



All Engines Must Comply

Even the smallest and least-used engines are subject to the RICE MACT federal regulations for stationary engines.

The reach of the RICE MACT—the common moniker for the U.S. Environmental Protection Agency's (EPA) regulation codified in 40 CFR 63, Subpart ZZZZ that establishes Maximum Achievable Control Technology (MACT) standards for Reciprocating Internal Combustion Engines (RICE)—has extended from 3,300 applicable existing engines, when first proposed in 2002, to more than one million today.^{1,2} There is now no engine size below which the rule does not apply. In two example scenarios, engines that produce less than one horsepower (hp)—one, a propane-fired pressure washer engine and the other, an emergency backup power generator for a guard shack—are now subject to this regulation.

Nonroad vs. Stationary

Without an applicability cutoff for engine size, the key, and in many cases, only, aspect of an engine that can negate the applicability of the RICE MACT is its portability. The RICE MACT, as well as its sister New Source Performance Standard (NSPS) regulations in 40 CFR 60, Subparts IIII and JJJ, only apply to “stationary” engines. To be “stationary,” an engine must not be “mobile,” or, more specifically, “nonroad.” Nonroad engines are not subject to the RICE MACT; rather, they are subject to mobile source regulations that principally affect the manufacturers of such engines. Thus, the definition of nonroad from 40 CFR 1068.30 is critical to determining RICE MACT applicability. In summary, a nonroad engine is an engine that was designed to be moved (e.g., it is on wheels or skids or it has handles for carrying), and it is actually moved

at least once per year (or shorter for seasonal sources) from one location to another.

It is important to note that EPA has clarified in various guidance that nonroad versus stationary classification assessments should focus on the purpose and location of the engine, not necessarily on the engine itself. This is critical when considering the common practice of swapping engines that perform the same function in the same location when maintenance on one engine is needed.

Another key consideration is the regulation's parenthetical definition of location: “(building, structure, facility, or installation)”. Multiple EPA guidance documents elaborate on this definition. A December 5, 2008, letter from EPA Region 5 to the Minnesota Pollution Control Agency³ explains that an engine can be considered nonroad, even if it never leaves a plant site, as long as it regularly moves from one location to another within the plant site.

Other Exemptions

For any engines that do not meet the nonroad definition, and therefore are considered stationary, there are only three exemptions from the RICE MACT. The exemptions offer no relief for the vast majority of stationary engine operators:

1. Engines at test cells/stands (apparatus used for testing uninstalled engines);

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2. Engines used for national security purposes (e.g., engines equipped with features typical for military combat); and
3. Certain existing (meaning installed prior to June 12, 2006) emergency-use engines at residences, commercial facilities (e.g., stores, office buildings), and institutions (e.g., hospitals, libraries).

As required by the general provisions of the MACT regulations, owners/operators must keep records for any nonroad designations and for any exemptions. Careful consideration should be given to the form of such records, especially where a nonroad designation is made based on the movement of an engine within a plant site.

RICE MACT Requirements

All engines not designated as nonroad and not exempt are affected sources under RICE MACT. The range of RICE MACT requirements is nearly as broad as the types of engines regulated. Some engines have no applicable requirements despite being technically subject to the regulation, while many other engines must conduct testing, continuous monitoring, and typical paperwork requirements (i.e., recordkeeping, reporting, and notifications). The differences among requirements are not necessarily intuitive.

For example, an existing, non-emergency, four-stroke lean-burn (4SLB) engine at a hazardous air pollutants (HAP) major source has no requirements if it is larger than 500 hp, but if smaller it is subject to a carbon monoxide limitation that is, according to EPA, only achievable through the use of add-on catalytic controls. The RICE MACT makes more sense when considering other engines for which catalytic controls will likely be needed. Generally, they are the largest engines

within each category, including (a) existing, non-emergency, four-stroke rich-burn (4SRB) engines greater than 500 hp at HAP major sources; (b) existing, non-emergency, compression ignition (diesel-fired) engines greater than 300 hp at both HAP major and area sources; and (c) new, non-emergency engines at major sources that are greater than 250 hp if 4SLB or greater than 500 hp for all other types (except landfill/digester gas-fired engines).

