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EPA's Tier 2 Emission Standards for New Motor Vehicles: A Fact Sheet

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The Clean Air Act Amendments of 1990 established "Tier 1" standards to limit tailpipe emissions from new motor vehicles. The law also required the Environmental Protection Agency (EPA) to determine if stricter controls would be necessary by model year (MY) 2004 to assist states in attaining or maintaining the National Ambient Air Quality Standards. EPA also was required to assess the availability and cost-effectiveness of technologies necessary to control emissions. In a report submitted to Congress in August 1998, EPA concluded that tougher standards are necessary and that essential technologies are available and cost-effective.[1] As a result, EPA finalized stricter "Tier 2" standards on February 10, 2000.[2] The new standards will be phased in beginning in MY2004 and will require all new passenger cars and light trucks up to 8,500 pounds, and all new heavier passenger vehicles up to 10,000 pounds (including large sport-utility vehicles), to demonstrate full compliance by MY2009. To improve the efficiency of emission control technologies, oil refiners also will be required to limit gasoline sulfur levels to an average of 30 parts per million (ppm) nationwide beginning in 2005, roughly 90% less than the current national average of 340 ppm.

The new Tier 2 standards will require vehicle manufacturers to reduce tailpipe emissions of carbon monoxide (CO), formaldehyde (HCHO), nitrogen oxides (NO_x), non-methane organic gases (NMOG), and particulate matter (PM). However, manufacturers will have the flexibility to average the NO_x emissions of their vehicle fleets to demonstrate compliance with the standards instead of certifying each vehicle according to the same stringency. The standards will require the most reductions in emissions of NMOG and NO_x to help control the formation of ground-level ozone pollution. Relative to the Tier 1 standards, the fleet average standard for NO_x will require vehicle manufacturers to reduce overall tailpipe emissions by 88% to 95%. The standards also will require at least an 80% reduction in PM emissions but will require less stringent reductions in CO emissions. The standard for HCHO is a new requirement that is intended to reduce emissions of carcinogenic pollutants. The table on page 2 compares the current Tier 1 standards, which became effective in MY1994, to the new Tier 2 standards that will be phased in beginning in MY2004.

[1] EPA. Office of Air and Radiation. *Tier 2 Report to Congress*. July 31, 1998. 55 p.

[2] EPA. *Federal Register*. February 10, 2000. p. 6698-6870.

Comparison of Tier 1 and Tier 2 Tailpipe Emission Standards for Motor Vehicles

Vehicle Type/Weight	Intermediate Useful Life (grams/mile) [a]					Full Useful Life (grams/mile) [a]				
	NMHC/ NMOG [b]	CO	NO_x	PM	HCHO	NMHC/ NMOG [b]	CO	NO_x	PM	HCHO
Tier 1 Standards										
LDVs/LDTs (< 3,751 lbs.)	.250	3.4	.40	.08	n/a	.310	4.2	.60	.10	n/a
LDTs (3,751-5,750 lbs.)	.320	4.4	.70	.08	n/a	.400	5.5	.97	.10	n/a
LDTs (> 5,750 lbs.)	.390	5.0	1.10	n/a	n/a	.560	7.3	1.53	.12	n/a
Tier 2 Standards										
Final Fleet Average [c]	n/a	n/a	n/a	n/a	n/a	n/a	n/a	.07	n/a	n/a
Interim Fleet Averages [d]	n/a	n/a	n/a	n/a	n/a	n/a	n/a	.20/.30	n/a	n/a
Interim Bin 11 [e]	n/a	n/a	n/a	n/a	n/a	.280	7.3	.90	.12	.032
Interim Bin 10 [f, g]	.125/.160	3.4/4.4	.40	n/a	.015/.018	.156/.230	4.2/6.4	.60	.08	.018/.027
Interim Bin 9 [f, g]	.075/.140	3.4	.20	n/a	.015	.090/.180	4.2	.30	.06	.018
Bin 8 [g]	.100/.125	3.4	.14	n/a	.015	.125/.156	4.2	.20	.02	.018
Bin 7	.075	3.4	.11	n/a	.015	.090	4.2	.15	.02	.018
Bin 6	.075	3.4	.08	n/a	.015	.090	4.2	.10	.01	.018
Bin 5	.075	3.4	.05	n/a	.015	.090	4.2	.07	.01	.018
Bin 4	n/a	n/a	n/a	n/a	n/a	.070	2.1	.04	.01	.011
Bin 3	n/a	n/a	n/a	n/a	n/a	.055	2.1	.03	.01	.011
Bin 2	n/a	n/a	n/a	n/a	n/a	.010	2.1	.02	.01	.004
Bin 1	n/a	n/a	n/a	n/a	n/a	.000	0.0	.00	.00	.000

[a] The intermediate useful life standards set a benchmark for the amount of pollutants that a vehicle is expected to emit after being driven for 50,000 miles. The Tier 1 full useful life standards reflect the amount of pollutants that a vehicle is expected to emit after 100,000 miles of vehicle use. The Tier 2 standards increase the full useful life benchmark to 120,000 miles. If a manufacturer voluntarily chooses to certify a vehicle to a higher useful life of 150,000 miles, compliance with the Tier 2 intermediate standards is optional.

[b] Tier 1 vehicles are subject to the testing procedure for NMHC, but Tier 2 vehicles will be subject to the testing procedure for NMOG. Both pollutants are closely related hydrocarbon compounds that can combine with NO_x in the presence of sunlight to form ground-level ozone pollution. EPA selected the NMOG testing procedure under Tier 2 because it more accurately measures hydrocarbon levels.

[c] Each manufacturer will have the flexibility to select any set, or "bin", of emission standards when certifying different models of vehicles, as long as it meets the fleet average requirement for NO_x emissions.

[d] During the phase-in period, the interim fleet average for LDVs and LLDTs will be .30 grams/mile and will expire at the end of MY2006. The interim fleet average will be .20 grams/mile for HLDTs and MDPVs and will expire at the end of MY2008.

[e] Bin 11 will only apply to MDPVs and will expire at the end of MY2008 when phase-in is complete.

[f] Bins 9 and 10 will expire at the end of MY2006 for LDVs and LLDTs and at the end of MY2008 for HLDTs and MDPVs.

[g] The higher values will apply only to HLDTs during the phase-in period and will expire at the end of MY2008.

LDV = light duty vehicle (<6,001 lbs.)
LLDT = (light) light duty truck (<6,001 lbs.)
HLDT = (heavy) light duty truck (6,001-8,500 lbs.)
MDPV = medium duty passenger vehicle (8,501-10,000 lbs.)
NMHC = non-methane hydrocarbons
NMOG = non-methane organic gases
CO = carbon monoxide
NO_x = nitrogen oxides
PM = particulate matter
HCHO = formaldehyde

Prepared by the Congressional Research Service based on data from the Environmental Protection Agency.