



Project Summary

The 1985 NAPAP Emissions Inventory (Version 2): Development of the National Utility Reference File

J. K. Wagner, S. S. Rothschild, and D. A. Istvan

The National Acid Precipitation Assessment Program's (NAPAP's) emissions inventory activities focus on the estimation of emissions from pollutants that contribute to acid deposition. Because electric utilities, which emit a large share of total acid deposition precursor emissions, are important for modeling analyses, this project was conducted to create a file containing comprehensive data on all electric utilities in the U.S. Data reported by states to the National Emissions Data System for the 1985 NAPAP Emissions Inventory and data reported to the U.S. Department of Energy on EIA Form 759, EIA Form 767, FERC Form 423, and the Integrated Data Base System matched and combined. The resulting 1985 National Utility Reference File contains detailed unit level data for nearly 10,000 electricity generating units.

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).

Introduction

The National Acid Precipitation Assessment program (NAPAP) was established by Congress in 1980 to coordinate and expand research on problems posed by acid deposition in and around the U.S. Because electric

utilities emit significant amounts of acid deposition precursor pollutants (SO₂ and NO_x), one of NAPAP's responsibilities is to provide a comprehensive data base of electric utility emissions and operating data for use by other NAPAP research efforts and by federal and state government agencies.

No single data base currently maintained by either the Environmental Protection Agency (EPA) or the Department of Energy (DOE) contains accurate and comprehensive information about electric utilities at the generating unit level in a form that meets the needs of NAPAP's electric utility modeling researchers and other utility data users. Several data bases contain different and sometimes overlapping unit-level data elements, while other sources contain reliable plant-level information. Some publications address a single data issue.

The purpose of this project was to develop a single data base for a consistent reference year (1985) that would meet most of the broad utility-related data needs of NAPAP research groups. Special emphasis was placed on meeting data needs related to atmospheric modeling, emissions forecasting, and assessment. The resulting data base is termed the National Utility Reference File (NURF). It includes information on every electric generating unit—including fossil-fuel-fired, hydro, and nuclear units—in the U.S. in 1985.

The major sources of data for NURF included the 1985 NAPAP Annual Emissions Inventory (Version 2), DOE's Integrated Data Base System (IDBS, and inventory of power plants), Energy

Information Administration (EIA) Forms 767 and 759, Federal Energy Regulatory Commission (FERC) Form 423, and miscellaneous other sources of data. Table 1 lists these major sources of data from which NURF was compiled and the data they provided.

Most of the effort in creating NURF was directed toward merging the differing data bases and reconciling differences between them. These differences occurred most often between IDBS, the NAPAP Emissions Inventory, and EIA Form 767, since the inventory contains data at the emission point level and Form 767 contains data at the boiler level, while NURF is at the generating unit level defined by IDBS.

Data Categories

The general categories of data included in NURF are:

- identification and location information;
- unit operation characteristics;
- unit lifetime data;
- fuel data, including three fuels and two types of coal;
- regulatory information;
- emissions and pollution control data; and

- ownership data.

The individual data elements included in each of these categories are discussed below.

Identification and Location Information

DOE plant and unit identifier codes (Office of the Regulatory Information System (ORIS) Respondent and Plant codes), National Emissions Data System (NEDS) plant and point codes, state and county codes, and the plant name are provided.

Unit Operation Characteristics

Prime mover (steam, hydro, nuclear), technology code, nameplate capacity in MW, capacity factor, generation, heat rate, bottom type (wet or dry), and firing type (e.g., tangential, opposed) are listed for each unit.

Unit Lifetime Data

Year on-line and year of retirement (if announced by DOE) are provided. Where a unit is undergoing fuel conversion, the retirement date is the date it is shut down for conversion, and a new year on-line is supplied for the converted unit.

Fuel Data

The type of fuel and its heating value, sulfur content, ash content, delivered

price, and quantity consumed are reported for three fuels. If one of the fuels is coal, further detail is provided for two coal types (e.g., bituminous, sub-bituminous).

Regulatory Information

The regulatory category and emission limit as reported on EIA Form 767 are provided for SO₂, NO_x, and TSP.

Emissions and Pollution Control Data

Emissions in tons/year in 1985 are provided for SO₂, NO_x, TSP, and VOC. The SO₂, NO_x, and VOC emission rates are also provided. The SO₂ and NO_x control devices and their efficiencies, and any information available on planned scrubbers are also provided in NURF.

Ownership Data

The operating utility name and owner are listed. If a utility is owned by more than three parties, information is provided on three owners (owner state, owner utility, and percent of ownership). If a utility has more than three owners, the sum of the percentages may be less than 100%.

The report contains tables summarizing fuel consumption, generation, capacity, and SO₂ and NO_x emissions by state. Plant-level SO₂ and NO_x emissions for the top 100 emitters of SO₂ in the U.S. in

Table 1. Major Data Inputs to NURF

Name	Type*	Level of Detail	Data Provided
IDBS	A	Generating unit	Year on-line, year retired, capacity, ownership, prime mover, fuel capability
EIA Form 759	A	Plant	Fuel consumption and generation
FPC Form 423	A	Plant	Cost and quality of fuels
NAPAP	A	Point	Fuel consumption, fuel quality, control equipment, and emissions (SO ₂ , NO _x , TSP, emission limits)
EIA Form 767	A	Boiler/fuel feeder	Fuel consumption, control equipment, firing type and bottom type, SO ₂ , NO _x , and TSP emission limits
DOE coal conversions	M	Unit	Plants converted or planning conversion to coal, year unit planned to convert
NERC coal conversions	M	Unit	Plants converted or planning conversion to coal, year unit planned to convert
NERC planned plants	M	Unit	New plants, year on-line date
OAQPS regulatory data	M	Unit	Regulatory categories
FGDIS	A	Boiler	SO ₂ scrubber data
Radian/EVA data	M	Boiler	Retrofit factor
EPRI TAG data	M	Prime mover - fuel type	Technology-related data

*A = Automated, M = Manual

1985 and unit-level information (SO₂ emission rate, Btus consumed, and SO₂ emissions) for generating units with capacities of at least 25 MW are provided.

Complete information is provided on tape for nearly 10,000 electric utility units. An EBCDIC data tape containing the entire data base and a diskette containing a Lotus 123 worksheet

with selected data elements for steam electric units greater than 25 MW are available from the National Technical Information Service.

J. K. Wagner, S. S. Rothschild, and D. A. Istvan are with E. H. Pechan and Associates, Inc., Springfield, VA 22151.

J. David Mobley is the EPA Project Officer (see below).

The complete report consists of paper copy, diskette, and magnetic tape, entitled "The 1985 NAPAP Emissions Inventory (Version 2): Development of the National Utility Reference File."

Paper Copy (Order No. PB 90-132 341/AS; Cost: \$23.00, subject to change)

Diskette (Order No. PB 90-501 008/AS, Cost \$80.00 subject to change)

Magnetic Tape (Order No. PB 90-500 992/AS, Cost: \$220.00 subject to change)

(Cost of diskette and magnetic tape includes paper copy.)

The above items 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:

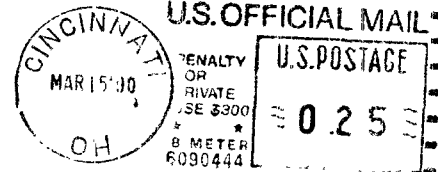
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