

Report to the 54th Session of GRPE, June 2007
Recent Rulemaking Activities of Interest in the United States

This document provides a summary of recent rulemaking activities by the United States Environmental Protection Agency.

The fact sheets contained here provide an overview of the following programs:

- Our proposed rulemaking covering locomotive and marine compression-ignition engines under 30 L/cyl
- Our proposed rulemaking covering heavy-duty on-highway onboard diagnostic systems
- Our proposed rulemaking covering emission standards for new nonroad spark-ignition engines, equipment, and vessels; and
- Our final rulemaking covering new fuel economy testing and labeling requirements

Regulatory Announcement: EPA Proposal for More Stringent Emissions Standards for Locomotives and Marine Compression-Ignition Engines

EPA420-F-07-015, March 2007

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The U.S. Environmental Protection Agency (EPA) is proposing more stringent exhaust emission standards for locomotives and marine diesel engines. The proposal would significantly reduce harmful emissions of diesel particulate matter (PM) and nitrogen oxide (NOx) emissions from these engines through a three-part program: (1) tightening emission standards for existing locomotives when they are remanufactured, (2) setting near-term engine-out emission standards, referred to as Tier 3 standards, for newly-built locomotives and marine diesel engines; and (3) setting longer-term standards, referred to as Tier 4 standards, for newly-built locomotives and marine diesel engines that reflect the application of high-efficiency aftertreatment technology. [EPA is also proposing provisions to eliminate emissions from unnecessary locomotive idling](#) and is asking for comment on a concept to reduce emissions from existing marine diesel engines when they are remanufactured. This proposal is part of EPA's ongoing National Clean Diesel Campaign (NCDC) to reduce harmful emissions from diesel engines of all types.

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Background

Existing EPA regulations in 40 CFR parts 92 and 94 include standards for emissions of PM, NOx, HC and CO from locomotive and marine compression-ignition engines (also called diesel engines). These standards rely on engine-based technologies to reduce emissions. The opportunity to gain large additional public health benefits, as well as the similarities between these engines and highway diesel and nonroad engines, have led us to consider additional emission controls based on the high-efficiency aftertreatment technologies that will soon be in use by highway and nonroad engines.

Need to Reduce Locomotive and Marine Diesel Emissions

Locomotive and marine diesel engines contribute significantly to air pollution in many of our nation's cities and towns. In the coming decades, these engines are expected to account for an even greater share of overall emissions as other emission control programs take effects for cars, trucks, and other nonroad emissions sources. EPA estimates that, without the emission reductions from today's proposal, by 2030 locomotive and marine diesel engines would contribute more than 65 percent of national mobile source diesel PM_{2.5} emissions and 35 percent of national mobile source NO_x emissions, a key precursor to ozone and secondary PM formation.

Recent air quality data show that about 157 million people live in areas that violate air quality standards for ground-level ozone, also called smog and about 88 million people live in areas that violate air quality standards from PM. These pollutants contribute to serious public health problems that include premature mortality, aggravation of respiratory and cardiovascular disease, aggravation of existing asthma, acute respiratory symptoms and chronic bronchitis. EPA believes that diesel exhaust is likely to be carcinogenic to humans by inhalation. Children, people with heart and lung diseases, and the elderly are thought to be most at risk.

Locomotive and marine diesel emissions reductions are expected to benefit those who live, work, or recreate in and along our nation's coastal areas, rivers, ports, and rail lines. Such reductions are expected to have beneficial impacts on visibility impairment and regional haze, as well as reducing crop damage and acid rain.

Description of Engines Covered

The proposed requirements would cover all locomotives and many marine diesel engines already subject to EPA emission standards, as follows:

- **Locomotives:** With limited exceptions, the regulations would apply to all line-haul, passenger, and switch locomotives that operate extensively within the United States, including newly manufactured locomotives and remanufactured locomotives that were originally manufactured after 1972. The primary exception is that the new remanufacturing standards would not apply to the existing fleets of locomotives owned by very small railroads.
- **Marine Diesel Engines:** The regulations would apply to newly-built marine diesel engines with displacements less than 30 liters per cylinder installed on vessels flagged or registered in the United States. These are commonly referred to as marine diesel engines and are divided into three categories for the purposes of EPA's standards. Category 1 are engines above 50 horsepower (hp) and up to 5 liters per cylinder displacement. Category 2 are engines from 5 to 30 liters per cylinder. Category 3 are engines at or above 30 liters per cylinder. EPA is proposing to change the definition of Category 1 and Category 2 engines to reflect a 7 liter per cylinder cut-off.

Marine Diesel engines are used in commercial, recreation, and auxiliary power applications. Commercial propulsion applications range from tug boats to Great Lakes freighters. Recreational propulsion applications range from sailboats to super-yachts. EPA is also requesting comments on whether the Agency should tighten emission standards for certain existing marine diesel engines when they are remanufactured. Marine diesel engines at or above 30 liters per cylinder displacement are not included in this proposal; these engines, which are typically used for propulsion on ocean-going vessels, will be addressed in a separate EPA rulemaking.

Exhaust Emissions Standards

The proposal consists of a three-part emission control.

First, EPA is proposing to adopt more stringent standards for existing locomotives when they are remanufactured. These standards would take effect as soon as certified remanufacture systems are available (as early as 2008), but no later than 2010 (2013 for Tier 2 locomotives). EPA is also requesting comment on similar requirements for certain existing marine diesel engines when they are remanufactured.

