A. CLEAN AIR ACT SULFUR DIOXIDE TRADING: THE "CAP-AND-TRADE" POSTER CHILD

In its original 1970 formulation, the CAA did not employ emissions trading. Its key components were the congressionally decreed technology-forcing that demanded a 90% rollback of motor vehicle tailpipe emissions and its harm-based ambient standards approach to stationary air pollution sources that was implemented by the State Implementation Plan (SIP) process.

The CAA Amendments of 1990 signaled the high-visibility embrace of economic instruments by establishing a "cap-and-trade" program that was designed to achieve a 10 million ton per year reduction in SO_2 emissions by the year 2000. At the time, that reduction represented more than 50% of the emissions of SO_2 for the regulated electricity-generating entities when compared with 1980 levels that were used as the baseline for the program. This program addressed concerns additional to those of the health-based primary NAAQS for SO_2. The principal environmental purpose of the cap-and-trade program is to combat downwind acid rain and other forms of acid deposition. The program has obtained the mandated reductions at a cost so low that it surprised many observers. What is less clear is the extent to which the program has alleviated the downwind acidification and whether the reductions were so easily attainable that the program's stunning success can be replicated in other contexts.

U.S. Environmental Protection Agency, Title IV Acid Deposition Program[4]
Implementing the 1990 Clean Air Act: EPA Speaks
77 American Bar Association Journal, February 21, 1991, at 51–57

SO_2 Allowances — Basic Program. The legislation obtains SO_2 emissions reductions from electric utility plants through the use of a market based system of emission allowances. Under this system, "affected units" (essentially all utility boilers that serve generators larger than 25 megawatts (MW)) are allocated allowances in an amount which is based on their past fossil fuel consumption and the emissions rate required by the legislation. An allowance is defined as an authorization allocated to an affected unit, to emit, during or after a specified calendar year, one ton of SO_2. Any new utility units which commence operation after December 31, 1995 are not allocated allowances and must obtain allowances sufficient to cover their emission by January 1, 2000 and thereafter.…

Allowance Holding Requirement. Affected sources are required to hold sufficient allowances to cover their level of emissions. Allowances may not be used prior to the calendar year for which they are allocated. Sources may not exceed emission limitations provided in the law unless the owner or operator obtains and holds additional allowances to emit excess tons of SO_2. However, the fact that an affected source holds excess allowances does not entitle it to exceed the National Ambient Air Quality Standard limits.

Penalties for Non-Compliance. Sources whose emissions exceed allowances held will be required to pay $2000 per excess ton, and will be required to offset excess tons the following year.

4. Title IV contains both the sulfur dioxide trading program highlighted here and a nitrogen oxide control program that relies on traditional command-and-control performance techniques. See 42 U.S.C. §7651f.

Allowance Usage. Once allocated, allowances can be used by affected sources to cover emissions, banked for future use, or sold to others. Allowances transferred to others are not effective until a written certification of transfer from the parties involved is received and recorded by EPA. No permit alteration is required.

Allowance Tracking. EPA will develop a system for issuing, recording and tracking allowances.

Cap on SO_2 Emissions/Allowances Allocated. Beginning in 2000, the total number of allowances issued by EPA to utility units is, with limited exceptions, not to exceed 8.9 million allowances. This effectively caps emissions and ensures maintenance of the 10 million ton SO_2 reduction.

SO_2 Reduction Program. SO_2 reductions are obtained in two phases. Phase I reductions are required by January 1, 1995 from 111 plants listed in the legislation. These plants have large units — 100 MWs or more — and have high emission rates — 2.5 lbs/mmBTU or more.[5] There will be approximately 265 affected units in these Phase I plants. Phase I plants are located in 21 eastern and midwestern states.

Phase I Allowance Allocations. Phase I affected units will be issued allowances as reflected in the legislation. The allocation was based on a 2.5 lbs/mmBTU emission rate, multiplied by their "baseline," the average fossil fuel consumed during the years 1985, 1986, and 1987.

Phase II Reductions. In Phase II, which begins on January 1, 2000, the emissions limits imposed on Phase I plants are tightened, and emissions limits are imposed on smaller, cleaner plants as well. In general, all utility plants emitting at a rate above 1.2 lbs/mmBTU will have to reduce their emissions to a level equal to 1.2 lbs/mmBTU multiplied by their baseline.

