



ON POINT

The Competitive Enterprise Institute

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Committed to Advancing the Principles of Free Enterprise and Limited Government

July 6, 1999

No. 41

Market-Based Chimera: Emission Trading Fails to Deliver

By Paul J. Georgia¹

The Clinton-Gore Administration is trying to persuade the American people that the Kyoto Protocol, the most ambitious and expensive environmental initiative ever proposed, will be painless. The administration claims that reducing greenhouse gas emissions by 30 to 40 percent by 2010, as required under the Kyoto Protocol, would cost little – no more than \$12 billion per year – as long as a well-designed international emission trading system is in place.²

The Administration justifies its claims by pointing to the U.S. acid rain program, which it credits with greatly reducing the costs of lowering the industrial emissions that cause acid rain. Katie McGinty, chair of the President's Council on Environmental Quality claimed, "We've reduced the emissions that cause acid rain by more than 40 percent of what was required under the law for less than a tenth of the price that was predicted . . . we will put [the same] market forces to work to help us take on this [climate change] objective."³

The success of the acid rain program has, however, been greatly exaggerated. The costs of compliance have been much higher than claimed, and fall within the range predicted by industry and government studies. More importantly, the acid rain program has had little to do with the reductions in sulfur dioxide emissions that have occurred. The U.S. experience with the acid rain program inspires little confidence that a greenhouse gas trading system would be successful on an international scale.

An Overview of the SO₂ Trading System. The acid rain program, established under Title IV of the 1990 Clean Air Act, sets a cap on total sulfur dioxide (SO₂) emissions. Emission allowances, each representing one ton of SO₂, are distributed to companies affected by the cap, based on previous emissions. Instead of federally mandated reduction measures, firms are allowed to choose their own method of SO₂ abatement. If a firm reduces emissions below its allowance, it can sell the surplus permits, giving an added incentive to lower emissions. The ability to trade allows reductions to occur where it is the least expensive. Firms with low marginal reduction costs can reduce emissions and sell the excess permits to firms with high marginal costs. This is what leads to potential cost savings.

SO₂ reductions are to be achieved in two phases, lowering total annual emissions to nine million tons. The first phase began in 1995 and involved only the largest emitters of SO₂. The goal is to reduce

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² Dr. Janet Yellen, Chairman of the President's Council of Economic Advisors, testimony before the House Small Business Committee, April 29, 1999.

³ Transcript of White House climate briefing by Sperling, Tarullo, others, *U.S. Newswire*, Washington, D.C., October 22, 1997.

emissions a third of the way towards the nine million-ton cap. The second phase, which will include all major emitters of SO₂, begins in 2000, and is to be completed by 2002.

The Administration's Phony Numbers. According to the Administration, industry and government forecasts put the cost of removing SO₂ from the atmosphere at about \$1,000 per ton, but that the real cost has been about \$100 per ton. It also claims that compliance has been 40 percent greater than required by law. These numbers are wrong, however, and demonstrate a fundamental misunderstanding of the acid rain program.

The \$1,000 per ton estimate was not an estimate of the cost of complying with Title IV, as the Administration claims. Rather it was an estimate of the marginal cost of lowering SO₂ emissions using scrubbers. Estimates of Title IV compliance showed that in 1995 dollars the cost per ton of reducing SO₂ emissions in Phase I would be in the range of \$150 to \$300 and \$225 to \$500 for implementation of Phase II. These estimates have been remarkably accurate. According to an analysis by MIT, funded by the federal government's National Acid Precipitation Assessment Program, the actual compliance cost of Phase I of Title IV is about \$187 to \$210 per ton, well within the predicted range.⁴

The Administration uses its phony numbers to discredit current studies that show that meeting the Kyoto targets will be expensive and painful. They claim that "industry" has a history of exaggerating the costs of environmental regulation, and that they are doing the same thing to defeat the Kyoto Protocol. As we have seen, estimates of the costs of Title IV were right on the mark. Many studies by both private entities and government agencies estimate heavy economic costs for Kyoto compliance, contradicting the conclusions of the Administration's lone study.

The Administration is correct in saying that companies have reduced emissions of SO₂ far below that required under Title IV. This does not mean that the program has worked better than expected. The goal of Title IV – to reduce SO₂ emissions to nine million tons by 2002 – will not be met. The over-compliance that we are now witnessing will be limited to Phase I. Utilities currently over-comply because under Title IV they can "bank" their allowances and use them to exceed the cap during Phase II when it will be significantly lower. According to economists Anne E. Smith of Charles River Associates, Jeremy Platt of EPRI, and Denny Ellerman of MIT, "Due to phase-in and banking provisions, emissions are likely to substantially (and legally) exceed the annual cap starting in 2000. The beginning of Phase II marks the beginning of an era of 'undercompliance,' as the bank being created by today's 'overcompliance' will allow the full force of the Phase II cap to be delayed" until 2005 – 2012.⁵ When all is said and done, the acid rain program will have fallen well short of expectations.

