

NHTSA and EPA Propose to Extend the National Program to Improve Fuel Economy and Greenhouse Gases for Passenger Cars and Light Trucks

The National Highway Traffic Safety Administration (NHTSA) and the U.S. Environmental Protection Agency (EPA) are issuing a joint proposal extending the National Program to further improve fuel economy and reduce greenhouse gas emissions for passenger cars and light trucks for model years 2017 through 2025. NHTSA is proposing Corporate Average Fuel Economy (CAFE) standards under the Energy Policy and Conservation Act (EPCA), as amended by the Energy Independence and Security Act (EISA), and EPA is proposing national greenhouse gas (GHG) emissions standards under the Clean Air Act.

The standards proposed would apply to passenger cars and light trucks (from subcompact cars to large sedans and station wagons, to crossover utility vehicles, to SUVs, minivans, and pickup trucks) manufactured in model years 2017 through 2025. The proposed CAFE standards are projected to require, on an average industry fleet-wide basis for cars and trucks combined, 40.1 miles per gallon (mpg) in model year 2021, and 49.6 mpg in model year 2025. EPA's proposed GHG standards, which are harmonized with NHTSA's CAFE standards, are projected to require 163 grams/mile of carbon dioxide (CO₂) in model year 2025.¹

This proposal builds on the success of the first phase of the National Program to improve fuel economy and reduce GHG emissions from U.S. light-duty vehicles which established strong and coordinated GHG and fuel economy standards for model years 2012-2016. This proposal is consistent with the President's May 21, 2010 request that EPA and NHTSA work together to develop a national program that would "...produce a new generation of clean vehicles" and responds to the country's critical need to reduce oil consumption and to address global climate change.

The agencies have been developing the basis for these proposed standards almost since the conclusion of the rulemaking in May 2010 first establishing the National Program. After much research and deliberation by the agencies, and drawing on the expertise of CARB and other industry, environmental, union, and public interest stakeholders, President Obama announced plans for these proposed rules on July 29, 2011 and NHTSA and EPA issued a Supplemental Notice of Intent (NOI) outlining the agencies' plans for proposing the MY 2017-2025 standards and program. The State of California and thirteen auto manufacturers representing over 90 percent of U.S. vehicle sales provided letters of support for the program concurrent with the Supplemental NOI. The United Auto Workers (UAW) also supported the announcement.

Continuing the National Program would ensure that all manufacturers can build a single fleet of U.S. vehicles that would satisfy requirements of both federal programs as well as California's program, thus helping to reduce costs and regulatory complexity while providing significant energy security and environmental benefits.

¹ 163 g/mi would be equivalent to 54.5 mpg, if the vehicles were to meet this CO₂ level all through fuel economy improvements. The agencies expect, however, that a portion of these improvements will be made through reductions in air conditioning leakage, which would not contribute to fuel economy.

Benefits and Costs of the Proposed National Program

This second phase of the National Program is projected to save approximately 4 billion barrels of oil and 2 billion metric tons of GHG emissions over the lifetimes of those light duty vehicles sold in MY 2017-2025. The agencies estimate that fuel savings will far outweigh higher vehicle costs, and that the net benefits to society of the MY 2017-2025 National Program will be in the range of \$311 billion to \$421 billion (7 and 3 percent discount rates, respectively)² over the lifetimes of those vehicles sold in MY 2017-2025.

Benefits to Consumers

These proposed standards would have significant savings for consumers at the pump. Higher costs for new vehicle technology will add, on average, about \$2000 for consumers who buy a new vehicle in MY 2025. Those consumers who drive their MY 2025 vehicle for its entire lifetime will save, on average, \$5200 to \$6600³ (7 and 3 percent discount rates, respectively) in fuel savings, for a net lifetime savings of \$3000 to 4400⁴ -- assuming gasoline prices remain at essentially current levels. For those consumers who purchase their new MY 2025 vehicle with cash, the discounted fuel savings will offset the higher vehicle cost in less than 4 years, and fuel savings will continue for as long as the consumer owns the vehicle. Those consumers who buy a new vehicle with a typical 5-year loan will benefit from an average monthly cash flow savings of about \$12 during the loan period, or about \$140 per year, on average, as the monthly fuel savings more than offsets the higher monthly payment due to the higher incremental vehicle cost.