Special Reserve for EPA Allowance Sales and Auctions. EPA is to create an allowance reserve by tapping each affected source's allocation 2.8 percent during 1995–99, and 2.8 percent of the basic Phase II allocation for each year beginning in 2000. These allowances are to be set aside for EPA allowance sales and auctions.

Allowance Sales. A portion of the allowances in the reserve established above are to be put in a direct sale subaccount and sold by EPA in accordance with EPA regulations. The proceeds of the allowance sales are to be returned to the affected units on a pro rata basis.... Unsold allowances are to be transferred to the auction subaccount (discussed below).

EPA Direct Allowance Sales. EPA will offer for sale allowances...[in accordance with a schedule[6]]. They shall be offered at a price of $1500 per allowance (CPI adjusted). Sales are to be made on a first come first served basis subject to the priority for Independent Power Producers.

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5. The emission rates are measured in pounds of SO_2 emitted per million British thermal units of heat produced (mmBTU). It is widely conceded that fossil fuel fired power plants can, using widely available techniques and technologies, meet a standard of 1.2 lbs/mmBTU. Some plants using both controls and low sulfur fuel achieve rates as low as .3 lbs/mmBTU. [Eds.]

6. The schedule calls for advance sale of 25,000 allowances per year for each year beginning in 1993 and spot sales of an additional 25,000 allowances in 2000 and each year thereafter. Spot sale allowances must be used in the year of the sale unless banked. Advance sale allowances may be used only in the seventh year (or later) following the sale, unless banked. [Eds.]

Allowance Auctions. EPA is to establish a subaccount in the allowance reserve for auctions.... Auctions will be open to any person, and will be carried out by sealed bid, with sales based on bid price. No minimum bid will be established. Auction proceeds will be transferred to affected units contributing to the reserve on a pro rata basis, and allowances held for auction which were not sold at the auction will be returned to contributing affected units on a pro rata basis.[7]

COMMENTARY & QUESTIONS

1. **Key steps in the acid deposition program.** What goes into establishing a trading system? At least five vital building blocks make up the EPA's Title IV efforts to create a market in tradeable emissions allowances for SO_2: (1) the tradeable allowances, (2) the means by which EPA limits their total number, (3) the initial distribution of the allowances, (4) the means by which allowances are redistributed, and (5) the means by which compliance is measured.

2. **Making the reductions of emissions certain to occur.** When enacted, the allowance system appeared likely to reduce SO_2 emissions substantially. The penalties for excess emissions ($2000 per ton) may be inconsequential to a large entity such as a power plant, but the offset requirement for the following year means that the offending firm must obtain allowances and apply them against the previous year's excess emissions in addition to paying the fine. Even if this cost is modest, applying the allowances to "retire" the excess means that the total multiyear pollution remains limited to the number of allowances. As long as (1) the government refuses to increase the number of allowances, (2) the measurement of actual emissions and credits is accurate, and (3) the government enforces the offset requirement, the reductions in a cap-and-trade program are virtually certain to occur.

3. **Knowing the goal.** In Title IV, the goal clearly is to end acid rain, and the trading program is understood to be a means to that end. That will not always be the case. As one commentator puts it, "Market mechanisms will not set our goals for us and may even disguise their absence." Pedersen, The Limits of Market-Based Approaches to Environmental Protection, 24 Envtl. L. Rep. 10173 (1994). Even when the environmental goal is clearly identified, cap-and-trade reduces emissions but does not ensure that the goal is attained.

4. **Has Title IV attained its goal?** The question posed is really two questions, depending on whether the goal is seen as reducing emissions to the "cap" or the improvement of the condition of the affected lakes and rivers. As to the former question, the answer is an unequivocal yes. As to the latter question, the most recent comprehensive study is favorable as well, although there is debate on the subject. See U.S. Environmental Protection Agency, Responses of Surface Water Chemistry to the Clean Air Act Amendments of 1990 (January 2003), available at http://www.epa.gov/ord/htm/CAAA-2002-report-2col-rev-4.pdf.

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7. There is also a schedule for the number of allowances to be offered at auction. Like the direct sales schedule it is bifurcated between spot auction of current year allowances and advance auction of allowances good in the seventh year after the auction. In general, 150,000 allowances are offered in the spot auction in each year beginning in 1995 and 100,000 allowances are offered in the advance auction. [Eds.]