Regulatory Announcement

EPA Sets Tier 3 Motor Vehicle Emission and Fuel Standards

The U.S. Environmental Protection Agency (EPA) is finalizing an important rule designed to reduce air pollution from passenger cars and trucks. Starting in 2017, Tier 3 sets new vehicle emissions standards and lowers the sulfur content of gasoline, considering the vehicle and its fuel as an integrated system.

- The Tier 3 vehicle standards reduce both tailpipe and evaporative emissions from passenger cars, light-duty trucks, medium-duty passenger vehicles, and some heavy-duty vehicles.
- The Tier 3 gasoline sulfur standard will make emission control systems more effective for both existing and new vehicles, and will enable more stringent vehicle emissions standards. Removing sulfur allows the vehicle's catalyst to work more efficiently. Lower sulfur gasoline also facilitates the development of some lower-cost technologies to improve fuel economy and reduce greenhouse gas (GHG) emissions, which reduces gasoline consumption and saves consumers money.
- The tailpipe standards include different phase-in schedules that vary by vehicle class but generally phase in between model years 2017 and 2025. In addition to the gradual phase-in schedules, other flexibilities include credits for early compliance and the ability to offset some higher-emitting vehicles with extra-clean models.
- The fuel sulfur standards include an averaging, banking, and trading (ABT) program that will allow refiners and importers to spread out their investments through an early credit program and rely on ongoing nationwide averaging to meet the sulfur standard. EPA is also finalizing flexibilities such as the ability to carry over credits from Tier 2 to Tier 3 and hardship provisions for extenuating circumstances, as well as flexibility provisions for small businesses (small manufacturers of Tier 3 vehicles and small refiners), small volume manufacturers, and small volume refineries.

EPA United States Environmental Protection Agency

Office of Transportation and Air Quality
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- The Tier 3 program continues the successful transition that began with EPA's Tier 2 program, finalized in 2000, in which EPA treated vehicles and fuels as a system to reduce both gasoline sulfur and vehicle emissions. While there were claims at the time that the program would cause fuel prices to increase far in excess of EPA's estimates and would result in closures and fuel supply shortages, the Tier 2 program was a success and resulted in gasoline sulfur reductions of up to 90 percent and enabled the use of new emission control technologies in cars and trucks with no serious negative impacts on the refining industry. EPA's Clean Diesel Program similarly utilized a systems approach to reducing sulfur emissions from diesel fuels and enabling cleaner diesel technologies with the Highway Diesel Rule (finalized in 2001) and the Nonroad Diesel Rule (finalized in 2004) again with no serious negative impacts. Now that the U.S. refining industry routinely produces lower sulfur fuel products, new market opportunities for international fuel exports have opened up.

- EPA is finalizing the Tier 3 program largely as proposed. EPA received a large number and wide range of comments on the proposed rule, and the final Tier 3 program is based both on this extensive public input and updated analyses of the rule's impacts. EPA sought comment on the level of the per-gallon sulfur cap (which applies in addition to the annual average), and has decided to maintain the per-gallon caps at existing levels. EPA is also finalizing an ethanol content of 10 percent (E10) for emissions test gasoline (as opposed to the proposed 15 percent ethanol (E15) test fuel).

Benefits and Costs of the Rule

These Tier 3 standards will address public health issues that exist currently and are projected to continue in the future as requested in a May 21, 2010 Presidential memorandum.

- Over 149 million Americans are currently experiencing unhealthy levels of air pollution which are linked with adverse health impacts such as hospital admissions, emergency room visits, and premature mortality. Motor vehicles are a particularly important source of exposure to air pollution, especially in urban areas.

- The vehicle emission standards combined with the reduction of gasoline sulfur content will significantly reduce motor vehicle emissions, including nitrogen oxides (NOX), volatile organic compounds (VOC), direct particulate matter (PM2.5), carbon monoxide (CO) and air toxics.