Second, EPA is proposing near-term emission standards, referred to as Tier 3 standards, for newly-built locomotive and marine engines. These standards would reflect the application of technologies to reduce engine-out PM and NO_x emissions and would phase in starting in 2009.

Third, EPA is proposing long-term emissions standards, referred to as Tier 4, for newly-built locomotives and marine diesel engines. These standards are based on the application of high-efficiency catalytic aftertreatment technology and would phase in beginning in 2014 for marine diesel engines and 2015 for locomotives. These standards are enabled by the availability of clean diesel fuel with sulfur content capped at 15 parts per million, which will be available beginning by 2012. These marine Tier 4 engine standards would apply only to commercial marine diesel engines above 800 hp and recreational marine diesel engines above 2,000 hp.

The proposal would result in PM reductions of about 90 percent and NO_x reductions of about 80 percent from engines meeting these standards, compared to engines meeting the current standards. The proposed standards would also yield sizeable reductions in emissions of HC, CO, and other air toxics.

Program Costs

EPA estimates the annual cost of complying with the proposed program to be about \$600 million in 2030. The average price in 2030 of a locomotive is expected to increase by less than three percent (about \$49,000 per unit) as a result of the proposed standards. In the marine markets, the expected impacts in 2030 are different for engines above and below 800 hp. Increases in engine and vessel prices for commercial engines below 800 hp and recreational engines are expected to be small (less than one percent). The average price of

a commercial marine diesel engine above 800 hp is expected to increase by about 8.5 percent for Category 1 engines and about 19 percent for Category 2 engines. The average price of a marine vessel using these larger engines is expected to increase much less, about 1 percent for vessels using Category 1 engines above 800 hp (about \$16,000) and 3.6 percent for vessels using Category 2 engines above 800 hp (about \$142,000). The expected impacts on prices in the locomotive and marine transportation service market would be less than one percent.

Program Benefits

These proposed standards would result in substantial benefits to public health and welfare and to the environment. EPA estimates that by 2030 this comprehensive emission control program would reduce annual emissions of NO_x and PM by 765,000 and 28,000 tons, respectively, and the magnitude of these reductions would continue to grow well beyond 2030. EPA estimates that the monetized health benefits of this rule in 2030 would be approximately \$12 billion. The value of the benefits would be much greater than the projected program cost of \$600 million per year. By 2030, the rule would annually prevent 1,500 premature mortalities; over 1,100 hospitalizations; 170,000 work days lost; and 1,000,000 minor restricted-activity days and other quantifiable benefits.

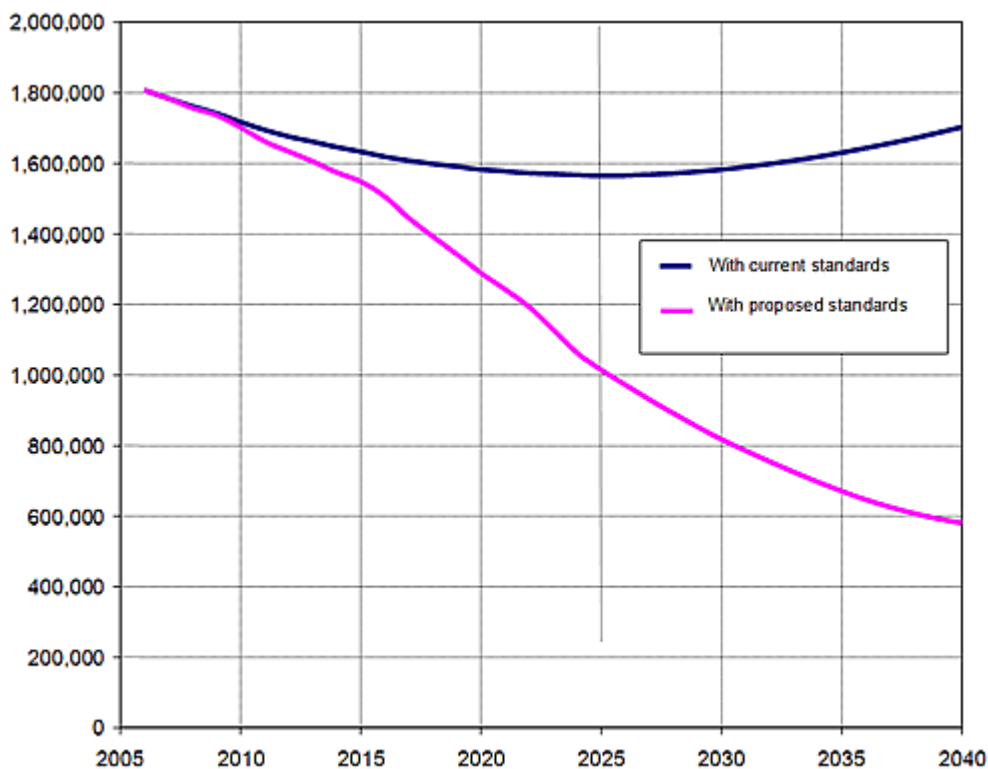


Figure 1 Projected NO_x Emissions (tons per year) with and without the Proposed New Controls

