

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

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

The standards proposed would apply to passenger cars, light-duty trucks, and medium-duty passenger vehicles, covering model years 2017 through 2025. The proposed standards are projected to require on an average industry fleet wide basis – that is all passenger cars, light-duty trucks, and medium duty passenger vehicles (including all SUVs) -- 163 grams/mile of carbon dioxide (CO₂) in model year 2025, which is equivalent to 54.5 miles per gallon (mpg) if the vehicles were to meet this CO₂ level all through fuel economy improvements.

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 address global climate change and to reduce oil consumption.

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.

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 MYs 2017-2025 National Program will be in the range of \$311 billion to \$421 billion (7 and 3 percent discount rates, respectively) 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 \$2,000 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, \$5,200 to \$6,600 (7 and 3 percent discount rates, respectively) in fuel savings, for a net lifetime savings of \$3,000 to \$4,400 -- 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 that 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

EPA's Proposed Standards

EPA is proposing a set of fleet-wide average carbon dioxide (CO₂) emission standards for cars and light trucks. These standards are based on CO₂ emissions-footprint curves, where each vehicle has a different CO₂ emissions compliance target depending on its footprint value (related to the size of the vehicle). Generally, the larger the vehicle footprint, the higher the corresponding vehicle CO₂ emissions target. As a result, the burden of compliance is distributed 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), each manufacturer will have its own fleet-wide standard that reflects the vehicles it chooses to produce, and the GHG program provides a wide range of credit programs and flexibilities for manufacturers to meet the standards.

Table 1 shows the projected fleet-wide CO₂ emission targets under the footprint-based approach. The car requirements are projected to increase in stringency from 213 to 144 grams per mile between model year 2017 and model year 2025. Similarly, fleet-wide CO₂ emission level requirements for trucks are projected to increase in stringency from 295 to 203 grams per mile. EPA projects that the average light vehicle (combined car and truck) tailpipe CO₂ compliance level in model year 2017 will be 243 grams per mile while the average vehicle tailpipe CO₂ emissions compliance level for the model year 2025 standard is projected to be 163 grams per mile, corresponding to 54.5 mpg in model year 2025, if all reductions were made through fuel economy improvements.

Table 1 - Projected Fleet-Wide Emissions Compliance Targets under the Proposed Footprint-Based CO₂ Standards (g/mi) and Corresponding Fuel Economy (mpg)

	2017	2018	2019	2020	2021	2022	2023	2024	2025
Passenger Cars (g/mi)	213	202	192	182	173	165	158	151	144
Light Trucks (g/mi)	295	285	277	270	250	237	225	214	203
Combined Cars & Trucks (g/mi)	243	232	223	213	200	190	181	172	163
Combined Cars & Trucks (mpg)	36.6	38.3	39.9	41.7	44.4	46.8	49.1	51.7	54.5

Figures 1 and 2 show the actual footprint curves for cars and trucks. For passenger cars, the CO₂ compliance values associated with the footprint curves would be reduced on average by 5 percent per year from the model year 2016 projected passenger car industry-wide compliance level through model year 2025. In recognition of manufacturers' special challenges in improving the fuel economy and GHG emissions of full-size pickup trucks as we transition from the MY 2016 standards to MY 2017 and later, while preserving the utility (e.g., towing and payload capabilities) of those vehicles, EPA is proposing a lower annual rate of improvement for light-duty trucks in the early years of the program. For light-duty trucks, the proposed average annual rate of CO₂ emissions reduction in model years 2017 through 2021 is 3.5 percent per year and for model years 2022 through 2025 it is 5 percent per year.

