA anticipates that we are potentially on the path to dangerous anthropogenic interference and cataclysmic climate change.

Comment Number: 0596-4
Organization: Environmental Defense Fund
Commenter: Martha Roberts

In this EIS GHG emissions for the CAFE alternatives are presented primarily in terms of the small relative differences among them, instead of the total GHG from the vehicle categories projected for each alternative. This is misleading because it gives the impression that each alternative will progressively decrease the nation's GHG emissions, when in fact, under each alternative total GHG emissions increase considerably compared to the present. Merely demonstrating the relative reductions of stricter alternatives versus "no action" paints a mirage of future benefits that do not exist.

We have conducted a simple analysis that provides this more appropriate contextual information. It demonstrates, for example, that under the "optimized" alternative, atmospheric CO_2 concentrations will increase by approximately 12 ppm by 2100. (This estimation relies upon the cumulative greenhouse gas (GHG) emissions presented in section 4 of the EIS and the assumption that oceans and forests will sequester half of the total GHG emissions. Then each 8,000 MMT CO_2e contributes 1 ppm of atmospheric CO_2e. See the EPA's paper, A Wedge Analysis of the U.S. Transportation Sector (EPA 420-R-07-007, U.S., 2007) for more details.) This is a more appropriate depiction of its impact than showing, as the current EIS does, the tenths of a ppm variation between the different alternatives by 2100. NEPA requires that each proposal, including the "no action" alternative, be considered against the baseline condition so that cumulative impacts, which are defined as both adverse impacts and the enhancement of the environment, can be compared with existing environmental impacts. This comparative analysis is unlawfully omitted from the EIS.

Response

NHTSA included the suggested discussion of impacts from extreme temperature increases from the IPCC Fourth Assessment Report to put the baseline emissions and emissions reductions into context. See Section 3.4.1.4. NHTSA also expanded the discussion of tipping points to address this point. See Section 3.4.3.2.4.

NHTSA disagrees with the interpretation that the Optimized Alternative increases CO_2 concentrations from the baseline. The baseline represents continued increases in emissions from cars and light trucks, consistent with increases in population and income. The CAFE alternatives reduce the CO_2 emissions and concentrations from these levels. The emissions are greater than current emissions, but it is not reasonable to view current conditions as the baseline.

NHTSA added a discussion in this FEIS to better show the emissions reductions from the CAFE standards alternatives as emissions reductions from cars and light trucks in the United States, which shows that it does represent substantial emissions reductions from the transportation emission sector. See Section 3.4.4.1.

10.3.3.6 Sea-level Rise

Comments

Comment Number: 0572-27
Organization: Center for Biological Diversity
Commenter: Brian Nowicki, Mickey Moritz, Kassie Siegel

The DEIS cannot rely solely on model results to predict sea level rise. Instead, the prediction should be based on the sea level measurements from paleoclimate data, which indicate that in the past sea level was approximately 25 meters higher at temperatures only 2-3° C of warmer and atmospheric CO_2 concentrations of 350 – 450 ppm. (Hansen 2007). For comparison, the DEIS predicts that temperature in 2100 under the A1B "business as usual" scenario will be approximately 2.7° C warmer. DEIS at 3-63, Table 3.4-5. Although the DEIS acknowledges that Rahmstorf (2007) has predicted a sea level rise of over 1 m by 2100, even his prediction does not capture the non-linearity of ice-sheet loss (Hansen 2007). If this non-linearity is taken into account, "business as usual" sea level rise this century is more likely to be on other order of 5 m (Hansen 2007; Overpeck et al. 2006).

Given the strong scientific evidence that sea level will rise by substantially more than predicted in the IPCC Fourth Assessment report, the EIS's analysis, both qualitative and quantitative, must be adjusted to account for the economic impacts of severe and abrupt climate change. It is certain that sea level will rise significantly this century, and assuredly at a rate much greater than that reported in the DEIS. Regardless of the actual numerical value, the amount of increase will be enough to constitute a major environmental and economic impact. Economic analyses exist to estimate the economic impact of such an event. (Stern 2007) [Footnote: See original comment document.] As a result, the DEIS must include the substantial economic cost in the cost-benefit analysis.

Comment Number: 0572-34
Organization: Center for Biological Diversity
Commenter: Brian Nowicki, Mickey Moritz, Kassie Siegel

The example of the scaling approach as applied to sea level and as illustrated in Table 3.4-14 is obscure and impossible to follow. Data appears to be missing from Table 3.4-14 (column 1) and the values do not appear to correspond to the steps outlined on page 3-77. This needs to be clarified so that readers can assess the validity of the numerical results. The value for sea level rise for "no action" corresponds to the midpoint for the B1 scenario (28.0 cm [centimeter]), not the A1B scenario (34.5 cm) that is purportedly represented in Table 3.4-14. If the steps provided on page 3-77 are carried out, it appears that the difference between alternatives for sea level rise is approximately double the range of values reported in Table 3.4-14.

Regardless, the approach itself is deeply flawed. First, using the IPCC estimates of potential sea level rise does not correct the shortcomings in MAGICC. The IPCC did not account for ice sheet dynamics in any of their estimates. As a result, any modeling or scaling attempt will not capture the most important components of sea level rise, as acknowledged in the DEIS at 3-76. As a result any attempt to estimate sea level rise from IPCC data will be deeply flawed. If a scaling approach is to be used, it should be based on paleoclimate data predicting the sea level rise associated with various temperature and CO_2 concentrations.

Response

In Section 3.4.3.2.4 of the FEIS, NHTSA expands its research and consideration of the issue of tipping points to include new research, as suggested by commenters, and expands the discussion from the IPCC and USCCSP literature. NHTSA expands the discussion within the FEIS to include the consideration of paleoclimatic research, which shows that abrupt and severe climate change has occurred in the past, that greater increases in sea-level rise occurred in the past and at temperatures consistent with those being simulated for 2100, and that these climate changes can occur in multiple climate systems or related systems affected by climate. While there is still substantial uncertainty surrounding the exact thresholds where tipping points occur, and the interrelationships among tipping points, scientists are improving their understanding of the processes that determine the potential for abrupt or irreversible change. As noted by commenters, the triggering of abrupt and severe climate-change events could increase the costs to society in an equally abrupt fashion.

Given the current state of science on tipping points, it is not possible for NHTSA to quantitatively relate the reductions in CO_2 emissions, temperatures, precipitation changes, and sea-level rise to tipping-point thresholds. Like all other individual GHG mitigation actions being considered by governments around the world, this action alone, even as analyzed under the most stringent alternative, does not produce enough of a CO_2 emissions reduction to avert levels of abrupt and severe climate change. Abrupt or severe climate change can only be avoided through implementation of many more GHG-reduction initiatives, and will require a global effort. To the degree that the action in this rulemaking reduces the rate of CO_2 emissions, the rule contributes to the general reduction or delay in reaching these tipping-point thresholds. Alternatives that reduce greater amounts of CO_2 contribute a greater degree to the avoidance of any tipping points within global climate systems.

NHTSA included the scaling approach in the DEIS because MAGICC 4.1 did not reflect Fourth Assessment Report science. In the FEIS, NHTSA used MAGICC 5.3 and eliminated the scaling approach, but included an expanded comparison of MAGICC 5.3 and Fourth Assessment Report results.

10.3.4 Resource Impacts of Climate Change

10.3.4.1 Introduction

Comment

Comment Number: TRANS-33-5
Organization: Individual
Commenter: Fred Dobb

Spiritually and ethically, we cannot reduce endangered species, flood and famine refugees, or the integrity of recreation to pennies in an equation, not that the draft EIS even accounts for them at all.

Response

The FEIS discusses the impacts of floods and droughts on the population, both nationally and globally. See Section 4.5.7.1; Section 4.5.7.2; Section 4.5.7.2.1; Section 4.5.8.2.3; and Section 4.5.8.3. While these can certainly be devastating events, the science of directly linking floods and droughts to anticipated changes in climate on the local and regional scale is still developing. A number of endangered species are likewise considered in the DEIS. See DEIS 4.5.4; DEIS p. 4-81, Section 4.5.4.2.3. NHTSA has chosen not to monetize such relationships as the impact upon health and environment because the DEIS and this FEIS focus on changes in, and impacts to, the environment - not on the monetized values of those changes.

10.3.4.2 Industries, Settlements, and Society

Comment

Comment Number: TRANS-37-7
Organization: Individual
Commenter: Jaafar Rizvi

Now, of course, these disasters aren't entirely preventable, but it's within our power to lessen the severity of them.

The DEIS report states that 4 percent of the world's global warming emissions come from American transportation. And if we can lower these emissions by 25 percent, we're lowering the global emissions by 1 percent.

If a decrease in 1 percent could decrease, you know, the severity of the next Katrina by 1 percent, you're talking about saving thousands of lives, and you're talking about saving a billion dollars.

Moreover, we can expect to have more than one large disaster every year. We have been having tons all over the world. Katrina was the last huge one in the U.S. But the International Federation of the Red Cross showed in its 2007 world disaster report that there has been an increase in natural disasters of over 115 percent since 2004, totaling 541 individual disasters. It states that this increase has been due entirely to weather related disasters.

Response

The commenter attempts to establish a causal relationship between global warming and a particular weather event, in this case, Hurricane Katrina. No single weather event can be attributed to global warming, even though global warming can increase the likelihood of some extreme weather events. Because of this and the non-linear nature of global warming, it is not possible to make the connection the commenter tries to make by attributing a reduction in the strength of a storm to an equal reduction in CO_2 emissions. Further, the relationship between emissions levels and weather-related natural disasters is not clear. The state of scientific knowledge is not sufficient at this time to determine how weather-related disasters would be affected by the action alternatives, other than to state that the reduction in CO_2 emissions estimated by this rulemaking would contribute to the reduction of impacts of global warming, including severe weather events.

10.3.4.3 Human Health

Comments

Comment Number: 0596-3
Organization: Environmental Defense Fund
Commenter: Martha Roberts

The cumulative impacts section in this EIS fails to provide the proper context to evaluate the climate change potential or consequent health impacts of the proposed fuel efficiency standards. In omitting this context NHTSA directly contradicts the Court's instructions in *Center for Biological Diversity v. NHTSA* regarding the agency's obligation to address cumulative impacts under NEPA, explaining that the environmental review must:

"provide the necessary contextual information about the cumulative and incremental environmental impacts of the Final Rule in light of other CAFE rulemakings and other past, present, and reasonably foreseeable future actions, regardless of what agency or person undertakes such other actions." [Footnote: See original comment document.]

The EIS draws heavily upon the most recent Intergovernmental Panel on Climate Change (IPCC) Fourth Assessment Report in describing the causes of climate change and its impacts on the environment and human welfare. However, the EIS ignores the strong language in the IPCC report that describes appropriate, science-based targets to avoid the most drastic of these impacts. For example, the IPCC states that "avoidance of many key vulnerabilities requires temperature change in 2100 to be below 2.6 °C above pre-industrial levels." [Footnote: See original comment document.] Key health-related vulnerabilities include the risk of floods, droughts, and deteriorating water quality and supply for hundreds of millions of people. [Footnote: See original comment document.] Rising global temperatures increase the likelihood of severe weather events, net declines in world food production, and widespread deglaciation with the resultant loss of reliable summer melt stream flows, all detrimental to human health. In order to avoid passing this dangerous temperature threshold, the IPCC indicates that GHG emissions must peak within 10 years (of 2007) and atmospheric carbon dioxide (CO_2) levels stabilize at less than 440 parts per million (ppm). This corresponds to a 30-60% reduction in global GHG emissions by the year 2050 from the year 2000. [Footnote: See original comment document.]

The type of risk management approach, which seeks a reasonable target to avoid severe health, environmental, and other impacts of dangerous climate change, has been proposed by the EPA in its recent "Technical Support Document on the Benefits of Reducing GHG Emissions" and summarized by Environmental Defense Fund in its supplemental comments on the NPRM for the CAFE standards. These comments are attached here and we hereby incorporate them as part of EDF's [Environmental Defense Fund's] comments on the draft EIS.

Comment Number: 0600-5
Organization: Centers for Disease Control and Prevention
Commenter: Sarah Heaton, Andrew Dannenberg

The anticipated effects of increased CAFE standards on the human environment in the United States will occur primarily through the following mechanisms: 1) Fleet emission changes 2) Fuel consumption changes 3) Fleet design changes. To adequately assess the potential impact of CAFE standards on the human environment:

Health impact analysis and modeling of each mechanism is necessary for each of the proposed alternatives.

