

### Nonroad Recreational Engines and Vehicles: Exhaust Emission Standards

	Vehicle	Phase	Year	HC <sup>a</sup> g/kW-hr	HC + NOx g/km	CO		Minimum Useful Life (hours/years/km) <sup>b</sup>	Warranty Period (hours/months/km) <sup>b</sup>
						g/kW-hr	g/km		
Federal	Snowmobiles <sup>c</sup>	1 <sup>d</sup>	2006+	100 [ABT]	-	275 [ABT]	-	400 / 5 / 8,000	200 / 30 / 4,000
		2	2010-2011	75 [ABT]	-	275 [ABT]	-		
		3 <sup>e</sup>	2012+	150 <sup>f</sup> [ABT]	-	400 <sup>f</sup> [ABT]	-		
	Off-highway motorcycles <sup>g</sup>	1 <sup>d</sup>	2006+	-	2.0 <sup>h, i</sup> [ABT]	-	25 <sup>h, i</sup> [ABT]	> 70 cc Displacement: - / 5 / 10,000 ≤ 70 cc Displacement: - / 5 / 5,000	> 70 cc Displacement: - / 30 / 5,000 ≤ 70 cc Displacement: - / 30 / 2,500
	ATVs <sup>g</sup>	1 <sup>d</sup>	2006+	-	1.5 <sup>j, k</sup> [ABT]	-	35 <sup>k</sup> [ABT]	≥ 100 cc Displacement: 1000 / 5 / 10,000 < 100 cc Displacement: 500 / 5 / 5,000	≥ 100 cc Displacement: 500 / 30 / 5,000 < 100 cc Displacement: 250 / 30 / 2,500

**Notes:**

- a** The numerical emission standards for hydrocarbons (HC) must be met based on the following types of hydrocarbon emissions for recreational engines and vehicles powered by the following fuels: (1) non-methane hydrocarbons for natural gas; (2) total hydrocarbon equivalent for alcohol; and (3) total hydrocarbons for other fuels.
- b** Useful life is expressed in hours, years, or kilometers, whichever comes first; warranty period is expressed in hours, months, or kilometers (km), whichever comes first. Nonroad recreational engines and vehicles must meet emission standards over their full useful life. A longer useful life in terms of km and hours must be specified for the engine family if the average service life is longer than the minimum value as described in 40 Code of Federal Regulations (CFR) 1051 Subpart B.
- c** Test procedures for snowmobiles use the equipment and procedures for spark-ignition engines in 40 CFR Part 1065.
- d** Phase 1 standards will be phased in: 50 percent by 2006, 100 percent by 2007.
- e** Litigation on the November 2002 final rule resulted in a court decision that requires EPA to clarify the evidence and analysis upon which the Phase 3 carbon monoxide (CO) and HC standards were based. EPA will address this in a future rulemaking.
- f** These are the maximum allowable family emission limits (FEL). The HC and CO standards are defined by a functional relationship as described in 40 CFR 1051.103(a)(2).

- g** For off-highway motorcycles and ATVs, chassis dynamometer emissions test procedures are specified in 40 CFR Part 86, Subpart F and engine dynamometer emissions test procedures are specified in 40 CFR Part 1065.
- h** Maximum allowable FEL: 20.0 grams per kilometer (g/km) for HC plus nitrogen oxides (NOx) and 50 g/km for CO.
- i** Manufacturers may certify off-highway motorcycles with engines that have total displacement of 70 cubic centimeters (cc) or less to an HC+NOx standard of 16.1 grams per kilowatt-hour (g/kW-hr) (with an FEL cap of 32.2 g/kW-hr) and a CO standard of 519 g/kW-hr.
- j** Maximum allowable FEL for HC+NOx is 20.0 g/km.
- k** Manufacturers may certify all-terrain vehicles with engines that have total displacement of less than 100 cc to an HC+NOx standard of 25.0 g/KW-hr (with an FEL cap of 40.0 g/kW-hr) and a CO standard of 500 g/kW-hr.

**Code of Federal Regulations (CFR) citations:**

- 40 CFR 1051.101-115 = Emission standards
- 40 CFR 1051.120 = Warranty requirements