

EMISSIONS ALLOWANCE TRADING UNDER THE CLEAN AIR ACT: A MODEL FOR FUTURE ENVIRONMENTAL REGULATIONS?

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INTRODUCTION

The formation and passage of legislation has been the subject of innumerable legal, political, and economic studies. Yet, perhaps the most useful tool in analyzing the creation and implementation of legislation is to examine the process itself. This Article focuses on the emissions allowance trading program of Title IV-A of the Clean Air Act (CAA)¹ by examining the debate surrounding its passage and the commentary following its implementation.

The passage and implementation of such an emissions trading scheme suggests an alternative to traditional pollution control measures, which rely on “command-and-control” regulations that rigidly prescribe the manner in which individual polluters, or categories of similar polluters, should reduce their emissions.² This traditional regulation is a “zero-sum game” in which polluters and environmental groups fight over limited resources.³ This game often results in outcomes that satisfy neither side for, as public choice theory argues, the median voter will determine the outcome.⁴ In the traditional scheme, this result will simply be a compromise between the high level of pollution control that

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¹ 42 U.S.C. §§ 7651-7651o (1994).

² See RICHARD L. REVEZ, FOUNDATIONS OF ENVIRONMENTAL LAW AND POLICY 130 (1997).

³ For instance, any given reduction in pollution results in a direct cost to the polluter.

⁴ See, e.g., JAMES BUCHANAN & GORDON TULLOCK, THE CALCULUS OF CONSENT 122 (1962). Under public choice theory, “environmental regulation is

many environmentalists want and the much lower controls that polluters seek.

Emissions trading, which allows polluters to satisfy pollution caps either through the reduction of emissions or the purchase of allowances, may provide a solution to what many on both sides see as an unsatisfactory regulatory scheme. By making pollution control cheaper, the limited pie of the traditional zero-sum game is made larger.⁵ The result is a pollution control system that may achieve more pollution reduction at a lower cost and, perhaps most importantly, with far less political resistance. Despite these advantages, however, the prevalence of emissions trading and other market-based regulatory schemes is less than one might expect.⁶ Therefore, the extent to which barriers may hinder the implementation of such trading regimes is important to consider.

This Article will clarify the claims made both for and against emissions trading under the CAA and thereby evaluate the potential use of similar trading systems in other regulatory contexts. Part I describes the theory of emissions allowance trading and discusses the various political considerations favoring and disfavoring its adoption in relation to competing regulatory options. Part II sets out the basic structure of the CAA program. Next, Part III examines the congressional debates leading up to the passage of emissions trading, which became part of the 1990 CAA amendments.⁷ This testimony was elicited from various actors, including polluters, environmental groups, state regulators, and the lawmakers themselves. Finally, Part IV looks at the commentary regarding the program's implementation by many of the same actors involved with its passage, as well as academics, reporters, and administrators.

As this Article illustrates, the ease with which the allowance program was passed, as well as its successful implementation, makes it a promising scheme for other environmental measures. The relative dearth of market-based pollution schemes among existing environmental statutes may be a temporary phenomenon as more political actors recognize the gains that trading programs can provide to both environmentalists and polluters.

seen as the response to the pressure of powerful groups that seek to further their individual interests." REVESZ, *supra* note 2, at 183.

⁵ See *infra* text accompanying notes 11-13.

⁶ See *infra* text accompanying notes 23-34.

⁷ Pub. L. No. 101-549, 104 Stat. 2399 (1990).

Admittedly, not all environmental problems lend themselves to trading.⁸ For those that do, however, their governing instruments should be considered ripe for amendment.

I

THEORY OF MARKET-BASED EMISSIONS ALLOWANCES

The market-based approach to environmental enforcement is not a new idea, despite its relatively recent implementation. Economists and academics have advocated this approach as an alternative to the traditional command-and-control mode for some time.⁹ The 1990 amendments to the CAA were groundbreaking, nonetheless, as the first piece of federal legislation to enact these reforms on such a large scale.¹⁰

The idea behind tradable pollution permits is to provide greater flexibility to polluters seeking to meet their emissions reduction obligations as cost-effectively as possible. Under an emissions trading approach, permits that allow a certain amount of pollution are distributed to polluters,¹¹ who then have three basic choices. One option is to limit their emissions to exactly what their permits allow, subject to penalties for exceeding these levels. Second, polluters may emit less than their permits authorize (known as “over control”) and attempt to sell their excess permits to other polluters. Third, they may buy additional permits, thereby allowing more emissions.

The major attraction of emissions trading is its promise of achieving a given level of pollution abatement at the lowest cost

⁸ One commentator has noted the potential difficulties of applying a trading regime to problems that are already heavily regulated, such as hazardous waste sites. See Robert N. Stavins, *What Can We Learn from the Grand Policy Experiment? Lessons from SO₂ Allowance Trading*, 12 J. ECON. PERSP. 69, 78 (1998) (stating that “[t]he demand for a market-based instrument is likely to be greatest and the political opportunity costs of legislators providing support are likely to be least when the status quo instrument is essentially non-existent[, such as with] global climate change”).

⁹ See, e.g., J.H. DALES, *POLLUTION, PROPERTY, AND PRICES* (1968).

¹⁰ See *infra* text accompanying note 72.

¹¹ The means of distribution is not vital to the economic benefits of trading. See generally Ronald H. Coase, *The Problem of Social Cost*, 3 J.L. & ECON. 1 (1960) (arguing that the initial allocation of property rights will be irrelevant to an outcome’s economic efficiency as long as transaction costs are low and full information is readily accessible).

to polluters.¹² Market forces will encourage polluters that can decrease emissions more cheaply to do so and then to sell their extra allowances to polluters that face higher abatement costs. By allowing polluters to determine among themselves the best way to meet a given level of emissions, the most economically efficient outcome will be realized. Emissions trading, it is argued, will also encourage development of better pollution control technology since polluters can capture the gains of successful research and development efforts by selling excess permits.¹³ Moreover, a trading scheme is often implemented as part of an overall cap in emissions, which is more directly correlated with environmental harm than emission rates from individual polluters.¹⁴

The interaction between the economic theory of market-based pollution regulation and its political reality implicates public choice theory's median voter model. This model assumes that individuals (political actors, in this case) will be motivated to act in their own self-interest.¹⁵ Under traditional environmental regulation, self-interest often pitted environmentalists seeking more pollution controls against polluter industries wanting fewer pollution controls. This conflict tended to result in halfway solutions that left both sides dissatisfied. Emissions trading obviously does nothing to change either side's goals, nor does it eliminate the need for compromise altogether. Rather, trading can allow for a regulatory outcome that provides greater benefits than traditional regulation for most interest groups. In particular, greater pollution controls can be achieved at a lower cost to industry,¹⁶ thereby shifting the median voter outcome to one that is more desirable to all interested parties.¹⁷

¹² See Bruce A. Ackerman & Richard B. Stewart, *Reforming Environmental Law: The Democratic Case for Market Incentives*, 13 COLUM. J. ENVTL. L. 171, 178-88 (1987).

¹³ See *id.*

¹⁴ See Richard Schmalensee et al., *An Interim Evaluation of Sulfur Dioxide Emissions Trading*, 12 J. ECON. PERSP. 53, 55 (1998). The authors also state that allowance trading created significantly heterogeneous responses from individual plants, in contrast to the blanket approach of the command-and-control scheme. See *id.* at 61.

¹⁵ See, e.g., *id.*; ANTHONY DOWNS, *AN ECONOMIC THEORY OF DEMOCRACY* 4-5 (1957); see also STEVEN KELMAN, *MAKING PUBLIC POLICY* 232-39 (1987) (providing a summary of public choice theory).

¹⁶ See *supra* text accompanying notes 12-13.

¹⁷ For a discussion of political barriers to market-based regulation, see Roger G. Noll, *Economic Perspectives on the Politics of Regulation*, in 2 HAND-

Trading may not only improve the outcome of a specific regulatory dispute among political actors, but it may also act as a catalyst and support for other regulatory initiatives. John Kingdon argues that the ability of actors to initiate and pass legislation occurs during limited openings of "policy windows."¹⁸ An "open" policy window is the period of time in which the political stage is ripe for considering a particular initiative, often accompanying changes in an administration, shifts in congressional power, fluctuations in the national mood, or pressing problems.¹⁹ While tradable permits may not be able to open such a window on their own, they may keep existing windows open longer, thereby widening the opportunity for policy change.

Environmental issues present recurring problems in Congress, but environmental policy windows are frequently closed because of a lack of politically acceptable solutions.²⁰ By providing such a solution, tradable permits may extend the life of a policy window. A trading scheme, therefore, can act in tandem with an environmental crisis or another window-opening event to achieve legislative action. In the case of air pollution control, President Bush's campaign promise to be the "environmental president,"²¹ and his subsequent election, constituted such an event. Tradable permits may have kept this policy window open long enough to bring together environmental and industrial interests to pass a new regulatory scheme that satisfied both sides. It is impossible to know what, if any, environmental regulations would have occurred without tradable permits, but, as this Article will illustrate, commentary during the passage of the legislation repeatedly extolled the benefits of the trading program.²² Emissions trading, therefore, appears to be a good tool for

BOOK OF INDUSTRIAL ORGANIZATION 1254, 1275 (Richard Schmalensee & R.D. Willig eds., 1989).

¹⁸ See JOHN W. KINGDON, *AGENDAS, ALTERNATIVES, AND PUBLIC POLICIES* 174-76 (1984).

¹⁹ See *id.* at 177.

²⁰ See *id.* at 177-78.

²¹ See, e.g., *Bush Vows to Start Acid Rain Cutback*, L.A. TIMES, Aug. 31, 1988, at A3 (quoting Bush as saying "I am an environmentalist.").

²² See, e.g., *infra* text accompanying notes 72, 81. The presentation of commentary in this Article perhaps overemphasizes the criticism of allowance trading. Even those commentators who were critical of certain aspects of the plan or were concerned with potential problems with the plan's implementation generally supported trading over the traditional command-and-control system. See, e.g., *infra* text accompanying note 85.

broadening environmental policy windows, thereby increasing the chances of initiating and implementing environmental legislation.

Despite the theoretical benefits of allowance trading, its implementation has been less frequent than expected. The traditional command-and-control scheme still dominates environmental regulation.²³ One explanation for this phenomenon is that market-based schemes, while offering many advantages, may present a different set of political problems that the command-and-control system avoids. Existing polluters, their trade groups, and organized labor may all favor a command-and-control regulation that serves to favor or disfavor certain pollution sources because strategic lobbying can provide competitive advantages that tradable permits may obviate.²⁴ Environmental groups have also objected to permit trading, arguing that such permits represent a “license to pollute,” that economic analysis is ill-suited for the hard-to-quantify environmental impact of pollution, that market-based systems would prove less flexible against attempts to increase environmental protection, and that “hot spots”²⁵ of concentrated pollution could develop.²⁶ Legislators may similarly be wary of uncertain outcomes resulting from market-based systems, finding command-and-control regulatory approaches more familiar to their legal training.²⁷ Legislators may

²³ For instance, both the CAA and the Clean Water Act (CWA) adopt the command-and-control paradigm in their technology-based emission and effluent standards. See 42 U.S.C. § 7411(a)-(b) (1994) (CAA standards); 33 U.S.C. §§ 1311(b), 1316 (1994) (CWA standards).

²⁴ See Stavins, *supra* note 8, at 72-73. For example, in 1976, Eastern coal producers and the United Mine Workers Union successfully lobbied to amend the CAA’s “new source performance standards” to mandate the use of coal scrubbers, thereby maintaining the demand for high-sulfur coal and protecting mining jobs. See BRUCE A. ACKERMAN & WILLIAM T. HASSLER, CLEAN COAL/DIRTY AIR 30-32 (1981). On the other hand, permit trading may also be susceptible to lobbying, particularly in distributing the initial permits. See Paul L. Joskow & Richard Schmalensee, *The Political Economy of Market-Based Environmental Policy: The U.S. Acid Rain Program*, 41 J.L. & ECON. 37 (1998) (discussing politics of permit allocation).

