

E PROJECTED EMISSIONS

This chapter provides estimates of projected emissions of SO₂ and NO_x for all sectors of concern in both the United States and Canada. Several models and scenarios are used to depict a range of projected emissions to the year 1980 and/or 2000.

E.1 IN THE UNITED STATES

Emissions have been projected by the Department of Energy for all sectors using the Strategic Environmental Assessment System (SEAS) model, and by the Environmental Protection Agency using several models. Projected emissions are presented in Tables E.1.1 through E.1.4.

The results from these models differ somewhat, as would be expected, but agree on the basic conclusion that electric utilities are, and will remain, the dominant man-made emitters of both sulphur dioxide and nitrogen oxides in the United States.

Because of their impact on national emissions, more sophisticated models were used to evaluate the impact of various hypothetical emission regulations for power plants.

(1) Description of Methodologies

Utility emissions were projected using two models: the Utility Simulation Model (USM), developed and operated by Teknekron Research, Incorporated (TRI), and the Coal and Electric Utilities Model (CEUM) developed and run by ICF Incorporated. Both models are capable of projecting future energy use, by fuel type, for the electric utility industry, given a baseline energy scenario. The models also calculate the cost of emission controls, emissions and relative cost effectiveness of control, on a dollar per tonne of collected pollutant basis.

The two models differ in basic design. CEUM uses representative units which behave according to model constraints and optional economics. USM begins with a data base including all existing power plant units in the continental U.S., and scales up to future demand by simulating plant additions. Both models can simulate the choice of different coal supply sources and concomitant transportation paths.

Each model was run to establish a benchmark "base case." This benchmark is compliance with current air pollution regulations in State Implementation Plans (SIPS) and, for newer plants, compliance with New Source Performance Standards (NSPS). The analyses were made of various feasible pollution control scenarios. Except for three common regulatory scenarios, different scenarios were assessed by each model, depending on the strengths of the particular models. Analysis to date has focused on sulfur dioxide emissions, although nitrogen oxide emissions will also be evaluated.