Fleet Emission Changes and Human Health:

Transportation-related emissions contribute to climate change. CAFE standards can promote the use of alternative technologies in the U.S. and abroad that reduce harmful emissions and, in turn, reduce contributors to climate change and improves human health outcomes. Although some health outcomes of climate change are difficult to predict, others are supported by considerable evidence. Health impacts affected by increasing or reducing contributors to climate change are appropriate for analysis of the human environment pursuant to NEPA.

Health outcomes from climate change, for which quantitative or qualitative impact analysis is possible, should be included in predictive modeling.

Automobile contributions to criteria air pollutants are affected by CAFE standards and such emissions directly affect human health outcomes. Asthma, bronchitis, chronic obstructive pulmonary disease, and cardiovascular disease are some of the most common health outcomes triggered or exacerbated by air pollutants from motor vehicles. Reducing ozone forming emissions, NO_x, and hydrocarbons can improve human health outcomes and reduce medical care costs. The DEIS fails to discern among alternatives regarding the health impacts from emissions/air pollutants. For adequate analysis of impacts to the human environment pursuant of NEPA:

Analysis of the potential health effects from fleet emissions, both acute and chronic, is critical to include in the analysis of alternatives pursuant to NEPA.

Adequate cost/benefit analysis of alternatives should include health costs associated with the acute and chronic effects from auto emissions at each level in the range of alternatives to show both current associated costs and potential savings from reduced emissions.

Comment Number: 0600-10
Organization: Centers for Disease Control and Prevention
Commenter: Sarah Heaton, Andrew Dannenberg

The anticipated effects of increased CAFE standards on the human environment in the United States will occur primarily through the following mechanisms: 1) Fleet emission changes 2) Fuel consumption changes 3) Fleet design changes. To adequately assess the potential impact of CAFE standards on the human environment health impact analysis and modeling of each mechanism is necessary for each of the proposed alternatives.

Fuel Consumption Changes and Human Health:

Decreased demand and consumption of fossil fuel in an environment of increasing costs likely affects economic stability which affects human health outcomes (e.g. “drive or eat”). These health determinants and potential health outcomes should be considered as factors affected by CAFE standards and discussed.

Comment Number: TRANS-32-1
Organization: Environmental Defense Fund
Commenter: James Keck

EDF, while supporting the inclusion of climate change health impacts within the EIS is deeply concerned by the assertion that the agency and its consultants were unable to determine the magnitude of these impacts across the proposed CAFE alternatives, not only on the basis of climate change, but also regarding conventional pollutant health impacts.

Response

Quantifying the impacts of climate change on human health is a complex analysis requiring a thorough understanding of not only the direct impacts of varying each climate stressor on human health, but the indirect impacts associated with multiple climate stressors. The complex ecosystem response further amplifies the potential feedbacks of climate change on human health, making it very difficult to adequately quantify this relationship. This would require significant health and environmental modeling, which could provide results with a large amount of uncertainty and which might rely on science still under development. EPA notes in its comments on the DEIS that a "complete health and environmental impacts analysis would begin with a full scale photochemical air quality modeling to demonstrate the changes in ambient air pollution exposure…. These ambient concentrations would then be fed through a health impacts model…to characterize population exposure and the change in health response…." Furthermore, the CCSP 2008 report entitled "Analyses of the Effects of Global Change on Human Health and Welfare and Human Systems" notes that, "the body of literature [on health impacts of climate change] remains small, limiting quantitative projections of future impacts." It also notes that there is still a need to "[d]evelop quantitative models of possible health impacts of climate change that can be used to explore a range of socioeconomic and climate scenarios." Instead, NHTSA describes the impacts by providing a thorough qualitative description of the current "state-of-the-art" science linking climate change impacts to human health. NHTSA also discusses peer-reviewed studies based on modeling and other rigorous tools that link climate change impacts to human health.

Sections 3.3.1.2, 3.3.1.3, 3.5.4, and 4.5.8 of the FEIS describe impacts to human health. In addition, Section 3.4.3.2.4 of the FEIS includes a discussion of tipping points to describe the most drastic impacts of climate change.

10.3.5 Non-Climate Cumulative Impacts of CO_2 Emissions

10.3.5.1 Consequences

Comment

Comment Number: 0572-36
Organization: Center for Biological Diversity
Commenter: Brian Nowicki, Mickey Moritz, Kassie Siegel

The DEIS ignores one of the major, direct impacts of increased atmospheric CO_2: ocean acidification. Carbon dioxide is readily exchanged between the atmosphere and the sea surface. The increase in CO_2 is a direct result of human activity—fossil fuel burning. Due to the fact that the ocean has a carbonate buffer system, an increase in aqueous CO_2 reduces the concentration of carbonate while increasing the concentration of bicarbonate. The direct result is a decrease in ocean pH.

The reduction in free carbonate ions harms organisms that form calcium carbonate shells. There is a profound impact on the *entire* marine ecosystem due to the fact that many calcifying plankton, the basis of the food web, are severely affected by ocean acidification. Furthermore, organisms such as fish also experience direct effects from increased ocean CO_2, which include metabolic, immune, and reproductive dysfunction.

There is an extremely high level of scientific consensus regarding the destructive effects of ocean acidification. A recent comment letter signed by the top 25 marine scientists who study ocean acidification emphasized that the decrease in pH due to un-checked CO_2 emissions will be devastating and irreversible on human time scales (Caldiera and 25 others, 2007).

Ocean acidification has also been recognized by advisory bodies. For instance, the USCOP characterizes climate change as "among the most pressing scientific questions facing our nation and the planet." (USCOP Ocean Blueprint 2004). Furthermore, the USCOP report states that ocean acidification is impairing some organisms and has "potentially profound impacts on marine production and biodiversity" (USCOP Ocean Blueprint 2004). The resulting recommendation is that scientific information be used to modify management strategies. Likewise, the Pew Commission discussed the myriad effects of climate change on marine life, including changes in ocean chemistry. The report stated that the Commission "feels strongly" that the U.S. must reduce its emission of greenhouse gases to limit injury to the marine environment (Pew Oceans Commission Living Oceans 2003).

The oceans have already taken up about 40% of the CO_2 that humans have produced since the industrial revolution, and this has lowered the average ocean pH by 0.11 units (Sabine et al. 2004). Although this number may sound small, it represents a significant change in acidity. The ocean takes up about 30 million metric tons of CO_2 each day (Feely et al., 2008). While pre-industrial levels of atmospheric CO_2 hovered around 280 ppm (Orr et al. 2005)), they have now increased to 380 ppm; if current trends continue they will increase another 50% by 2030 (Turley et al., 2006). Over time, the ocean will absorb up to 90% of anthropogenic CO_2 released into the atmosphere (Kleypas et al. 2006).

Unlike future climate change, the pH change in response to increased atmospheric CO_2 is relatively easy to predict because it involves basic chemical reactions and is unlikely to be affected by global temperature change (McNeil & Matear 2006). Thus, there is a strong consensus in the field that the oceans will undergo extensive acidification as the atmospheric CO_2 concentration rises.

Studies have established that anthropogenic CO_2 is the direct cause of the decrease in ocean pH. For instance, a tracer technique can be used to separate naturally occurring and dissolved carbon from that due to human activity (Gruber et al. 1996). Oceans absorb CO_2 more slowly than humans are currently releasing it. Current levels of anthropogenic CO_2 have virtually guaranteed that ocean pH will continue to decrease in the foreseeable future. Anthropogenic CO_2 emissions will result in a decrease in oceanic pH of 0.4 units by 2100 according to a model based on "business as usual" IPCC scenarios (Caldeira & Wickett 2003). This would constitute a catastrophic pH level (Zeebe et al. 2008). Disastrous impacts to marine ecosystems can only be avoided with rapid reductions in CO_2 emissions (Zeebe et al. 2008).

Despite the strong scientific consensus and direct connection between CO_2 emissions and oceanic pH, the DEIS treats ocean acidification as an indirect, cumulative impact. This is unacceptable. The ecological impacts of the proposed CAFE standards on ocean acidification must be fully analyzed. Ocean acidification is even more predictable than changes in temperature or sea level rise, for instance. Yet, the DEIS makes no effort to quantify the influence of the alternatives on ocean pH.

Response

Section 4.7.2.1 of the FEIS includes a discussion of ocean acidification. In addition, Section 4.7.1 describes a projected decrease in ocean pH.

10.3.6 Other Potentially Affected Resources Areas

10.3.6.1 Biological Resources

Comment

Comment Number: 0572-44
Organization: Center for Biological Diversity
Commenter: Brian Nowicki, Mickey Moritz, Kassie Siegel

The rulemaking will impact listed species in ways beyond global warming and ocean acidification. For example, vehicles are a primary source of excess nitrogen in the environment. Excess nitrogen contributes to major environmental problems including reduced water quality, eutrophication of estuaries, nitrate-induced toxic effects on freshwater biota, changes in plant community composition, disruptions in nutrient cycling, and increased emissions from soil of nitrogenous greenhouse gases (Fenn et al. 2003). Nitrogen deposition therefore impacts species listed under the Endangered Species Act in a number of ways.

Nitrogen deposition has contributed to the severe decline of the threatened bay checkerspot butterfly, endemic to the San Francisco Bay Area. (Fenn et al. 2003) The bay checkerspot butterfly is restricted to outcrops of serpentine rock which are low in nitrogen and support a diverse native grassland with more than 100 species of forbs and grasses, including the butterfly's host plants. (Fenn et al. 2003) Nitrogen deposition in the soil creates a more hospitable environment for non-native grasses which crowd out the butterfly's host primary host plant, *Plantago erecta*. (Fenn et al. 2003)

Response

Sections 3.5.1 and 3.5.2 of the FEIS acknowledge the influence of petroleum combustion in the introduction of nitrogen to waterbodies and terrestrial ecosystems, and the negative effects of this introduction on aquatic and terrestrial habitats. Additionally, NHTSA has expanded the text in Section 3.5.2.1.4 to mention the potential influence of nitrogen and other air pollutants on sensitive species and habitats. As stated in Section 3.5.2, NHTSA continues to believe that the proposed rule will minimally affect the deposition of nitrogen and resulting impacts to water and biological resources. See Section 3.3 and Appendix B-1 for more discussion of changes in air-pollutant levels.

Comments

Comment Number: 0572-43
Organization: Center for Biological Diversity
Commenter: Brian Nowicki, Mickey Moritz, Kassie Siegel

On May 15, 2008, the U.S. Fish and Wildlife Service listed the polar bear as a threatened species throughout is range due to global warming. Endangered and Threatened Wildlife and Plants, Determination of Threatened Status for the Polar Bear (*Ursus maritimus*) Throughout its Range, 73 Fed. Reg. 28212-28303 (May 15, 2008). The NHTSA must consult on the impact of its rulemaking, and its

proposal to set fuel economy standards far below what is technologically achievable, on the polar bear. (At the same time that the Secretary published the Final Listing Rule he also issued separate regulations, pursuant to Section 4(d) of the ESA, 16 U.S.C. § 1533(d), which authorize the widespread incidental take of polar bears and purport to exempt greenhouse gas pollutants from Section 7's consultation requirements. Endangered and Threatened Wildlife and Plants, Special Rule for the Polar Bear, 73 Fed. Reg. 28306-28318 (May 15, 2008) ("4(d) Rule"). In a section of the 4(d) Rule entitled "Consultation under Section 7 of the ESA," the Secretary alleges that "the best scientific data currently available does not draw a causal connection between GHG emissions resulting from a specific Federal action and effects on listed species or critical habitat by climate change, nor are there sufficient data to establish the required causal connection to the level of reasonable certainty between an action's resulting emissions and effect on species or critical habitat." 73 Fed. Reg. 28306, 28313. NHTSA must not rely on this rule as an excuse to forgo consultation because it is contrary to the best available science and the legal standards for Section 7 consultation. Moreover, exempting greenhouse gas emitting actions from Section 7 cannot be legally accomplished through section 4(d) of ESA. The Center and co-plaintiffs are currently challenging the 4(d) rule in court. See, e.g. Second Amended Complaint in *Center for Biological Diversity v. Kempthorne*, Civ. No. 08-1339 (CW) (N. Dist. Cal.).)