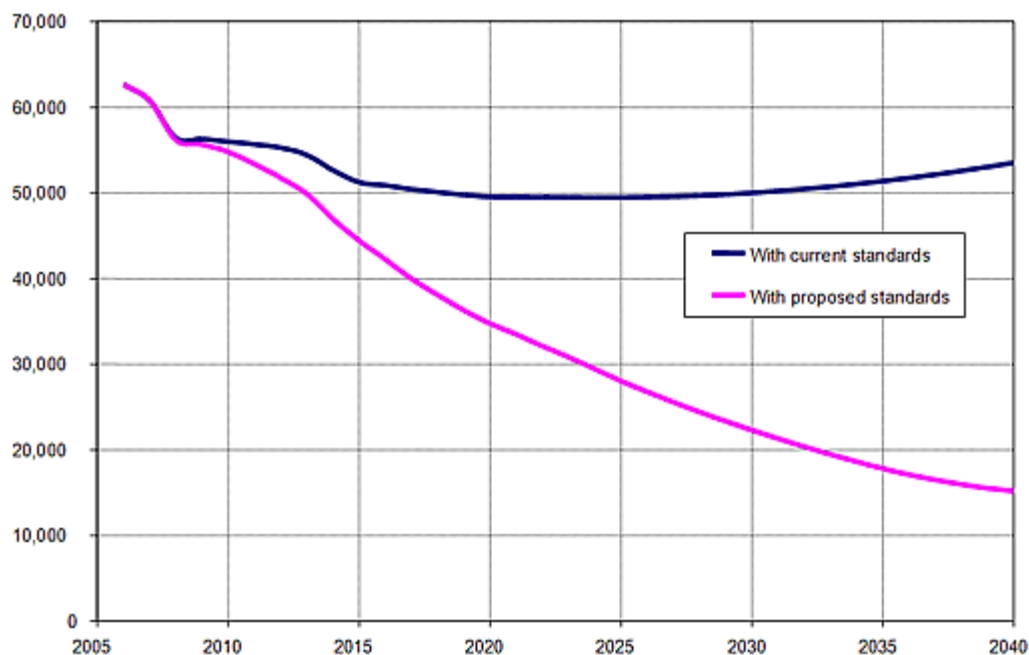


Figure 2 Projected PM_{2.5} Emissions (tons per year) with and without the Proposed New Controls

Public Participation Opportunities

EPA welcomes your comments on this rule. Comments will be accepted for 90 days beginning when this proposal is published in the *Federal Register*. All comments should be identified by Docket ID No. EPA-HQ-OAR-2003-0190 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

A public hearing will also be held in Seattle, Washington, and Chicago, Illinois, after publication of the proposed rule in the *Federal Register*. Additional information about the hearing will be printed in the *Federal Register*.

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/marine.htm or www.epa.gov/otaq/locomotv.htm

For more information on this rule, please contact Byron Bunker at:

U.S. Environmental Protection Agency
Office of Transportation and Air Quality
2000 Traverwood Drive
Ann Arbor, MI 48105
Voicemail: (734) 214-4155
E-mail: [Byron Bunker](mailto:bunker.byron@epa.gov) (bunker.byron@epa.gov)

Regulatory Announcement: Proposed Rule on OBD for Heavy-Duty Engines

EPA420-F-06-058, December 2006

[Download PDF version formatted for print](#) (PDF file, 6 pages, 115 KB, [About PDF Files](#))

The U.S. Environmental Protection Agency (EPA) is proposing regulations that would require the emissions control systems of large highway diesel and gasoline trucks to be monitored for malfunctions via an onboard diagnostic system (OBD), similar to those systems that have been required on passenger cars since the mid-1990s. We are seeking comment on possible future regulations that would require OBD systems on heavy-duty diesel engines used in nonroad equipment (e.g., construction, industrial, agricultural). This proposal also makes changes to certain existing OBD requirements for smaller highway heavy-duty diesel trucks.

- [Background](#)
- [Overview of Proposal](#)
- [Health and Environmental Effects](#)
- [Cost Effects](#)
- [How to Comment](#)
- [For More Information](#)

Background

- On January 18, 2001, EPA established a comprehensive national control program - the [Clean Diesel Truck and Bus Program](#) - to regulate heavy-duty vehicles and diesel fuel as a single system (66 FR 5002). As part of this program, new emission standards for heavy-duty engines and vehicles take effect in model years 2007 through 2010 and will apply to heavy-duty highway engines and vehicles. These standards are based on the use of high-efficiency catalytic exhaust emission control devices or comparably effective advanced technologies. Because these devices are damaged by sulfur, the program also reduces the level of sulfur in highway diesel fuel by 97 percent. The emissions reductions associated with this program are estimated to result in over \$70 billion in public health and welfare benefits through reduced hospitalizations and lost work days. The proposed OBD requirements will help to ensure that these benefits are realized.
- On February 19, 1993, EPA published a final rule requiring manufacturers of passenger vehicles to install OBD systems on vehicles beginning with the 1994 model year (58 FR 9468). The OBD systems must monitor emission control components for any malfunction or deterioration that could cause exceedance of certain emission thresholds. The regulation also required driver notification of any need for repair via a dashboard light, or malfunction indicator light (MIL), when the diagnostic system detected a problem. This is commonly referred to as the "Check Engine" light.
- On August 9, 1995, EPA published a rulemaking that set forth automobile service information requirements for light-duty vehicles and light-duty trucks ([60 FR 40474](#)). These regulations, in part, required each Original Equipment Manufacturer (OEM) to list all emission-related service and repair information on a Web site and explain how to obtain that information and at what cost. The intent of this provision is to ensure that aftermarket service and repair facilities have access to the same emission-related service information, in the same or similar manner, as that provided by OEMs to their franchised

dealerships. These service information availability requirements have been revised since the 1995 rule in response to changing technology ([68 FR 38428](#)).