The agencies have designed the proposed standards to preserve consumer choice -- that is, the proposed standards should not affect consumers' opportunity to purchase the size of vehicle with the performance, utility and safety features that meet their needs. This is because the standards are structured so as not to create incentives to manufacture vehicles of any particular size (so, for example, there is no incentive to downsize), and because the agencies have included costs of preserving performance, utility and safety features in developing the standards. The standards⁵ are based on a vehicle's size, or footprint⁵ -- that is, larger vehicles have numerically higher fuel economy targets and smaller vehicles have numerically lower GHG targets -- but every size vehicle has a fuel economy target. Thus, consumers will be able to continue to choose from the same types of vehicles that are currently in the marketplace.

NHTSA's Proposed Standards

Consistent with our statutory authority, NHTSA is proposing two phases of passenger car and light truck CAFE standards in this NPRM. The first phase runs from MYs 2017-2021, with proposed standards that are projected to require, on an average industry fleet wide basis, 40.9 mpg in MY 2021. The second

² For the CAFE standards alone, net societal benefits for the program are estimated at \$264 billion to \$355 billion (7 and 3 percent discount rates, respectively).

³ For the CAFE standards alone, fuel savings range from \$4400 to \$5600 at 7 and 3 percent discount rates, respectively.

⁴ For the CAFE standards alone, net fuel savings range from nearly \$2800 to nearly \$4000 at 7 and 3 percent discount rates, respectively.

⁵ Essentially, the space between the points at which the tires touch the ground.

phase of the CAFE program runs from MYs 2022-2025 and represents conditional⁶ proposed standards that are projected to require, on an average industry fleet wide basis, 49.6 mpg in model year 2025.

The CAFE standards are based on fuel economy-footprint curves, where each vehicle has a different fuel economy “target” depending on its footprint. Generally, the larger the vehicle footprint, the lower the corresponding vehicle fuel economy target. Footprint-based standards help to distribute the burden of compliance across all vehicles and all manufacturers. Manufacturers are not compelled to build vehicles of any particular size or type (nor does the proposed rule create an incentive to do so), and each manufacturer will have its own fleet-wide production-weighted standard that reflects the vehicles it chooses to produce. We note that for the first time, NHTSA is proposing to increase the stringency of standards by the amount (in mpg terms) that industry is expected to improve air conditioning system efficiency.

Table 1 shows the estimated required fuel economy levels for model years 2016-2025 when the fuel economy targets are multiplied by our forecast of vehicle sales in those years and harmonically averaged. The passenger car requirements are estimated to increase in stringency from 40 to 56 mpg between model year 2017 and model year 2025, and NHTSA will also set, consistent with its statutory authority, minimum standards for domestically-manufactured passenger cars estimated to increase in stringency from 38.1 to 51.5 mpg between model year 2017 and model year 2025. Similarly, fleet-wide mpg level requirements for trucks are projected to increase in stringency from 29.4 to 40.3. Based on our estimates of the relative sales of cars and trucks, NHTSA projects that the average light vehicle (combined car and truck) mpg compliance level for model year 2017 will be 35.3 mpg while the average mpg compliance level for model year 2025 standard will be 49.6 mpg.