On May 9, 2006, the National Marine Fisheries Service listed the staghorn and elkhorn corals as threatened due in part to increasing ocean temperature and ocean acidification due to anthropogenic greenhouse emissions. 71 Fed. Reg. 26852. The NHTSA must consult on the impact of its rulemaking on these coral species. The NHTSA must also consult on the impact of its rulemaking on the polar bear's and the corals' critical habitat, once such habitat is designated.

Global warming was cited by the U.S. Fish and Wildlife Service in its critical habitat rulemakings for the Quino Checkerspot and Bay Checkerspot butterflies. See 73 Fed. Reg. 3328-3373 and 72 Fed. Reg. 48178-48218. The NHTSA must consult on the impact of its rulemaking on these species and their critical habitat.

The NHTSA must not limit its consultation, however, to species like the polar bear, corals, and checkerspot butterflies for which anthropogenic greenhouse emissions were cited as a reason for listing or as an impact in the listing or critical habitat rules. The Center has identified 143 listed species for which a recovery plan has been adopted that specifically identifies climate change or a projected impact of climate change as a direct or indirect threat to the species, as a critical impact to be mitigated, as a critical issue to be monitored, and/or as a component of the recovery criteria. [See Exhibit A in original comment document.] This is clear evidence that the NHTSA's rulemaking "may affect" these species. The NHTSA must consult on the impact of its action all listed species which may be affected.

While we are cognizant that federal agencies, for the most part, have not to date been complying with their obligation to consult on the impact of their greenhouse gas emissions on listed species, and therefore there may be some capacity building required for this consultation, this can in no way be used an excuse for continued non-compliance with the law. The direct, indirect, and cumulative impacts of setting fuel economy standards for all cars and light trucks nationally are extraordinarily significant, and therefore a large number of species may be implicated. Where, as here, the NHTSA's rulemaking is national in scope, the NHTSA should conduct a nationally focused consultation. Again, the NHTSA must not attempt to use the large scale of its action as an excuse for ignoring its environmental review duties, since the highly significant nature of the action only makes it more important to thoroughly review its impacts under all applicable laws. Nor can the mere fact that a large geographical area or large number of species be used as an excuse for inaction. See, e.g., *Wash. Toxics Coalition v. EPA*, 413F.3d 1024 (9th Cir.

Wash. 2005) (upholding order requiring the EPA to consult on the impact of 54 pesticide ingredients on 25 species of fish.). If anything, a nationally focused consultation will provide the opportunity to most efficiently analyze the impact of the rulemaking on species and groups of species.

Comment Number: 0572-42
Organization: Center for Biological Diversity
Commenter: Brian Nowicki, Mickey Moritz, Kassie Siegel

The NHTSA's rulemaking will impact species listed as threatened and endangered in several ways, yet the NHTSA has failed to initiate the required Section 7 consultations with the Services [U.S. Fish and Wildlife and National Marine Fisheries Services] on its impact. The NHTSA must initiate and complete the required Section 7 consultations on the rulemaking, or it may be held liable for take of listed species from the impacts of its action, including increased greenhouse gas emissions and other emissions such as NO_x.

Comment Number: 0572-48
Organization: Center for Biological Diversity
Commenter: Brian Nowicki, Mickey Moritz, Kassie Siegel

Setting fuel economy standards for U.S. automobiles is one of the single greatest actions impacting overall greenhouse gas emissions in this country. NHTSA's regulations authorize billions of metric tons of CO_2 and other greenhouse gas emissions over the lifetime of the vehicles. As such, NHTSA must initiate consultation with the FWS and NMFS on the impact of the greenhouse gas and other air pollutants on listed species. Without a non-jeopardy biological opinion and incidental take statement, NHTSA may be liable for take of listed species from increased greenhouse gas emissions and global warming that result from the NHTSA's action. Additional information on the requirement for NHTSA to conduct an ESA Section 7 consultation is contained in Attachment 2 [See original comment document for attachment.], consistent with NHTSA's request to limit primary comments to 15 pages or less. 73 Fed. Reg. 24476.

Response

The CBD submitted comments asking NHTSA to complete a Section 7 consultation with the U.S. Fish and Wildlife Service and the National Marine Fisheries Service because, according to CBD, NHTSA's action will impact endangered species. Specifically, CBD argues that NHTSA's action is responsible for "…increased greenhouse gas emissions and other emissions such as NO_x." NHTSA's action actually reduces the rate of emissions by increasing fuel economy, evidenced by overall (tailpipe and upstream) decreases in emissions of NO_x, $PM_{2.5}$, SO_x, VOC, DPM, benzene, and 1,3-butadiene. However, in the FEIS, NHTSA estimates that VMT will increase over time as the per-mile costs decrease (called the rebound effect). Consequently, the Nation's total car and truck emissions are expected to increase. To be accurate in calculating future scenarios, NHTSA must account for this factor, even if the amount of automobile use is beyond NHTSA's control.

Federal agencies are responsible for determining whether consultation on their proposed actions is required. To make this determination, an agency examines the direct and indirect effects of its proposed action to see if the action "may affect" a listed species. For indirect effects, the impact to the species must be later in time, must be caused by the proposed action, and must be reasonably certain to occur.[24]

[24] *Letter from the Director of the Fish and Wildlife Service to the Regional Directors regarding "Expectations for Consultations on Actions that Would Emit Greenhouse Gases" dated May 14, 2008.*

All of the action alternatives analyzed in this FEIS show a reduction in emissions of CO_2, NO_x, $PM_{2.5}$, SO_x, VOC, DPM, benzene, and 1,3-butadiene compared to the No Action Alternative. The FEIS also quantifies the resulting decreases in sea-level rise, changes in precipitation, and temperature decreases for each of the alternatives from decreasing CO_2 emissions. NHTSA then qualitatively discusses the impacts to ecosystems, ocean acidification, natural resources, wildlife, and many other factors. Because it is beyond the ability of current modeling and the level of uncertainty is very high, it is not possible to quantitatively calculate the effects of this CO_2 reduction on specific localized ecosystems. NHTSA discussed the issue with the U.S. Fish and Wildlife Service to ensure proper compliance. Without sufficient data to establish the required causal connection (to the level of reasonable certainty) between the proposed rulemaking, GHG emissions, and the subsequent impacts to listed species or critical habitat, Section 7 consultation is not required.

10.3.6.2 Land Use and Development

Comment

Comment Number: 0595-8
Organization: Environmental Protection Agency
Commenter: Susan Bromm

Finally, the DEIS states that impacts to land use and development "could include increased agricultural land use" due to increasing use of biofuels. Increased mining is also a potential impact as the search grows for raw materials to create new lightweight materials and hybrid structures. Mining and related land disturbance activities could also have an impact on water resources and aquatic health, particularly where increasing sediment runoff in rivers and streams is an issue.

Response

NHTSA has revised Sections 3.5.1 through 3.5.3 and Section 3.5.5 to include a discussion of mining and related land disturbances.

10.3.6.3 Need for Additional Health Impacts Analysis

Comments

Comment Number: 0595-26
Organization: Environmental Protection Agency
Commenter: Susan Bromm

Also, the $/ton source needs to be cited throughout the document and characterized appropriately. EPA used these $/ton estimates in its ozone NAAQS analysis to *supplement* the formal health impacts analysis — they were not used as a substitute for that analysis.

In light of these observations, EPA recommends the text be revised as follows:

> "NHTSA's analysis of alternative CAFE standards incorporates the economic value of reduced damages to human health that would result from the reductions in emissions of criteria air pollutants and GHGs estimated to result from each alternative. These reductions in damages to human health are valued using estimates of damage costs per unit of emissions of each pollutant that approximate the chemical composition

and geographic distribution of emissions generated by motor vehicle use arid by production and distribution of transportation fuels.

"The dollar-per-ton estimates only provide a screening-level approximation of the potential value of health improvements associated with each alternative. They are not meant to replace a formal health impacts analysis that quantifies and monetizes health incidence such as premature mortality, chronic bronchitis, and respiratory and cardiovascular illnesses, but instead provide an estimate of health-related benefits in the absence of a formal analysis. It should also be noted that the monetized benefits associated with criteria pollutant reductions underestimate total benefits because the dollar-per-ton values used in this analysis omit a number of unquantified human health and environmental impacts.

"The dollar-per-ton estimates used in this analysis were developed by EPA for use in a supplemental analysis of the benefits associated with the final ozone NAAQS RIA [NHTSA should insert the following footnote: U.S. Environmental Protection Agency. August 2007. Benefit Per Ton Technical Support Document, Docket No. EPA-HQ-OAR-2006-0834, Proposed Regulatory Impact Analysis (RIA) for the Proposed National Ambient Air Quality Standards for Ozone Prepared by: Office of Air and Radiation, Office of Air Quality Planning and Standards.]. Human health is further discussed in Chapters 3 and 4."

Comment Number: 0600-1
Organization: Centers for Disease Control and Prevention
Commenter: Sarah Heaton, Andrew Dannenberg

So that comprehensive impact analysis of the human environment for CAFE standards might be carried out and adequately considered in the assessment:

- Collaboration with public health professionals is suggested for assessment and analysis of the CAFE standards' human health impacts.
- Economic analysis should include health costs associated with the environmental impacts of alternatives. This should be described in the EIS.
- Mitigation analysis for projected public health outcomes is necessary. Current mitigation analysis in the DEIS is insufficient.

Response

Two federal agencies commented on the human health discussions in the DEIS. EPA stated that NHTSA did not perform a complete health analysis. Rather than calling for additional analyses, however, EPA suggested clarifying language be inserted in the text that would explain the level of analysis performed. In particular, EPA notes that a "complete health and environmental impacts analysis would begin with a full scale photochemical air quality modeling to demonstrate the changes in ambient air pollution exposure…. These ambient concentrations would then be fed through a health impacts model…to characterize population exposure and the change in health response…." EPA provided text that explains what analysis NHTSA did and did not perform. By contrast, CDC called for more extensive modeling analysis, recommending that economic analysis of health costs be included and commenting that mitigation analysis is necessary. The CDC draws on the wedge analysis described by

Pacala and Socolow in Science magazine in 2004. CDC also provided specific recommendations regarding human health impacts associated with changes in fleet emissions, fuel consumption, and fleet design. See Sections 10.3.2.4, 10.3.4.3, and 10.3.6.4, which address these specific suggestions.

Sections 3.5.4, 3.3.1.2, 3.3.1.3, and 4.5.8 of the FEIS discuss impacts to human health. NHTSA has provided a thorough description of how emissions can affect human health, specific assessments of the changes in emissions due to the new CAFE standards, and discussions of the impacts to human health from direct, indirect, and cumulative impacts perspectives based on information from IPCC and USCCSP. NHTSA has enhanced the information by including data on the potential health costs reduced under each of the alternatives. See Sections 3.3.2.4.2 and 4.3.3.2.3.

NHTSA appreciates and adopts the language EPA suggested to clarify the level of health analysis performed in Section 3.3.2. NHTSA also notes EPA's description of the extensive photochemical exposure and health analysis that would be required to conduct a full-scale health-impacts analysis.

NHTSA believes that this is a better approach than attempting to conduct more extensive health impacts analysis. The differences in emissions reductions (GHGs and air pollution) and in health costs avoided among the alternatives provide ample information for the decisionmaker, as required under NEPA. It is reasonable to anticipate that human health impacts will mirror these indicators. The information to be gained through the very extensive process of health modeling would not add substantial new information, because the differences in estimated climate effects (temperature, precipitation, and sea-level rise) are small; therefore, changes in the health impacts related to these effects would also be small. Further, the differences between the alternatives will be smaller still, due to the global nature of the problem. Similarly, the screening-level analysis of avoided health outcomes and avoided health costs of criteria pollutants among the alternatives provide ample information for the decisionmaker. Additional levels of analysis would on the other hand introduce substantial new uncertainties as each new level of analysis depends on the previous analysis. Thus existing uncertainties are magnified by multiple levels of analysis.