Regulatory Announcement

Figure 1 CO₂ (g/mile) Car Standards Curves

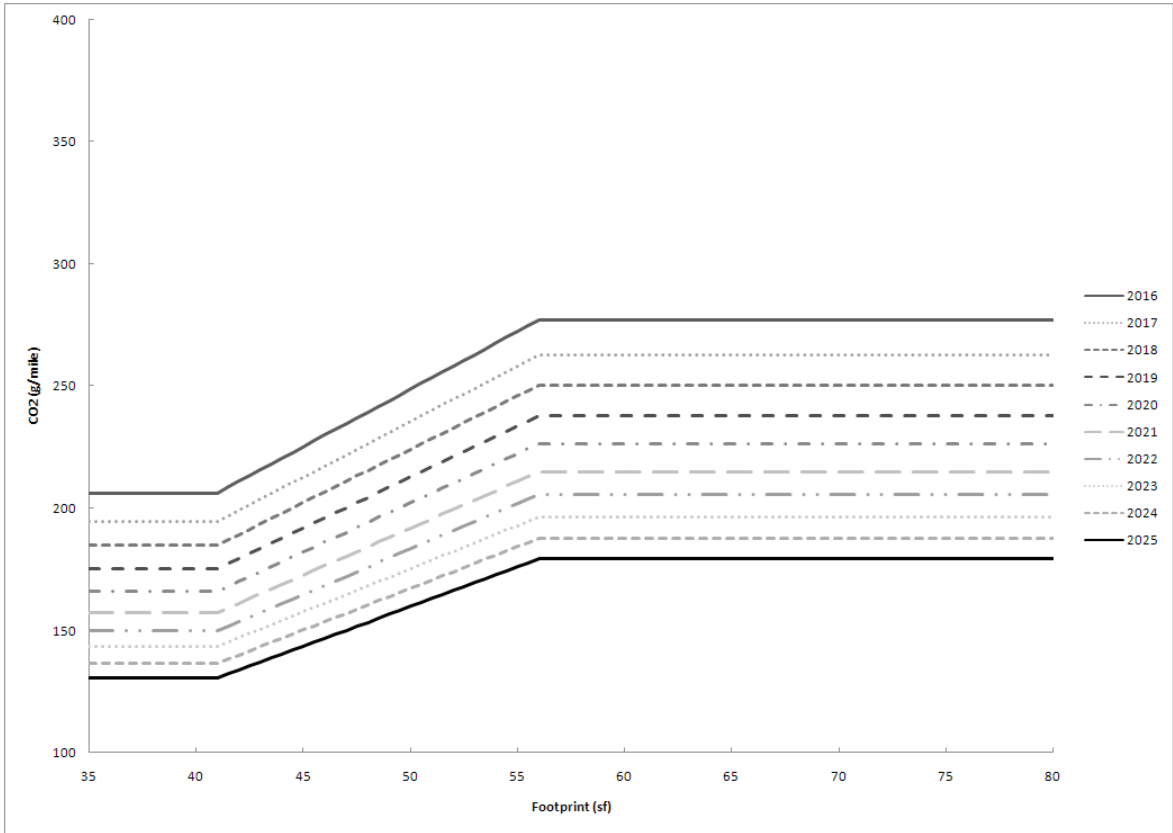
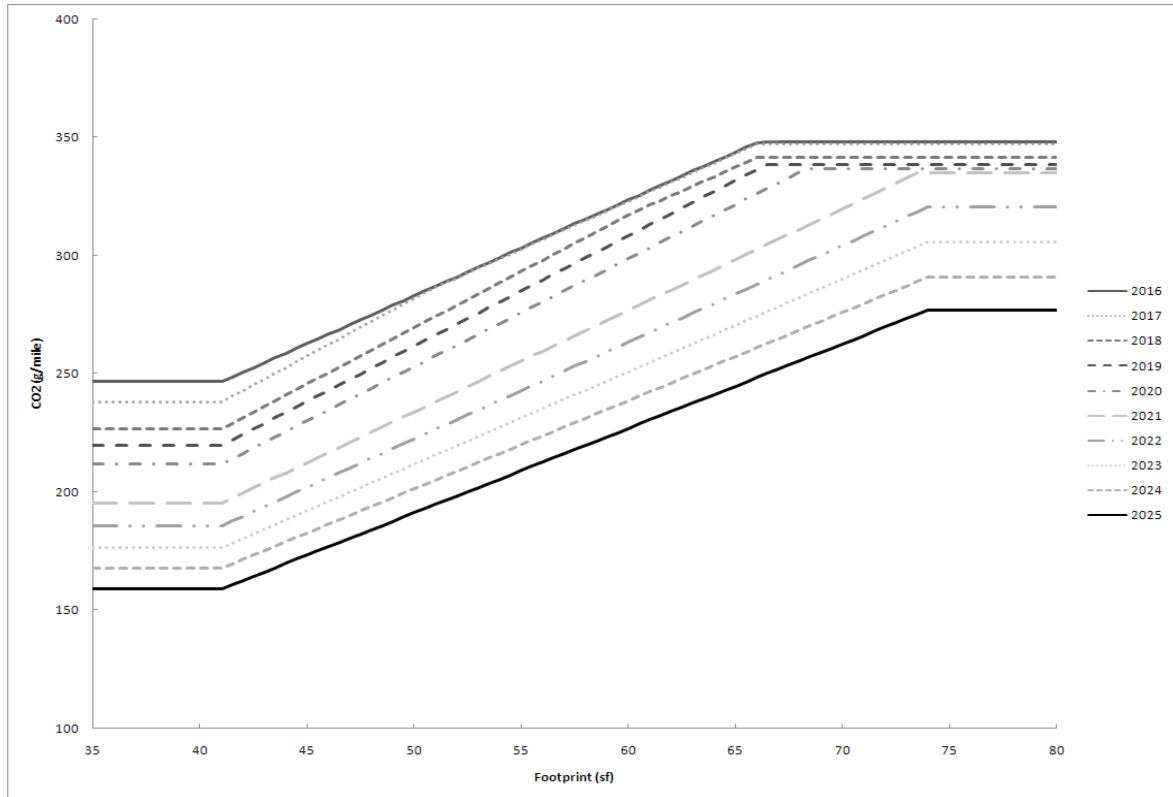