Table 1. Estimated Average Required Fleet-Wide Fuel Economy (mpg) under Proposed Footprint-Based CAFE Standards⁷

	2016 base	2017	2018	2019	2020	2021	2022	2023	2024	2025
Passenger Cars	37.8	40.0	41.4	43.0	44.7	46.6	48.8	51.0	53.5	56.0
Light Trucks	28.8	29.4	30.0	30.6	31.2	33.3	34.9	36.6	38.5	40.3
Combined Cars & Trucks	34.1	35.3	36.4	37.5	38.8	40.9	42.9	45.0	47.3	49.6

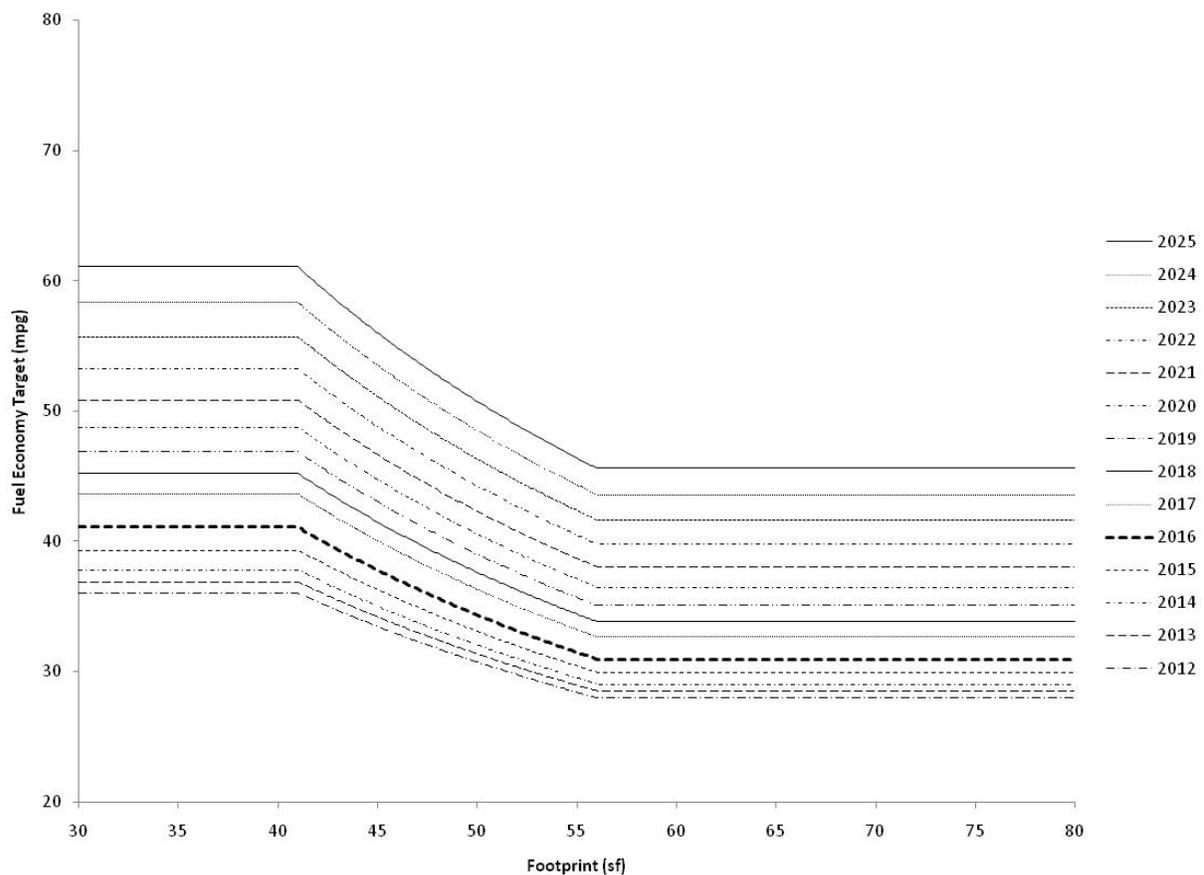
Figures 1 and 2 show the actual mpg-footprint curves for cars and trucks. For passenger cars, the annual increase in the stringency of the standards is expected to average 4.1 percent from model years 2017 through 2021, and 4.3 percent from model years 2022 through 2025. In recognition of manufacturers’ unique challenges in improving the fuel economy and GHG emissions of full-size pickup trucks as we

⁶ By “conditional,” NHTSA means to say that the proposed standards for MYs 2022-2025 represent the agency’s current best estimate of what levels of stringency would be maximum feasible in those model years, but in order for the standards for those model years to comply with EPCA/EISA a subsequent rulemaking must be undertaken by the agency at a later time.