Section 3.4 describes the climate effects and shows that temperature differences between the alternatives are within 0.02 ºC; differences in precipitation are within 0.02 percent; and sea-level rise is within 0.02 to 0.11 centimeter across the alternatives. In fact, NHTSA does not believe that it is possible to credibly estimate the differences between the alternatives, as discussed in Section 4.4 (Cumulative Impacts). This is supported by the USCCSP 2008 report entitled "Analyses of the Effects of Global Change on Human Health and Welfare and Human Systems." This report, which is one of just 21 "priority" Synthesis and Assessment Products issued by the U.S. Government, notes that, "the body of literature [on health impacts of climate change] remains small, limiting quantitative projections of future impacts." The report also notes that there is still a need to "[d]evelop quantitative models of possible health impacts of climate change that can be used to explore a range of socioeconomic and climate scenarios."

To address CDC's request for additional economic/health impacts analysis, NHTSA has provided more information regarding the health effects due to emission of criteria air pollutants. Specifically, NHTSA has expanded the discussion in Sections 3.3.2.4.2 and 4.3.3.2.3 to include estimates of the economic costs and benefits due to asthma, bronchitis, pulmonary disease, and cardiovascular disease. This analysis is limited to the criteria air pollutants because per-unit health damage estimates are not available for MSATs.

In suggesting further modeling, CDC cites the wedge analysis by Pacala and Socolow (2004) and might, therefore, misconstrue the action NHTSA is taking. NHTSA's action is limited to the CAFE rulemaking. The proposed rulemaking would result in substantial reductions in GHG emissions from

passenger cars and light trucks in the United States, which, when considered in a global context, would result in small changes in temperature, precipitation, and sea-level rise. Under NEPA, this is the action that must be evaluated for environmental impacts. The FEIS does not, and should not, in NHTSA's opinion, account for other emissions-reduction strategies beyond what is reasonably foreseeable, as required under NEPA. Because the United States has not established in law or regulation other emissions-reduction strategies (except the MY 2016-2020 CAFE targets specified in EISA), including presumed improvements in energy efficiency would be speculative. Therefore, NHTSA continues to believe that the appropriate context for analysis of human health impacts is limited to the reduction in emissions resulting from the alternatives specified in the proposed rule.

Finally, CDC suggested inclusion of health expertise in development of the FEIS. An expert in the area of health research and analysis has been added to the consultant team assisting NHTSA on this effort.

10.3.6.4 Vehicle Downweighting

Comments

Comment Number: 0530-1
Organization: Individual
Commenter: Dale Olson

I find it truly amazing that in the past when environmental rules were promulgated EPA justifies them with health risks and estimates of deaths. In the case of fuel economy you are disregarding this very concern. To achieve high fuel economy standards vehicles will be made of lighter less strong materials which will make the vehicles less safe and significantly increase highway fatalities. I find it disingenuous that in this case human health can be discounted.

Comment Number: 0554-5
Organization: Individual
Commenter: James Adcock

NHTSA continues to misinterpret the results of Kahane exactly backwards. Kahane's studies illuminate nothing about how manufacturers might actually design new vehicles to achieve higher furl economy. For hypothetical example a vehicle redesigned to have a carbon fiber body with the same stiffness but lower weight might have higher fuel economy AND greater safety. We don't know. Nothing in the Kahane studies comes close to addressing these kinds of engineering design tradeoffs. But on the contrary, Kahane does well-model the scenario where in the face of high gas prices consumers are on average forced within an existing market mix of vehicles to purchase slightly smaller vehicles in order to achieve affordable fuel economy when facing a market where NHTSA and Manufacturers have failed to provide vehicles with fuel economy matching market gas prices. NHTSA then, should be looking to Kahane to illuminate the excess deaths caused to consumers when NHTSA sets fuel economy standards too weak in the face of high gas prices. Such a failure to regulate, and the excess deaths that result, represent a direct failure of NHTSA to meet its primary mandate of Highway Safety. Weak fuel economy standards equals excess traffic deaths. Not the other way around. Consumers need to be able to buy the fuel economy they need in the vehicle size they want without being forced to downsize due to NHTSA setting fuel economy standards that are too weak. Continuing to read Kahane "backwards" results in setting GHG emissions standards too high.

Comment Number: 0572-63
Organization: Center for Biological Diversity
Commenter: Brian Nowicki, Mickey Moritz, Kassie Siegel

The NPRM, on page 24359, states that a 2002 report by a committee of the National Academy of Sciences "cautioned that the safety effects of downsizing and downweighting are likely to be hidden by the generally increasing safety of the light-duty vehicle fleet. It said that some might argue that this improving safety picture means that there is room to improve fuel economy without adverse safety consequences; however, such an approach would not achieve the goal of avoiding the adverse safety consequences of fuel economy increases." However, this misrepresents the findings of the report by omitting the findings that weight reduction for vehicles greater than 4,000 lbs. curb weight would result in a safety benefit, as was discussed in detail in the recent Ninth Circuit opinion. [Footnote: See original comment document.] Omitting the benefits of weight reduction skewed the development of the CAFE standards toward lower efficiency vehicles.

Comment Number: 0576-32
Organization: Public Citizen
Commenter: Joan Claybrook

NHTSA's unfounded position on weight reduction reinforces the common myth that fuel economy standards reduce vehicle safety by promoting downweighting. The agency says directly in its notice "[b]ecause downweighting is a common compliance strategy, and because the agency believes that downweighting of lighter vehicles makes them less safe, our model does not rely on weight reductions to achieve the standards for vehicles under 5,000 pounds GVWR and then only up to 5 percent." Downweighting of lighter vehicles has actually never been a common compliance strategy. When NHTSA implemented its first fuel economy standards in the 1980s, 85 percent of fuel economy gains were made by adding fuel saving technologies, and only 15 percent came from weight reductions, and then weight was only removed from the heaviest vehicles. [Footnote: See original comment document.]

NHTSA relies on a 2003 study by Charles Kahane to justify not considering weight reduction as a compliance strategy for vehicles under 5,000 pounds GVWR (73 FR 24456.) Kahane's study oversimplifies the relationship between weight and safety, obfuscates findings which show that reducing weight from only the *heaviest* vehicles actually improves safety, and overlooks the relationship between the *difference* in vehicle weight, rather than simply the weight of the vehicle. [Footnote: See original comment document.] NHTSA has taken the position that improving fuel economy by reducing vehicle weight poses an unconscionable threat to highway safety, largely based on the Kahane study and Crandall-Graham analysis cited above. [Footnote: See original comment document.] The auto industry opposes a focus on extensive weight reduction because pickup trucks and SUVs have been their cash cows.

One way of thinking about the impact of fuel economy and safety is in terms of compatibility and aggressivity of a given vehicle in a two-vehicle crash. "Compatibility" refers to how well one vehicle matches with another in a crash, and "aggressivity" roughly describes how harmful a vehicle is to occupants of a struck vehicle in a two-vehicle crash. [Footnote: See original comment document] There are several vehicle attributes which describe vehicle compatibility and aggressivity, such as weight, bumper overlap, vehicle geometry, including bumper height and average height of force, and front-end stiffness. (S. 357 of the 110th Congress, the "Ten in Ten Fuel Economy Act," introduced by Sen. Dianne Feinstein on January 22, 2007 included a provision which would have required NHTSA to establish a compatibility and aggressivity reduction safety standard to promote improved vehicle compatibility. While this language was not included in the Energy Independence and Security Act, Public Citizen

recommends that NHTSA develop a compatibility and aggressivity standard.] NHTSA's position on fuel economy and safety is inconsistent with its own research on incompatibility.

The agency claims that the restructured CAFE scheme will improve safety by "eliminating the regulatory incentive to downsize vehicles." (71 FR 17568) But NHTSA ignores the impact that the light truck loophole has already had on safety through increased incompatibility, and fails to address the problem by providing no regulatory incentive for automakers to build more compatible light trucks, or by amending the regulatory definitions of cars and light trucks to close this dangerous and wasteful loophole. NHTSA says "by raising the light truck standards . . . there is no regulatory incentive from the CAFE program to design small vehicles as light trucks instead of passenger cars." This overlooks the fact that the new standards do not close the light truck loophole. It sets lower standards for larger vehicles, and eliminates the leveling effect of the corporate average (that is, balancing lighter vehicles against heavier ones). [Footnote: See original comment document]

Comment Number: 0600-11
Organization: Centers for Disease Control and Prevention
Commenter: Sarah Heaton, Andrew Dannenberg

The anticipated effects of increased CAFE standards on the human environment in the United States will occur primarily through the following mechanisms: 1) Fleet emission changes 2) Fuel consumption changes 3) Fleet design changes. To adequately assess the potential impact of CAFE standards on the human environment:

Health impact analysis and modeling of each mechanism is necessary for each of the proposed alternatives.

…Vehicle safety is a public health concern. Appropriate vehicle design as well as decreasing vehicle fleet disparities in size and weight can act to decrease crash-related injury to those driving lighter-weight automobiles and trucks as well as other modes of transportation such as bicycles, motorcycles, and scooters. Changing CAFE standards will affect fleet design and therefore have the potential to increase or decrease crash-related injury. Potential fleet design and composition by which vehicle manufacturers will comply with new CAFE standards warrants comprehensive analysis. Modeling these projections is critical to an adequate analysis of the impact that new CAFE standards will have on the human environment. To adequately promote and protect human health assuming shifts in the U.S. automobile fleet make-up:

Analysis of current vehicle fleet composition, prospective fleet composition, and optimal fleet composition with respect to transportation user needs, CAFE standards, and decreasing crash-related injury to transportation system users is also warranted for adequate assessment.

Response

NHTSA considered the potential safety concerns of making vehicles lighter (i.e., downweighting) in both the rulemaking and the FEIS. See DEIS Section 3.5.4, Safety and Other Human Health Impacts, for NHTSA's approach to these safety concerns. In that section, NHTSA describes the importance of the new form of the CAFE standard ("Reformed CAFE") to alleviate the potential for downweighting. By using an attribute-based standard, which the NAS recommended in 2002 and the EISA requires, NHTSA believes that the incentive to downweight vehicles should be reduced or eliminated.

Contrary to Public Citizen's concerns that NHTSA relies too heavily on the Kahane study, NHTSA routinely reviews the full spectrum of relevant studies because safety is a major NHTSA concern. Several of these studies are noted in the FEIS. See Section 3.5.4.

It is because of this complexity that NHTSA believes that all relevant literature should be examined. Public Citizen cites the dissent to the NAS study, but fails to note that the majority report, agreed to by 11 of 13 panel members, concluded that downsizing and weight reduction that occurred in the late 1970s and early 1980s likely resulted in between 1,300 and 2,600 crash fatalities under the previous form of the CAFE standard. This led to the NAS recommendation that the form of the CAFE standards be changed to an attribute-based approach. As for misinterpreting the results of the Kahane study, as Mr. Adcock alleges, Dr. Kahane is on the NHTSA staff and is a recognized expert in the field of vehicle safety. His interpretation of the results of his own study is definitive.

While the study of safety and fuel economy is multi-faceted, Public Citizen's recommendation for compatability and agressivity standards is misplaced. NHTSA can use its authority under the Safety Act to address unreasonable risks to safety. NHTSA's rulemaking and its EIS are focused directly on new CAFE standards. The FEIS addresses safety concerns because they are potential health impacts.

NHTSA agrees with CDC's statement that changing fleet design can have important impacts on human health, but disagrees with CDC's contention that prospective vehicle fleets, or an "optimal" vehicle fleet, can be assessed for impacts on human health. One of NHTSA's primary responsibilities is to assess the crashworthiness of current model vehicles, a responsibility we faithfully fulfill. CDC's proposed analysis, on the other hand, would go far beyond this, and demonstrates a lack of understanding regarding the structure of the rulemaking. NHTSA has no authority to require a specific composition of the vehicle fleet. This proposed rulemaking does not require vehicle manufacturers to implement specific technologies or specific approaches to meet the new standards. Manufacturers might or might not meet their requirements by downweighting (against NHTSA's advice for most vehicles). There is a wide variety of technologies available to assist manufacturers to comply with the new standards. The extent to which they will do so in reaction to the new standards cannot be accurately estimated. Therefore, NHTSA concludes that the analysis CDC proposes would be impossible to do in any sort of a meaningful way.

10.3.6.5 Hazardous Materials and Regulated Wastes

Comment

Comment Number: 0595-7
Organization: Environmental Protection Agency
Commenter: Susan Bromm

EPA believes the DEIS could be strengthened (page 3-88) by adding supporting information on the topic of hazardous materials. We recommend the DEIS document in more detail that future efforts at downweighting of vehicles by substitution of aluminum, plastics, composites, and synthetic materials for steel and ductile iron parts, will not result in a net (overall) increase in the hazardous waste stream, and that if there are any increases, these will be manageable under current technologies.

