

Technical Highlights

Frequently Asked Questions on the Draft NONROAD2004 Emission Inventory Model

What is the draft NONROAD2004 model?

The draft nonroad model calculates past, present, and future emission inventories (i.e., tons of pollutant) for all nonroad equipment categories except commercial marine, locomotives, and aircraft. Fuel types included in the model are: gasoline, diesel, compressed natural gas, and liquefied petroleum. The model estimates exhaust and evaporative hydrocarbons (HC), carbon monoxide (CO), oxides of nitrogen (NO_x), particulate matter (PM), sulfur dioxide (SO₂), and carbon dioxide (CO₂). The user may select a specific geographic area (i.e., national, state, or county) and time period (i.e., annual, monthly, seasonal, or daily) for analysis.

What are the differences between draft NONROAD2002a and draft NONROAD2004?

Draft NONROAD2004 has several changes and enhancements:

- The most notable change is that draft NONROAD2004 accounts for the final Tier 4 nonroad diesel engine standards (also known as the Clean Air Nonroad Diesel Rule).
- Draft NONROAD2004 contains more horsepower (hp) bins in order to model the final Tier 4 diesel engine standards. Specifically, the 50-100 hp bin was split into 50-75 hp and 75-100 hp bins. Also, the 1500 hp point was moved to 1200 hp, giving bins of 1000-1200 hp and 1200-2000 hp.

- Draft NONROAD2004 eliminates the Tier 3 NO_x and PM transient adjustment factors (TAFs) for steady-state applications.
- The base year diesel populations in draft NONROAD2004 were updated from 1998 to 2000, based on newer sales data.
- The PM_{2.5} fraction of PM₁₀ for diesel engines was revised from 0.92 to 0.97, based on an updated analysis of size distribution data for diesel engines.
- The recreational marine populations, median life, and deterioration factors for HC and NO_x were revised to match what was used in the 2002 final rulemaking that covers large spark ignition engines (>25 hp), recreational equipment, and recreational marine diesel engines (>50 hp).¹ The exhaust emission factors for these three categories were also revised in draft NONROAD2004 to reflect the final standards.
- The output label in the core model and Reporting Utility was changed from “SO_x” to “SO₂” to avoid confusion, since SO₂ emissions are calculated by the model.
- Reporting Utility Enhancements:
 - Reports have been updated to reflect the new hp ranges, PM_{2.5} fraction, and SO₂ label, as mentioned above.
 - County level reports now include the Federal Information Processing Standard (FIPS) code as well as the county name.
 - For users who have their own copy of Microsoft Access 2000 or later, a new reporting utility version is also being provided for testing purposes that includes National Emissions Inventory Input Format (NIF) 3.0 output, as well as two new reporting options: “Emission Totals by HP and Source Classification” and “Emission Totals by HP and SCC.”

What are the differences between draft NONROAD2002b and draft NONROAD2004?

Draft NONROAD2002b incorporates the Tier 4 diesel standards contained in the April 2003 Notice of Proposed Rulemaking, whereas draft NONROAD2004 incorporates the Tier 4 diesel standards in the Final Rulemaking. Draft NONROAD2004 supercedes draft NONROAD2002b.

Does the draft NONROAD2004 model reflect all of EPA's final nonroad engine emission standards to date?

No. The model does not fully reflect the evaporative inputs (permeation, running loss, hot soak, and diurnal) for the new recreational equipment and large spark-ignition (SI) engine standards that were published in the *Federal Register* in November 2002². These will be incorporated into the final version.

How do I account for evaporative emission benefits from the new recreational equipment and large spark-ignition standards?

Until these benefits are incorporated into the NONROAD model, users will need to estimate the diurnal, hot soak, running loss, and permeation emissions and benefits based on the information in the September 2002 Regulatory Support Document for this rule (EPA420-R-02-022). This document can be downloaded from the EPA Office of Transportation and Air Quality web site at: www.epa.gov/otaq/recveh.htm.

