

Frequently Asked Questions from Owners and Operators of Nonroad Engines, Vehicles, and Equipment Certified to EPA Standards

The U.S. Environmental Protection Agency (EPA) has adopted emission standards for nearly all types of nonroad engines, vehicles, and equipment. This page describes how EPA emission standards affect individual owners and operators of these products.

Why does EPA adopt emission standards for nonroad engines, vehicles, and equipment?

Nonroad engines contribute significantly to air pollution. The emission standards address emissions of oxides of nitrogen (NO_x), hydrocarbons (HC), particulate matter (PM), and carbon monoxide (CO). These emissions help form smog and include toxic compounds such as benzene, so reducing them will benefit our health and environment. In the Clean Air Act, Congress requires us to set emission standards that address these problems.

Does my current nonroad engine, vehicle, or equipment need to meet these regulations?

Manufacturers must ensure that each new engine, vehicle, or equipment meets the latest emission standards. Once manufacturers sell you a certified product, no further effort is required to complete certification. If products were built before EPA emission standards started to apply, they are generally not affected by the standards or other regulatory requirements. See Table 1 for a listing of when EPA emission standards started to apply. We never require owners to retire their old engines, vehicles, or equipment.

What requirements apply to owners and operators of certified products?

A key part of the regulations that applies to you is the tampering prohibition—you may not disable any emission controls installed on certified engines, vehicles, or equipment. This would apply for removing emission control devices, adding or modifying hardware or software that increases emissions (of any pollutant), reprogramming onboard computers, or operating engines without any needed supplies such as Diesel Exhaust Fluid. Manufacturers explain in their owner's manual what type of emission controls exist for each model; they may also specify some minor maintenance that must be done to keep emission controls working properly. For restrictions and recordkeeping requirements that apply for rebuilding engines and performing maintenance on certified products, see "How to Maintain or Rebuild Engines Certified to EPA Standards," (EPA-420-F-18-003, February 2018) which is available at www.epa.gov/regulations-emissions-vehicles-and-engines/regulations-emissions-nonroad-vehicles-and-engines.

Similarly, EPA regulations prohibit defeat devices—you may not make, sell, or install any part that bypasses, impairs, defeats, or disables the control of emissions of any regulated pollutant.

Since manufacturers have the primary responsibility to meet emission standards for their products, you generally have no requirements to achieve a certain level of emission control or to re-certify. However, you must meet additional requirements in two special circumstances:

- You may need to use certified kits or systems when remanufacturing locomotive engines or marine diesel engines.
- In the case of Marine SI engines (40 CFR part 1045), Recreational vehicles (40 CFR part 1051), and Small SI engines (40 CFR part 1054), you must re-certify if you upgrade your engine to operate on a different fuel. For fuel conversions with other types of nonroad engines, vehicles, or equipment, you may need to do testing to show that the conversion is not considered tampering, but you do not need to re-certify.

What kind of emission controls does EPA require?

We don't tell manufacturers what emission controls to use to comply with the regulations, but we rely on testing information from engines equipped with specific technologies to establish the emission standards. Manufacturers may use these anticipated technologies, or they may find better ways to meet emission standards.

Manufacturers of diesel engines have typically met the standards with more careful control of intake air and fuel injection, with some exhaust gas recirculation. Long-term standards for many of these engines will generally involve additional use of aftertreatment devices such as diesel particulate filters (DPF) and selective catalytic reduction (SCR).

Most Large SI engines and many Marine SI engines use automotive-type technologies, including closed-loop fuel injection and three-way catalytic converters. For other engines, manufacturers will optimize air-fuel mixtures and make other internal engine changes. We expect continued use of two-stroke engines in the following cases: (1) outboard and personal watercraft marine engines may use direct-injection two-stroke engine technology, which avoids the most prob-

lematic aspects of two-stroke combustion; (2) to maintain lightweight performance, Handheld Small SI engines will typically continue to use two-stroke engines, though these engines will generally have catalysts to reduce the amount of unburned fuel from escaping through the exhaust as hydrocarbon emissions; and (3) some two-stroke snowmobile engines will likely continue to be available, depending on ongoing efforts to improve the performance characteristics of four-stroke snowmobile engines.