Some published studies have also suggested that the trend toward substitution of lighter weight aluminum for steel in autos increases energy demands and may result in increased pollution from bauxite mining, alumina refining, and aluminum smelting operations. The DEIS should cite current research on how the substitution of lighter weight materials can avoid significant effects on water or biological resources, and reduce CO_2. The DEIS simply states that the "projected reduction in fuel production and consumption as

a result of the proposed action and alternatives may lead to a reduction in the amount of hazardous materials and wastes created by the oil extraction and refining industries." No mention is made of the consequences/impacts of the increasing substitution to lighter weight materials.

Response

NHTSA has revised Section 3.5.5 to include a discussion of the hazardous-waste stream and lighter materials.

10.3.6.6 Environmental Justice

Comment

Comment Number: TRANS-15-1
Organization: Individual
Commenter: Marissa Knodel

This is an issue of environmental justice, since these countries have contributed the least to global warming, and yet given their size, location, geography and lack of political power, will suffer the most from global warming.

The highest point on many of these islands is only a few years high. Now, with global warming causing sea levels to rise, and increasing the magnitude and severity of tropical storms, many of these nations already have agreements with the governments of New Zealand and Australia to evacuate their entire populations with the expectation that their homes will be under water within the next 50 years.

Response

Sections 4.5 and 4.6 of the FEIS include discussions of the effects of climate change on environmental justice populations; these sections describe the particular vulnerability of low-lying atolls to sea-level rise. NHTSA recognizes that populations on low-lying atolls are likely to be disproportionately affected by sea-level rise as a result of increased CO_2 emissions. However, these impacts are from global emissions releases, not just from U.S. emissions releases. To the extent that the reductions estimated from the alternatives considered in this rulemaking reduce or delay sea-level rise, this rule could offset these impacts. However, to avert sea-level rise that would displace these populations, many more CO_2-reduction initiatives will be required.

10.3.7 Cumulative Impacts - General

Comment

Comment Number: TRANS-32-2
Organization: Environmental Defense Fund
Commenter: James Keck

We believe that NHTSA has failed to comply with the Ninth Circuit's previous mandate to quote, provide the necessary contextual information about the cumulative and incremental environmental impacts of the final rule in light of other CAFE rulemakings and other past, present, and reasonably foreseeable future actions regardless of what agency or person undertakes such other actions.

Response

NHTSA acknowledges that under NEPA we are required to take a "hard look" at the effects of our actions on global warming within the context of other actions that also affect global warming. Thus, consistent with CEQ regulations, guidance, and applicable case law, the DEIS and this FEIS provide appropriate contextual information about the cumulative impacts of increased CAFE standards "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 (federal or non-federal) or person undertakes such other actions." 40 CFR § 1508.7.

Agencies retain substantial discretion as to the extent of the inquiry and the appropriate level of explanation. Marsh v. Oregon Natural Resources Council, 490 U.S. 360, 376-77 (1989). Indeed, CEQ recognizes the impracticality of requiring an agency to "analyze how the cumulative effects of an action interact with the universe; the analysis of environmental effects must focus on the aggregate effects of past, present, and reasonably foreseeable future actions that are truly meaningful" (CEQ 2005). An EIS must discuss "reasonably" foreseeable cumulative effects. Blue Mountain Biodiversity Project v. Blackwood, 161 F.3d 1208, 1214-15 (9th Cir. 1998). When an agency's determination of "reasonably foreseeable future actions" and "component parts" is "'fully informed and well-considered,'" the courts will defer to the agency's determination. Id. at 1208 (quoting Save the Yaak Comm. v. Block, 840 F.2d 714, 717 (9th Cir. 1988)). Some level of detail is required in describing the cumulative effects of a proposed action. "To consider cumulative effects, some quantified or detailed information is required." Neighbors of Cuddy Mountain v. U.S. Forest Service, 137 F.3d 1372, 1376 (9th Cir. 1998).

The past and present actions related to the CAFE rulemakings are addressed in the emissions time series, as described in Section 4.4 of the FEIS. Although literally hundreds of future actions are contemplated to address climate change – both in the United States and elsewhere – the set of reasonably foreseeable actions is quite limited. In fact, existing regulatory commitments in the United States and elsewhere generally expire within the next 5 years (during the time the MY 2011-2015 CAFE standards would be in effect).

Although it is not possible to reasonably foresee the profile of global GHG mitigation policies over the remainder of the 21st Century, the SRES emissions scenarios NHTSA used in the climate modeling bracket a wide range of potential combinations of population, economic development, technology evolution, and energy intensity. While they are not designed to portray various GHG mitigation policy outcomes, they indicate the effect of a diverse set of conditions. NHTSA has expanded the FEIS analysis to use multiple emissions scenarios and multiple climate sensitivities, which provide insight on how the regulatory options affect climate under a variety of background conditions. See Section 3.4.4.4.

10.4 OTHER COMMENTS ON THE DEIS

10.4.1 Mitigation

Comments

Comment Number: 0572-28
Organization: Center for Biological Diversity
Commenter: Brian Nowicki, Mickey Moritz, Kassie Siegel

After summarizing an environmental problem, the next required task of an EIS is to discuss ways to reduce the project's impact and solve the problem. This rulemaking is particularly well suited for such an analysis since EPCA requires the fuel economy standard to be set at the "maximum feasible" level and higher fuel economy standards result in lower greenhouse gas emissions. Yet the failure to discuss solutions is one of the DEIS's most glaring failures.

In the bizarre and constrained world presented in the DEIS, there is no solution to global warming. The full range of alternatives considered by NHTSA, combined with NHTSA's assumptions, discussed below, result in atmospheric CO_2 concentrations of between 705.4 and 708.6 ppm. DEIS at 2-16. While global warming is indeed a daunting problem, presenting the analysis in this truncated form leaves the false impression that nothing can be done about it, violating both the letter and the spirit of NEPA. Leading scientists are able to tell us with a high degree of certainty that allowing CO_2 concentrations to rise to more than 700 ppm by the end of this century will result in catastrophic climate impacts. NHTSA has a mandatory duty to disclose in the DEIS what NHTSA can do to contribute to the solution.

Comment Number: 0600-1
Organization: Centers for Disease Control and Prevention
Commenter: Sarah Heaton

Mitigation analysis for projected public health outcomes is necessary. Current mitigation analysis in the DEIS is insufficient.

Response

The commenters appear to misconstrue NEPA requirements and NHTSA's role in setting CAFE standards within the context of climate change. Climate change is global in nature and stems from GHG emissions that trap heat and cause global temperatures to rise. According to the IPCC and USCCSP, the final impacts of climate change are anticipated to include a wide variety of detrimental effects. The sources for these GHGs, however, are numerous. In addition to transportation sources, GHG emissions are generated by the industrial, commercial, agriculture, and residential sectors, and electricity generation. In fact, many human activities that require power generate GHGs because a great deal of our power is generated through the use of carbon-based fuels, including home heating and cooling, and driving. According to EPA's "Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2005" (2007d), Table 2-14, transportation sources (including air travel and freight) accounted for 28 percent of GHGs (expressed in carbon dioxide equivalents), and electricity generation accounted for 34 percent. Other sectors contribute to GHG emissions as follows: industry (19 percent), agriculture (8 percent), commerce (6 percent), and residential (5 percent).

To slow or reverse the anticipated impacts of climate change, it is likely that all sectors would have to reduce emissions. Some scientists have called for as much as an 80 percent reduction in GHGs

by 2050 to moderate (but not eliminate) the detrimental impacts of climate change. This will require substantial reductions from all sectors. Further, it will require such sectoral reductions in all nations.

By contrast, NEPA only requires that NHTSA disclose the environmental impacts of its proposed action. NHTSA's action is limited to the CAFE rulemaking. EPCA, as amended by EISA, is not designed, and NHTSA has no authority, to dictate the U.S. Government's GHG emissions reduction policy. Addressing climate change in a meaningful way would likely require new legislation from Congress in conjunction with that from other nations.

The agency's action would result in substantial reductions in GHG emissions from passenger cars and light trucks in the United States, which, when considered in a global context, would result in small changes in temperature, precipitation, and sea-level rise. Under NEPA, this is the action NHTSA must evaluate for environmental impacts. Because the alternatives will reduce GHGs, the agency's action is expected to reduce the effects of climate change.

In addition, most of the air pollution emissions are anticipated to decrease, even as some increase slightly under some alternatives and in some years. The additional health analyses shown in Sections 3.3 and 4.3 indicate that net health impacts should be beneficial to human health. For these reasons, NHTSA continues to believe that mitigation, when considered within the NEPA definition of reducing the harmful effects of an agency's action, is unnecessary.

10.4.2 List of Preparers

Comments

Comment Number: 0596-1
Organization: Environmental Defense Fund
Commenter: Martha Roberts

Although the team that created this EIS is well-credentialed in many areas of environmental assessment, we do not believe they had the proper expertise to adequately evaluate the health impacts of the proposed CAFE alternatives. We note that among the team of 47 technical experts, the reviewers, and the project managers not one had obtained a graduate degree in public health. The National Highway Traffic Safety Administration (NHTSA) asserts in its response to comments from the Centers for Disease Control and Prevention (CDC) also calling for inclusion of public health professionals,

"NHTSA feels confident that the consultants retained to assist in the analysis and development of the DEIS, along with its own staff, have the requisite knowledge and skills to effectively incorporate health issues into the document." [Footnote: See original comment document.]

EDF supports the CDC's recommendation for inclusion of public health professionals in the process of developing the EIS. Given the length and complexity of this EIS, it is unlikely that a teleconference with the CDC was sufficient to obtain the "high degree of understanding" NHTSA asserts, and therefore unlikely that the appropriate disciplinary expertise in public health was applied to this EIS. [Footnote: See original comment document.]

Comment Number: 0600-12
Organization: Centers for Disease Control and Prevention
Commenter: Sarah Heaton

Collaboration with public health economists is warranted.

Response

NHTSA is confident that the consultants retained to assist in the analysis and development of this NEPA analysis, along with its own staff, have the requisite knowledge and skills to effectively incorporate health issues into the document. In addition, staff with degrees in public health have contributed to the analysis presented in the FEIS. See Chapter 7, Preparers.

10.4.3 Appendix C Cost-Benefit Analysis Excerpt from the Preliminary Regulatory Impact Analysis

Comments

Comment Number: 0574-15
Organization: Alliance of Automobile Manufacturers
Commenter: Julie Becker

The technology penetration tables in the PRIA are not sufficient to show the technology combinations that NHTSA actually assumed. The information contained in the "decision tree" figures isn't sufficient either. Answers to the following questions would help us determine what combinations were actually modeled:

1. Why does the MY 2015 penetration rate of VVT [variable valve timing] technology in Table V-11b and similar tables exceed 100%?

2. On which transmissions is ASL [aggressive shift logic] assumed to be used in MY2015?

3. What other engine technologies are used in combination with Turbo/Downsize? Specifically, is VVLTD [variable valve lift and timing (discrete VVL)], VVLTC [variable valve lift and timing (continuous VVL)], or cylinder deactivation (DISP) assumed?

4. In the "decision tree" on page V-64, is DISP retained when VVLT is added?

5. In the "decision tree" on page V-64, is VVLT retained when GDI [gasoline direct injection] is added?

6. In the "decision tree" on page V-65, is ASL retained when the transmission is changed to AMT [Automated Shift Manual Transmission]?

Answers to the following questions would help clarify the benefit estimates that NHTSA is assuming for specific technologies:

1. Shift Logic — Does NHTSA have a specific definition of baseline non-aggressive shift logic and aggressive shift logic in terms of the upshift and downshift points as a function of engine load in each gear? How did NHTSA determine the percent of vehicles using aggressive shift logic in the baseline?

