



## EPA's NEW NONROAD MOBILE EMISSIONS MODEL

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Presented at  
Emission Inventory: Living in a Global Environment  
December, 1998  
New Orleans, Louisiana

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### Overview

- *History and timetable*
- *General description and structure*
- *Example of model setup and view*
- *Revisions in progress*
- *Staying informed*

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### Model History and Timetable

- Former EPA guidance: NEVES, 1991
- Draft NONROAD model release and Public Workshop, June 1998
- 60-day comment periods for all supporting technical documents
- Model updates posted on the Web, July and September 1998
- Draft final model to be released Spring 1999
  - 30 day (minimum) comment period on form/function and any significant revisions from draft release
- Final model to be released second half 1999
- Later releases with new features

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### Inventory News

- NONROAD vs. NEVES
  - National Inventory
    - VOC +25%
    - NO<sub>x</sub> +25%
    - PM Down -5%

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### Equipment Types

- Airport ground support
- Agricultural equipment
- Construction equipment
- Industrial and commercial equipment
- Recreational vehicles
- Residential and commercial lawn and garden equipment
- Logging equipment
- Recreational marine vessels
- Underground mining equipment
- Oil field equipment

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### Emissions Estimates to be Added in Later Model Version

- Commercial marine
- Locomotive
- Aircraft

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## Pollutants Reported

- Exhaust
  - HC
  - NO<sub>x</sub>
  - CO
  - CO<sub>2</sub>
  - SO<sub>x</sub>
  - PM
- Non-exhaust HC by mode
  - Diurnal
  - Refueling
  - Crankcase

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## Geographic Coverage

- National
  - 50 states
  - U.S. total
- State
- County
- Sub-county
- Non-attainment areas

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### Temporal Coverage

- *Past, present, future year emissions*
- *Annual, seasonal, monthly, or daily emissions*
- *Daily emissions distinguished by season and weekday/weekend*

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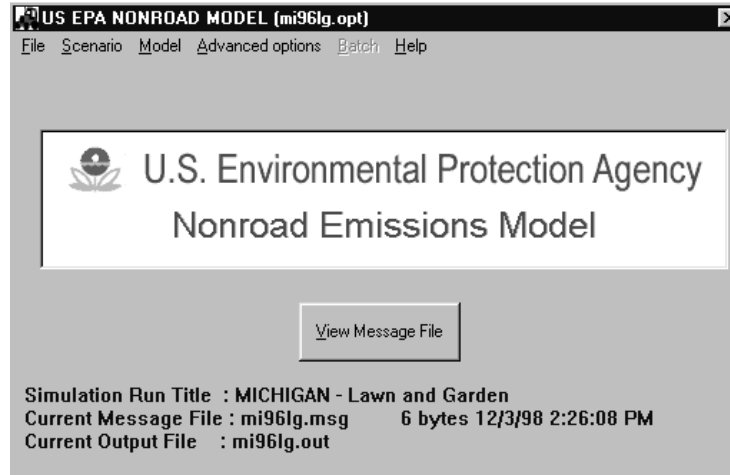
### Model Structure

- *Graphical User Interface (Visual Basic)*
- *Core Model (Fortran)*
- *Reporting Utility (Microsoft Access)*

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### Graphical User Interface Example Screen



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### Graphical User Interface Example Screen



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### Graphical User Interface Example Screen



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### Reporting Utility Example Screen



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### Reporting Utility Example Screen

The screenshot shows a software interface for generating reports. It includes the following elements:

- Report:** Emission Totals by Source Classification
- Database table to use:** a test of ru and refuel
- Decimal places to use:** 2
- Report all states/countries?:**
- Report one state/county:** Kent County
- Pollutants to report:** All Pollutants
- Fuel Type:** All Fuels
- Select the HC:** THC, TOG, NMOG, NMHC, VOC
- Select the PM size:** PM10, PM2.5
- Buttons:** Run, Cancel

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### Reporting Utility Standardized Reports

- Emissions totals by:
  - County
  - Major Source Classification
  - Equipment Type/Code
  - Horsepower
- Population and Fuel Consumption by SCC and HP
- Comparison of Emissions by:
  - Major Source Classification
  - SCC
  - Horsepower Comparison of Population and Fuel Consumption by SCC

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### General Calculation

- Multiply:
  - Equipment population
  - Average load factor
  - Activity in hours of use per year
  - Emission factor with *deterioration and/or new standards*
  - Average power level
- Temporally and geographically allocate emissions

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### Model Inputs (defaults provided)

- Emission factors
- Emission deterioration factors
- Activity, load factors, and median engine life
- Base year equipment populations
- Growth factors indicators
- Scrappage function
- Geographic allocation indicators
- Temporal allocation factors

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### Model Documentation

- *Technical support documents on the Web*
- *User's Guide on the Web*

<http://www.epa.gov/oms/nonrdmdl.htm>

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### Major Revisions from Draft to Draft Final

#### *Graphical User Interface*

- *Error checking of inputs*
- *RU now runs directly from GUI*

#### *Core model*

- *Model Speed up*
- *Revised refueling emissions*
- *Tank size based on average tank volume rather than gal/hp*

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### Major Revisions from Draft to Draft Final (continued)

#### Reporting Utility

- All emissions reports by fuel type
- Refueling vapor displacement and spillage reported separately
- Hot soak, resting and running losses no longer reported
- Additional reports

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### Major Revisions from Draft to Draft Final (continued)

#### Default model inputs

- Linear instead of exponential growth in populations
- Revised geographic allocation indicators
- GSE populations based on aircraft LTO data
- Revised recreational marine inputs
  - annual activity
  - median lifetime
- Revised engine populations
  - 4-stroke motorcycles, ATVs, and lawnmowers
  - 2-stroke chainsaws, trimmers, and leafblowers
  - snowmobiles

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### Major Revisions from Draft to Draft Final (concluded)

#### Default model inputs (concluded)

- Revised emission factors
  - small spark ignition engines
  - large spark ignition engines
- Revised emission standard phase-in schedules
  - compression ignition engines
  - small spark ignition engines
- Revised NO<sub>x</sub> deterioration factors
  - inboard recreational marine
  - small spark ignition engines

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### To Stay Informed: Electronic Information Sources

- Web site
  - <http://www.epa.gov/oms/nonrdmdl.htm>
- MOBILE list server
- E-mail
  - [nonroad@epa.gov](mailto:nonroad@epa.gov)

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