For gasoline-fueled products, we have also adopted requirements to control permeation emissions from fuel systems. We expect these requirements to lead to the use of improved materials to prevent fuel from escaping through fuel tanks and hoses into the atmosphere. This should noticeably reduce the smell of gasoline around these vehicles and equipment.

How will these controls affect performance and safety?

As part of the rulemaking process, we evaluate potential safety issues related to new standards to make sure not to adopt emission standards that would cause manufacturers to use emission controls that add new risks to operating vehicles or equipment. As always, it is important to take proper precautions when using engine-powered vehicles or equipment.

Meeting emission standards adds to the engine designer's challenge. This might lead to some trade-offs with respect to power or efficiency; however, there are many examples of design engineers coming up with ways to add emission controls in a way that significantly improves engine power and efficiency while reducing emissions. Over time, engineers will work to improve designs to reduce or eliminate any remaining trade-offs.

Do EPA regulations affect where I can use my nonroad vehicle or equipment?

No. These regulations do not include any specific restrictions about where you can use your nonroad vehicle or equipment. They address only the permissible emission rates from new, certified products.

State and local governments have limited authority to set emission standards for new products; however, they may adopt regulations that restrict the use and operation of most products that are no longer new. EPA generally has no involvement with such restrictions.

Do EPA regulations apply in California?

California has adopted its own emission standards for certain types of new nonroad engines, vehicles, or equipment. In those cases, manufacturers must certify their products with the California Air Resources Board; these products are also certified with EPA even if no additional requirements apply.

EPA's prohibitions against tampering and defeat devices apply to certified products throughout the United States, including products that are certified to meet emission standards that apply uniquely in California.

For More Information

You can access documents related to emission standards for nonroad engines, vehicles, and equipment on EPA's Office of Transportation and Air Quality (OTAQ) website at:

www.epa.gov/regulations-emissions-vehicles-and-engines/regulations-emissions-nonroad-vehicles-and-engines

You can also contact the OTAQ library for document information at:

(734) 214-4311

Email: Group_AALibrary@epa.gov

Table 1

Schedule for Application of New Emission Standards for Certifying Engines and Vehicles

Engine category	Engine subcategory	Manufacturing date after which emission standards start to apply
A. Heavy-duty highway engines	—	Model year 1970
B. Locomotives or locomotive engines	—	January 1, 1973
C. Marine compression-ignition engines at or above 37 kW	Commercial: displacement < 0.9 L/cyl	Model year 2005
	Commercial: 0.9 ≤ displacement < 2.5 L/cyl	Model year 2004
	Commercial: displacement ≥ 2.5 L/cyl	Model year 2007
	Recreational: displacement < 0.9 L/cyl	Model year 2007
	Recreational: 0.9 ≤ displacement < 2.5 L/cyl	Model year 2006
	Recreational: 2.5 ≤ displacement < 5.0 L/cyl	Model year 2009
D. Other nonroad compression-ignition engines.	Marine compression-ignition engines: Power < 19 kW	January 1, 2000
	Marine compression-ignition engines: 19 kW ≤ Power < 37	January 1, 1999
	Nonroad engines: Power < 19 kW	January 1, 2000
	Nonroad engines: 19 kW ≤ Power < 37	January 1, 1999
	Nonroad engines: 37 kW ≤ Power < 75	January 1, 1998
	Nonroad engines: 75 kW ≤ Power < 130	January 1, 1997
	Nonroad engines: 130 kW ≤ Power ≤ 560	January 1, 1996
	Nonroad engines: Power > 560 kW	January 1, 2000
E. Marine spark-ignition engines.	Outboard	Model year 1998
	Personal watercraft	Model year 1999
	Sterndrive/inboard	Model Year 2010
F. Recreational spark-ignition engines and vehicles	—	Model year 2006
G. Other nonroad spark-ignition engines at or below 19 kW	—	Model year 1997
H. Other nonroad spark-ignition engines above 19 kW	—	Model year 2004