2. Understanding Hybrid Benefits — Based on Table V-2, the benefits of 2-mode hybrids and Power Split hybrids over the non-hybrid baseline are 15.2% (1-(1.075*1.035*1.035)) and 22.6% (1-(1.075*1.035*1.035*1.065)), respectively. However, the text says "NHTSA estimates that Power Split hybrids can achieve incremental fuel consumption reductions of 25 to 35% over conventionally powered vehicles." Is the difference due to the fact that the hybrid estimates in

Table V-2 are incremental to the use of something other than "conventionally powered vehicles?" If so, at what point in the "decision trees" are hybrids applied and do the engine technologies already applied at that point carry forward? For example, is hybrid technology used in combination with Turbo/Downsize or VVLTC? Is it correct to assume the transmission technologies do NOT carry forward, but the hybrid benefits are incremental to something other than a baseline transmission? If so, what is the transmission that the hybrid system benefits are incremental to?

3. Cam Phasers — The decision tree on page V-64 indicates that dual cam phasers are applied subsequent to the use of intake cam phasers. Does that mean that the benefit of dual cam phasers shown in Table V-2 is incremental to intake cam phasing?

4. In Table V-2, is the benefit for cylinder deactivation incremental to the use of dual cam phasers and are dual cam phasers assumed to still be used?

5. In Table V-2, are the benefits for VVLT incremental to cylinder deactivation and is cylinder deactivation assumed to still be used when VVLT is added?

6. On the overhead valve branch of Table V-2, does the incremental benefit for continuous VVLT assume that coupled cam phasing was in the baseline?

7. If cylinder deactivation is ever assumed to be used in combination with VVT or VVLT, what "synergy" was assumed?

8. If cylinder deactivation or VVLT are ever assumed to be used in combination with Turbo/Downsize, what "synergies" are assumed?

Comment Number: 0595-27
Organization: Environmental Protection Agency
Commenter: Susan Bromm

The excerpted Cost and Benefit RIA chapters appear to have been pulled from an outdated version of the RIA. EPA recommends that the text be replaced with that found in the April, 2008 version of the RIA.

Response

To the extent that the AAM and EPA have identified aspects of NHTSA's analysis that need updating, clarifying, or correcting, NHTSA has revised its analysis. Other comments from AAM address very specific issues concerning the application of technologies to improve fuel economy in the Volpe model. NHTSA has taken all of the AAM's questions and suggestions regarding technology costs and transparency of analysis into consideration in revising and updating the technology inputs to the Volpe model. For further discussion of this issue, see the agency response in 10.2.2 above.

10.4.4 Additional Comments

Comments

Comment Number: 0554-11
Organization: Individual
Commenter: James Adcock

Manufacturers are widely misrepresenting EPA Fuel Economy values on TV by quoting highway mileage values as if they are combined mileage values. NHTSA needs to act to correct these deliberately distorting practices. These advertisements are in turn representative of the fact that NHTSA has been setting fuel economy standards too low, forcing manufacturers to misrepresent to the public how they have chosen to implement those standards. Allowing these advertising deceptions results in higher GHG.

Comment Number: 0575-10
Organization: Union of Concerned Scientists
Commenter: Eli Hopson

Based on Tables la and lb from the Preliminary Regulatory Impact Analysis, it appears that NHTSA expects a significant number of manufacturers will opt for civil penalties instead of compliance. Under NHTSA's proposed "Optimized (7%)" scenario, the projected harmonic average for the passenger car fleet falls 0.2-1.0 mpg (between 2011 and 2015) short of the required fleet average, while the projected harmonic average for the light truck fleet falls 0.2-0.6 mpg short of the required fleet average. [Footnote: See original comment document.] Under other scenarios (i.e., Optimized (3%), TC=TB, etc.) projected harmonic averages fall short of required fleet averages by even greater amounts.

The $5 penalty has remained in effect since 1975. Since that time, inflation has devalued the impact of that penalty. A fine of equivalent value today would need to be more than $20 per 0.1 mpg. [Footnote: See original comment document.] Increasing the noncompliance civil penalty would boost its effectiveness in achieving its original policy intent. Given the escalating economic and environmental importance of energy conservation, UCS [Union of Concerned Scientists] recommends that the Secretary of Transportation invoke a CAFE noncompliance civil penalty of $10 per 0.1 mpg.

Comment Number: 0575-30
Organization: Union of Concerned Scientists
Commenter: Eli Hopson

NHTSA's analysis indicates that a significant number of manufacturers will opt for civil penalties over compliance with fuel economy requirements. Increasing the civil penalty would ensure the benefits are actually realized. The Secretary of Transportation should use existing authority to increase the CAFE noncompliance civil penalty from $5 to $10 per 0.1 mpg.

Comment: Number: 0572-49
Organization: Center for Biological Diversity
Commenter: Brian Nowicki, Mickey Moritz, Kassie Siegel

The NRPM on page 24461 further argues that "since EISA now permits manufacturers to transfer credits earned for their passenger car fleet to their light truck fleet and vice versa, it makes even less difference how a vehicle is classified, because the benefit a manufacturer gets for exceeding a standard may be applied anywhere." However, the NPRM on page 24393 states explicitly that NHTSA "does not attempt to account for either CAFE credits or over-compliance … EPCA and EISA do not allow NHTSA to

consider those credits toward compliance in future or prior model years. Therefore, the Volpe model does not attempt to account for these flexibilities." Thus, NHTSA specifically constrained the Volpe model from including precisely those considerations that NHTSA points to as justification for not revising the definition of light trucks, indicating that the revision of the definitions to classify pickup trucks and SUVs as passenger vehicles would indeed result in higher standards for many vehicles.

Response

Fuel economy advertisements: The issue of whether any advertisements misrepresent EPA fuel economy estimates is beyond the purview of this action and, in any event, within the jurisdiction of the Federal Trade Commission.

Civil penalties: As discussed in the NPRM, EPCA authorizes NHTSA to increase the civil penalty up to $10.00 for each tenth of a mpg that a manufacturer's average fuel economy falls short of the standard for a given model year, exclusive of inflationary adjustments, if NHTSA decides that the increase in the penalty (1) will result in, or substantially further, substantial energy conservation in model years in which the increased penalty may be imposed, and (2) will not have a substantial deleterious impact on the economy of the United States, a State, or a region of a state. See 49 U.S.C. § 32912(c). In the NPRM, NHTSA asked for comments on whether it should initiate a proceeding to consider raising the civil penalty. A number of commenters indicated that they would favor raising the civil penalty to $10. NHTSA will consider the comments in deciding whether to initiate rulemaking to raise the civil penalty.

Credits: CBD's comment suggests that NHTSA might not have been completely clear in its explanation of how the use of credits interacts with the classification of vehicles. NHTSA does not believe that the statutory prohibition on considering credits in determining CAFE standards has the effect of producing standards that would be higher if NHTSA reclassified certain light trucks as passenger cars.

10.4.5 Rulemaking

10.4.5.1 State Preemption

Comments

Comment Number: 0554-4
Organization: Individual
Commenter: James Adcock

The NHTSA assertion of CAA [Clean Air Act] preemption is not rational for several reasons. First, NHTSA's proposed standards do not actually regulate GHG tailpipe emissions. Rather NHTSA sets relationships between tailpipe emissions and footprint. NHTSA does not know how much GHG will be emitted because it will depend on the actual mix of car, trucks, and their footprints. States might set rules that tend to affect this mix or limit GHG which would not stop NHTSA from setting whatever GHG/footprint, car versus truck relationships NHTSA wants. Secondly, Congress specifically prevents NHTSA from consideration of alternative fuels, which states might use in their regulations to limit overall GHG net emissions. For example California might set regulations designed to make 10% of their autos electric powered by green electricity, thereby reducing GHG emissions by 10% compared to federal regulations.

Comment Number: 0572-66
Organization: Center for Biological Diversity
Commenter: Brian Nowicki, Mickey Moritz, Kassie Siegel

Following a rulemaking in which NHTSA repeatedly and systematically manipulates the analysis in order to select an absurdly low fuel economy level, NHTSA then asserts that its rulemaking preempts state regulation of greenhouse gas emissions from automobiles. NHTSA's statements in this regard are incorrect, inappropriate, and either legally irrelevant or contrary to existing law. We request that all statements regarding preemption be removed prior to publication of the final rule.

Comment Number: 0575-18
Organization: Union of Concerned Scientists
Commenter: Eli Hopson

UCS is disappointed in NHTSA's attempt to use this CAFE NPRM to address California's vehicle global warming pollution regulations. The previously discredited legal arguments made by the agency were rejected in decisions by the Supreme Court and two separate district courts. It is clear that EPA's authority to regulate greenhouse gases under the Clean Air Act is separate and distinct from NHTSA's authority to set fuel economy standards. It is inappropriate for NHTSA to go beyond its authority, challenge the court decisions, and parrot the auto industry's flawed legal claims. The administration should grant the waiver to California and allow the states to move forward.

Interestingly, as shown in Table 2 below [see comment document], NHTSA's own analysis demonstrates that with proper assumptions—such as employing a Total Cost-Total Benefit (TC=TB) economic practicability assessment, or using realistic gasoline prices—fuel economies higher than the approximate California Pavley regulation MPG equivalent are both technically achievable and economically practicable.

Response

NHTSA does not believe that the EIS is the appropriate forum in which to address the merits of NHTSA's position on preemption, and refers readers to Section XIII.D of the NPRM. While NHTSA has explained its considered view that state GHG emission regulations for motor vehicles are largely preempted by EPCA insofar as those regulations address tailpipe emissions of CO_2, EPCA does not have any effect on state regulation of matters beyond NHTSA's authority (for example, GHGs from motor vehicles other than tailpipe emissions of carbon dioxide), or from motor vehicles (for example, motorcycles) or other machinery not subject to CAFE. NHTSA also has no authority over state regulation of alternative fuels, although it does have authority over state regulation of alternative-fuel vehicles, as such regulations would be "related to fuel economy" and preempted under 49 U.S.C. § 32919. In terms of the environmental impacts of such state regulations, however, NHTSA cannot analyze the effects of inchoate potential future regulations with any reasonable degree of certainty. NHTSA notes further that EPA denied California's Clean Air Act waiver request, as noted in the NPRM, and that California's (and other states' based on California's) light-duty motor vehicle GHG regulations are therefore currently unenforceable. NHTSA will address comments regarding the preemption issue in the final rule.

10.4.5.2 Vehicle Footprint

Comments

Comment Number: 0554-3
Organization: Individual
Commenter: James Adcock

Truck CAFE curves cross Car CAFE curves. [See graph attached to original comment document.] For several years at medium values of footprint NHTSA compliance curves set lower values for cars than for trucks. Since the mpg values for trucks have historically been set lower than for cars because of the unique challenges and abilities trucks have, including greater hauling capacity and greater towing capacity, inverting this relationship never makes sense. This problem is part of a larger problem: that NHTSA has largely designed the curves for cars and trucks independently when instead NHTSA needs to recognize that both consumers and manufacturers have the choice of car versus truck. Thus the curves for cars and trucks need to be designed in a consistent and rational manner to work together. For example, the great disparity between car and truck curves for small footprints should encourage manufacturers to design "AMC Eagle" style small "trucks" which have car-like characteristics except for being high and needlessly unstable, leading to unnecessary rollover fatalities. NHTSA's choice of design curves for cars versus trucks works directly against NHTSA's charter of highway safety while resulting in greater GHG.

Comment Number: 0554-6
Organization: Individual
Commenter: James Adcock

Bias in the High Threshold transition point of the truck curves. NHTSA has lowered the high point threshold in the truck curves without a rational basis for doing so. Having incomplete information on the subject means choosing a best estimate, not biasing that estimate. Biasing this threshold results in greater GHG, and reduces most consumers' ability to choose a rationally sized vehicle to meet their family's needs without fear of death in collisions with those large trucks that the biased high threshold encourages, which again increases GHG.

Comment Number: 0575-17
Organization: Union of Concerned Scientists
Commenter: Eli Hopson

A size-based system has a built-in risk of vehicle upsizing whereby manufacturers upsize vehicles in order to achieve lower fuel economy targets. This issue is a less of a concern when the logistic curve is not as "steep." As noted in the NPRM, however, the proposed curves, particularly those for passenger cars are quite steep, opening the door for manufacturer "gaming." Under the proposed curves, for example, a Honda Civic could lower its target by almost 2 mpg (38.4 to 36.6) by simply increasing its footprint 1 square foot. Similarly, a 1 square foot change in size would lower the Saturn Aura's target fuel economy by nearly 1 mpg. Vehicles have, indeed, been getting larger; the archetypal Honda Accord sedan's footprint, for example, increased by 0.6 ft^2 between 2001 and 2004, and an additional 1.9 ft^2 by 2008. [Footnote: See original comment document.] Certainly, with such steep curves, ample opportunities exist for all manufacturers to game the system to their favor, eroding warranted energy savings.