²⁵ See *infra* text accompanying notes 136-139.

²⁶ See Stavins, *supra* note 8, at 72.

²⁷ See *id.* at 74; see also *Vindicated, After All These Years*, 1998 NAT’L J. 2852, 2852 (quoting market-based regulation proponent Allen Kneese’s description of such opposition: “We have a heritage of legalistic approaches to various problems of public policy. The emissions charges and market-based incentives idea didn’t sit very comfortably in that context. [Policymakers] felt that if there were things wrong, you should forbid them.”).

also favor the ability of traditional pollution standards to hide regulatory costs relative to the more direct cost of a pollution permit.²⁸ Finally, administrative bureaucrats may view market-based systems as a threat to their pivotal role as “experts” in traditional environmental regulations.²⁹ Notwithstanding the overall policy benefits of emissions trading, many powerful players in the political arena appear to have strong vested interests against the adoption of such programs.

Despite such interests, when market-based systems are implemented, tradable permitting schemes generally prevail over alternatives such as emissions taxes.³⁰ Although economic theory suggests that the choice of a market-based scheme should be case-specific,³¹ tradable permits have dominated. Once again, a likely cause is the political landscape. As in the command-and-control context, existing polluters may favor tradable permits as a means to gain advantage over newer firms, because permit schemes allow rent-seeking during the allocation process and pose increased barriers to market entry for new firms.³² Environmental groups, like politicians, may prefer the less conspicuous costs of permits over an outright emissions tax for fear of alarming fickle consumers and voters with the true price of environmental protection. Such groups are also attracted to the aggregated cap in emissions that usually accompanies the permit scheme.³³ Political interests may also favor the legislative distribution of permits rather than an initial auction or an emissions

²⁸ See Stavins, *supra* note 8, at 73 (suggesting also that command-and-control regulations allow legislators to make stronger statements of environmental protection while weakening implementation through exceptions and poor enforcement).

²⁹ See *id.*

³⁰ See Nathaniel O. Keohane et al., *The Choice of Regulatory Instruments in Environmental Policy*, 22 HARV. ENVTL. L. REV. 313, 315-16 (1998). Another example of a trading regime is the “Clean Development Mechanism” proposed in the Buenos Aires conference on global warming, which provides industrial nations pollution credits for investing in technology that reduces greenhouse gas emissions in developing countries. See Margaret Kriz, *After Argentina*, 1998 NAT’L J. 2848, 2848-49.

³¹ See Keohane et al., *supra* note 30, at 315-16.

³² See Stavins, *supra* note 8, at 75; see also Keohane et al., *supra* note 30, at 348 (citing also “the virtually unanimous opposition by private industry to pollution taxes result[ing] from the fact that, under such schemes, firms pay not only their private costs of compliance, but also the costs of tax payments to the government for any residual emissions”).

³³ See Stavins, *supra* note 8, at 75; Keohane et al., *supra* note 30, at 358.

tax, as legislators have more control over the process and, therefore, a greater chance of forming coalitions.³⁴

These explanations for the prevailing political choices concerning regulatory mechanisms say a great deal about the true impact of trading programs.³⁵ Determining which factors are the most influential in guiding these choices will reveal the potential feasibility of tradable permits in other environmental regulatory contexts. For instance, if all that was required to implement market-based regulations was an understanding of the economic theory, then a crash-course in economics for policymakers would seem to be the key to future legislation.³⁶ If, on the other hand, the key to political success is the melding of a market-based system that avoids direct taxation while imposing a clear cap on emissions, then emission trading's prevalence over plans lacking these features, such as emission taxes, would be understandable. An examination of the motivation of political actors during the passage of the trading program will allow proponents for environmental reform to more readily identify the need to move to a "second best" economic solution³⁷ and to determine what that solution entails. Furthermore, researchers examining such solutions could inform their analyses with these political limitations, thereby producing more accurate models for proposed regulations.

Towards this end, the bulk of this Article will examine the political support and criticism for the CAA tradable permit program, thereby showing what considerations were crucial in its ac-

³⁴ See Joskow & Schmalensee, *supra* note 24, at 38-39; Stavins, *supra* note 8, at 75.

³⁵ Several scholars have employed this "political economy" analysis in an attempt to explain the resulting regulatory structure. See, e.g., Stavins, *supra* note 8, at 71-78; Keohane et al., *supra* note 30, at 325-46.

³⁶ This is clearly not the case. As this Article will show, few policymakers seemed to be motivated primarily by the economic theory. See generally STEVEN P. KELMAN, WHAT PRICE INCENTIVES?: ECONOMISTS AND THE ENVIRONMENT 100 (1981) (finding, through a survey of congressional staffers, that support for market-based environmental policies were motivated by ideological beliefs, with a limited understanding of the effects of such programs).

³⁷ For instance, using an auction for the initial distribution of permits, rather than a free allocation by Congress, could result in 25% lower costs for the program. See, e.g., Lawrence Goulder et al., *Revenue-Raising vs. Other Approaches to Environmental Protection: The Critical Significance of Pre-existing Tax Distortions*, 28 RAND J. ECON. 708 (1997). Congressional allocation may be a necessary "second best" solution if it is the only politically feasible means of passing the legislation.

ceptance by policymakers and other interested parties. As a preliminary matter, a more thorough account the program's regulatory features is in order.

II

EMISSIONS TRADING UNDER THE CLEAN AIR ACT

The discussions surrounding the 1990 amendments to the CAA were heavily influenced by perceived shortcomings in the existing acid rain control program.³⁸ Before the amendments, the CAA relied primarily on a traditional command-and-control regulatory scheme, in which compliance with emission goals required either changes in production (e.g., the use of scrubbers for coal-burning plants) or mandated reductions in emissions.³⁹ This system limited utilities' production options in complying with emission caps, thereby preventing many polluters from meeting the emission goals in a cost-effective manner and perhaps decreasing incentives to reduce emissions below the levels set by the CAA. This problem, among others, led scholars, legislators, and industry to propose alternative acid rain controls.⁴⁰

The market-based approach designed for Title IV-A was not completely new, however. In the 1970s and 1980s, the Environmental Protection Agency (EPA) provided for limited emissions trading in its air emissions and lead rights programs.⁴¹ Trading could occur under four air pollution schemes: (1) "bubbles," which allowed adjacent sources to be considered part of one source, thereby permitting trading among nearby plants;⁴² (2) "offsetting," which allowed source operators to offset additional pollution from one source by reducing the same pollutant at other nearby sources;⁴³ (3) "banking," which authorized pol-

³⁸ See Larry B. Parker et al., *The Clean Air Act Amendments of 1990—A Symposium: Clean Air Act Allowance Trading*, 21 ENVTL. L. 2021, 2023-24 (1991).

³⁹ See Dallas Burtraw & Byron Swift, *A New Standard of Performance: An Analysis of the Clean Air Act's Acid Rain Program*, [1996] 26 ENVTL. L. REP. (ENVTL. L. INST.) 10,411, 10,412-13 (Aug. 1996).

⁴⁰ See, e.g., Ackerman & Stewart, *supra* note 12, at 178-88.

⁴¹ See Parker et al., *supra* note 38, at 2033-34.

⁴² See Recommendation for Alternative Emission Reduction Options Within State Implementation Plans, 44 Fed. Reg. 71,779 (1979).

⁴³ See Air Quality Standards; Interpretative Ruling, 41 Fed. Reg. 55,524, 55,524-27 (1976).

luters to reduce emissions in order to use the allowance later;⁴⁴ and (4) “netting,” which exempted from new source requirements changes made to existing plants, if total emissions did not significantly increase.⁴⁵

Title IV-A of the CAA amendments focused, in particular, on electric utilities’ emissions of sulfur dioxide (SO₂)⁴⁶ and oxides of nitrogen (NO_x).⁴⁷ Building on earlier reforms, utilities were given pollution “allowances” that permitted the utility to emit SO₂ or NO_x.⁴⁸ These allowances could then be bought and sold in an allowance trading system, thereby holding overall emissions constant while allowing market forces to determine the level of emissions for any given utility.⁴⁹

The first step in the 1990 amendments was to set the overall emissions levels. Title IV-A reduced emission goals for January 1, 2000 by ten million tons of SO₂ and two million tons of NO_x below that of the previous command-and-control CAA system.⁵⁰ The intent of the new standards was to reduce SO₂ emissions to 15.7 million tons per year—an almost fifty-percent reduction.⁵¹ Title IV-A imposed a cap on total SO₂ emissions, limited after 2000 to 8.9 million tons annually per utility.⁵²

These control provisions were to take place in two phases.⁵³ By January 1, 1995, Phase I utilities, defined as larger emitters,⁵⁴ were supposed to reduce their SO₂ emissions by 3.5 million tons.⁵⁵ By January 1, 2000, Phase II facilities⁵⁶ must meet the 8.9

⁴⁴ See Emissions Trading Policy Statement: General Principles for Creation, Banking and Use of Emission Reduction Credits, 51 Fed. Reg. 43,814, 43,831 (1986).

⁴⁵ See *id.* at 43,830.

⁴⁶ See 42 U.S.C. § 7651 (1994).

⁴⁷ See *id.* § 7651f.

⁴⁸ See *id.* § 7651c.

⁴⁹ See Parker et al., *supra* note 38, at 2022.

⁵⁰ See 42 U.S.C. § 7651(b). Total utility emissions were set at 8.9 million tons of SO₂ for the year 2000, as compared to 15 million tons for the year 1988. See Parker et al., *supra* note 38, at 2026.

⁵¹ See S. REP. NO. 228, at 302 (1989), *reprinted in* 1990 U.S.C.C.A.N. 3385, 3685.

⁵² See 42 U.S.C. § 7651b(a)(1).

⁵³ For a helpful chart detailing the requirements of each phase, see Parker et al., *supra* note 38, at 2027 tbl.1.

⁵⁴ There were 110 such facilities, defined as those larger than 100 Megawatts (Mw) and emitting greater than 2.5 pounds of SO₂ per million British Thermal Units (mmBtu). See 42 U.S.C. § 7651c, tbl.A; Parker et al., *supra* note 38, at 2027.

⁵⁵ See 42 U.S.C. § 7651c(a)(2).

million ton cap on SO₂ emissions, thereby requiring a reduction of around five million tons. Plants emitting less than 1.2 pounds of SO₂ per mmBtu must meet limits based on their past usage.⁵⁷ Finally, utilities started after the Phase II compliance date must not only meet the new emissions cap, but also offset their emissions—i.e., obtain emissions permits from other utilities.⁵⁸

The emissions allowances are allocated to existing utilities based on their past usage.⁵⁹ A utility may distribute the allowances in any manner among whatever plants it operates.⁶⁰ However, a utility starting operation after 2000 will receive no permits and must buy them from existing plants.⁶¹ Utilities are free to sell allowances nationally or hold their permits for later use.⁶² A plant whose emissions exceed those allowed by its permits is penalized \$2000 per excess ton of SO₂ and has its allowed emissions in the following year reduced by one ton for every ton exceeded.⁶³

The EPA was given a great deal of responsibility in implementing the emissions allowance program. For instance, the agency was granted some discretion in distributing the initial allowances⁶⁴ and was entrusted to run the sales and auctions of permits thereafter.⁶⁵ Each year, 2.8% of the Phase I and II allowances are set aside for sale: 50,000 allowances are sold for \$1500 each,⁶⁶ and the remaining 200,000 permits are auctioned with no set price.⁶⁷ Other ongoing EPA responsibilities include tracking the allowances,⁶⁸ determining regulations to issue the permits,⁶⁹ and monitoring and enforcing the allowance system.⁷⁰

⁵⁶ These are defined as those facilities equal to or larger than 75 Mw and emitting from 1.2 to 2.5 pounds of SO₂ per mmBtu. *See id.* § 7651d(b).

⁵⁷ *See id.* § 7651d(d). Emissions are limited to either their 1985-87 baseline, multiplied by 1.2, or a new baseline determined by 60% of their present fuel consumption. *See id.*; *see also* Parker et al., *supra* note 38, at 2028.