- In October 2000, EPA published a [rule requiring OBD systems on heavy-duty vehicles and engines](#) up to 14,000 pounds gross vehicle weight rating (GVWR) (65 FR 59896). In that rule, EPA expressed its intention to develop in a future rule OBD requirements for vehicles and engines used in vehicles over 14,000 pounds. EPA again expressed this same intention in its Clean Diesel Truck and Bus rule (66 FR 5002) which established new heavy-duty highway emissions standards for 2007 and later model year engines.
- In June 2003, EPA published a [rule extending service information availability requirements to heavy-duty vehicles and engines](#) weighing up to 14,000 pounds GVWR. EPA did not extend these requirements to engines above 14,000 pounds GVWR, deciding to wait until such engines were subject to OBD requirements.

Overview of Proposal

The proposal requires manufacturers to install OBD systems that monitor the function of emission control components and alert the vehicle operator to any detected need for emission related repair. In addition, when a malfunction occurs, diagnostic information must be stored in the engine's computer to assist in diagnosis and repair of the malfunction. Also proposed are requirements that would make available to the service and repair industry information necessary to perform repair and maintenance service on OBD systems and other emission related engine components. These proposed requirements will help to ensure that the significant benefits of EPA's Clean Diesel Program exhaust emission standards will be realized in-use. Specifically:

- For 2010 and later model year heavy-duty diesel and gasoline engines used in trucks and buses over 14,000 pounds, we are proposing that all major emissions control systems be monitored and malfunctions be detected prior to emissions exceeding a set of emissions thresholds. Most notably, we are requiring that the aftertreatment devices—e.g., the diesel particulate filters and oxides of nitrogen (NOx) reducing catalysts—that will be used on highway diesel engines to comply with the 2010 emissions standards will be monitored and their failure will be detected and noted to the driver. We are also proposing that all emission-related electronic sensors and actuators be monitored for proper operation.
- For 2010 and later highway vehicles over 14,000 pounds, we are proposing that one engine family per manufacturer be certified to the proposed OBD requirements in the 2010 through 2012 model years. Beginning in 2013, all highway engines for all manufacturers would have to be certified to the proposed OBD requirements. This phase-in is designed to spread over a number of years the development effort required by industry and to provide industry with a learning period prior to implementing the OBD requirements on 100 percent of their highway product line.
- For vehicles over 14,000 pounds, the service information availability requirements would apply for those engines certified to the OBD requirements.
- For 2010 and later model year highway heavy-duty diesel vehicles under 14,000 pounds, we are proposing a new emissions threshold for monitoring of the diesel particulate filter. The existing requirement for these applications is to detect a catastrophic failure of the device. We believe now that a more stringent requirement is appropriate and feasible. The proposed emissions threshold is consistent, both in stringency and in timing, with the proposed particulate matter (PM) thresholds for over 14,000 pound applications.

- For 2007 and later model year highway heavy-duty diesel vehicles under 14,000 pounds, we are proposing a change to the existing emissions thresholds for NO_x emissions. The existing thresholds, typically 1.5 times the applicable NO_x standard, were established when the engine's NO_x standard was much higher than today's very low level. We believe these OBD thresholds are not technologically feasible in the context of EPA's very stringent NO_x emission standards, and this proposal addresses that issue.

For heavy-duty diesel engines used in nonroad equipment, we are seeking comment on possible future regulations that would require OBD systems. Diesel engines used in nonroad equipment are, like highway engines, a major source of NO_x and PM emissions, and the diesel engines used in nonroad equipment are essentially the same as those used in heavy-duty highway trucks. Further, new regulations applicable to nonroad diesel engines will result in the introduction of advanced emissions control systems like those expected for highway diesel engines ([69 FR 38958](#)). Therefore, having OBD systems and OBD regulations for nonroad engines seems to be a natural progression from the proposed requirements for heavy-duty highway engines.

Health and Environmental Effects

- In our Clean Diesel Truck and Bus rule, we estimated that the new 2007 emission standards will result in substantial benefits to the public health and welfare through significant annual reductions in emissions of NO_x, PM, nonmethane hydrocarbons (NMHC), carbon monoxide, sulfur dioxide, and air toxics. These emission reductions will prevent 8,300 premature deaths, more than 9,500 hospitalizations, and 1.5 million work days lost. This OBD proposal will help to ensure that these projected benefits will be realized.
- As a result of this program, each new truck and bus will be more than 90 percent cleaner than current models. We project a 2.6 million ton reduction of NO_x emissions in 2030 when the current heavy-duty vehicle fleet is completely replaced with newer heavy-duty vehicles that comply with the 2007 program's emission standards. By 2030, the program will reduce annual emissions of NMHC by 115,000 tons and PM by 109,000 tons.
- Ozone causes a range of health problems related to breathing, including chest pain, coughing, and shortness of breath. PM is deposited deep in the lungs and causes premature death, increased emergency room visits, and increased respiratory symptoms and disease. With both ozone and PM, children and the elderly are most at risk. In addition, ozone, NO_x, and PM adversely affect the environment in various ways, including crop damage, acid rain, and visibility impairment.
- We have not estimated new emissions reductions associated with this proposal. We consider OBD to be a critical element to an overall emissions control program. As such, OBD requirements and their associated benefits were assumed in our estimated emissions reductions associated with the 2007 Clean Diesel Truck and Bus Program.

Cost Effects

We project that the proposed OBD requirements will result in an increased cost of roughly \$50 per diesel engine and \$60 per gasoline engine used in applications over 14,000 pounds. We project that the proposed new requirements for diesel heavy-duty applications under 14,000 pounds will cost roughly \$5 per engine or vehicle.