UCS strongly opposes the adoption of a "dual attribute" approach, as it is unclear that a reasonable second attribute exists that will deliver the benefits of a size-based system. One unfortunate consequence of an attribute-based system is that the attribute is removed from the "toolkit" of resources automakers can

employ to make their vehicles more fuel efficient. The incorporation of a second attribute, such as horsepower, would remove automakers' abilities to use the attribute to improve vehicle fuel economy. Worse yet, the attribute becomes a mechanism for the industry to "game" their fuel economy obligations; automakers could boost engine power to help a vehicle meet a lower fuel economy target. For the past 20+ years, automakers have steadily increased vehicle weight and power while keeping fuel economy constant. Today's average vehicle is 900 pounds heaver and has 90 percent more horsepower than its 20 year-old counterpart. [Footnote: See original comment document.] NHTSA should not employ regulations that further encourage this attribute trend.

Response

NHTSA uses the same methodology for setting both the passenger-car and light-truck curves, as discussed in the NPRM, but applies that methodology to the passenger-car and light-truck fleets separately, because EPCA (as amended by EISA) requires NHTSA to set separate standards for passenger cars and light trucks.

NHTSA explained at length in the NPRM that it is aware of steepness issues with the proposed passenger-car curve and has considered the issue very carefully in developing the FEIS and the final rule. The curves representing the analysis contained in this FEIS are much less steep than the curves in the NPRM. Regarding the concerns expressed by UCS about attribute-based CAFE standards, NHTSA notes that an attribute-based standard is required under EISA and was recommended by the National Academy of Sciences (NAS). NAS' expressed concern was the potential for downsizing and its negative impacts on safety. NHTSA notes the UCS concern, but it runs counter to the law and the NAS recommendation.

10.4.5.3 Ratably

Comments

Comment Number: TRANS-01-6
Organization: Alliance of Automobile Manufacturers
Commenter: Julie Becker

In our scoping comments, we asked NHTSA to consider how to construe the term ratably, a term that the Energy Dependence and Security Act of 2007 makes central. And so we would ask you to reconsider that issue as well.

Response

NHTSA disagrees that the EIS alternatives were not properly established because the agency did not conduct a full "textual" analysis in interpreting the term "ratably." NHTSA analyzed a range of alternatives that would capture a full spectrum of potential environmental impacts, ranging from vehicles continuing to maintain their MY 2010 fuel economy, to standards based on the maximum technology expected to be available over the period. The various alternatives analyzed create standards that present several points on a continuum of alternatives. A different construction of the term "ratably" than NHTSA used in the NPRM might affect the levels of increase in the standards from one year to the next, but we are satisfied that any "ratable" analysis would still fall within the spectrum covered by the existing alternatives and would have impacts that fall within the range identified in this FEIS. Therefore the decisionmakers and the public will be fully informed of the potential environmental impacts of all the reasonable alternatives.

10.4.5.4 Vehicle Classification

Comments

Comment Number: 0572-62
Organization: Center for Biological Diversity
Commenter: Brian Nowicki, Mickey Moritz, Kassie Siegel

In the development of the proposed CAFE standards, NHTSA relies on an outdated and inadequate definition of light trucks. This defies the recent Ninth Circuit opinion that found the use of these definitions to be arbitrary and capricious and required NHTSA to revise the definition of light trucks and, by extension, SUVs. [Footnote: See original comment document.] NHTSA's attempt to justify its failure to revise the definitions of light trucks and SUVs to reflect the fact that light trucks and SUVs are overwhelmingly used as passenger vehicles is unavailing. 73 Fed. Reg. 24459.

The NPRM on page 24460 argues that "The EISA adds a significant requirement to EPCA—the combined car and light-truck fleet must achieve at least 35 mpg in the 2020 model year. Thus, regardless of whether the entire fleet is classified as cars or light trucks, or any proportion of each, the result must still be a fleet performance of at least 35 mpg in 2020. This suggests that Congress did not want to spend additional time on the subject of whether vehicles are cars or light trucks." However, this interpretation entirely fails to address the primary reason for revising the definition of light truck—the fact that SUVs and pickup trucks are overwhelmingly used as passenger vehicles.

Comment Number: 0575-16
Organization: Union of Concerned Scientists
Commenter: Eli Hopson

The Energy Independence and Security Act of 2007 sets separate attribute-based target mpg levels for passenger and non-passenger vehicles, accommodating an industry interest in having non-passenger vehicles held to less stringent fuel economy standards than passenger vehicles of the same attribute (i.e., footprint size). These separate standards, which have been in effect in one form or another since the 1970s to accommodate performance-oriented, non-passenger work vehicles, are the source of a long-standing loophole created when NHTSA began equating SUVs, minivans, crossovers and even some station wagons with non-passenger vehicles. The association of these categories has allowed automakers to tweak passenger vehicle characteristics in order to have them classified as light trucks that are held to lower fuel economy standards.

This "gaming" of the system is contrary to the original intent of the law and robs the nation of energy savings. In a 2007 ruling on NHTSA's fuel economy standards for model year 2008-2011 light trucks, the Ninth Circuit Court of Appeals deemed that NHTSA's decision not to close the SUV loophole (by revising the definition of passenger and non-passenger automobiles) was arbitrary and capricious. The court ruled that, among other factors, NHTSA's decision "runs counter to the evidence showing that SUVs, vans, and pickup trucks are manufactured primarily for the purpose of transporting passengers and are generally not used for off-highway operation." [Footnote: See original comment document.]

In NPRM documentation, NHTSA argues that Congress had the opportunity to change the definitions and did not, which "strongly suggests Congressional approval of the agency's 30-year approach to vehicle classification." [Footnote: See original comment document.]

As the saying goes, absence of evidence is not evidence of absence. In not addressing the definitions legislatively, Congress merely preserved the same definitions upon which the Ninth Circuit decision was

made. The notion that Congressional inaction "strongly suggests" approval is flawed. It could equally be interpreted that the inaction of Congress was a result of a belief that the Ninth Circuit decision (which came out a month before passage of the Energy bill) sufficiently spoke to the issue and negated a need for clarification. Indeed, in an extension of remarks on the Senate amendments to H.R. 6, bill author Congressman Edward I. Markey (D-MA) specifically noted,

"Section 1061 is not intended to codify, or otherwise support or reject, any standards applying before model year 2011, and is not intended to reverse, supersede, overrule, or in any way limit the November 15, 2007 decision of the U.S. Court of Appeals for the Ninth Circuit in *Center for Biological Diversity v. National Highway Traffic Safety Administration* (No. 06-71891)." [Footnote: See original comment document.]

Given these findings, UCS recommends that NHTSA revise its definition of passenger and non-passenger vehicles in accordance with the ruling of the Ninth Circuit Court of Appeals.

Comment Number: 0576-42
Organization: Public Citizen
Commenter: Joan Claybrook

Now that the market is shifting towards vehicles that more closely resemble large cars and station wagons, NHTSA should restore their classification as cars, primarily designed for the purpose of transporting passengers.

Response

Comments on the issue of classification may be grouped into several categories of arguments that the regulatory definitions relating to whether some vehicles are passenger cars or light trucks were incorrect: first, that they did not comport with the Ninth Circuit's opinion in CBD and do not reflect the fact that many light trucks are used as passenger vehicles; second, that they were not ratified by Congress in EISA; third, (which is related to the first) that they do not ensure that some vehicles which they believe should be classified as passenger cars are in fact classified as such; and fourth, they allow manufacturers to "game" the definitions by making minor changes to vehicles to obtain a light truck classification and thus, a lower fuel economy targets. NHTSA responds to these comments below.

In light of the Ninth Circuit remand, NHTSA intends to include certain vehicles in the passenger automobile category that had been in the light truck category. *As proposed in the NPRM, in this FEIS, NHTSA has tightened the coverage of its regulatory definition of "light truck" to ensure that two-wheel drive versions of an SUV are not classified as light trucks under 49 CFR § 523.5(b) simply because the SUV also comes in a four-wheel drive version. In order to be properly classifiable as a light truck under Part 523, a two-wheel drive SUV must either be over 6,000 lbs GVWR and meet 4 out of 5 ground clearance characteristics to make it off-highway capable under § 523.5(b), or it must meet one of the functional characteristics under § 523.5(a) (e.g., greater cargo carrying capacity than passenger carrying capacity). This clarification, which the vehicle manufacturers largely supported, would result in the re-classification of an average of 1,400,000 two-wheel drive SUVs from light trucks to passenger cars in each of the five model years covered by the standards. The result of this re-classification would be an average increase of 0.8 mpg in the combined passenger car and light truck standards over MY 2011-2015, producing a corresponding additional 4.5 billion gallons of fuel savings and 54 million metric tons of avoided carbon dioxide emissions during the useful life of vehicles sold during these model years. All of the alternatives and scenarios analyzed in this FEIS reflect this re-classification.*

As to other vehicles, NHTSA has considered in this FEIS whether recategorization would result in improved fuel economy and therefore lower emissions of carbon dioxide and other pollutants. This is discussed below.

NHTSA disagrees that consumers' use of vehicles is determinative of their CAFE classification. *With regard to the commenters' argument that the standards do not reflect the fact that many light trucks are used as passenger vehicles, NHTSA discussed at length in the NPRM that the fact that vehicles are used for personal transportation does not make them passenger cars for purposes of CAFE. The commenters' argument overlooks the statutory definition of passenger automobile. This term is defined to mean an automobile that the Secretary decides by regulation is "manufactured" primarily for transporting not more than . . ." The statute does not employ the word "used". If Congress had wanted all vehicles that transport passengers to be classified as passenger automobiles, it would have said "used primarily" in EPCA, instead of "manufactured primarily." The commenters also overlook the key role played by vehicle design and functional capabilities in vehicle classification for CAFE purposes. Instead, Congress specifically identified particular characteristics in the definition of passenger automobile, and gave NHTSA discretion to determine the contours of the regulatory definitions for purposes of the CAFE standards. NHTSA refers readers to the discussion in the NPRM at 73 FR 24458-24461 (May 2, 2008) for additional information on this issue. See further the discussion of EPCA's legislative history in the proposal and final rule establishing NHTSA's vehicle definition regulation. 41 FR 55368, 55369-55371, December 20, 1976, and 42FR 38362, 38365-38367, July 28, 1977. That discussion, and not the incorrect and anomalous description of it in a preliminary notice published by the agency in late 2003 (68 FR 74908, 74926, December 29, 2003), represents the agency's historical position.*

NHTSA disagrees that Congress intended to codify the Ninth Circuit opinion. *With regard to the commenters' argument that Congress did not approve of NHTSA's vehicle classification system in EISA and their suggestion that Congress codified the Ninth Circuit's opinion with respect to classification, NHTSA has carefully considered the discussion of this issue in the extension of remarks by Congressman Edward Markey. The agency notes that Congress did not amend the definition of "passenger automobile" or direct the agency to amend the definition of that term in the agency's classification regulation. NHTSA notes further that the remarks of Congressman Markey were not spoken on the floor during the House's consideration of EISA. 153 CONG. REC. H14253 (editor's note) and H14444 (daily ed. Dec. 6, 2007) (statement of Cong. Markey). Accordingly, we do not believe that the views in those remarks can be ascribed to Congress as a whole.*

In developing the EIS, NHTSA has considered whether changes in the regulatory vehicle categorization definitions in 49 CFR Part 523 would result in improved fuel economy and therefore lower emissions. *One of the concerns underlying the Ninth Circuit's decision was the potential impact of vehicle categorization on the ultimate fuel economy for light trucks. The commenters, too, were concerned about this in general. NHTSA has taken a hard look at this.*

In 2006, when NHTSA issued its MY 2008-2011 light truck fuel economy rule, and in 2007, when the Ninth Circuit issued its initial opinion in CBD, EISA had not been enacted. Under EPCA as it then existed, the passenger car standard was a flat 27.5 mpg average requirement. 49 U.S.C. 32902(b) Re-classifying light trucks as passenger cars, in the flat pre-EISA world, intuitively would have resulted in their having to meet a higher standard, or in the manufacturers' having to build more small, lightweight vehicles in order to balance out those new arrivals, and could have resulted in more fuel savings. This assumption may no longer be correct, because such a recategorization could now result in lower standards for passenger automobiles.

