United States
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Air and Energy Engineering
Research Laboratory
Research Triangle Park, NC 27711

Research and Development

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Project Summary

Revision of the Industrial Combustion Emissions Model to a Base Year of 1980

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The Industrial Combustion Emissions (ICE) Model is one of four stationary source emission and control cost forecasting models developed by EPA's Air and Energy Engineering Research Laboratory for the National Acid Precipitation Assessment Program. The ICE Model projects air pollution emissions (sulfur dioxide (SO_2), particulate matter (PM), nitrogen oxides (NO_x) and sulfates), costs and fuel mix for industrial fossil-fuel-fired (natural gas, distillate and residual fuel oil,and coal) boilers by state and year (1980 baseline, 1985, 1990, 1995, 2000, 2010, 2020, and 2030).

The ICE Model was originally developed from a data base of industrial boilers and fuel consumption in 1974. This report describes the development of an updated 1980 base year fuel consumption and air pollution emissions estimates data base by state. These 1980 base year data have been incorporated into ICE Model Versions 4.0, 5.0, and 6.0.

The ICE Model (Version 6.0) is available for remote terminal access and operation at EPA's National Computer Center (NCC). A transcription of the model is also available on magnetic tape from the National Technical Information Service (NTIS).

This Project Summary was developed by EPA's Air and Energy Engineering Research Laboratory, Research Triangle Park, NC, to announce key findings of the research project that is fully documented in a separate report of the same title (see Project Report ordering information at back).

Summary

The following data elements are included in the ICE Model base year data file:

- State
- Industry group (one of seven)
- Fuel type (natural gas, distillate or residual fuel oil, or coal)
- Boiler size class (million Btu/hr, one of eight categories)
- Annual capacity utilization rate (one of five categories)
- Annual fossil fuel consumption
- Pollution control equipment
- Air Quality Control Region (AQCR)
- State Implementation Plan (SIP) air emission limits by pollutant (SO_2, PM, NO_x) and fuel type (residual fuel oil, coal)
- Controlled emission rates for SO_2, sulfates, PM, and NO_x (which are a function of the fuel type, fuel-firing method, pollution control equipment, and regulation).

The aggregate 1980 ICE Model base year estimates for the contiguous States and the District of Columbia are:

- 1.454×10^6 metric tons (1.603×10^6 short tons) of SO_2 emissions
- 0.691×10^6 metric tons (0.762×10^6 short tons) of NO_x emissions
- 2.7 GJ ($2,534 \times 10^9$ Btu) of natural gas consumption
- 0.3 GJ (317×10^9 Btu) of distillate fuel oil consumption

- 1.1 GJ (1,017 x 10^9 Btu) of residual fuel oil consumption
- 1.0 GJ (954 x 10^9 Btu) of coal consumption

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The complete report, entitled "Revision of the Industrial Combustion Emissions Model to a Base Year of 1980," (Order No. PB 88-211 941/AS; Cost: $12.95, subject to change) will be available only from:
National Technical Information Service
5285 Port Royal Road
Springfield, VA 22161
Telephone: 703-487-4650
The EPA Project Officer can be contacted at:
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