

an independent review panel.^{114 115} These reviews found that significant progress has been made since the final rule was published, reinforcing our confidence that the highway engine standards can be met. (Our consideration of these highway engine standards is consistent with the requirement in Clean Air Act section 213(a)(3) that EPA consider nonroad engine standards equivalent in stringency to those adopted for comparable highway engines regulated under section 202 of the Act.)

Although there are important differences, nonroad diesel engines operate fundamentally like heavy-duty highway diesel engines. In fact, many nonroad engine designs are derived from highway engine platforms. We believe that, given the availability of nonroad diesel fuel meeting our proposed 15 ppm maximum sulfur requirement and adequate development lead time, nonroad diesel engines can be

designed to successfully employ the same high-efficiency exhaust emission control technologies now being developed for highway use. Indeed, some nonroad diesel applications, such as in underground mining, have pioneered the use of similar technologies for many years. These technologies, the experience gained with them in nonroad applications, the issues involved in transferring technology from highway to nonroad applications, and the appropriate standards and test procedures for this nonroad Tier 4 program are discussed in detail in the remainder of this section.

B. What Engine Standards Are We Proposing?

1. Exhaust Emissions Standards

The PM, NO_x, and NMHC emissions standards being proposed for nonroad diesel engines are summarized in Figures III.B-1 and 2. We are also making minor adjustments to CO

standards as discussed in section III.B.1.f. All of these standards would apply to covered nonroad engines over the useful life periods specified in our regulations, except where temporary in-use compliance margins would apply as discussed in section VII.J.¹¹⁶ We are not proposing changes to the current useful life periods because we do not have any relevant new information that would lead us to propose changes. However, we do ask for comment on whether or not changes are warranted and, if so, on what the useful life periods should be. The testing requirements by which compliance with the standards would be measured are discussed in section III.C. In addition we are proposing new “not-to-exceed” (NTE) emission standards and associated test procedures to help ensure robust control of emissions in use. These standards are discussed as part of a broader outline of proposed NTE provisions in sections III.D and VII.G.

FIGURE III.B-1—PROPOSED PM STANDARDS (G/BHP-HR) AND SCHEDULE

Engine Power	Model Year					
	2008	2009	2010	2011	2012	2013
hp < 25 (kW < 19)	^a 0.30	.....	.....	.....	.....	.....
25 ≤ hp < 75 (19 ≤ kW < 56)	^b 0.22	.....	.....	.....	.....	0.02
75 ≤ hp < 175 (56 ≤ kW < 130) .....	.....	.....	.....	.....	0.01	.....
175 ≤ hp ≤ 750 (130 ≤ kW ≤ 560) .....	.....	.....	.....	0.01	.....	.....
hp > 750 (kW > 560) .....	.....	.....	.....	^c 0.01	.....	.....

Notes:

^aFor air-cooled, hand-startable, direct injection engines under 11 hp, a manufacturer may instead delay implementation until 2010 and demonstrate compliance with a less stringent PM standard of 0.45 g/bhp-hr, subject also to additional provisions discussed in Section III.B.1.d.i.

^bA manufacturer has the option of skipping the 0.22 g/bhp-hr PM standard for all 50–75 hp engines; the 0.02 g/bhp-hr PM standard would then take effect one year earlier for all 50–75 hp engines (in 2012).

^c50% of a manufacturer's U.S.-directed production must meet the 0.01 g/bhp-hr PM standard in this model year. In 2014, 100% must comply.

FIGURE III.B-2—PROPOSED NO_x AND NMHC STANDARDS AND SCHEDULE

Engine Power	Standard (g/bhp-hr)	
	NO _x	NMHC
25 ≤ hp < 75 (19 ≤ kW < 56)	3.5 NMHC+NO _x ^a	
75 ≤ hp < 175 (56 ≤ kW < 130)	0.30	0.14
175 ≤ hp ≤ 750 (130 ≤ kW ≤ 560)	0.30	0.14
hp > 750 (kW > 560)	0.30	0.14

Engine Power	Phase-in Schedule			
	2011	2012	2013	2014
25 ≤ hp < 75 (19 ≤ kW < 56) .....	.....	.....	100%	.....
75 ≤ hp < 175 (56 ≤ kW < 130) .....	.....	^b 50%	^b 50%	^b 100%
175 ≤ hp ≤ 750 (130 ≤ kW ≤ 560)	50%	50%	50%	100%
hp > 750 (kW > 560)	50%	50%	50%	100%

Notes:

Percentages are U.S.-directed production required to comply with the Tier 4 standards in the indicated model year.

^aThis is the existing Tier 3 combined NMHC+NO_x standard level for the 50–75 hp engines in this category; in 2013 it would apply to the 25–50 hp engines as well.

¹¹⁴ “Highway Diesel Progress Review”, U.S. EPA, June 2002. EPA420-R-02-016. (www.epa.gov/air/caaac/dieselreview.pdf).

¹¹⁵ “Meeting Technology Challenges For the 2007 Heavy-Duty Highway Diesel Rule”, Final Report of the Clean Diesel Independent Review

Subcommittee, Clean Air Act Advisory Committee, October 30, 2002. (www.epa.gov/air/caaac/diesel/finalcdirpreport103002.pdf).

¹¹⁶ The useful life for engines ≥50 hp is 8,000 hours or 10 years, whichever occurs first. For engines <25 hp, and for 25–50 hp engines that

operate at constant speed at or above 3000 rpm, it is 3000 hours or 5 years. For other 25–50 hp engines, it is 5,000 hours or 7 years.