⁵⁸ *See* 42 U.S.C. § 7651b(e).

⁵⁹ *See id.* § 7651b(a)(1); *see also* Parker et al., *supra* note 38, at 2025.

⁶⁰ *See* 42 U.S.C. § 7651b(a)(1).

⁶¹ *See id.* § 7651b(e).

⁶² *See id.* § 7651b(b).

⁶³ *See id.* § 7651j.

⁶⁴ For instance, Title IV-A provides for additional allowances to be given to cleaner plants. *See id.* § 7651c.

⁶⁵ *See* Parker et al., *supra* note 38, at 2032.

⁶⁶ *See* 42 U.S.C. § 76510(c)(1)-(2). These are sold only upon a showing that a good faith effort to purchase allowances failed. *See id.* § 7651o(c)(4).

⁶⁷ *See id.* § 7651o(d).

⁶⁸ *See id.* § 7651b(d).

⁶⁹ *See id.* § 7651(g).

III LEGISLATIVE HISTORY

The tradable allowance program was one of the major focuses of President Bush's proposed environmental reforms. Bush sought to bolster his image as a self-proclaimed environmentalist, yet was eager to accommodate the business interests that supported his administration and the Republican Party.⁷¹ The emissions trading system was a means to reconcile these often competing concerns. On signing the CAA amendments into law, President Bush summed up his support for allowance trading as follows:

The innovative use of market incentives in the bill represents the turning of a new page in our approach to environmental problems in this country. The acid rain allowance trading program will be the first large-scale regulatory use of market incentives and is already being seen as a model for regulatory reform efforts here and abroad. . . .

By employing a system that generates the most environmental protection for every dollar spent, the trading system lays the groundwork for a new era of smarter government regulation; one that is more compatible with economic growth . . . [and] that relies on the market to reconcile the environment and the economy.⁷²

The President's desire to achieve environmental protection while also providing cost savings for polluter industries is clear. His panacea was the allowance trading program and its promise in providing environmental gains and business flexibility.

William K. Reilly, EPA Administrator, echoed Bush's sentiments by arguing that emissions trading allows the government to set adequate national environmental goals while permitting utilities to attain these goals "in the least expensive, most cost-effective ways."⁷³ Expanding on the latter assertion, he noted that emissions trading "provides economic incentives to employ

⁷⁰ See *id.* § 7651k(a).

⁷¹ See Stavins, *supra* note 8, at 76 (stating that "[t]he ideas of 'fiscally responsible environmental protection' and 'harnessing market forces to protect the environment' fit well with [the Bush Administration's] quintessentially moderate Republicanism").

⁷² Statement by President George Bush Upon Signing S. 1630, 26 WKLY. COMP. PRES. DOC. 1824 (Nov. 19, 1990), reprinted in 1990 U.S.C.C.A.N. 3887-1, 3887-1 to 3887-2.

⁷³ *Clean Air Act Reauthorization, Part 2: Hearings on H.R. 144, H.R. 1470, H.R. 2586, H.R. 2909, H.R. 3030, and H.R. 3211 Before the Subcomm. on En-*

the least cost solution by choosing among cleaner fuels, energy efficient combustion and the promotion of energy conservation among its customers.”⁷⁴ This economic argument was not the only motivation for the permit system, but it clearly dominated legislative debate over the amendments. The importance of discussing the economic theory of permits is underscored by a 1981 survey of congressional staff members that showed both a sharp ideological disagreement on the use of market-based systems and a lack of understanding of the economics of the scheme.⁷⁵ An increased knowledge of economic theory and its relationship to environmental regulation may have sparked increased support for tradable permits, thereby making economic analysis a focal point of the debate over the permit program.

A. *Economic Approach*

The idea of trading emission permits is based on economic theories addressing the most effective way to regulate pollution.⁷⁶ Debate over the amendments, therefore, focused a great deal on the feasibility of the economic model in achieving its promised goals. Savings through utility compliance costs alone were estimated by some at between \$1.7 billion and \$3.4 billion a year by 2010.⁷⁷

Daniel Dudek, Senior Economist for the Environmental Defense Fund (EDF) and the “father of emissions trading,”⁷⁸ argued that the two most important factors for the trading program to achieve the promise that economic analyses predict were: (1) a typical “cap” on reductions that guarantees environmental goals;⁷⁹ and (2) “flexibility for sources in the means they choose

ergy and Power of the House Comm. on Energy and Commerce, 101st Cong. 16 (1989) [hereinafter *Energy Hearings*, Part 2].

⁷⁴ *Id.*

⁷⁵ See Stavins, *supra* note 8, at 76 (citing Steven Kelman’s 1981 survey); see also *supra* note 36.

⁷⁶ See Ackerman & Stewart, *supra* note 12, at 178-88.

⁷⁷ See *Clean Air Act Amendments of 1989, Part 5: Hearings on Acid Rain Before the Subcomm. on Env’tl. Protection of the Senate Comm. on Env’t and Pub. Works*, 101st Cong. 63 (1989) [hereinafter *Env’tl. Hearings*] (statement of Sen. Heinz).

⁷⁸ See *id.* at 202 (statement of Sen. Lieberman) (“[O]bviously, Mr. Dudek, you are the creator of this idea, or at least the leading advocate of it, and it takes us all into a brave new world.”).

⁷⁹ See *id.* at 269 (describing the emissions cap as “an underlying mandatory reduction program of the highest degree of integrity and reliability”).

for fulfilling their reduction obligations.”⁸⁰ A system that contained these two parts “would offer a permanent, least-cost solution to the acid-rain problem while spurring a number of other environmental and economic benefits.”⁸¹

One such benefit predicted by Dudek was that \$14.3 billion in savings could result from greater efficiency spurred by increased incentives to reduce energy use.⁸² He further estimated that use of market-based controls might save as much as seventy-five percent over the costs associated with the same controls under traditional regulation, while simultaneously encouraging more emission controlling technologies.⁸³

Not everyone was as optimistic as either Dudek or the Bush Administration. Many critics of the trading program, as well as some of its supporters, argued that the amendments left many problems unaddressed. Discussion of these problems was the source of most of the legislative debate regarding the economic aspects of the trading program. However, because the program seemed generally unaffected by such criticism, these debates do not provide clear support for many of the theories that attempt to explain the barriers to alternate regulations or allowance trading’s dominance among market-based schemes.⁸⁴

1. *Liquidity*

The major economic concern regarding the success of the program was that the allowance market created would not be sufficiently liquid to produce the benefits theorized. This potential problem had two conceivable causes: an inadequate distribution of permits and the possibility that utilities would “hoard” the permits that they received.

Many groups feared that too few permits would be traded. John E. Barker, Assistant Vice-President for Armco, Inc. (a steel producer), spoke on behalf of the Electricity Consumers Resource Council in support of allowance trading, yet voiced concerns over the proposed amendments.⁸⁵ Barker’s concerns were

⁸⁰ *Id.*

⁸¹ *Id.* at 266.

⁸² *See id.* at 273.

⁸³ *See id.* at 282.

⁸⁴ *See supra* text accompanying notes 24-36.

⁸⁵ *See Clean Air Act Reauthorization, Part I: Hearings Before the Subcomm. on Energy and Power of the House Comm. on Energy and Commerce*, 101st Cong. 491 (1989) [hereinafter *Energy Hearings, Part I*].

that too few allowances would be available for trading because new plants would have to buy permits from existing plants at exorbitant rates and that the program's market-building mechanisms were uncertain.⁸⁶ Along these lines, A. Joseph Dowd, Senior Vice-President and General Counsel of the American Electric Power Service Corporation, noted that "the lower allowable emissions rates are forced, the less there is left over for trading."⁸⁷ Senator Robert Byrd issued a similar warning, expressing concern that the Senate plan would allow the EPA to reduce emission permits from the credits reserve⁸⁸ as much as eighteen months later.⁸⁹

Not all groups shared these fears, however. The Department of Energy (DOE) submitted a detailed economic defense of the allowance trading program, arguing that the incentive of firms to maximize profits would be sufficient to produce significant trading.⁹⁰ Dudek and Colorado Governor Roy Romer also suggested that the number of Phase I utilities should be large (both argued for 100) in order to foster more trading.⁹¹ Moreover, Dudek suggested that if "market participants . . . believe that they will not use the marketplace that they all claim they wish to have, then . . . Congress [should] . . . reserv[e] some of those allowances . . . and then auction[] them out."⁹² Regarding this idea, Richard Schmalensee of the Council of Economic Advisors noted that an "auction system would be in principle as effi-

⁸⁶ See *id.* at 498 (stating that "[u]tilities would be motivated to retain the allowances for their own use and to restrict transfer to new sources," while the bill "does not explicitly establish or encourage the formation of a market for the trading of emissions allowances").

⁸⁷ *Energy Hearings, Part 2, supra* note 73, at 382.

⁸⁸ The credits reserve is the set of allowances that the EPA does not distribute to polluters in order to sell later at auctions, thereby giving all utilities (not just those with initial allowance distributions) a chance to purchase permits. See *supra* text accompanying notes 66-67.

⁸⁹ See *Clean Air Conferees Asked to Mull Approaches Forwarded by Senator Byrd*, COAL WK., Sept. 3, 1990, at 8, available in 1990 WL 2230877 (expressing Byrd's support for the House provision that defines allowances more precisely). The Senate version was eventually passed into law, but it removed this "look back" provision. See *id.*

⁹⁰ See *Energy Policy Implications of the Clean Air Act Amendments of 1989: Hearings Before the Senate Comm. On Energy and Natural Resources*, 101st Cong 30-60 (1990) [hereinafter *Energy Policy Hearings*].

⁹¹ See *Env'tl. Hearings, supra* note 77, at 208 (statement of Dr. Daniel J. Dudek, senior economist, EDF), 228 (statement of Gov. Roy Romer, Colo.).

⁹² *Id.* at 202.

cient as our direct distribution system”⁹³ (i.e., free permit allocation by Congress). The Administration also emphasized the need for the allowance market to “have all the characteristics attributable to a free market mechanism.”⁹⁴

Another liquidity issue was the possibility of “hoarding,” the opportunity for a utility to hold its allowances rather than sell them on the trading market.⁹⁵ It was thought that hoarding, if it occurred to a substantial degree, would reduce the ability of the trading program to achieve its promised benefits by negating the market for permits.⁹⁶ For instance, William W. Berry, Chairman and Chief Executive Officer of Dominion Resources and Chairman of Virginia Power, argued that the offsetting provision⁹⁷ would prevent trading because any utility that expects growth will refuse to sell its allowances.⁹⁸ Similarly, the American Electric Power Service Corporation asserted that companies would be unwilling to sell allowances if they thought they would need them in later years.⁹⁹

This concern was countered in part by Linda G. Stuntz, Deputy Undersecretary of the DOE, who discussed a resolution by the Ohio Public Utilities Commission promising not to encourage hoarding of permits.¹⁰⁰ Moreover, Schmalensee asserted that consumers and utility shareholders would successfully oppose hoarding, “which would necessarily result in higher rates or lower returns or both.”¹⁰¹ Dudek also suggested that hoarding

⁹³ *Energy Hearings, Part 2, supra* note 73, at 233.

⁹⁴ *Id.* at 72 (statement of W. Hensen Moore, Deputy Secretary of Energy) (citing free entry and exit; multiple buyers and sellers; and prices determined by the marginal cost of emissions reduction).

⁹⁵ *See Parker et al., supra* note 38, at 2041.

⁹⁶ *See id.*

⁹⁷ This provision required additional emission needs to be met through the purchase of new allowances. *See* 42 U.S.C. § 7651e (1994).

⁹⁸ *See Energy Hearings, Part 2, supra* note 73, at 304 (statement of William W. Berry, Chairman, Virginia Power) (stating that “any utility expecting to increase generation . . . will tend to retain its allowances to serve its own customers’ needs”).

⁹⁹ *See id.* at 382 (statement of A. Joseph Dowd, Senior Vice-President & General Counsel, American Electric Power Service Corp.).