⁷ We note that because the standards are footprint based and the fleet projections and distributions change slightly with each update of our projects. The actual target levels for any model year will not be known until the end of that model year based on actual vehicle sales.

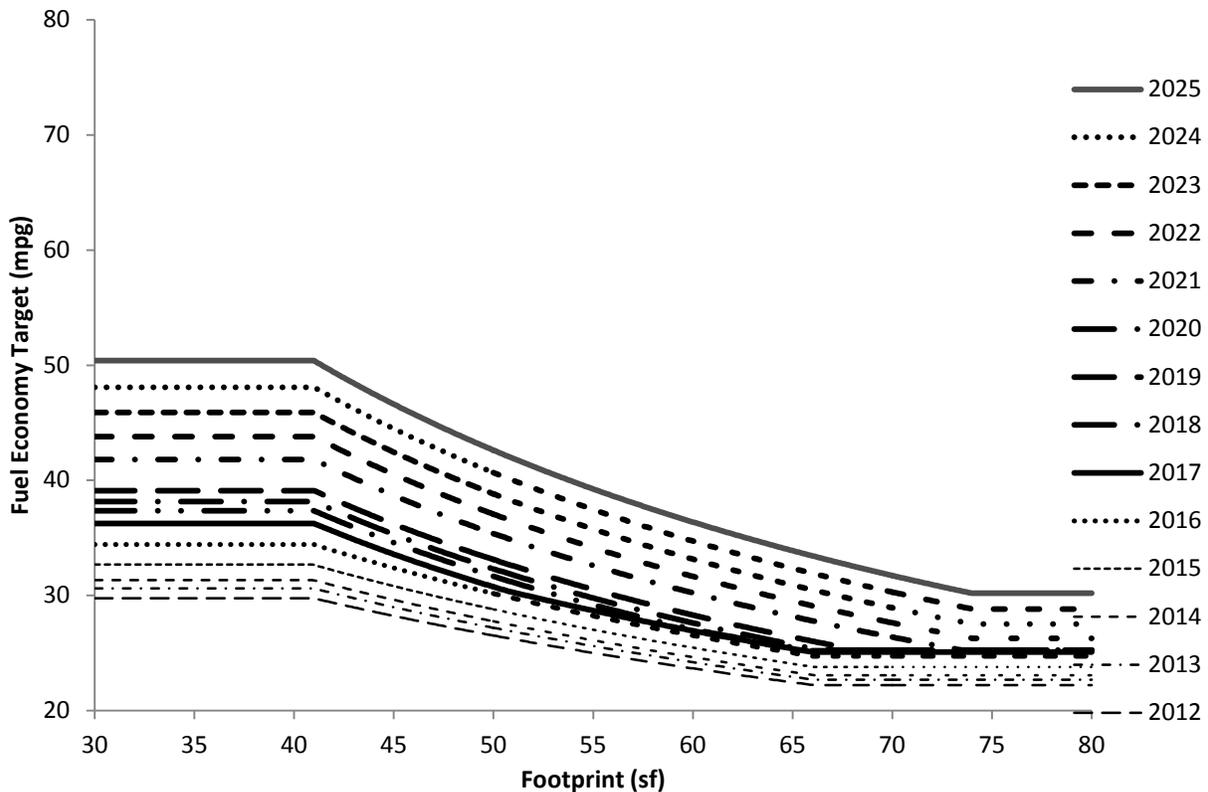
transition from the MY 2016 standards to MY 2017 and later, while preserving the utility (e.g., towing and payload capabilities) of those vehicles, NHTSA is also proposing a slower annual rate of improvement for light trucks in the first phase of the program. For light trucks, the proposed annual increase in the stringency of the standards would be 2.9 percent per year on average in model years 2017 through 2021, and 4.7 percent from model years 2022 through 2025.⁸

Figure 1. CAFE (mpg) Standards Curves for Passenger Cars



⁸ NHTSA notes that the proposed rates of increase in stringency for CAFE standards are lower than EPA's proposed rates of increase in stringency for GHG standards. As in the MYs 2012-2016 rulemaking, this is for purposes of harmonization and in reflection of several statutory constraints in EPCA/EISA. As a primary example, NHTSA's proposed standards, unlike EPA's, do not reflect the inclusion of air conditioning system refrigerant and leakage improvements, but EPA's proposed standards would allow consideration of such A/C refrigerant improvements which reduce GHGs but do not affect fuel economy.