How to Comment

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-2005-0047 and submitted by one of the following methods:

- Internet: www.regulations.gov
- E-mail: A-and-R-Docket@epa.gov
- Mail:
Environment Protection Agency
EPA Docket Center (EPA/DC)
Air and Radiation Docket and Information Center (6102T)
1200 Pennsylvania Avenue NW
Washington, DC 20460
- Hand Delivery:
EPA Docket Center
EPA West Building
Room 3340
1301 Constitution Avenue NW
Washington, DC

For More Information

You can access the proposed rule and related documents on EPA's Office of Transportation and Air Quality (OTAQ) Web site at: www.epa.gov/obd/regtech/heavy.htm

For additional information specific to OBD, please contact:

- Todd Sherwood, U.S. EPA, National Vehicle and Fuels Emission Laboratory, Assessment and Standards Division, 2000 Traverwood, Ann Arbor, MI 48105; phone 734-214-4405; fax 734-214-4816; email sherwood.todd@epa.gov.

For additional information specific to service information availability, please contact:

- Holly Pugliese, U.S. EPA, National Vehicle and Fuels Emission Laboratory, Compliance and Innovation Strategies Division, 2000 Traverwood, Ann Arbor, MI 48105; phone 734-214-4288; fax 734-214-4869; email pugliese.holly@epa.gov.

Proposed Emission Standards for New Nonroad Spark-Ignition Engines, Equipment, and Vessels

EPA420-F-07-032, April 2007

Download [PDF](#) version formatted for print. (4 pp, 98K, [About PDF Files](#))

The U.S. Environmental Protection Agency (EPA) is proposing exhaust emission standards for marine spark-ignition engines and small land-based nonroad engines. EPA is also proposing new evaporative emission standards for equipment and vessels using these engines. These standards would apply only to newly manufactured products. The proposed standards would reduce the harmful health effects of ozone and carbon monoxide from these engines, equipment, and vessels.

- [Which engines and vehicles would be covered?](#)
- [Why is EPA regulating these engines, equipment, and vessels?](#)
- [What are the Proposed Requirements?](#)
- [Health and Environmental Benefits](#)
- [Costs](#)
- [Public Participation Opportunities](#)
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Which engines and vehicles would be covered?

At EPA, we are proposing new standards for emissions of hydrocarbons (HC), nitrogen oxides (NO_x), and carbon monoxide (CO) from a variety of nonroad engines, equipment, and vessels that cause or contribute to air pollution. The controls for these products have been combined into one proposal because these engines and vehicles share many common characteristics. Differences in their design and use led us to propose separate emission standards for each group.

- **Small Nonroad Spark-Ignition Engines and Equipment:** Spark-ignition (SI) nonroad engines rated below 25 horsepower (19 kW) used in household and commercial applications, including lawn and garden equipment, utility vehicles, generators, and a variety of other construction, farm, and industrial equipment.
- **Marine Spark-Ignition Engines and Vessels:** Spark-ignition engines used in marine vessels, including outboard engines, personal watercraft, and sterndrive/inboard engines.

Why is EPA regulating these engines, equipment, and vessels?

The engines and vehicles covered by this proposal are significant sources of air pollution. They account for about 25 percent of mobile source hydrocarbon emissions and 30 percent of mobile source carbon monoxide emissions.

The proposed standards continue the process of establishing nonroad standards as required by the Clean Air Act. We are required to study emissions from nonroad engines and vehicles and to set emissions standards if the level of pollutants from these sources cause or significantly contribute to air pollution and, more specifically, if the emissions of CO, NO_x or hydrocarbons contribute significantly to the formation of ozone and carbon monoxide in more than one area of the country currently not meeting ozone and carbon monoxide standards. We completed the Nonroad Engine and Vehicle Emission Study in 1991, and in 1994 determined that these sources contribute significantly to ozone or CO nonattainment. We have already set emission standards for most nonroad engines, including farm and construction equipment, locomotives, commercial marine, and recreational vehicles.

What are the Proposed Requirements?

The proposed requirements vary depending on the kind of engine or vehicle. In developing these requirements, we considered specific factors for each type. Among the factors considered were the environmental impacts, the number of hours each year that the engine is used, the need for high-performance operation, and the costs. The proposed requirements for each type of engine and vehicle are:

Small Nonroad Engines

We are proposing HC+NO_x exhaust emission standards of 10 g/kW-hr for Class I engines starting in the 2012 model year and 8 g/kW-hr for Class II engines starting in the 2011 model year. We expect manufacturers to meet these standards by improving engine combustion and adding catalysts. These standards are consistent with the requirements recently adopted by the California Air Resources Board (ARB). We are not proposing new exhaust emission standards for handheld emissions.

For spark-ignition engines used in marine generators, we are proposing a more stringent Phase 3 CO emission standard of 5 g/kW-hr. This would apply equally to all sizes of engines subject to the Small SI standards.

We are proposing new evaporative emission standards for both handheld and nonhandheld equipment. The new standards include requirements to control fuel tank permeation, fuel line permeation, and diffusion emissions. For nonhandheld engines we are also proposing to require control of running losses.

When fully implemented, the proposed standards would result in a 35 percent reduction in HC+NO_x emissions from new engines' exhaust. The proposed standards would result in a 45 percent reduction in evaporative emissions.