¹⁰⁰ *See Energy Policy Hearings, supra* note 90, at 47-48 (citing, generally, the possibility of regulatory incentives to discourage hoarding).

¹⁰¹ *Energy Hearings, Part 2, supra* note 73, at 221 (statement of Richard Schmalensee, member, Economic Council of Advisors) (arguing that hoarding more allowances than would be reasonably necessary in the near future would impose significant opportunity costs to utilities, which would lead them to sell such permits).

could be mitigated by allowing the EPA to withhold a certain percentage of allowances each year, thereby accruing a pool that could be distributed to utilities shut out by the free market.¹⁰²

The severity of hoarding is not entirely clear, as a reasonable level may be beneficial or necessary for utilities and could occur without threatening the trading program. Potential growth and other concerns for the future provide a legitimate need for a utility to “hoard” its allowances.¹⁰³ The issue really seems to go towards anticompetitive behavior—the possibility that utilities may hold onto allowances in order to drive up prices or hurt competitors.¹⁰⁴

The potential liquidity problem is a justified concern. For the trading system to work, there must be a market sufficiently large for utilities to feel confident in their ability to buy or sell permits; otherwise, polluters would have no incentive to reduce emissions.¹⁰⁵ This problem, however, did not appear to implicate any serious obstacles to passage. The most likely reason is that the problem dealt with implementation, most of which was left to the EPA.¹⁰⁶ Ultimately, the liquidity issue led in part to the introduction of the program’s auction provision¹⁰⁷—one of the few significant changes made in the legislation after its introduction. Yet, the central purpose of the auction provision was not to address this problem; rather, its creation was intended to meet concerns of smaller utilities who feared that they would be shut out of the trading system. Therefore, while liquidity was an oft-cited issue in the hearings for the trading program, it did little to shape or threaten the bill’s passage.¹⁰⁸

¹⁰² See *Envtl. Hearings*, *supra* note 77, at 203 (statement of Dr. Daniel J. Dudek, senior economist, EDF) (stating that accrued emissions “could be available for independent power producers and others who are concerned about the anti-competitive effects of such a system”). This concern is also related to anti-trust issues. See discussion *infra* Part III.E.

¹⁰³ See *Energy Hearings, Part 2*, *supra* note 73, at 222-23 (statement of Richard Schmalensee, member, Economic Council of Advisors).

¹⁰⁴ See *id.* at 223-24; see also discussion *infra* Part III.E.

¹⁰⁵ A market that is too small could make the transition costs too high for significant trading to occur. See Coase, *supra* note 11, at 15-19.

¹⁰⁶ See *supra* text accompanying notes 64-70.

¹⁰⁷ See Parker et al., *supra* note 38, at 2032.

¹⁰⁸ This concern did gain further prominence in the implementation stage of the program, although some commentators are now suggesting that its importance in evaluating the program has been overstated. See, e.g., Burtraw & Swift, *supra* note 39, at 10,411-14 (describing the 1990 amendments to the CAA

2. *Assumptions of the Economic Model*

In addition to the program's implementation, the underlying assumptions of the economic model were attacked. In his testimony, William Berry stated that the real world's imperfect information would undermine the goals of the allowance program.¹⁰⁹ Citing the monopolistic nature of the electric power industry, David W. Penn, General Manager of Wisconsin Public Power, Inc., argued that the "emissions trading provisions and the assumptions underlying them . . . are nonsense."¹¹⁰ It is unclear why certain utilities were against trading; one possibility is that they believed the program—and the emissions cap in particular—would be more costly to them than the present system. Resistance to permits, however, was not a sentiment shared by most utilities, which generally supported the program.¹¹¹

While criticism of the economic model's assumptions was not well-developed in the hearings, it did present an obstacle to passage. The trading model is based on the assumption that transaction costs will not be so expensive that a market cannot form (e.g., the liquidity concern) and that there will be sufficient information to allow utilities to value allowances and trade them.¹¹² During the program's implementation stage, as actual data on trading became available, the lack of an active trading market became a more prominent issue.¹¹³ However, at the early stage of pre-passage debate, criticism of the economic model lacked significant evidence of this problem, and there were few direct responses to criticisms of the model's actual application.¹¹⁴ Basically, the issue came down to a difference of opinion, with supporters of the permit system asserting that the assumptions on which successful implementation depended were sound and those in opposition arguing that the prediction of success were based on a flawed theoretical foundation. In the end,

as "one of the most successful environmental programs of the past decade" despite liquidity problems).

¹⁰⁹ See *Energy Hearings, Part 2, supra* note 73, at 304 (statement of William W. Berry, Chairman, Virginia Power).

¹¹⁰ *Id.* at 390 (arguing in large part that anticompetitive practices will pervade the program and prevent a true market from forming).

¹¹¹ See, e.g., *supra* text accompanying note 85.

¹¹² See *supra* text accompanying note 105.

¹¹³ See discussion *infra* Part IV.A.1.

¹¹⁴ For example, there were no studies or economic models that countered the contentions of EDF's study, which predicted that an adequate market would form. See *Envtl. Hearings, supra* note 77, at 270-71.

the possibility that the economic assumptions upon which the program was based were too flawed to work failed to change or prevent the passage of the amendment. Despite suggestions to the contrary,¹¹⁵ the uncertainty of the trading program's outcome did not appear to provide a significant obstacle to its support by legislators or environmentalists.

3. *Regulatory Issues*

The power given to the EPA¹¹⁶ and state regulatory agencies¹¹⁷ in implementing the program prompted concern regarding the regulatory scheme. William Walbridge, Executive Vice-President of Seminole Electric Cooperative, speaking on behalf of the National Rural Electric Cooperative Association, doubted the ability of a free market in permits to exist in the face of significant state regulation.¹¹⁸ Similarly, Richard L. Lawson, President of the National Coal Association, pointed out that utilities must obtain permits before each trade, thereby "eliminating any flexibility that the trading system might provide."¹¹⁹

Others objected to the assertion that state regulation hurts the market for emissions trading. William Badger, a member of the Maryland Public Service Commission and Vice-President of the National Association of Regulatory Utility Commissioners, a state regulatory interest group, justified such regulations by arguing that "[i]t would be irresponsible for the states not to first examine the extent to which emission allowances may be required to accommodate economic growth before authorizing a utility to transfer emission allowances to another state."¹²⁰ He further pointed out that the very utilities protesting regulatory action

¹¹⁵ See *supra* text accompanying notes 26-27.

¹¹⁶ See, e.g., *supra* text accompanying notes 64-70.

¹¹⁷ For example, states were required to meet the EPA's national ambient air quality standards (NAAQS), which placed caps on airborne pollutants, through state implementation plans (SIPs) approved by the EPA. See 42 U.S.C. § 7410(a)(1) (1994).

¹¹⁸ See *Clean Air Act Reauthorization: Hearings Before the Subcomm. on Energy and Power of the House Comm. on Energy and Commerce, Part 3*, 101st Cong. 47 (1989) [hereinafter *Energy Hearings, Part 3*] ("State public utility commissions representing State and Local interests could and would likely dictate alternatives for the regulated utility other than those following free market behavior."); see also *supra* note 117.

¹¹⁹ *Energy Hearings, Part 1, supra* note 85, at 621.

¹²⁰ *Id.* at 662-63. Badger noted that "it is the cap provision[, limiting overall emissions,] which requires that the states undertake this type of regulatory process." *Id.* at 662.

were given their place in the market by the same agencies that they were now complaining about.¹²¹ Dudek similarly discounted the threat of over-regulation, predicting that if “[s]tates act unilaterally to restrict trading, they will only drive up costs to their rate-payers.”¹²² Finally, some members of Congress addressed this issue by expressing their understanding that the EPA, in implementing the program, “may not use the permitting system to impose cumbersome unit-specific control requirements which would impede the free trading of allowances in any way.”¹²³

The regulatory scheme created to implement a program clearly has a significant impact, for, as the cliché states, “the devil is in the details.” Concern over ensuing regulations was obviously a legitimate problem, yet Congress did not seem eager to micromanage the program, as evinced by the CAA amendments’ deference to agency implementation.¹²⁴ This deference, in addition to the significant enforcement that the program required, may have forestalled hostility from bureaucrats, who could have felt threatened by the market’s usurpation of some of their traditional regulatory roles.¹²⁵ While regulation had little impact on the system’s passage, this issue gained more prominence, as one would expect, during the program’s implementation.

B. *Environmental Interests*

Problems with the program’s economic rationale were not the only subject of discussion in the hearings. Non-economic approaches, as well as secondary economic effects often ignored by proponents, also played a part in the legislative debate surround-

¹²¹ See *Envtl. Hearings*, *supra* note 77, at 204 (stating that “it should be remembered that the very plants that give rise to these credits have been placed to the rate payers through, very often, a seven month rate process, through evidentiary hearings, for which just and reasonable rates have been established by a commission”).

¹²² *Id.* at 210 (statement of Dr. Daniel J. Dudek, senior economist, EDF). Dudek further noted that “most of these utilities are already engaged in power pooling arrangements” and that “[i]f you trade power across State lines, you are also simultaneously trading emissions.” *Id.* at 210. There has been little evidence that regulations actually imposed have had any negative effects on trading or shareholders. See discussion *infra* Part IV.A.2.

¹²³ 136 CONG. REC. E3672 (daily ed. Nov. 2, 1990) (statement of Rep. Oxley).

¹²⁴ Cf. ACKERMAN & HASSLER, *supra* note 24, at 7-12 (criticizing rulemaking under prior versions of the CAA, including Congress’s abnormally active role in setting these rules).

¹²⁵ See *supra* text accompanying note 29.

ing the bill. Not surprisingly, the major non-economic issue was the program's environmental impact. While support from certain environmental groups was obviously crucial, the ability of environmental concerns to shape the legislation may not have been as profound as some have theorized.¹²⁶ Rather, it appears that once environmental groups no longer posed a significant threat to the permit program, the few environmental issues expressed by such interests received scant attention.

One of the major goals of the Bush Administration was to achieve environmental protections cost-effectively. The Administration asserted that emissions trading could meet these goals, as allowances "strongly encourage conservation and provide an incentive for the development and deployment of cleaner, energy efficient technologies."¹²⁷ David G. Hawkins, a Senior Attorney at the Natural Resources Defense Council (NRDC), speaking for the National Clean Air Coalition (NCAC), indicated his group's support for giving industry the flexibility it requested in order to reach environmental goals.¹²⁸ He emphasized, however, that "[t]he keystone of the environmental objective, and, thus, of the allowance system itself is the requirement that once total . . . emissions are reduced they are not to be increased again."¹²⁹ Moreover, Kenneth L. Lay, Chairman and Chief Executive Officer of ENRON Corp. (a natural gas provider), was, not unexpectedly, supportive of the trading program.¹³⁰ While not supporting the program solely on environmental grounds, he stated that the trading program "is an innovative idea that will further the goals of clean air and economic efficiency," and rec-

¹²⁶ See, e.g., *supra* text accompanying notes 26, 33.

¹²⁷ *Energy Hearings, Part 2, supra* note 73, at 18 (statement of William Reilly, Administrator, U.S. Environmental Protection Agency); see also *id.* at 215-16 (statement of Richard Schmalensee, member, Economic Council of Advisors) ("There is no doubt that [the] application [of market principles] will reduce acid rain at lower cost and at less risk of disruption and dislocation than any alternative approach. Indeed, at least 11 of the 13 living American Nobel Laureates in Economics . . . have endorsed the principles that underlie the Administration's approach.").

¹²⁸ See *Envtl. Hearings, supra* note 77, at 88-89.

¹²⁹ *Id.* (arguing further that, without this cap, "there is no true market for allowances").