In EISA, Congress made both the passenger car and light truck standards attribute-based, which means that the fuel economy target curves for each standard are a function of the fleet subject to that standard. In developing the curves that determine fuel economy targets for each vehicle footprint, NHTSA fits the curve based in part on the sizes (footprint) and fuel economy levels (given the estimated effects of adding fuel-saving technologies) of the vehicles in each regulatory class. Consider, for example, a small SUV typically classified as a light truck, and assume that the small SUV gets relatively good fuel economy for a truck. Moving the small SUV out of the truck fleet may reduce the overall average fuel economy level required of light trucks, because the vehicles remaining that regulatory class will be the larger ones that have relatively lower fuel economy. Averaging their capabilities will result in a lower target than if the small SUV in question was remained in place. Moving the SUV into the passenger car fleet may either boost or lower the average fuel economy level required of passenger cars, depending on how the size and potential fuel economy of the given SUV compares to those of the vehicles that were already classified as passenger cars.

NHTSA's analysis indicates that the direction and magnitude of the net effects of vehicle re-classification depend on the composition of the fleet and the specific nature of the change in classification. As shown in Figure 10-1, assigning two-wheel drive SUVs and those vehicles that do not meet the third row requirement to the passenger car fleet would add to the passenger car fleet a set of vehicles (labeled "PC Formerly Classified as LT") with fuel economy levels that are generally (though not universally) in the same range as those of passenger cars of similar footprint. However, further reassigning to the passenger car fleet minivans and vehicles that <u>do</u> meet the third row requirement, as commenters appear to suggest, would add to the passenger car fleet a set of vehicles (labeled "LT Reassigned to PC under Alternative Definition") with fuel economy levels that are generally (though not universally) lower than those of passenger cars of similar footprint. Figure 10-2 shows how the composition of the light truck fleet is affected by such shifts. Reassigning either the smaller or larger group of vehicles to the passenger car fleet removes from the light truck fleet vehicles that are generally (though not universally) smaller and more efficient than the vehicles that remain in the light truck fleet.

As discussed above, in the context of the MY 2011-2015 passenger car and light truck standards, moving 1,400,000 two-wheel drive SUVs from the light truck to the passenger car fleet, as reflected in this FEIS, increases the fuel economy standards for both light trucks and passenger cars. However, going further and reclassifying other light trucks as passenger cars, as the commenters would have NHTSA do, would change the form and stringency of the curves for the maximum feasible standards. Substantially, it would reduce overall average required CAFE levels by an average of 0.4 mpg during MY 2011-2015, reducing fuel savings by 2.7 billion gallons over the useful life of vehicles sold in these model years, and increasing carbon dioxide emissions by 28 million metric tons.

Accordingly, EPCA and EISA's overarching purpose of energy conservation would not be better fulfilled by further changing the vehicle classifications.

The current definitions are tighter and more difficult to game than commenters suggest. *With regard to the commenters' argument that the standards allow manufacturers to "game" the definitions by making minor changes to vehicles to obtain a light truck classification and thus, a lower fuel economy target, NHTSA notes that minor changes are not sufficient, and that fairly major changes would be necessary in order to reclassify a passenger car as a light truck. To make a two-wheel drive SUV a light truck, for example, manufacturers would need either to add a third row of seats to it, convert it to four-wheel drive, or raise its GVWR over 6,000 lbs and ensure that it met 4 out of the 5 ground clearance characteristics. These changes are not minor, and likely can be made only every several years at the time of one of the periodic vehicle redesigns. Additionally, the minor benefit to be gained in terms of a lower target must be balanced against consumer demand. In a time of high gas prices and increasing*

Figure 10-1. Passenger Car Fleet

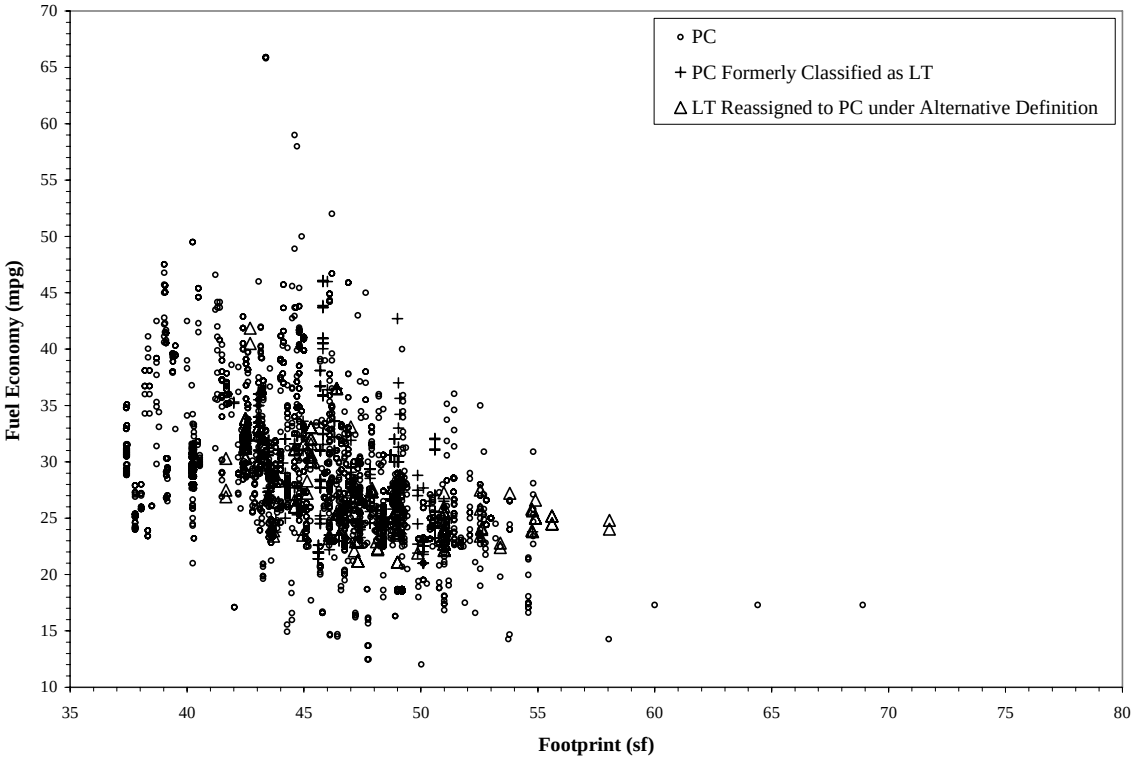
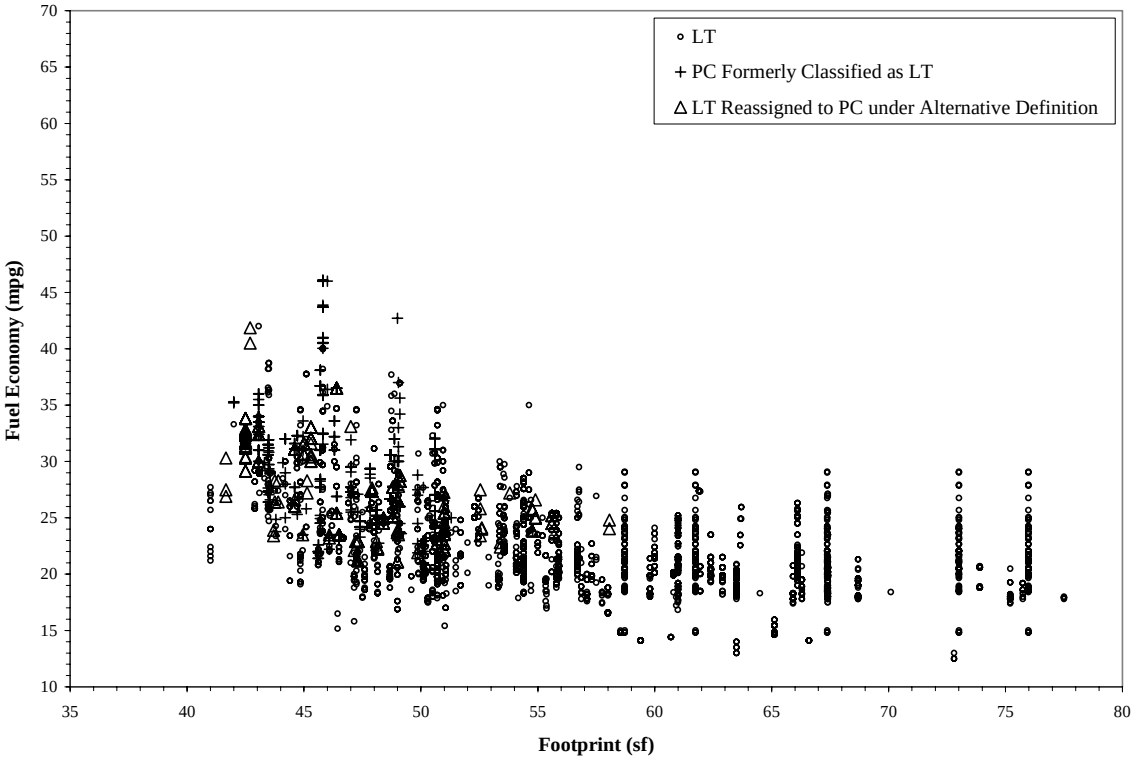


Figure 10-2. Light Truck Fleet



consumer interest in high fuel economy vehicles, it seems unlikely to NHTSA that manufacturers would take the risk of turning passenger cars into light trucks solely to obtain the slightly lower light truck target.

Further, to the extent that commenters and the Ninth Circuit believe that EPA's regulatory definitions for emissions purposes are "tighter" than NHTSA's, we note that this is not an apt comparison for several reasons. First, the NAS Report and the 9th Circuit are referring to EPA's Tier 2 criteria pollutant emissions requirements for mobile sources. These requirements are different from the CAFE requirements—light trucks produce more criteria pollutants than passenger cars not just because they tend to consume more fuel, but because their engines tend to be tuned differently to produce more torque for cargo-carrying and towing, which creates more pollution. Thus, the effect of having more light trucks on the roads (and thus wanting to limit their classification as light trucks) is greater for criteria pollutant emissions purposes than for CAFE purposes.

Second, EPA continues to use the same definitions as NHTSA does for CAFE purposes.[25] Even though EPA has changed its definitions for Tier 2 purposes, the effect of those changes was to move only four vehicle models—the Chrysler PT Cruiser, the Chevrolet HHR, the Honda Element, and the Dodge Magnum—whose combined production is currently less than 250,000 per year. NHTSA believes that manufacturers currently classify these four vehicles as light trucks either because they come in four-wheel drive, or because their rear seats may be easily removed to create a flat, floor level surface that increases cargo-carrying capacity. After MY 2011, vehicles may only be classified as light trucks on the basis of permitting expanded use of the vehicle for cargo-carrying purposes if they have three rows that fold flat. As currently designed, none of these four models would meet this requirement, so NHTSA would likely classify these vehicles as passenger cars as well. And third, after MY 2009, EPA will have no distinction between passenger cars and light trucks for Tier 2 purposes—all vehicles will be subject to the same standard. The fact that EPA has slightly restricted the definition of light truck for Tier 2 purposes will soon be entirely irrelevant.

In summary, EPA's "tightening" of the light truck category in Tier 2 resulted in the reclassification of less than 20 percent of the number of vehicles reclassified as a result of our tightening the implementation of our vehicle definitions. Further, EPA's action has little relevance to vehicle classification for CAFE purposes. This is proved by the fact that EPA ultimately intends to do away with the distinction between passenger car requirements and light truck requirements in Tier 2, an option which EPCA would not permit NHTSA to implement for CAFE.

With regard to commenters' argument that the existing definitions do not ensure that "vehicles that more closely resemble large cars and station wagons" (which NHTSA takes to refer to crossovers) are classified as passenger cars, we note that as a result of the tightened implementation of our vehicle definitions, many crossovers are in fact now properly classified as passenger cars. To the extent that crossovers are not classified as passenger cars, it is, we believe, only because they either (1) have four-wheel drive and meet 4 out of 5 ground clearance characteristics; (2) are over 6,000 lbs GVWR and meet 4 out of 5 ground clearance characteristics; or (3) have three rows of seats.

[25] *See 40 CFR Part 600.002-93.*