Figure 2 CO₂ (g/mile) Truck Standards Curves



Example footprint targets for popular vehicle models are shown in Table 2, illustrating the fact that different vehicle sizes will have varying CO₂ emissions and fuel economy targets under the footprint-based standards. Vehicle CO₂ emissions will be measured over the EPA city and highway tests.

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

Vehicle Type	Example Models	Example Model Footprint (sq. ft.)	EPA CO ₂ Emissions Target (g/mi)*	NHTSA Fuel Economy Target (mpg)*
Example Passenger Cars				
Compact car	Honda Fit	40	131	61.1
Midsize car	Ford Fusion	46	147	54.9
Fullsize car	Chrysler 300	53	170	48.0
Example Light-duty Trucks				
Small SUV	4WD Ford Escape	44	170	47.5
Midsize crossover	Nissan Murano	49	188	43.4
Minivan	Toyota Sienna	55	209	39.2
Large pickup truck	Chevy Silverado	67	252	33.0

* Real-world CO₂ is typically 25 percent higher and real-world fuel economy is typically 20 percent lower than the CO₂ and CAFE values discussed here.

Vehicle Technologies to Reduce GHGs and Improve Fuel Economy

EPA's and NHTSA's technology assessment indicates there is a wide range of technologies available for manufacturers to consider in reducing GHG emissions and improving fuel economy. 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. 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. The agencies also expect that vehicle air conditioners will continue to improve by becoming more efficient and by increasing the use of alternative lower greenhouse warming potential (GWP) refrigerants. 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, EPA and NHTSA 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 both agencies.

EPA's Program Flexibilities

EPA's proposed program provides compliance flexibility to manufacturers. This flexibility is expected to provide sufficient lead time for manufacturers to make necessary technological improvements and reduce the overall cost of the program, without compromising overall environmental objectives. The flexibilities also provide incentives to facilitate market penetration of the most advanced vehicle technologies.

Credit Banking and Trading - EPA is proposing to continue the same comprehensive program for averaging, banking, and trading of credits established in the MY 2012-2016 program. Together, these provisions help manufacturers in planning and implementing the orderly phase-in of emissions control technology in their production, consistent with their typical redesign schedules. 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 across all vehicles it produces, both cars and light trucks. Trading of credits between companies would also be permitted. To facilitate the transition to the increasingly more stringent 2017-2025 standards, EPA is proposing an additional CO₂ credit carry-forward provision, allowing credits generated from MY 2010 through 2016 to be used through MY 2021.

Air Conditioning Improvement Credits - As with the MYs 2012-2016 program, manufacturers will be able to generate CO₂-equivalent credits to use in complying with the CO₂ standards for improvements in air conditioning (A/C) systems, both for approaches that reduce tailpipe CO₂ through efficiency improvements and for reduced refrigerant leakage through better components and through the use of alternative refrigerants with lower global warming potential than presently used (reduces hydrofluorocarbons (HFC) emissions).

Off-Cycle Credits - Off-cycle technologies achieve CO₂ reductions that are not reflected on current test procedures. Such technologies might include solar panels on hybrids, adaptive cruise control or active aerodynamics. EPA is proposing to expand and streamline the MYs 2012-2016 off-cycle credit provisions. For MY 2017 and later, EPA is proposing a pre-approved list of technologies and credit values. Further, manufacturers could also apply for off-cycle technologies beyond those listed (or for different credit values for the listed off-cycle technologies) if they have sufficient data.