¹³⁰ See *Energy Hearings, Part 1, supra* note 85, at 472. One may surmise that natural gas providers were in favor of the program because its cap on emissions gave both utilities and consumers incentives to reduce pollution, thereby encouraging the use of fuel with lower pollution than coal, such as natural gas.

ognized that permits would promote greater use of cleaner-burning natural gas by utilities.¹³¹

One potential environmental problem was expressed by Senator Max Baucus, who asked during subcommittee debate what his colleagues thought of the fact that “some say that the allowance system which allows trading is a license to pollute.”¹³² This sentiment views the trading system as giving more acceptance to pollution than the traditional command-and-control system. Senator John Heinz’s response was a typical defense of allowance trading: “[W]e’re not talking about anybody having the right to pay for basically an open ended amount of pollution. . . . [T]here is going to be a limit on pollution and we’re going to allow the marketplace to decide how to best distribute the responsibility for staying under that limit.”¹³³

Once trading began, some environmental group also objected on these grounds.¹³⁴ Such criticism, however, seems to have subsided in the face of the program’s ability to achieve reductions in emissions at lower costs to both utilities and regulators.¹³⁵ Moreover, it is not clear that the program’s attitude towards environmental regulation is really much different from the traditional system. The trading program incorporates the command-and-control system’s emissions cap, while allowing polluters to decide how to achieve the reduction. Although the permits initially distributed may appear to be “licenses” to pollute, there is little difference from the old scheme, which similarly allowed utilities a certain level of emissions. Also, once utilities have to pay for additional allowances instead of relying on the initial, free distribution of permits, the distinctions that do exist dissipate.

Another issue associated with tradable permits is the potential for “hot spots,” concentrations of emissions within a certain geographical area.¹³⁶ Senator Joseph Lieberman described this problem as follows:

If we allow an open market . . . is there any danger that the sources of the acid rain that are hitting New England will acquire the permits to continue doing so? In other words, that

¹³¹ *Id.*

¹³² *Envtl. Hearings, supra* note 77, at 8.

¹³³ *Id.* at 9.

¹³⁴ *See infra* text accompanying notes 247-248.

¹³⁵ *See infra* text accompanying notes 205-207.

¹³⁶ *See Ackerman & Stewart, supra* note 12, at 187-88.

reductions, if they're imposed on a national basis, may actually occur in plants other than the ones . . . that seem to be the source of the problem?¹³⁷

The response from Senators John Heinz and Timothy Wirth was that the first phase of implementation would target heavy polluters, thereby reducing the risk of hot spots.¹³⁸ This answer, however, did not fully address Senator Lieberman's worry because hot spots could still form as trading became more widespread. This issue, therefore, became more important during implementation of the program, particularly as trading became an option for more utilities and as state regulatory commissions became concerned with the effect of trading on the quality of their local environment.¹³⁹

Despite these concerns, it seems apparent that most environmental groups shared the sentiment of Fred Krupp, Executive Director of EDF, who said, "[i]t is refreshing to see Democrats and Republicans coming together behind a strong clean air bill The 10 million ton reduction in acid rain pollution and the permanent cap on future emissions represent a big victory for the environment."¹⁴⁰ This statement reflects many environmental groups' view of the amendments, which held the emissions caps as the primary policy objective while considering trading merely as a means to emissions reduction. It was precisely this means that had more support from polluters and Congress than the traditional approach. This consensus, of course, is one of the primary benefits that trading provides.¹⁴¹ It is possible that some other factor may explain the strong unity of these previously opposed interests, but it is clear that most parties involved in the legislation saw tradable permits—and the diverse groups that supported it—as the most significant force behind the passage of the amendments.¹⁴²

The success of the trading program, as well as the amendments as a whole, was still contingent upon support from envi-

¹³⁷ *Envtl. Hearings*, *supra* note 77, at 13.

¹³⁸ *See id.*

¹³⁹ *See infra* text accompanying notes 254-257.

¹⁴⁰ *Clean Air Bill Emerges from Congress; White House Approval Near*, *COAL WK.*, Oct. 29, 1990, at 10, available in 1990 WL 2230610.

¹⁴¹ *See Stavins*, *supra* note 8, at 77 ("Market-based instruments are most likely to be politically acceptable if they can achieve environmental improvements which otherwise are not politically or economically feasible.").

¹⁴² *See, e.g., supra* text accompanying note 72.

ronmental interests. EDF, in particular, was instrumental in promoting and supporting the allowance trading program.¹⁴³ Yet, somewhat curiously, the Senate Subcommittee on Environmental Protection only heard testimony from two environmental groups, out of twenty-seven total witnesses.¹⁴⁴ Despite this limited testimony, the support of environmental interests still seemed vital to the passage of the program, although substantive changes resulting from environmental concerns were not apparent. The lack of modifications may reflect environmental groups' satisfaction with the amendment. After all, their major interest was a lower emissions cap, and they may have believed that support from the utilities was impossible without trading. In the end, it appears that many environmental groups viewed emissions trading as the best means, both politically and economically, of achieving the level of reductions specified in the amendments, which was sufficient to foster their support for the program.¹⁴⁵

C. Consumer Concerns

Representatives of electric utility consumers were deeply interested in the tradable permit program, and these advocates both supported and criticized the program on the grounds of consumerism. The prominence of consumer issues in the hearings was, however, not very high.

¹⁴³ See Dan Krainin, *Policy Dialogue: EDF, GM Riding High on Joint Venture*, GREENWIRE, July 9, 1992, available in WESTLAW, ALLNEWS Database (stating that "EDF is widely recognized for its leadership in this field, having been credited by the Bush administration with breaking the logjam on emissions trading under the Clean Air Act of 1990"); see also Joskow & Schmalensee, *supra* note 24, at 48.

¹⁴⁴ It is not clear why there were so few environmental groups represented at the hearings. EDF and the NCAC were represented and both supported the trading permits. See *supra* text accompanying notes 140 (EDF), 128 (NCAC). It is possible that other environmental groups were opposed to the program, but there was no evidence of significant opposition in the news at the time. It is also possible that Congress believed two environmental groups were sufficient to represent environmental interests. This author, however, can only speculate as to the real motivation.

¹⁴⁵ See, e.g., *supra* text accompanying note 78 (describing Dudek as one of the most important intellectual forces behind the allowance program). It is interesting, however, that, as this section makes clear, Dudek's testimony had little to do with pure environmental concerns. He provided answers, primarily through a detailed study, to many economic and regulatory concerns, while assuming that the permit program, in combination with the emissions cap, would be beneficial for the environment. See *supra* text accompanying notes 78-83.

One concern over the program's effect on electric rates, expressed by Mark N. Cooper, Director of Research of the Consumer Federation of America, was the possibility that utilities may overinvest in allowances, thereby increasing costs to electric buyers while distributing the additional profits to shareholders.¹⁴⁶ William Reilly of the EPA countered this concern by predicting that the allowance trading system would reduce electric rates by twenty percent.¹⁴⁷ At a greater level of detail, Dudek's EDF study allowed for the possibility of rate increases but estimated that, at the most, 90% of states would have rate increases less than 3.5%, while 10% of states would have only around 5% increases.¹⁴⁸

While concern for consumers was a common theme throughout much of the debate over other CAA amendments, little of it was targeted directly at the permit program. Much of the focus was on the effect of the emissions cap. Yet there was recognition that the flexibility that the trading program would provide utilities was a potential influence on consumer electric rates. Given that commentators argued on both sides, it seems fair to say that no one was sure of what would happen, particularly in different regions of the country. EDF had the most comprehensive study, however, and Dudek's prediction that allowance trading would have a minimal effect on rates seemed reasonable at the time of passage and even more so given the lack of comments on this issue following passage. Finally, while one might expect that utility rates would be of special interest to politicians—as changes in utility costs directly impact the pocketbooks of voters—the representatives had few questions or comments on the program's influence on utility rates. It is unclear why this issue was not more prominent, but possible explanations include the lack of invitations to consumer groups to testify, the ability of regulatory agencies to set rates and limit rate increases, and the prediction by the well-respected Dudek that the impact would be small.¹⁴⁹

¹⁴⁶ See *Energy Hearings, Part 1*, *supra* note 85, at 463 (stating that “if regulators are not careful in accounting for the income from the sale of these credits or permits, utilities might be inclined to invest in reductions at the expense of ratepayers and then enrich stockholders with the profits”).

¹⁴⁷ See *Energy Hearings, Part 2*, *supra* note 73, at 17 (citing the simplification of the allowance trading process as the key to cost reduction compared to trading without allowances, which would require much negotiation and administrative rulemaking).

¹⁴⁸ See *Env'tl. Hearings*, *supra* note 77, at 274.

¹⁴⁹ See *id.*

D. Federalism Issues

While many commentators cited the overall regulatory scheme as a potential problem,¹⁵⁰ the role of federal versus state regulators was also at issue. Fearing a lack of sufficient regulation, Mark Cooper noted the uncertainty as to whether there would be federal or state jurisdiction over utilities' use of allowances.¹⁵¹ The federalism issue was raised again by Jo Campbell, State Commissioner for Texas, who expressed concern over the ability of state authorities to regulate allowances due to possible federal preemption of state utility regulatory authority.¹⁵² Moreover, Edward Addison stated that the allowance trading program "would permit the Environmental Protection Agency to assume the traditional authority of States to issue permits under State Implementation Plans."¹⁵³

Despite such testimony, how much the impact of emissions trading itself troubled the states is questionable. William Badger reported that ninety-four percent of state commissions favored emissions trading, with ninety-two percent favoring intrastate trading and fifty-nine percent favoring interstate trading.¹⁵⁴ While the lessening support for interstate trading seems to affirm the federalism issue, Badger stated that his group's major concerns were "flexibility and cost effectiveness . . . [which a] trading system would further."¹⁵⁵ He did assert, however, that the amendment should not exclude state commissions from the oversight of allowance transferability,¹⁵⁶ although he explicitly stated that "the means to control these allowances should not be vested with the States."¹⁵⁷

¹⁵⁰ See discussion *supra* Part III.A.3.

¹⁵¹ See *Energy Hearings, Part 1, supra* note 85, at 545 (statement of Mark N. Cooper, Director of Research, Consumer Federation of America).

¹⁵² See *Energy Hearings, Part 3, supra* note 118, at 37-38 (citing the initial distribution of allowances to higher emitting polluters as a major problem).

¹⁵³ *Energy Hearings, Part 1, supra* note 85, at 566 (statement of Edward L. Addison, President and CEO, Southern Company) (referring to SIPs); see also *supra* note 117.

¹⁵⁴ See *id.* at 659 (statement of William Badger, Vice-President, National Association of Regulatory Utility Commissioners).

¹⁵⁵ *Id.* at 660.

¹⁵⁶ See *id.* at 661. Badger noted that, despite the states' support for emissions trading, "[w]e do, however, believe that the way the bill is structured, we are going to lose some needed control over the emissions." *Id.* at 692. He argued that the bill should require trades to be reviewed as part of the state review of utilities' annual filing of long-term plans. See *id.*

¹⁵⁷ *Env'tl. Hearings, supra* note 77, at 204.

The federalism question is another issue that was raised but had no noticeable effect on the amendment's final language or implementation. This problem, like many others, appeared at the time of the amendments debate to be merely a potential consequence of the program. When the issue became more significant during the implementation phase, Congress still showed no desire to take over some of the implementation duties from the EPA or the states,¹⁵⁸ nor did it seem to view the potentially overlapping jurisdictions as a major problem.

E. *Antitrust Problems*

The antitrust issue, indirectly related to consumerism, was the possibility that the permit program would foster antitrust behavior among the more powerful utilities. The American Public Power Association, a group of local, nonprofit utilities, feared that a few private utilities would be able to exert economic control over power production.¹⁵⁹ Mark Cooper complained of the creation of "a new strategic resource that could be used by the largest utilities to foil competition By vesting rights in incumbents, the permit system may create an insurmountable barrier to entry."¹⁶⁰

Schmalensee countered this fear in concluding that allowances would not result in noncompetitive behavior.¹⁶¹ Additionally, the National Association of Regulatory Utility Commissioners presented case law on state regulatory decisions that provided antitrust defenses.¹⁶² William Badger also argued that state commissions would help determine the distribution of permits and "incorporate into any bidding system . . . the right of

¹⁵⁸ See, e.g., *supra* text accompanying notes 64-70 (EPA), 117 (states).