Marine spark-ignition engines and vessels

We are proposing a more stringent level of emission standards for outboard and personal watercraft engines starting with the 2009 model year. The proposed standards for engines

above 40 kW are 16 g/kW-hr for HC+NO_x and 200 g/kW-hr for CO. For engines below 40 kW, the standards increase gradually based on the engine's maximum power. We expect manufacturers to meet these standards with improved fueling systems and other in-cylinder controls. The levels of the standards are consistent with the requirements recently adopted by California ARB with the advantage of a simplified form of the standard for different power ratings and with a CO standard.

We are proposing new exhaust emission standards for sterndrive and inboard marine engines. The proposed standards are 5 g/kW-hr for HC+NO_x and 75 g/kW-hr for CO starting with the 2009 model year. We expect manufacturers to meet these standards with three-way catalysts and closed-loop fuel injection. To ensure proper functioning of these emission control systems in use, we are proposing a requirement that engines have a diagnostic system for detecting a failure in the emission control system. For sterndrive and inboard marine engines above 373 kW with high-performance characteristics (generally referred to as "SD/I high-performance engines"), we are proposing a CO standard of 350 g/kW-hr. We are also proposing a variety of other special provisions for these engines to reflect unique operating characteristics and to make it feasible to meet emission standards using emission credits. These standards are consistent with the requirements recently adopted by California ARB, with some adjustment to the provisions for SD/I high-performance engines and with a CO standard.

The emission standards described above relate to engine operation over a prescribed duty cycle for testing in the laboratory. We are also proposing "not-to-exceed" standards that require manufacturers to maintain a certain level of emission control when engines operate under normal speed-load combinations that are not included in the certification duty cycle.

We are proposing new standards to control evaporative emissions for all vessels using marine spark-ignition engines. The new standards include requirements to control fuel tank permeation, fuel line permeation, and diurnal emissions, including provisions to ensure that refueling emissions do not increase.

When fully implemented, the proposed standards would result in a 70 percent reduction in HC+NO_x emissions, and a 20 percent reduction in CO from new engines' exhaust. The proposed standards would result in a 70 percent reduction in evaporative emissions.

Health and Environmental Benefits

We estimate that by 2030, the proposed standards would result in significant annual reductions of pollutant emissions from regulated engine and equipment sources nationwide, including 630,000 tons of volatile organic hydrocarbon emissions, 98,000 tons of NO_x emissions, and 6,300 tons of direct particulate matter (PM_{2.5}) emissions. These reductions correspond to significant reductions in the formation of ground-level ozone and ambient PM_{2.5}. We also expect to see annual reductions of 2.7 million tons of carbon monoxide emissions, with the greatest reductions in areas where there have been problems with individual exposures. The requirements in this proposal would result in

substantial benefits to public health and welfare and the environment. We estimate that by 2030, on an annual basis, these emission reductions would prevent 450 PM-related premature deaths, approximately 500 hospitalizations, 52,000 work days lost, and other quantifiable benefits every year. The total estimated annual benefits of this rule in 2030 are approximately \$3.4 billion. Estimated costs in 2030 are many times less at approximately \$240 million.

Costs

The estimated costs of the new standards range from \$9.5 million in 2008 to \$620 million in 2037. These control costs are partially offset by estimated annual fuel savings of about \$360 million in 2037 once standards are fully implemented. As a result, the net cost of the program in each year ranges from \$6.4 million in 2008 to \$260 million in 2037.

The results of the economic impact modeling performed for the Small SI and Marine SI engines and equipment control programs suggest that the social costs of those programs are expected to be about \$570 million in 2030 with consumers of these products expected to bear about 66 percent of these costs. We estimate fuel savings of about \$330 million in 2030 that will accrue to consumers. There are \$240 net social costs associated with the program in 2030.

Public Participation Opportunities

We welcome your comments on this proposed rule. Comments will be accepted until August 3, 2007. All comments should be identified by Docket ID No. EPA-HQ-OAR-2004-0008 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

For More Information

You can access the proposed rule and related documents on EPA's Office of Transportation and Air Quality (OTAQ) Web site at:

- [Lawn and Garden \(Small Gasoline\) Equipment](http://www.epa.gov/otaq/equip-ld.htm) (www.epa.gov/otaq/equip-ld.htm)

- [Gasoline Boats and Personal Watercraft](http://www.epa.gov/otaq/marinesi.htm) (www.epa.gov/otaq/marinesi.htm)
- Both web pages have all the documents related to this proposed rule.

For more information on this rule, please contact the Assessment and Standards Division at:

- U.S. Environmental Protection Agency
- Office of Transportation and Air Quality
- 2000 Traverwood Drive
- Ann Arbor, MI 48105
- Information Line: 734-214-4636
- E-mail: asdinfo@epa.gov

Regulatory Announcement: EPA Issues New Test Methods for Fuel Economy Window Stickers

EPA420-F-06-069

December 2006

Download [PDF](#) version of this fact sheet formatted for print. (5 pages, 190K, [About PDF](#))

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 - [Existing Tests and Methods](#)
 - [The New Methods to Determine Fuel Economy Estimates](#)
- [How the New Test Methods Will Affect Fuel Economy Estimates](#)
- [Laboratory Tests Reflect Real-World Conditions](#)
- [Larger SUVs and vans required to have fuel economy labels](#)
- [Fuel Economy Label Design](#)
- [No Impact on CAFE](#)
- [For More Information](#)

The U.S. Environmental Protection Agency (EPA) is finalizing new test methods for calculating the fuel economy estimates, which are posted on window stickers of new cars and trucks. These estimates help consumers compare the fuel economy of different vehicles for both city and highway driving. This new rule makes three important changes.