Figure 2. CAFE (mpg) Standards Curves for Light Trucks



Example footprint targets for popular vehicle models are shown in Table 2, illustrating the fact that different vehicle sizes will have varying fuel economy and CO₂ emissions targets under the footprint-based standards. We note that real-world CO₂ is typically 25 percent higher and real-world fuel economy is typically 20 percent lower than the CO₂ and fuel economy target values presented here.

Table 2. Model Year 2025 Fuel Economy and CO₂ Targets for Various MY 2008 Vehicle Types

Vehicle Type	Example Models	Example Model Footprint (sq. ft.)	CO ₂ Emissions Target (g/mi) ^a	Fuel Economy Target (mpg) ^b
Example Passenger Cars				
Compact car	Honda Fit	40	131	61.1
Midsized car	Ford Fusion	46	147	54.9
Fullsize car	Chrysler 300	53	170	48.0

Example Light Trucks				
Small SUV	4WD Ford Escape	44	170	47.5
Midsized crossover	Nissan Murano	49	188	43.4
Minivan	Toyota Sienna	55	209	39.2
Large pickup truck	Chevy Silverado	67	252	33.0

Vehicle Technologies to Improve Fuel Economy and Reduce GHGs

NHTSA’s and EPA’s technology assessment indicates there is a wide range of technologies available for manufacturers to consider in improving fuel economy and reducing GHG emissions. The proposals allow for long-term planning by manufacturers and suppliers for the continued development and deployment across their fleets of fuel saving and emissions-reducing technologies. The agencies believe that advances in gasoline engines and transmissions will continue for the foreseeable future, and that there will be continual improvement in other technologies, including vehicle weight reduction, lower tire rolling resistance, improvements in vehicle aerodynamics, diesel engines, and more efficient vehicle accessories, and that vehicle air conditioners will continue to improve by becoming more efficient. The agencies also expect to see some increased electrification of the fleet through the expanded production of stop/start, hybrid, plug-in hybrid electric and electric vehicles. Many of these technologies are already available today, and manufacturers will be able to meet the standards through significant efficiency improvements in these technologies, as well as through a significant penetration of these and other technologies across the fleet.

Mid-Term Evaluation

Given the long time frame at issue in setting standards for MYs 2022-2025, and given NHTSA’s obligation to conduct a separate rulemaking in order to establish final standards for vehicles for those model years, NHTSA and EPA are proposing to undertake a comprehensive mid-term evaluation and agency decision-making process. As part of this undertaking, both NHTSA and EPA will develop and compile up-to-date information for the evaluation, through a collaborative, robust and transparent process, including public notice and comment. The comprehensive evaluation process will lead to final agency action by NHTSA.

NHTSA’s Program Flexibilities

NHTSA’s proposed program provides compliance flexibility to manufacturers. This flexibility is expected to facilitate compliance and reduce the overall cost of the program, without compromising overall energy security and environmental objectives. The flexibilities also provide incentives to encourage market penetration of more advanced vehicle technologies.

Credit Transfer, Trading, and Carry-Forward/Carry-Back - NHTSA is maintaining the same comprehensive program for credits established in the MY 2012-2016 program. Credits may be carried forward, or banked, for five years, or carried back three years to cover a deficit in a previous year. A manufacturer may transfer credits from one fleet to another (cars to trucks, or trucks to cars), and trade credits to other manufacturers. Together, these provisions help

manufacturers in planning and implementing the orderly phase-in of fuel saving technology in their production, consistent with their typical redesign schedules.