¹⁵⁹ See *Energy Hearings, Part 1, supra* note 85, at 677; see also *id.* at 673 (statement of Ruth Gonze, Policy Analyst, American Public Power Association) ("The Government grants rights to emit to a certain group of utilities and not to others. . . . There is no reason to expect utilities to relinquish rights to potential competitors.").

¹⁶⁰ *Id.* at 462-63 (statement of Mark N. Cooper, Director of Research, Consumer Federation of America). Richard L. Lawson, President of the National Coal Association, also expressed concern with the low prospect that a utility will sell to its competitors. See *id.* at 621.

¹⁶¹ See *Energy Hearings, Part 2, supra* note 73, at 220 (statement of Richard Schmalensee, member, Economic Council of Advisors) ("My assessment of the facts regarding the economic incentives in the allowance market does not provide me with any indications that would lead me to expect noncompetitive behavior.").

¹⁶² See *id.* at 294.

allowances . . . to permit . . . non-utility sources [that would have to buy allowances from competitors] an opportunity to provide energy requirements.”¹⁶³

In contrast, the Administration recognized the potential for anticompetitive behavior, asserting that, while a large number of participants minimizes the possibility of market control, “[i]t is possible that a relatively small group of utilities could attempt to control the market If this control were exercised to frustrate market entry, antitrust remedies would be appropriate.”¹⁶⁴ This concern was part of the impetus for one of the few additions to the program—an auction to be run at least annually by the EPA. The EPA was to set aside a certain number of allowances to be sold at the auctions; this system was intended to guarantee all utilities the opportunity to purchase allowances.¹⁶⁵

F. *Regional Equity*

The severe regional differences in volume of emissions and in access to low-sulfur coal created rent-seeking behavior among the parties involved in passing the amendments.¹⁶⁶ During the 1980s, after acid rain had begun to gain prominence as a significant environmental issue, the high-sulfur coal states of the Midwest and East generally opposed new controls, while Western and Northeastern states sought new scrubbing measures.¹⁶⁷ New legislation was essentially blocked by Representative John Dingell, Chair of the House Energy and Commerce Committee,¹⁶⁸ and Senator Robert Byrd.¹⁶⁹ President Reagan’s disapproval of most environmental regulations added to this congressional inertia.¹⁷⁰

¹⁶³ *Energy Hearings, Part 1, supra* note 85, at 664 (statement of William Badger, Vice-President, National Association of Regulatory Utility Commissioners).

¹⁶⁴ *Energy Hearings, Part 2, supra* note 73, at 73 (statement of W. Hensen Moore, Deputy Secretary of Energy).

¹⁶⁵ *See supra* text accompanying notes 65-67.

¹⁶⁶ *See* Joskow & Schmalensee, *supra* note 24, at 44-45.

¹⁶⁷ *See id.* at 45-47 (noting also that the Western and Northeastern states opposed additional electricity taxes).

¹⁶⁸ *See id.* at 47 (stating that Dingell’s “main concern was that any legislation amending the Clean Air Act would likely tighten auto emissions standards significantly”).

¹⁶⁹ *See id.* (reporting that “West Virginia, with high per capita emissions of SO₂ and high production of high-sulfur coal burned in other states, was potentially a big loser from acid-rain legislation”).

¹⁷⁰ *See id.*

Movement began in the 1980s with a rise in environmental concerns. With Bush's election as the "environmental president,"¹⁷¹ along with Senator George Mitchell's assumption of the Senate majority leadership, acid rain controls—at least with a market approach—seemed more plausible.¹⁷² Still, the regional concerns that had blocked legislation in the past remained a force during amendment proposals.

Senator James McClure expressed concern over the distribution of permits, which gave allowances to plants currently in operation but forced new utilities, which he believed would be primarily in the West, to pay for allowances.¹⁷³ This problem was caused by basing the initial distribution of allowances on past emissions, while providing additional allowances for emission reductions in plants operating during the initial distribution. This scheme would hurt states with cleaner emissions, such as those in the West, which had more low-sulfur coal, because they would receive fewer allowances.¹⁷⁴ This equity concern had a promi-

¹⁷¹ See *Bush Vows to Start Acid Rain Cutback*, *supra* note 21.

¹⁷² See *Joskow & Schmalensee*, *supra* note 24, at 48.

¹⁷³ See 136 CONG. REC. S3800 (daily ed. Apr. 2, 1990). A similar sentiment, while not directed at the allowance trading program in particular, was expressed by Richard L. Trumka, President of the United Mine Workers of America, who asserted that the amendments would place a disproportionate burden on Midwestern states. *Energy Hearings, Part 1*, *supra* note 85, at 457 (stating that the amendments "assign to the Midwest and a few neighboring States a vastly disproportionate share of the cleanup responsibility"). Richard Lawson, from the National Coal Association, also expressed equity concerns. *See id.* at 620 (stating that requiring new plants to obtain emissions offsets "will be especially detrimental to utilities in the West and Southwest which are the fastest growing regions of the country"). However, as Richard Schmalensee noted:

[t]he fact that the incumbent holds an initial allocation of allowances, while the entrant must buy them, does not constitute an advantage. . . . The owners of an initially allocated allowance contemplating its internal use face an opportunity cost equal its value on the national market—exactly the same opportunity cost faced by a buyer of allowances.

Energy Hearings, Part 2, *supra* note 73, at 230.

¹⁷⁴ See, e.g., *Energy Hearings, Part 2*, *supra* note 73, at 173 (statement of Ronald W. Watkins, President and Chief Executive Officer, Nebraska Public Power District) ("The proposal would ironically penalize States and utilities in those States with a low sulfur dioxide (SO₂) emissions rate and small total SO₂ emissions by capping these States at their 1985 emission rates."). The 10 states with the lowest total SO₂ emissions were Vermont, Oregon, District of Columbia, Rhode Island, California, Maine, Montana, Utah, Connecticut, and Washington; the 10 states with the highest total SO₂ emissions were Ohio, Indiana, Pennsylvania, Georgia, Illinois, West Virginia, Missouri, Tennessee, Kentucky, and Texas. See *Joskow & Schmalensee*, *supra* note 24, at 46 tbl.1.

ment role during the hearings,¹⁷⁵ yet much of the criticism seemed to focus on the emissions cap, rather than the emissions trading provisions.

Richard E. Ayres, Chairman of the NCAC, argued that allowance trading, which his group supported “in concept,”¹⁷⁶ would actually help to spread costs among different regions.¹⁷⁷ Dudek argued that under the worst-case scenario the average state’s share of the program’s total cost would be 3.7%, with four states having shares of more than 6% and the highest single-state share being 11.7%.¹⁷⁸

A related problem was raised by Jon Pendergrast, Energy Policy Manager of LTV Steel Company, who objected to the application of the permit program to non-utility industries.¹⁷⁹ His concern was similar to those of low-sulfur coal states: “Utilities . . . because they generate the vast majority of SO₂ emissions, would be allowed to accrue the majority of emissions allowances.”¹⁸⁰

These equity concerns seem justified, yet had little effect on the amendments’ passage. What the regional question did influence was the allocation of permits in both phases of the program.¹⁸¹ The program did provide larger polluters with more allowances, but these were the very polluters that the trading program was intended to target. Utilities with low emissions would not be able to significantly reduce emissions, while new utilities were assumed to be able to meet present emissions standards.¹⁸² It was the older plants, most of which were in the East

¹⁷⁵ See *Energy Hearings, Part 1*, *supra* note 85, at 516-24.

¹⁷⁶ *Id.* at 471.

¹⁷⁷ See *id.*

¹⁷⁸ See *Env’tl. Hearings*, *supra* note 77, at 273 (statement of Dr. Daniel J. Dudek, senior economist, EDF) (based on EDF analysis).

¹⁷⁹ See *id.* at 422.

¹⁸⁰ *Id.* at 422-23.

¹⁸¹ For a thorough discussion of the different interests at play in the allocation of permits, see Joskow & Schmalensee, *supra* note 24. For instance, the authors conclude that the amendments’ backers used the distribution of Phase I allowances to gain support from high-emissions states represented on important committees, as well as to subsidize scrubbers and benefits for displaced coalminers in high-sulfur coal states. See *id.* at 54-55. Moreover, Phase II allowances are described as following a “majoritarian politics” outcome, i.e., a result that was not biased towards key players. See *id.* at 66. They explain this outcome as occurring because the high-sulfur coal states focused on helping miners in Phase I, thereby placing less emphasis on Phase II allowances. See *id.*

¹⁸² See *id.* at 62-64.

and faced larger transportation costs for low-sulfur coal, that needed the greatest incentive and flexibility to meet pollution limits. Commentators continued to raise this issue after the program's passage, although this discussion abated as lower transportation costs significantly decreased the price of low-sulfur coal, thereby providing all regions with greater compliance cost savings than originally expected.¹⁸³

With regard to regional equity's effect on the legislation, the bottom line was that the easiest and most effective distribution of permits was one based on past emissions.¹⁸⁴ The economic theory behind tradable permits predicted that the initial distribution would not affect the final outcome.¹⁸⁵ The distribution would only benefit certain utilities over others—a result that failed to prevent passage of the amendments. This outcome undermines arguments that regional political interests, particularly of important policymakers, can prevent tradable permit schemes.¹⁸⁶ Such interests can still have powerful influences as the permit allocation process illustrates. Nonetheless, the ability of permit trading to overcome normally entrenched opposition to environmental regulation provides optimism for the prospect of applying such a scheme to other areas.

G. *Property Rights*

President Bush's original proposal would have made the emissions permits a property right protected from government taking under the Fifth Amendment.¹⁸⁷ The strong resistance to this provision resulted in one of the few significant changes to the amendment; it was eliminated from the final version of the legislation.¹⁸⁸

The prospect that allowances would be considered property under the Fifth Amendment worried several groups, not the least

¹⁸³ See Schmalensee et al., *supra* note 14, at 65.

¹⁸⁴ See Joskow & Schmalensee, *supra* note 24, at 60, 80-81 (concluding that rent seeking from special interests and legislators played a significant role in the allocation of permits).

¹⁸⁵ See Coase, *supra* note 11, at 15.

¹⁸⁶ For examples of such arguments, see Stavins, *supra* note 8, at 72-73.

¹⁸⁷ See U.S. CONST. amend. V (“nor shall private property be taken for public use, without just compensation”).

¹⁸⁸ See 42 U.S.C. § 7651b(f) (1994) (stating that an “allowance does not constitute a property right” and that “[n]othing in this subchapter or in any other provision of law shall be construed to limit the authority of the United States to terminate or limit such authorization”).

of which were utility regulators. The National Association of Regulatory Utility Commissioners was particularly concerned with defining permits as a property right.¹⁸⁹ From the environmentalist camp, Hawkins stated that “[t]here are no ‘rights’ to pollution, nor should there be. . . . It is imperative to specify allowances [as temporary permission to emit pollution] to avoid giving polluters a new legal weapon to use against further pollution control efforts.”¹⁹⁰ Dudek reaffirmed this sentiment, emphasizing that permits are not a right to pollute; rather, they represent an obligation to reduce emissions.¹⁹¹

The opposition to considering allowances as property rights was strong enough to eliminate it from the final bill. This success may be due, in part, to the lack of strong support for the measure. While some argued that allowances should be considered property rights, much of the impetus for the proposal was directed to the liquidity of allowances that would not be guaranteed protection from government changes. The chance that the government would drastically alter or eliminate existing allowances may have been small enough to kill the property rights measure, especially because its inclusion could have been a deal-breaker for many who feared that Fifth Amendment protection would undermine regulators’ ability to control the development of the trading market.

H. *Summary*

When David Hawkins, speaking for the NCAC, stated that “it’s nice to be here not to debate whether to control acid rain but to talk about how,”¹⁹² he may have understated the importance of the “how” relative to the “whether.” An obvious conclusion from the debate over emissions trading reveals is that the support from both utilities and environmentalists was crucial to the passage of not only trading, but of the CAA amendments as a whole.

The endorsement from Dudek and EDF provided critical support for the Bush Administration’s implementation of the

¹⁸⁹ See *Envil. Hearings*, *supra* note 77, at 309-10.