First, EPA's new methods will bring the miles per gallon (mpg) estimates closer to consumers' actual fuel economy by including factors such as high speeds, quicker accelerations, air conditioning use, and driving in cold temperatures. The new estimates will take effect with model year 2008 vehicles (available in dealer showrooms in 2007).

Second, for the first time, EPA will require fuel economy labels on certain heavier vehicles up to 10,000 pounds (lb) gross vehicle weight, such as larger SUVs and vans. These vehicles had been exempt because they exceeded the previous weight limit of 8,500 lb. Manufacturers will be required to post fuel economy labels on these vehicles beginning with the 2011 model year.

Third, to convey fuel economy information to the public more effectively, EPA is changing the design and content of the window sticker. The new label design will make it easier for consumers to compare fuel economy when shopping for new vehicles. New labels will be required on vehicles manufactured after September 1, 2007.

Background

Existing Tests and Methods

Fuel economy estimates have been provided to consumers since the 1970s as a tool to help shoppers compare the fuel economy of different vehicles. Currently, EPA relies on data from two laboratory tests to determine the city and highway fuel economy

estimates. The test methods for calculating these estimates were last revised in 1984, when the fuel economy derived from the two tests were adjusted downward – 10 percent for city and 22 percent for highway -- to more accurately reflect driving styles and conditions.

The city and highway tests are currently performed under mild climate conditions (75 degrees F) and include acceleration rates and driving speeds that EPA believes are generally lower than those used by drivers in the real world. Neither test is run while using accessories, such as air conditioning. The highway test has a top speed of 60 miles per hour, and an average speed of only 48 miles per hour.

Since the mid-1990s, EPA's emissions certification program has required the use of three additional tests which capture a much broader range of real-world driving conditions, including high-speed, fast-acceleration driving, the use of air conditioning, and colder temperature operation (20 degrees F). These conditions affect not only the amount of air pollutants a vehicle emits, but also a vehicle's fuel economy. However, these tests were not required to measure fuel economy.

Background

The New Methods to Determine Fuel Economy Estimates

For the first time, the EPA fuel economy estimates will use vehicle-specific data from tests designed to replicate three real-world conditions, which can significantly affect fuel economy: high speed/rapid acceleration driving, use of air conditioning, and cold temperature operation. Previously, these conditions were accounted for by across-the-board adjustments, rather than by vehicle-specific testing.

EPA's new fuel economy estimates will also reflect other conditions that influence fuel economy, like road grade, wind, tire pressure, load, and the effects of different fuel properties. The fuel economy for each vehicle model will continue to be presented to consumers on the label as city and highway MPG estimates.

In 2011, manufacturers will need to perform additional cold temperature, air conditioning, and/or high speed/rapid acceleration driving tests for those vehicles most sensitive to these conditions. However, in order to provide consumers with better fuel economy estimates sooner, EPA will use new calculation methods that capture these driving conditions. These estimates will begin with model year 2008 vehicles. The interim period from model year 2008 to model year 2011 will give manufacturers enough time to plan for this additional testing, while providing consumers with estimates that capture more realistic driving conditions.

How the New Test Methods Will Affect Fuel Economy Estimates

Under EPA's new methods, the new fuel economy estimates for most vehicles will be lower. This is not because auto makers have designed the same vehicles to be less fuel efficient – it is because our new test methods take into account factors that have been missing or not fully accounted for in the current tests. Because some vehicles are more

sensitive to these factors than others, the impact of the changes will vary from vehicle to vehicle.

Compared to today's estimates, the city mpg estimates for the manufacturers of most vehicles will drop by about 12 percent on average, and by as much as 30 percent for some vehicles. The highway mpg estimates will drop on average by about 8 percent, and by as much as 25 percent for some vehicles.

In vehicles that achieve generally better fuel economy, such as gasoline-electric hybrid vehicles, new city estimates will be about 20 to 30 percent lower than today's labels, and new highway estimates will be 10 to 20 percent lower. The nature of current hybrid technology -- the addition of a battery as a second source of on-board power, sophisticated control systems, and sometimes a smaller engine -- makes a hybrid's fuel economy more sensitive to certain factors, such as colder weather and air conditioning use. However, many hybrid models will remain among the most fuel-efficient vehicles on the market.

Since driving behaviors and conditions vary, there is no test that can perfectly predict the fuel economy that every driver will get. With any estimate, there will always be times when a driver's actual fuel economy will be higher or lower. However, EPA's new test methods will do a better job of bringing the estimates on the window sticker closer to people's real-world fuel economy experience.

Laboratory Tests Reflect Real-World Conditions

It is essential that EPA's fuel economy estimates continue to be derived from controlled, repeatable laboratory tests to enable a standardized or "level playing field," comparison between all vehicle models. However, the underlying calculations to determine the estimates are based on data from real-world driving behavior and conditions. Laboratory testing also preserves EPA's ability to confirm the results of manufacturers' testing.