- Compared to current standards, the non-methane organic gases (NMOG) and nitrogen oxides (NOX), presented as NMOG+NOX, tailpipe standards for light-duty vehicles represent approximately an 80% reduction from today's fleet average and a 70% reduction in per-vehicle particulate matter (PM) standards. The heavy-duty tailpipe standards represent about a 60% reduction in both fleet average NMOG+NOX and per-vehicle PM standards. EPA is also extending the regulatory useful life period during which the standards apply from 120,000 miles to 150,000 miles.

- Under the final Tier 3 program, federal gasoline will not contain more than 10 parts per million (ppm) of sulfur on an annual average basis by January 1, 2017. EPA is also finalizing standards that maintain the current 80 ppm refinery gate and 95 ppm downstream cap. The Tier 3 gasoline sulfur standards are similar to levels already being achieved in California, Europe, Japan, South Korea, and several other countries.

- Emission reductions from the Tier 3 program will lead to immediate air quality improvements that are critically important for states to attain and maintain the existing health-based National Ambient Air Quality Standard (NAAQS). In the absence of additional controls such as the Tier 3 standards, many areas will continue to have air pollution levels that exceed the NAAQS in the future.

Tier 3 will also reduce exposure to vehicle pollution for the millions of people living, working, and going to school near major roads.

Tier 3 is among the most highly cost-effective air quality control measures available.

- The program is projected to cost less than a penny per gallon of gasoline, and about $72 per vehicle. The annual cost of the overall program in 2030 is projected to be approximately $1.5 billion; however, EPA estimates that in 2030 the annual monetized health benefits of the Tier 3 standards will be between $6.7 and $19 billion.

- Through the use of more recent and robust cost analysis, EPA estimates that the cost of the total Tier 3 program (vehicle and fuel standards) will be less than half of what we projected in the proposal.

- By 2030, the Tier 3 standards will annually prevent:
  - Between 770 and 2,000 premature deaths
  - 2,200 hospital admissions and asthma-related emergency room visits
  - 19,000 asthma exacerbations
  - 30,000 upper and lower respiratory symptoms in children
  - 1.4 million lost school days, work days and minor-restricted activities

- By 2030, the Tier 3 standards will also reduce numerous tons of harmful emissions. Table 1 illustrates the projected tons of emission reductions in 2018 and 2030.

Table 1
Estimated Emission Reductions from the Final Tier 3 Standards
(Annual U.S. short tons)

	2018		2030	
	Tons	Percent of Onroad Inventory	Tons	Percent of Onroad Inventory
NO_X	264,369	10%	328,509	25%
VOC	47,504	3%	167,591	16%
CO	278,879	2%	3,458,041	24%
Direct $PM_{2.5}$	130	0.1%	7,892	10%
Benzene	1,916	6%	4,762	26%
SO_2	14,813	56%	12,399	56%
1,3-Butadiene	257	5%	677	29%
Formaldehyde	513	2%	1,277	10%
Acetaldehyde	600	3%	2,067	21%
Acrolein	40	3%	127	15%
Ethanol	2,704	2%	19,950	16%

The Tier 3 program is part of a comprehensive approach to reducing the impacts of motor vehicles on air quality and public health.

- Tier 3 is harmonized with the California Air Resources Board (CARB) Low Emission Vehicle (LEV III) program so automakers could sell the same vehicles in all 50 states.
- Tier 3 is aligned with and designed to be implemented over the same timeframe as EPA's program for reducing greenhouse gas (GHG) emissions from light-duty vehicles starting in model year 2017.
- Together, the Tier 3, light-duty GHG, and LEV III standards will maximize reductions in GHGs, criteria pollutants and air toxics from motor vehicles while streamlining programs and providing regulatory certainty and compliance efficiency.

This final rule is based on extensive public input received in response to the Tier 3 proposal. EPA held two public hearings in Philadelphia and Chicago, and we received more than 200,000 public comments. A broad range of stakeholders provided comments, including state and local governments, auto manufacturers, emissions control suppliers, refiners, fuel distributors and others in the petroleum industry, renewable fuels providers, environmental organizations, consumer groups, labor groups, private citizens, and others. EPA has also had extensive outreach with key stakeholders throughout the development of this rule.

For More Information

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

www.epa.gov/otaq/tier3.htm

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

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