¹⁹⁰ *Id.* at 87 (statement of David Hawkins, senior attorney, NRDC).

¹⁹¹ See *id.* at 203 (statement of Dr. Daniel J. Dudek, senior economist, EDF) (rejecting the property rights characterization “because [the permits] establish on the basis of the baseline compared with current emissions, what that individual source is responsible for producing in the way of emissions reductions”).

¹⁹² *Id.* at 26.

pollution trading system long favored by utilities.¹⁹³ The trading system itself was a key component in getting utilities to agree to a new cap in emissions, which was the goal that environmentalists sought. While there were numerous complaints regarding the program, it is striking that so few commentators argued against the implementation of any trading. Most of the discussion revolved around the proper implementation of the program, thus revealing the success of trading in creating diverse support. The broad scope of trading's appeal is further illustrated by the paucity of serious changes after the program was proposed.

The key to this widespread support seemed to result from the economic theory and predictions of the trading program. The detailed and well-regarded model supplied by EDF predicted significant cost savings over the traditional regulatory scheme for both industry and regulators, in addition to achievement of greater pollution control.¹⁹⁴ Virtually all of the affected parties—polluters, regulators, and environmentalists—viewed the trading program as superior to the status quo. Most of the problems identified spoke to the best way to implement trading¹⁹⁵ or to possible burdens placed on certain groups.¹⁹⁶ What opposition there was to trading in general¹⁹⁷ was rare and had little impact on the passage of the amendments.

Allowance trading apparently kept open Bush's environmental "policy window"¹⁹⁸ long enough for change to take place. Since political players on most sides of the issue were able to act in their own self-interest, support for the program coalesced in a manner that is rarely seen in environmental regulation. Yet the debate over the permit program reveals little about why its use has not been more widespread. Many of the theories proposed in answer to this question¹⁹⁹ did not appear to play a significant role during passage of the program. It is possible that these factors were at play but were not expressly discussed. The interests of existing utilities and their allies in Congress, for instance, were clearly relevant once the passage of new regulations was inevitable; they focused their attention on permit allocation, which was

¹⁹³ See *supra* text accompanying note 143.

¹⁹⁴ See, e.g., *supra* text accompanying notes 82-83.

¹⁹⁵ See, e.g., discussion *supra* Part III.A.

¹⁹⁶ See, e.g., discussion *supra* Parts III.C, III.F.

¹⁹⁷ See, e.g., *supra* text accompanying note 132.

¹⁹⁸ See *supra* text accompanying notes 19-24.

¹⁹⁹ See *supra* text accompanying notes 24-34.

based on past emissions rather than an initial auction.²⁰⁰ It is also possible, however, that many of these problems are less important than previously thought and that we are witnessing the beginning of a more widespread acceptance of pollution trading.²⁰¹

The legislative success of pollution trading suggests that expansion into other environmental schemes²⁰² may be warranted. Ultimately, however, the success of trading and the possibility of applying it elsewhere depends not only on the ease in which it was passed, but also its success once implemented.

IV

IMPLEMENTATION OF EMISSIONS TRADING

Early predictions regarding the program's implementation included cost savings resulting in a twenty- to thirty-percent decrease in the cost of complying with emissions reductions.²⁰³ Also, estimates for the price of allowances ranged from between \$400 to \$800 a ton.²⁰⁴

Eventually, predictions gave way to actual data, as a 1994 General Accounting Office (GAO) study found that compliance costs were reduced below the command-and-control model by \$3.1 billion per year.²⁰⁵ Later studies showed that 1996 emissions were thirty-five percent lower than that allowed by the emissions cap.²⁰⁶ Moreover, it has been estimated that the trading program saved twenty-five to thirty-four percent (\$225 million to \$375 million per year) in the cost of reducing emissions over a system

²⁰⁰ See Joskow & Schmalensee, *supra* note 24; see also *supra* text accompanying notes 32, 34.

²⁰¹ See Kriz, *supra* note 30, at 2851-52 (discussing the attempt to use trading in international air pollution regulations).

²⁰² For instance, such trading may occur in the context of water pollution or timber sales.

²⁰³ See Ben Z. Hershberg, *Paying for Right to Pollute*, GANNETT NEWS SERV., Nov. 28, 1990, available in 1990 WL 4985471 (citing David E. Jones, Vice-President of Temple, Barker & Sloane, Inc.).

²⁰⁴ See *id.*

²⁰⁵ See *Overview and Issues on Emissions Allowance Trading Programs: Hearings on Tradable Emission Credits Before the Joint Econ. Comm.*, 105th Cong. (1997), available in 1997 WL 11234727 [hereinafter *Emissions Trading Hearings*] (statement of Peter F. Guerrero, U.S. General Accounting Office).

²⁰⁶ See *id.* (describing total emissions of 2.9 million tons); see also Schmalensee et al., *supra* note 14, at 57-58 (describing emissions at 39% below issued allowances in 1995 and 33% lower in 1996, while attributing 45% of the reduction to increased scrubbing and 55% to switching to low-sulfur coal).

with the same emissions cap but no trading.²⁰⁷ Nevertheless, the GAO stressed that future implementation of trading should focus on “the need for reliable emissions data, penalties to discourage noncompliance, the allocation of emissions allowances, and the development of trading boundaries, to ensure that actual emissions reductions are achieved.”²⁰⁸

Eight years after its passage and four years after the start of Phase I, the emissions trading program appears to be successful. Jim Saxton, Chairman of the Joint Economic Hearing on Tradable Emissions Credits, opened the 1997 hearing on the trading program by stating in part that

the sulfur dioxide trading program appears to be an excellent example of how a market for emissions can reduce the cost of achieving our environmental protection goals at least cost. Its use in the acid rain program has reduced job loss, promoted economic growth, and lowered producer and consumer costs.²⁰⁹

While some criticism was leveled at the program, primarily that liquidity was limited and that the allowances were sold at unexpectedly low prices, many commentators have countered that these factors are improper measures of the program’s success.²¹⁰ These arguments contend that the two major benefits of the program result from the cap on emissions plus “[t]he cost savings resulting from the use of emission allowances (EAs) versus traditional command-and-control regulation The environmental goal was to achieve a specific quantity of emissions reductions, not to spend a specific sum of money.”²¹¹

As the trading program has developed, analysis of its implementation has been disseminated in diverse mediums, such as

²⁰⁷ See Schmalensee et al., *supra* note 14, at 64 (stating that emissions reductions cost on average \$187 per ton: \$153 per ton through increased use of low-sulfur coal and \$265 per ton through scrubbing).

²⁰⁸ *Emissions Trading Hearings*, *supra* note 205 (statement of Peter F. Guerrero, U.S. General Accounting Office).

²⁰⁹ *Id.*

²¹⁰ See *id.* (statement of Carlton W. Bartels, Managing Director, Cantor Fitzgerald Environmental Brokerage Services); Dallas Burtraw, *The SO₂ Emissions Trading Program: Cost Savings Without Allowance Trades*, 14 CONTEMP. ECON. POL’Y, Apr. 1, 1996, at 79, 79-80 (arguing that trading volume is not the proper measure of the system’s success and that cost-effective compliance is a better standard).

²¹¹ *Id.* (“Tradable rights programs in and of themselves do not reduce emissions. Instead, they provide the vehicle that permits the affected parties to seek out and exploit such opportunities.”).

Congressional hearings, academic articles, industry publications, and general news articles. As one might suspect, implementation issues, such as liquidity, that dominated debate before the passage of the legislation have maintained their significance. With several years of trading now observable, some of these comments have been modified, and these post-implementation analyses fail to add support for theories of command-and-control's dominance over market-based systems.²¹² The performance of the tradable permits program ably countered the few criticisms leveled against it during its passage and seems to have gained support since its implementation. Whether this scarceness of criticism indicates a significant shift toward favoring trading schemes is unknown, but the evidence—particularly when compared to explanations of trading's lesser role—appears to support such a contention.

A. *Economic Concerns*

1. *Liquidity*

Building on the worries voiced during the legislative debates, the ability to sustain a viable trading market has remained a primary concern for emissions trading in the implementation phase. Early regulations by the EPA sought to increase the market's liquidity. In particular, the agency held a certain amount of permits to sell at auctions run by the Chicago Board of Trade so that all polluters would have an opportunity to buy allowances.²¹³

This auction may be working, as trading now seems relatively active. Emission prices for 1997 were approximately \$110 per ton.²¹⁴ The number of allowances sold by the EPA at auction has remained below 300,000 for each of the quarterly auctions, but trading on the private market has increased significantly to

²¹² See *supra* text accompanying notes 24-29.

²¹³ See *supra* text accompanying notes 66-67.

²¹⁴ See Schmalensee et al., *supra* note 14, at 62. The authors also suggest that the significantly lower price relative to earlier predictions resulted from an overinvestment in scrubber technology and a premature commitment to long-term contracts for low-sulfur coal in the pre-implementation stage. These early compliance decisions may have driven down allowance prices in light of the unexpected, subsequent decline in rail rates and correspondingly cheaper low-sulfur coal. See *id.* at 65.

5.1 million allowances in 1997.²¹⁵ Trade news groups have stated that “[w]hile perhaps not perfect, [the trading programs] demonstrate that major [emissions] trading markets are viable.”²¹⁶

One suggestion for improving liquidity is the establishment of open-market programs that allow trades without government approval or limits on participants.²¹⁷ The most recent development involved the EPA’s delay in implementing a proposed plan to create an open-market trading rule.²¹⁸ Representative Thomas Bliley, Chair of the House Commerce Committee, criticized the EPA for changing the proposed rule to mere “guidance,” stating that “a guidance document-based approach will not ensure that states receive automatic EPA approval of open-market trading programs States, therefore, will not begin innovative environmental protection measures immediately, but rather must wait for EPA’s review and approval.”²¹⁹ The Northeast States for Coordinated Air Use Management, an association of state air quality administrators, echoed the call for an open-market policy that could provide more flexibility in trading.²²⁰ The EPA’s change, from rule to guidance, appears to have been influenced by strong opposition from environmental groups.²²¹

Despite the developing market, liquidity remains an issue for many utilities as well. Some of these entities believe that they are being shut out of the process,²²² while others argue that the expansion of trading will increase the environmental and economic benefits of the program.²²³ Compared to some of the dire predictions made during the legislative debates on liquidity,²²⁴ these complaints seem mild and would indicate that the program is doing quite well. Furthermore, Congress was clear that it

²¹⁵ See *id.* at 62-63 (reporting yearly allowance trading volumes starting from 1993 to be 130,000; 226,000; 1.6 million; 4.9 million; and 5.1 million).

²¹⁶ Cynthia Praul, *Emissions Trading Takes Center Stage*, ELEC. LIGHT & POWER, Dec. 1995, at 21, 22.

²¹⁷ See *id.* at 22.

²¹⁸ See Bliley ‘Disappointed’ Over Demise of EPA Open Market Trading Rule, UTILITY ENV’T REP., Feb. 27, 1998, at 9, 9 [hereinafter *Bliley ‘Disappointed’*].

²¹⁹ *Id.*

²²⁰ See Maureen Lorenzetti, *Pollution Credits Trading Must Have a Wider Universe*, PLATT’S OILGRAM NEWS, Aug. 23, 1996, at 2, available in 1990 WL 2247136.

²²¹ See Bliley ‘Disappointed’, *supra* note 218, at 9.

²²² See, e.g., *id.*

²²³ See, e.g., Lorenzetti, *supra* note 220.

²²⁴ See discussion *supra* Part III.A.1.

wanted trading to be implemented slowly, as the two-phased system indicates.²²⁵ Thus, contrary to the implication of this intermittent grouching from the regulated community, the trading program appears to be right on schedule and meeting its substantive policy objectives.

2. Regulatory Issues

The EPA's early regulations under the trading program faced little opposition. These early rules implemented much of the Phase I requirements and basic trading structure under the amendments,²²⁶ invoking responses typical of that by the Utility Air Regulatory Group: "[T]he proposed allowance tracking and trading system is generally well thought out, simple, and straightforward, and we urge EPA to keep it that way."²²⁷ However, as the EPA began to confront the specific regulations under the trading program, more contentious issues arose.

