

Technical Highlights

Frequently Asked Questions About NONROAD2005

What is NONROAD2005?

NONROAD2005 is the final version of the NONROAD model and it supersedes all previous versions of this model. NONROAD2005 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 NONROAD2004 and NONROAD2005?

NONROAD2004 was a draft version of the model, while NONROAD2005 is the final version that includes a wide range of improvements and updates. NONROAD2005 includes the following changes and enhancements, some of which have been requested by users:

- The ability to model fleetwide retrofit benefits was added.
- There are new evaporative categories for tank permeation, hose permeation, hot soak, and running loss emissions.

- The methodology for calculating diurnal emissions has been revised.
- The scrappage algorithm has been modified to generate base year age distributions that properly account for prior growth.
- Hydro power units have been reclassified from a farm to a commercial source classification category.
- An input field has been added to the option file and the graphical user interface (GUI) to allow users to specify a calendar year to use for the growth calculation. If the user enters a separate “growth year,” the model uses that year instead of the evaluation year to calculate the equipment populations. The main purpose of this option is to allow “no growth” inventory estimates, such as for analyzing the effects of the phase-in of new standards without the effects of growth. Other possible uses include the use of a growth year later than the evaluation year to analyze the effects of growth without the phase-in of new standards.
- An input field has been added to the option file and the GUI to allow users to specify a calendar year to use for the tech types selection. If the user enters a separate “technology year,” the model uses that year instead of the evaluation year for the tech types and tech fractions. The main purpose of this option is to more easily allow analysis of the effects of new emission standards in comparison to some prior level of control.
- There are updated and corrected allocations from the national to the state and county level.
 - ◇ New recreational marine allocation files use corrected county water surface areas for ocean and Great Lake coastal counties.
 - ◇ Enhanced construction equipment allocation accounts for differences in costs of construction around the country.
 - ◇ All allocations have been updated using either 2002 U.S. Census Bureau human population and housing estimates, 2002 County Business Patterns data, or other data sources.
- The model now uses an external county input file (the list of counties is no longer hard-wired in the model, allowing for changes in counties over time).
- It is now possible to model Puerto Rico and the U.S. Virgin Islands.
- The model now has the ability to generate inventories using daily inputs for temperature and RVP at the national or state level. This is done outside the GUI by activating an optional input file.
- The ability was added to allow separate user inputs of the marine and non-marine diesel fuel sulfur content, eliminating the need for separate model runs.

- A summary by year and model year was added to the multi-year post-processor.
- Reporting Utility Enhancements:
 - ◇ Added new report option, “Emissions by County and Fuel Type.”
 - ◇ Added report options that include emission factors.
 - ◇ Added load factor and average horsepower to the OUT and BMY output files. Added activity to the exhaust and evaporative BMY output files.
 - ◇ Made corrections to the NIF3.0 output and changed THC to VOC.
 - ◇ Modified HC conversion factors for crankcase and evaporative emissions to be consistent with the National Mobile Inventory Model (NMIM).
 - ◇ Developed stand-alone runtime version, based on Microsoft Access 2002.

What are the differences in emission inventory results between NONROAD2004 and NONROAD2005?

When comparing on a nationwide basis, NONROAD2005 generally predicts more total HC, CO, and NOx and less PM emissions than NONROAD2004. Since many of the allocations from the nationwide to the state and county level have been updated, results for local areas may differ.

Does NONROAD2005 reflect all of EPA's final nonroad engine emission standards to date?

Yes. The model now fully reflects 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 2002.

Can the option files used for previous versions of the model be used for NONROAD2005?

Only option files created with NONROAD2005 are compatible with NONROAD2005, due to the addition of new input files.

Have the technical reports and User's Guide for NONROAD2005 been updated?

The User's Guide has been updated for NONROAD2005. The technical reports have been updated when necessary to reflect changes incorporated into NONROAD2005. These documents can be downloaded from the NONROAD model web site at: www.epa.gov/otaq/nonrdmdl.htm.

What is EPA's policy guidance on the use of NONROAD2005 for SIP and conformity purposes?

A policy document that lists questions and answers on how and when to use NONROAD2005 for State Implementation Plans (SIPs) and conformity decisions is in preparation. When available, the policy document can be downloaded from the web site at: www.epa.gov/otaq/nonrdmdl.htm.

What is EPA's technical guidance on the use of NONROAD2005 for SIP and conformity purposes?

A technical document that provides EPA guidance on the appropriate input assumptions and sources of data for the use of NONROAD2005 in SIP and general conformity related submissions is in preparation. When available, the technical guidance document can be downloaded from the NONROAD model web site at: www.epa.gov/otaq/nonrdmdl.htm.

Should I use NONROAD2005 or NMIM2005?

[NMIM2005 \(the National Mobile Inventory Model\)](#) is a consolidated emissions modeling system for EPA's MOBILE6.2 and NONROAD2005 models. It generates county inventories using MOBILE6.2 and NONROAD2005 at scales ranging from individual counties to the nation. Its primary improvement over NONROAD2005 is the inclusion of all the required county temperature and fuel property data for the nation in a single database. In addition to the pollutants produced by NONROAD2005, NMIM2005 produces inventories for gaseous hazardous air pollutants (HAPs), polyaromatic hydrocarbons (PAHs), metals, dioxins, and furans.

Since NMIM2005 incorporates NONROAD2005, the common pollutant inventories produced by each (i.e., HC, CO, CO₂, NO_x, PM, and SO₂) will be the same, provided the same inputs are used. NMIM2005 will need to be used if toxic inventories are required. NONROAD2005 will need to be used if equipment populations or fuel consumption is required, or if output is required by model year.

How can I calculate emission benefits from the retrofit of nonroad engines?

There are two types of retrofit programs that are possible: 1) fleetwide programs, in which a specified fraction of certain categories of engines are retrofitted, or, 2) fleet-specific programs, in which a specific number of engines of a known fleet are retrofitted. The recommended method to model the effects of nonroad engine retrofits is to use NMIM2005, since it can properly model both fleetwide and fleet-specific retrofit programs. NMIM2005 can be downloaded from the NMIM model web site at: www.epa.gov/otaq/nmim.htm.

Some limited retrofit modeling capability is now also available with NONROAD2005. Chapter 6 of the NONROAD2005 user's guide provides more information regarding the calculation of retrofit benefits and the limitations of using NONROAD2005 for this purpose. It can be downloaded from the NONROAD model web site at: www.epa.gov/otaq/nonrdmdl.htm.

EPA has released a draft version of a retrofit guidance document, titled, "Guidance for Quantifying and Using Emission Reductions from Mobile Source Retrofit Projects in State Implementation Plans and Transportation and General Conformity." This document has been posted on the web at www.epa.gov/otaq/transp/conform/policy.htm. EPA plans to finalize this guidance by mid-January 2006.

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

Inputs for the small SI (<19 kW) and recreational marine SI categories may be revised in conjunction with rulemaking development.

How can I receive assistance if I have questions about NON-ROAD2005?

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