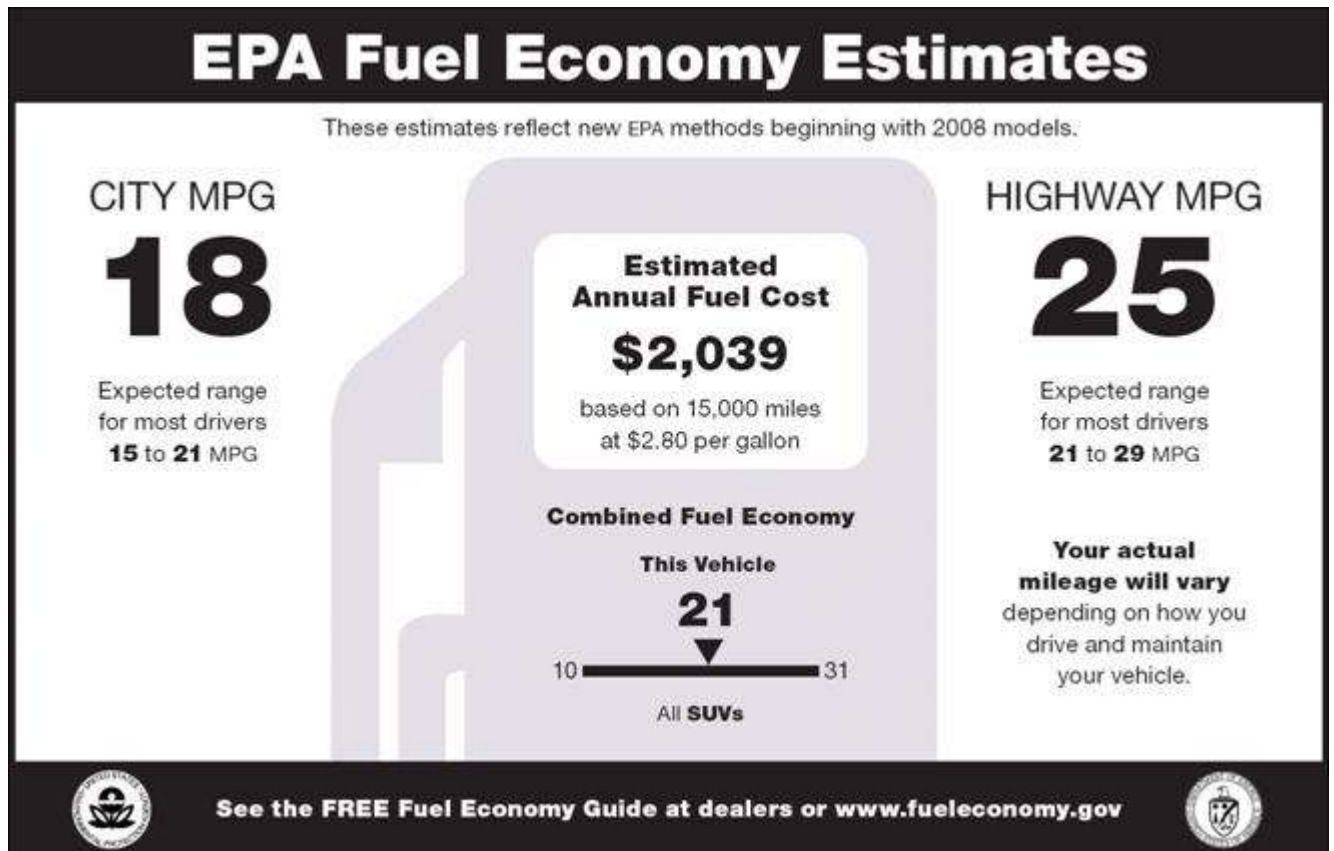
Auto makers will continue to be responsible for performing the fuel economy testing and calculating the label mpg estimates. EPA will continue to confirm the manufacturers' test results by performing audit testing at its National Vehicle and Fuel Emissions Laboratory in Ann Arbor, Michigan.

Larger SUVs and vans required to have fuel economy labels

Because the U.S. Department of Transportation (DOT) has recently ruled to integrate medium-duty passenger vehicles (MDPVs), including large SUVs and vans, into the Corporate Average Fuel Economy (CAFE) program starting in 2011, EPA must now include these vehicles in the fuel economy labeling program. Thus, EPA will be requiring fuel economy labeling of certain passenger vehicles up to 10,000 lb gross vehicle weight rating (GVWR). These vehicles used to be exempt because they weighed more than the previous cut-off of 8,500 lb. Vehicle manufacturers will be required to post fuel economy labels on MDPVs beginning with the 2011 model year.

Fuel Economy Label Design

To more clearly convey fuel economy information to consumers, EPA has revised the design and content of the fuel economy window sticker that appears on new automobiles.



The new label features more prominent fuel cost information, a user-friendly graphic for comparing the fuel economy of different vehicles, clearer text, and a Web site address for more information. Since the new label design will be required on vehicles manufactured on September 1, 2007, or later, manufacturers will be phasing in the new design during the 2008 model year. For model years 2008 and 2009, the label will also state that estimates reflect new EPA test methods beginning with 2008 models. [More information about the revised window sticker.](#)

No Impact on CAFE

EPA's rule has no impact on the CAFE program, which is administered by DOT's National Highway Traffic and Safety Administration (NHTSA). CAFE is the required average fuel economy for a vehicle manufacturer's entire fleet of passenger cars and light trucks manufactured for sale in the United States for each model year. There are separate regulations concerning the test methods and procedures to determine the fuel economy values under the CAFE program. For more information on CAFE, please visit NHTSA's Web site at:

<http://www.nhtsa.dot.gov/portal/site/nhtsa/menuitem.d0b5a45b55bfbe582f57529cdba046a0/>.

For More Information

You can access documents on this rulemaking on EPA's Office of Transportation and Air Quality Web site at:

www.epa.gov/fueleconomy/regulations.htm

For further information, please contact the Assessment and Standards Division at:

U.S. Environmental Protection Agency
Office of Transportation and Air Quality
2000 Traverwood Drive
Ann Arbor, MI 48105
Voicemail: (734) 214-4636
E-mail: asdinfo@epa.gov