Incentives for Electric Vehicles, Plug-in Hybrid Electric Vehicles, and Fuel Cell Vehicles - To facilitate market penetration of the most advanced vehicle technologies as rapidly as possible, EPA is proposing an incentive multiplier for compliance purposes for all electric vehicles (EVs), plug-in hybrid electric vehicles (PHEVs), and fuel cell vehicles (FCV) sold in MYs 2017 through 2021. This multiplier approach means that each EV/PHEV/FCV would count as more than one vehicle in the manufacturer's compliance calculation. EPA is proposing that EVs and FCVs start with a multiplier value of 2.0 in MY 2017, phasing down to a value of 1.5 in MY

2021. PHEVs would start at a multiplier value of 1.6 in MY 2017 and phase down to a value of 1.3 in MY 2021. There is no multiplier for MYs 2022-2025.

For EVs, PHEVs and FCVs, EPA is proposing to set a value of 0 g/mile for the tailpipe compliance value for EVs, PHEVs (electricity usage) and FCVs for MY 2017-2021, with no limit on the quantity of vehicles eligible for 0 g/mi tailpipe emissions accounting. For MY 2022-2025, EPA is proposing that 0 g/mi only be allowed up to a per-company cumulative sales cap:

- 1) 600,000 vehicles for companies that sell 300,000 EV/PHEV/FCVs in MYs 2019-2021;
- 2) 200,000 vehicles for all other manufacturers. EPA believes the industry-wide impact of such a tiered cap will be approximately 2 million vehicles.

For sales above these thresholds, manufacturers would be required to account for the net upstream GHG emissions for the electric portion of operation, using accounting methodologies set out in the rule.

Incentives for Advanced Technologies Including Hybridization for Full-Size Pick-Up Trucks - EPA is proposing an additional CO₂ per vehicle credit, 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 credit of 10 g/mi during MY 2017-2015 if the technology is used with at least 30% of a company 2017 full-size pickup production and ramping up to at least 80% in MY 2021. Strong HEV pickup trucks would be eligible for 20 g/mi per vehicle credit 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 which can significantly reduce GHG emissions and fuel consumption in pickup trucks, EPA is also proposing a performance-based incentive CO₂ emissions credit for full-size pickup trucks that achieve a significant CO₂ 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) - EPA is proposing a methodology for determining CO₂ levels for plug-in hybrid electric vehicles (PHEVs) and dual fuel compressed natural gas (CNG) vehicles based on the recognition that, once a consumer has paid several thousand dollars to be able to use a fuel that is considerably cheaper than gasoline, it is very likely that the consumer will seek to use the cheaper fuel as much as possible. EPA is proposing to use the Society of Automotive Engineers "utility factor" methodology (based on vehicle range on the alternative fuel and typical daily travel mileage) to determine the assumed percentage of operation on gasoline and percentage of operation on the alternative fuel.

EPA is not proposing to establish a utility factor for flexible fueled vehicles (FFVs) using E-85 and gasoline, since there is not a significant cost differential between an FFV and a conventional gasoline vehicles and historically consumers have only fueled these vehicles with E85 a very small percentage of the time. FFVs continue to be treated as they are treated in MY 2016 where emissions are weighted based on actual alternative fuel usage.

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, 2010.¹ Following the opportunity for public comment on the interim TAR and NOI, the agencies developed and published a Supplemental NOI (SNOI)² 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.

¹ 75 FR 62739, October 13, 2010

² 75 FR 76337, December 8, 2010

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. EPA-HQ-OAR-2010-0799 and submitted by one of the following methods:

Internet: www.regulations.gov

E-mail: A-and-R-Docket@epa.gov

Mail:

Environmental Protection Agency

Air and Radiation Docket and Information Center (6102T)

1200 Pennsylvania Avenue NW

Washington, DC 20460

Hand Delivery:

EPA West building

EPA Docket Center (Room 3340)

1301 Constitution Avenue NW

Washington, DC

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. 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 EPA's Office of Transportation and Air Quality (OTAQ) Web site at:

www.epa.gov/otaq/climate/regulations.htm

For more information on this rule, please contact the U.S. Environmental Protection Agency, Office of Transportation and Air Quality at:

E-mail: OTAQPUBLICWEB@epa.gov