Does the draft NONROAD2004 model reflect the final nonroad diesel fuel sulfur standards associated with the Tier 4 rule?

Annual in-use diesel fuel sulfur levels are provided and account for the 500 parts per million (ppm) standard beginning in 2007, the 15 ppm standard for land-based nonroad diesel engines only beginning in 2010, and the 15 ppm standard for marine engines (both recreational and commercial marine) and locomotives beginning in 2012. Two sets of diesel sulfur levels are provided for land-based nonroad diesel engines and recreational marine diesel engines. To model these two diesel categories, separate NONROAD runs will be necessary. Since NONROAD does not include locomotives and commercial marine vessels, the diesel fuel sulfur benefits for these are not accounted for by draft NONROAD2004.

Can the option files used for previous versions of the model be used for draft NONROAD2004?

Only option files created with draft NONROAD2002a are compatible with draft NONROAD2004, but the diesel fuel sulfur levels will need to be updated per the Sulfur.txt file being provided with this model release to accurately model the diesel fuel sulfur requirements.

Have the technical reports and User's Guide for draft NONROAD2004 been updated?

The technical reports have been updated to reflect changes incorporated into draft NONROAD2004. The User's Guide has not been updated for draft NONROAD2004 but will be for the final version. These documents can be downloaded from the NONROAD model web site at:

www.epa.gov/otaq/nonrdmdl.htm.

What additional changes are currently underway or being considered for the next version of the NONROAD model?

There are several additional changes and enhancements being considered:

- Revised evaporative emissions (permeation, hot soak, running loss, and diurnal) for recreational and large SI engines, to account for the provisions of the November 2002 rulemaking.
- Minor revisions to scrappage algorithm.
- Updated allocation of national diesel construction emissions to the state and county level, accounting for regional cost differences.
- Revised evaporative HC conversion factors (e.g., total hydrocarbon [THC] to volatile organic compound [VOC] or non-methane hydrocarbon [NMHC]), to be compatible with those in the National Mobile Inventory Model (NMIM).
- Revised emission factors and other inputs for SI recreational marine engines and other SI engines under 50 hp.
- Incorporation of ammonia emissions.
- Enhanced Reporting Utility with NIF v3.0 output.

What is EPA's guidance on the use of the draft NONROAD2004 model for official submissions?

EPA is allowing the use of the draft NONROAD2004 Model and associated default inputs in development of inventories supporting State Implementation Plans (SIPs). Although draft NONROAD2004 or its default inputs will likely change between the public release of the draft and the final version, now anticipated for later in 2004, the draft NONROAD2004 Model currently represents EPA's best tool for estimating nonroad emissions, as evidenced by the Agency's use in the Clean Air Nonroad Diesel Engine Final Rule. Therefore, we are allowing state agencies to use the draft model in SIPs during the period between public release of the draft and final versions of the model. Given the likely

additional changes to the model, coupled with the rather short time period projected between this release and the final version, states may choose to wait and use the final version of NONROAD for SIPs, if the final version is available in time to meet their SIP requirements.

EPA will not require that inventories developed using the draft version be updated following release of the final version. Given the likely changes, however, states may choose to update SIPs after EPA releases the final version of NONROAD.

After the release of the final version of NONROAD, states that are just beginning new SIP development, or are in the early stages of SIP development, should use the final version of NONROAD for those new SIPs.

When will the final NONROAD2004 model be released?

It is anticipated that a final NONROAD model will be released in late 2004.

How can I receive assistance if I have questions about draft NONROAD2004?

Please send an email with your question to nonroad@epa.gov or write to:

U.S. Environmental Protection Agency
Assessment and Standards Division
Air Quality and Modeling Center
2000 Traverwood Drive
Ann Arbor, MI 48105

¹ U.S. Environmental Protection Agency. *Control of Emissions From Nonroad Large Spark-Ignition Engines, and Recreational Engines (Marine and Land-Based); Final Rule*. 67 FR 68241-68290. November 8, 2002. (Docket Number A-2001-01, Document V-B-05)