Air Conditioning and Off-Cycle-Related Fuel Consumption Improvement Values - For the first time for MYs 2017-2025, manufacturers will be able to generate fuel consumption improvement values for improvements in air conditioning (A/C) system efficiency to use in complying with the CAFE standards, and for real-world improvements through the use of “off-cycle” technologies that raise fuel economy in ways that are not reflected on the current test procedures. Such technologies might include solar panels on hybrids, adaptive cruise control or active aerodynamics. These flexibilities will be implemented in the CAFE program in the same way that they are implemented in EPA’s GHG program.

Incentives for "Game Changing" Technologies Including Hybridization for Full-Size Pick-Up Trucks - Also for the first time for MYs 2017-2025, manufacturers will be able to generate fuel consumption improvement values for mild and strong hybrid electric (HEV) full size pickup trucks if this advanced technology is utilized across a designated percentage of a manufacturers’ full size pickup trucks. This incentive further encourages manufacturers to begin to transform the most challenged category of vehicles in terms of the penetration of advanced technologies. This should allow additional flexibility to achieve the higher levels of truck stringencies in MYs 2022-2025. Eligibility for this credit would be conditioned on a minimum penetration of the technology in a manufacturer’s full size pickup truck fleet. Mild HEVs pickup trucks would be eligible for a per vehicle fuel consumption improvement of 0.0011 gallons/mile (10 grams of CO₂ per mile) during MY 2017-2025 if the technology is used with at least 30% of a company’s 2017 full-size pickup production and ramping up to at least 80% in MY 2021. Strong HEV pickup trucks would be eligible for 0.0023 gallons/mile (20 grams of CO₂ per mile) per vehicle improvement during MY 2017-2025 if the technology is used on at least 10% of the company’s full size pickups. These volume thresholds are being proposed in order to encourage rapid penetration of these technologies in this vehicle segment. In addition to the specific hybridization credits, because there are other technologies besides mild and strong hybrids that can significantly reduce fuel consumption and GHG emissions in pickup trucks, manufacturers can also take advantage of a performance-based incentive for full-size pickup trucks that achieve a significant fuel consumption reduction below the applicable target. To avoid double-counting, the same vehicle would not receive credit under both the HEV and performance-based approaches.

Treatment of Compressed Natural Gas (CNG), Plug-in Hybrid Electric Vehicles (PHEVs), and Flexible Fuel Vehicles (FFVs) - In the CAFE program for MYs 2017–2019, the fuel economy of dual fuel vehicles will be determined in the same manner as specified in the MY 2012–2016 rule, and as defined by EISA. Beginning in MY 2020, EISA does not specify how to measure the fuel economy of dual fuel vehicles, and under its EPCA authority to measure and calculate fuel economy EPA will be using the “SAE utility factor” methodology for PHEV and CNG vehicles to determine how to proportion the fuel economy when operating on gasoline or diesel fuel and the fuel economy when operating on the alternative fuel. For FFVs, the same methodology would be used for both the CAFE and the GHG programs to determine how to proportion the fuel economy, which would be based on actual usage of E85. This approach is consistent with how EPA will handle these vehicles under the GHG program. The

CAFE program would also continue to provide incentives for use of alternative fuels in dual-fueled vehicles through the use Petroleum Equivalency Factors and the incentive multipliers that are used in the MY 2012–2016 rule, however with no cap on the amount of fuel economy increase allowed.