These engines for which catalytic controls are necessary—either two-way catalyst for the lean burn engines, including diesels, or three-way catalyst for the rich burn engines—are also subject to performance (“stack”) testing for carbon monoxide, formaldehyde, or, in some cases, total hydrocarbons (THCs) and to continuous monitoring requirements. The temperature at the inlet of the catalyst must be monitored continuously (every 15 minutes), averaged, and recorded according to a site-specific monitoring plan. The plan must also require the measurement of pressure drop across the catalyst at least once per month. The plan additionally must address, among other items, equipment performance evaluations, tolerances, calibration procedures, potential malfunctions, and preventative maintenance.

The remainder of affected engines—generally smaller engines and those used for emergencies only—are subject to a mixture of requirements. Some are subject to periodic performance (“stack”) testing. Some engines are primarily only subject to work practice standards, which include:

- Fuel restrictions (e.g., limitations on sulfur content, cetane index, or aromatic content);



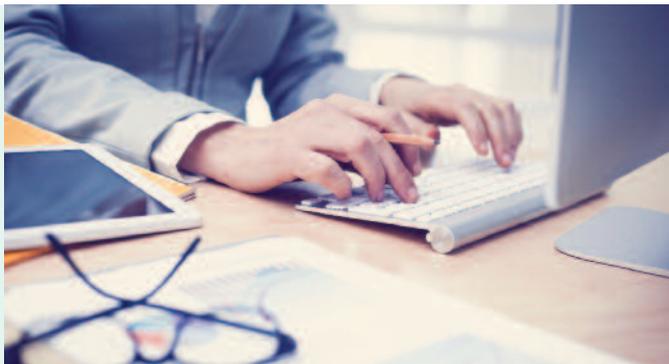
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As with most U.S. Clean Air Act regulations, robust recordkeeping is perhaps the most important aspect of compliance.

- Minimization of startup and idling time to less than 30 minutes; and
- Requirements to conduct standard maintenance activities, such as oil and filter changes, spark plug changes, and hose/belt inspections within certain frequencies depending on the type of engine.

Because of the wide ranges of affected engines and possible applicable requirements, and perhaps more so because of the way in which the RICE MACT is written (e.g., it can take two lines of a paragraph to just introduce what type of engines are being addressed: 4S or 2S, LB or RB, SI or CI, emergency or non-emergency, large or small, etc.), it can be difficult to determine what provisions apply to an inventory of engines. The best advice is to focus on one engine at a time. As demonstrated above, two or more engines can be substantially similar, but have vastly different requirements under RICE MACT. Also, one should make use of various tools available such as summary spreadsheets and flowcharts or other regulatory navigation tools to make initial determinations. Several tools are available at EPA's website.⁴ The initial determinations can and should then be confirmed within the regulation language itself.

Robust Recordkeeping Is Key

The burden falls on the owner/operator to determine RICE MACT regulatory applicability, perhaps more than any other regulation, because many state/local regulatory agencies have historically exempted many engines (e.g., small engines and emergency-use only engines) from permitting and, as a result, are still adjusting to regulating such sources.

Keep in mind that while many regulatory agencies are still adjusting to the RICE MACT and the sheer number of affected sources, other EPA regions and state agencies have begun assigning significant resources to the enforcement of the RICE MACT for stationary engines. The RICE MACT can often provide easy initial findings during an inspection because virtually all regulated facilities own engines and/or operate some rented or leased engines. Thus, it is critically important that each regulated facility develop an inventory of and applicability assessments for their on-site engines. As with most U.S. Clean Air Act regulations, robust recordkeeping is perhaps the most important aspect of compliance. There should be some record—even if only a non-applicability memo—for every engine at your site. **em**

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References

1. *Regulatory Impact Analysis for the Stationary Internal Combustion Engine (RICE) NESHAP—Final Report*; EPA-452/R-04-003; U.S. Environmental Protection Agency, February 2004.
2. *Fact Sheet—Final Amendments to the Emission Standards for Reciprocating Internal Combustion Engines*; U.S. Environmental Protection Agency, January 15, 2013.
3. Letter from Czerniak, G.T., U.S. Environmental Protection Agency, to Seltz, O., Minnesota Pollution Control Agency. Reciprocating Internal Combustion Engine (RICE) at Hibbing Taconite Company, Applicability Determination Index Control Number M090038, dated: December 5, 2008.
4. See <https://www.epa.gov/stationary-engines/guidance-and-tools-implementing-stationary-engine-requirements>.