Can Title IV be Credited With Emission Reductions? Although emission trading in theory promises significant cost savings, in practice it appears to have had very little to do with the cost savings realized during the period of implementation. Again, according to Smith, Platt & Ellerman, "The market-based approach to Title IV was not the primary cause of reductions in control costs, but the approach did enhance the competition among all control measures to achieve cost reductions after exogenous [or

⁴ A. Denny Ellerman and Richard Schmalensee, *et al. Emission Trading Under the U.S. Acid Rain Program: Evaluation of Compliance Costs and Allowance Market Performance*, MIT Center for Energy and Environmental Policy Research, Massachusetts Institute of Technology: Cambridge Massachusetts, 1997.

⁵ Anne E. Smith, Jeremy Platt, A. Denny Ellerman, *The Costs of Reducing Utility SO₂ Emissions – Not As Low As You Might Think*, MIT Center for Energy and Environmental Policy Research, Massachusetts Institute of Technology: Cambridge Massachusetts, August 17, 1998.

external] events caused one control option (low sulfur Powder River Basin coal) to become cheaper and more feasible.”⁶

Several outside factors have combined to reduce compliance costs. Fuel switching to low sulfur coal, and fuel blending have been the most popular compliance strategies thus far. Prior to Title IV, utilities were forced to adopt specific emission reduction technologies, such as scrubbers, to comply with emission controls.⁷ Elimination of the technology mandate removed artificial barriers to innovation and cost minimization, and may have had more to do with reducing SO₂ emissions than the implementation of trading. That the volume of trading has been very low also suggests that the contribution of trading to emissions reductions is minimal.

It has also been argued that much of the emissions reductions that took place in Phase I were “predestined by actions taken before the 1995 start of the program.” This was due to “demographic shifts in electricity demand toward areas more proximate to low sulfur coal.” Thus, “the decline in price of low sulfur coal may well have stimulated a decline in emissions even in the absence of Title IV”⁸, according to Dallas Burtraw of Resources for the Future.

Another important event that led to a significant drop in the cost of low sulfur coal was the Staggers Act of 1980 that deregulated the railroads. As a result, rail rates fell 35 percent. The increased competition for transporting low sulfur coal from the West to the East led to several innovations and improvements in the railroad industry that further decreased the prices of low sulfur coal. In fact, the cost of transporting low sulfur Powder River Basin coal fell by well over 50 percent as a result of railroad deregulation.⁹

SO₂ vs. CO₂. Another reason that the acid rain program is a poor model for international greenhouse gas trading is that the nature of CO₂ is different than SO₂. Sulfur dioxide is a byproduct of burning coal. CO₂, on the other hand, is the inevitable outcome of intentionally combining oxygen with the carbon (oxidization) in fossil fuel to release the energy. Reducing CO₂ emissions then is an entirely different endeavor than reducing SO₂ emissions. SO₂ emissions have primarily been cut via scrubbing, switching to low sulfur coal or blending low sulfur coal with high sulfur coal. There’s no such thing as low carbon fossil fuel nor can you scrub it out.

Moreover, the goal of reducing CO₂ emissions is far more ambitious than Title IV. Title IV involves a minor gas in a single industry (electricity) within a small geographical area. CO₂ trading, on the other hand, would involve many countries and a gas that is a necessary component of over 85 percent of the world’s energy use. Dr. Thomas Schelling, an economist at the University of Maryland, further argues that “an international emissions trading agreement, while esthetically elegant, is economically unworkable. There is no likelihood that nations of the world can sit down and allocate once and for all among themselves several trillion dollars worth...of very long-term unchangeable emissions quotas.”¹⁰

⁶ *Ibid.* p. 12.

⁷ The scrubber mandate was implemented primarily to protect high sulfur coal producers from low sulfur coal producers.

⁸ Dallas Burtraw, *Cost Savings Sans Allowance Trades? Evaluating the SO₂ Emission Trading Program To Date*, Resources for the Future: Washington, D.C., September 1995, p. 16.

⁹ *Ibid.*

¹⁰ As quoted in William F. O’Keefe, Testimony before the House Government Reform and Oversight Subcommittee On National Economic Growth, Natural Resources and Regulatory Affairs, September 16, 1998.

Conclusion. The lesson that should be taken from the U.S. experience with emission trading under Title IV is not that it shows government's ability to harness market forces for good, but rather that the more government interferes with markets the less likely good things will happen. The keys to Title IV's success were eliminating command-and-control emission reduction mandates and deregulating the railroads, not the program itself. To the degree that Title IV was a move towards freer markets, allowing companies to resume their normal cost-minimizing activities, it was successful. However, the full potential of competitive markets to increase efficiency and reduce SO₂ emissions is still hindered by the distortions in energy markets that remain under Title IV.

Free-market economies have impressive track records when it comes to increasing energy efficiency and environmental health. Command-and-control economies, on the other hand, have equally dismal track records for inefficiency, stagnation, and appalling environmental degradation. The Kyoto Protocol is a step backward to greater government control of energy use. This path will lead to inefficiency and diminished environmental health. If the Clinton Administration were serious about energy efficiency, then it would remove barriers to energy innovation, eliminate subsidies that encourage energy use – and deregulate energy markets – not regulate CO₂.

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