Background of the Joint Proposal

Following the successful adoption of a National Program for GHG and fuel economy standards for model years (MY) 2012-2016 vehicles, President Obama requested the agencies to continue their efforts to address standards for MY 2017-2025. In a May 21, 2010, Presidential Memorandum, the President requested that EPA and NHTSA work together to develop a national program that would “...*produce a new generation of clean vehicles.*” The President specifically requested that the agencies develop “...*a coordinated national program under the CAA [Clean Air Act] and the EISA [Energy Independence and Security Act of 2007] to improve fuel efficiency and to reduce greenhouse gas emissions of passenger cars and light-duty trucks of model years 2017-2025.*” The President recognized our country could take a leadership role in addressing the global challenges of improving energy security and reducing greenhouse gas pollution, stating that “*America has the opportunity to lead the world in the development of a new generation of clean cars and trucks through innovative technologies and manufacturing that will spur economic growth and create high-quality domestic jobs, enhance our energy security, and improve our environment.*”

Since that time, the agencies have worked with the State of California to address all elements requested in the May 21, 2010 Presidential Memorandum. We completed an initial assessment of the technologies, strategies and underlying analyses that would be considered in setting standards for 2017-2025, in consultation with a wide range of stakeholders. The Joint Interim Technical Assessment Report (TAR) and a Notice of Intent (NOI) to conduct a joint rulemaking were concluded on September 30, 2010.⁹ Following the opportunity for public comment on the interim TAR and NOI, the agencies developed and published a Supplemental NOI (SNOI)¹⁰ in December 2010 highlighting many of the key comments received in response to the September NOI and the TAR. That notice also discussed the agencies’ plans for many of the key technical analyses that would be undertaken in developing the upcoming proposed rulemaking.

On July 29, 2011, NHTSA and EPA issued a Supplemental Notice of Intent (NOI) outlining the agencies’ plans for proposing the MY 2017-2025 standards and program. The State of California and thirteen auto manufacturers provided letters of support for the program concurrent with the Supplemental NOI. The United Auto Workers, environmental groups and consumer groups also expressed support for the program.

Draft Environmental Impact Statement

NHTSA has also prepared a Draft Environmental Impact Statement (Draft EIS) pursuant to the National Environmental Policy Act, 42 U.S.C. 4321–4347, and implementing regulations issued by the Council on Environmental Quality (CEQ), 40 CFR part 1500, and NHTSA, 49 CFR part 520. NHTSA prepared the Draft EIS to analyze and disclose the potential environmental impacts of the proposed CAFE standards and a number of alternatives. The Draft EIS analyzes direct, indirect, and cumulative impacts and analyzes impacts in proportion to their significance.

⁹ 75 FR 62739, October 13, 2010.

¹⁰ 75 FR 76337, December 8, 2010.

Because of the link between the transportation sector and GHG emissions, the Draft EIS considers the possible impacts on climate and global climate change in the analysis of the effects of these proposed CAFE standards. The Draft EIS also describes potential environmental impacts to a variety of resources. Resources that may be affected by the proposed action and alternatives include water resources, biological resources, land use and development, safety, hazardous materials and regulated wastes, noise, socioeconomics, and environmental justice. These resource areas are assessed qualitatively in the Draft EIS.

For additional information on NHTSA's NEPA analysis, please *see* the Draft EIS on NHTSA's website.

Public Participation Opportunities

We welcome your comments on this proposed rule. Comments will be accepted for 60 days beginning when this proposal is published in the Federal Register. All comments should be identified by Docket ID No. NHTSA-2010-0131 and submitted by one of the following methods:

- Internet: www.regulations.gov
- Mail:
 - Docket Management Facility, M-30
 - U.S. Department of Transportation
 - West Building, Ground Floor, Rm. W12-140
 - 1200 New Jersey Avenue, SE
 - Washington, DC 20590.
- Hand Delivery, between 9 a.m. and 4 p.m. Eastern Time, Monday through Friday, except Federal Holidays:
 - West Building, Ground Floor, Rm. W12-140
 - 1200 New Jersey Avenue, SE

You should consult the Federal Register notice for this proposal for more information about how to submit comments, when the comment period will close, and about where and when public hearings will be held. Comments on NHTSA's Draft EIS will also be accepted to this docket and at the public hearings. A copy of the Federal Register notice can be found on our website listed below.

For More Information

You can access the rule and related documents on NHTSA's CAFE website at:

<http://www.nhtsa.gov/fuel-economy>

For more information on this rule, please contact the NHTSA's Office of Chief Counsel, at (202) 366-2992.