Many industrial groups tried, unsuccessfully, to move responsibility for the auction to the Treasury Department from the EPA.²²⁸ If this stance was fueled by fears of possible pro-environmental action from the EPA, the solution seems misguided given EDF's support for the move.²²⁹ Utilities also expressed unease regarding state regulatory commissions' reactions to proposed sales to out-of-state utilities.²³⁰ The auctions had also been criticized as being too infrequent to benefit the smaller utilities that pressed for its existence. According to Carlton W. Bartels, Managing Director of Cantor Fitzgerald Environmental Brokerage Services, fewer auctions prevent smaller utilities from purchasing allowances because they favor over-the-counter markets that can produce tailored deals.²³¹ Yet, Bartels also argued that regulations "should be sharply focused [on] enforcement of

²²⁵ See *supra* text accompanying notes 53-58.

²²⁶ See, e.g., 40 C.F.R. § 72.2 (1998) (defining a "person" allowed to purchase permits as "an individual, corporation, partnership, association, State, municipality, political subdivision of a State, any agency, department, or instrumentality of the United States, and any officer, agent, or employee thereof").

²²⁷ *Utilities View Acid Rain Regs*, COAL WK., Jan. 27, 1992, at 8.

²²⁸ See *Emission Allowance Auction May Move from EPA to Treasury Dept.*, INDUS. ENERGY BULL., Aug. 17, 1990, at 13, available in 1990 WL 2247136.

²²⁹ See *id.* (stating only that the Treasury Department had a greater expertise in administering an efficient market).

²³⁰ See Hershberg, *supra* note 203.

²³¹ See *Emissions Trading Hearings*, *supra* note 205.

the underlying environmental objectives, not on the market itself.”²³²

One response of the EPA has been to develop a classification system that records transfers and serves as a registry for allowances—a system that seems to have garnered a great deal of support.²³³ Nevertheless, a 1993 Congressional report, while crediting the EPA for addressing trading regulations, revealed that the agency had missed deadlines for fifty-eight out of ninety regulations under the CAA amendments.²³⁴ Vice-President Dan Quayle’s Council on Competitiveness (COC) was held to be primarily responsible, so little of the delay was attributed to the EPA.²³⁵ Indeed, Representative Henry Waxman, along with the consumer advocate group Public Citizen, sued the EPA to compel the agency to implement regulations after the COC fought the agency over regulatory language.²³⁶ The suit was soon dropped, when the EPA quickly proposed regulations.²³⁷

Monitoring costs by federal and state regulators are also a concern. A trading system requires adequate monitoring of all emissions in order to supply vital information to potential traders trying to determine market prices.²³⁸ It is estimated that such expenses account for seven percent of overall compliance costs.²³⁹ Since the inception of the program, administrative costs are much lower: the program has achieved forty percent of all emissions reductions under the CAA with only two percent of total administrative expenditures in its first five years.²⁴⁰ More-

²³² *Id.* (arguing that programs such as auctions should have fixed terms, lest the regulatory system become too complicated).

²³³ See Joseph Kruger & Melanie Dean, *Looking Back on Sulfur Dioxide Trading: What’s Good for the Environment Is Good for the Market*, PUB. UTILITIES FORTNIGHTLY, Aug. 1997, at 30, 30-31 (describing the three classification groups adopted by the EPA: Arm’s Length Transfers; Intra-Utility Transfers; and Reallocations).

²³⁴ See *Clean Air Act Picks Up Speed*, OCCUPATIONAL HAZARDS, Jan. 1, 1994, at 15, 15 (citing STAFF OF SENATE COMM. ON ENV’T AND PUB. WORKS, 103RD CONG., THREE YEARS LATER: REPORT CARD ON THE 1990 CLEAN AIR ACT AMENDMENTS (1993)).

²³⁵ See *id.*

²³⁶ See *Waxman Sues EPA on Permits: Cites Lapses on NO_x and SO₂*, COAL WK., June 15, 1992, at 8, available in 1992 WL 2434799.

²³⁷ See U.S. ENVTL. PROTECTION AGENCY, *EPA Proposes Acid Rain Emission Limits for Over 900 Utilities Nationwide*, ENVTL. NEWS, Jun. 15, 1992, available in 1992 WL 192404.

²³⁸ See *id.*

²³⁹ See Kruger & Dean, *supra* note 233, at 34.

²⁴⁰ See *id.* at 35.

over, the GAO has estimated that overall compliance costs are significantly lower than those under the traditional command-and-control model.²⁴¹ According to Dallas Burtraw, an economist at Resources For the Future, the incentives created by the trading program have encouraged the greater use of lower-polluting, low-sulfur coal, the primary cause of decreased compliance costs.²⁴²

Just as liquidity was an early and major issue, the resulting regulatory scheme also led to much debate. Evaluation of the EPA's implementation of the program seems positive, however. One interesting comment on the trading program was that it was *too* successful. Bartels suggested that the early success of Phase I of the program, in which utilities over-controlled emissions by 6.3 million tons (thirty-eight percent below the allowable amount), led to "investments by utilities in emissions reductions, which in retrospect, were not economic[ally] efficient."²⁴³ His suggestion was to keep the program as simple as possible and to treat all polluters alike in order to reduce uncertainty and avoid conflicting incentives.²⁴⁴

Perhaps the best measure of the success of the program's regulations is simply its bottom line. As stated earlier, the number of allowances sold has not been great, but emissions reductions beyond that mandated by the cap have been achieved with significant savings in both compliance and administrative costs.²⁴⁵ Therefore, the EPA seems to have responded well in its implementation of the allowance trading program.

B. *Environmental Concerns*

Ultimately, the success of the program, as perceived by environmental interests, depends on reducing emissions. Environmentalists looked for the program to achieve at least the

²⁴¹ See U.S. GEN. ACCOUNTING OFFICE, PUB. NO. GAO/RECD-95-30, ALLOWANCE TRADING OFFERS AN OPPORTUNITY TO REDUCE EMISSIONS AT LESS COST 27-29 (1994). The GAO projects cost savings as high as three billion dollars per year by 2010. See *id.* app. I, tbl.I.1.

²⁴² See Burtraw, *supra* note 210, at 85-88.

²⁴³ *Emissions Trading Hearings*, *supra* note 205 (statement of Carlton W. Bartels, Managing Director, Cantor Fitzgerald Environmental Brokerage Services) (explaining that cheaper rail travel led to decreased low-sulfur coal prices, thus causing utilities to reduce emissions before considering trades, while the phase-in system led to decisions based on inflated valuations of the allowances).

²⁴⁴ See *id.*

²⁴⁵ See *supra* text accompanying notes 205-207.

reduction required by the emissions cap and, ideally, to produce significant over-compliance as well. No one during the program's legislative consideration, however, predicted its actual level of emissions reduction. It has been estimated that the trading program reduced emissions forty percent below the legal requirements in 1995, the first year of trading.²⁴⁶

Notwithstanding this reduction, many concerns expressed by environmentalists during the amendment's debate resurfaced once trading was actually started. For example, a trade of permits from USX Corporation to Metallized Paper Corporation provoked the telling statement: "I don't think you should be able to buy the right to pollute."²⁴⁷ David Doniger, a Senior Attorney for NRDC, also said, "[t]he last thing you want to do is pretend that emissions which are already gone are still out there and let somebody use them."²⁴⁸ Questions about environmentalists' support for the program were also raised by the Sierra Club's "B-minus" rating given to Congress's environmental initiatives from 1988 to 1990.²⁴⁹

Still, many environmental groups, some of which were early critics of the program, now support the expansion of emissions trading. NRDC has argued for trading of other airborne pollutants.²⁵⁰ EDF, while discussing a broad range of joint environmental initiatives with General Motors, proposed the expansion of the existing trading system to mobile sources.²⁵¹ Even more traditionally confrontational groups, such as the Sierra Club,

²⁴⁶ See U.S. ENVTL. PROTECTION AGENCY, 1995 COMPLIANCE RESULTS: ACID RAIN PROGRAM, EPA 430-R-96-012 (1996), available in <<http://www.epa.gov/acidrain/comprpt/crbody.html>>. The reduction in 1996 was 35%. See Schmalensee et al., *supra* note 14, at 57-58.

²⁴⁷ *Trading of Pollution Rights Draws Fire*, CHRISTIAN SCI. MONITOR, Dec. 4, 1990, at 4 (quoting environmentalist Robert DeTorre's comment on the \$75,000 purchase of the right to emit seventy-five tons).

²⁴⁸ *Id.* This statement, however, ignores the possibility that, without emissions trading, the original emissions reduction may have never occurred.

²⁴⁹ See *Solar Lobby Lauds Hill, but Environmentalists Are Less Charitable*, INSIDE ENERGY, Nov. 26, 1990, available in 1990 WL 2245048 (criticizing the CAA amendments, although not focusing on emissions trading).

²⁵⁰ See *Jeffords Bill Greens Federal Debate with Renewables and Air Standards*, 7 ELECTRIC POWER ALERT ¶¶ 5-6 (May 7, 1997) <http://www.poweralert.com/sec_cgi/as_web.exe?PP_pa_1997+D+3381501>.

²⁵¹ See Krainin, *supra* note 143. EDF also supports emissions trading in the context of greenhouse gas pollution. See Kriz, *supra* note 30, at 2851.

have conceded that properly designed emissions trading programs, with diverse input, could be beneficial.²⁵²

One independent factor countering overall emissions reduction is the threat of hot spots.²⁵³ Several state attorneys general, from New York, Connecticut, New Hampshire, and Rhode Island, have criticized the amendments for not focusing on areas most affected by acid rain.²⁵⁴ While they failed to get the EPA to prevent hot spots, the attorneys general and the Adirondack Council, an environmental group, sued the EPA for refusing to allow states to block allowance trading when running permit programs under the CAA.²⁵⁵ EDF, however, opposes such restraints on trading, as they may reduce the desire of utilities to participate in the program.²⁵⁶ Moreover, the EPA has determined that, in the eastern part of the country, acid deposition among states with and without trading differed by less than five percent.²⁵⁷

Despite the legitimate concern over hot spots, as long as the trading scheme allows utilities to meet emission caps at a lower cost than the traditional command-and-control method, while also providing incentive for additional emission reductions, trading will continue to hold significant environmental support. Although some groups will always object to the perception that

²⁵² See Kruger & Dean, *supra* note 233, at 36.

²⁵³ See *supra* text accompanying notes 137-139.

²⁵⁴ See Susan Millington Campbell & Andrew S. Holmes, *Going Once, Going Twice, Sold!—EPA Auctions Pollution Rights: Market-Based System Permits Sale of Allowances to Emit Sulfur Dioxide*, 209 N.Y. L.J., June 7, 1993, *Env'tl. L. Sec.*, at 10.

²⁵⁵ See *id.* (discussing the complaint filed in *New York v. Browner*, No. 93-1214 (D.C. Cir. filed Mar. 11, 1993)). The article also discusses an attempt by the New York state legislature to pass a law that would require utilities to prepare environmental impact statements before a trade is made. See *id.*

²⁵⁶ See *id.*; see also George Lobsenz, *EDF Challenges Federal, State Acid Rain Rules*, *ENERGY DAILY*, Mar. 15, 1993, available in 1993 WL 2713184 (quoting the EDF's statement that "[i]t would be bitter irony if regulations or restrictions on allowance trading imposed by New York in the name of environmental protection proved in actuality to be responsible for the loss of sulfur dioxide emissions reductions that would be achieved otherwise").

²⁵⁷ See U.S. ENVTL. PROTECTION AGENCY, *ACID DEPOSITION STANDARD FEASIBILITY STUDY REPORT TO CONGRESS*, EPA 430-R-95-001a, at xv (1995) (stating that differences in deposition of less than 10% do not cause measurable changes in the acidification of lakes and streams). *But see* Raymond Hernandez, *Lilco Is to Stop Selling Credits to Upwind Polluters*, *N.Y. TIMES*, Apr. 30, 1998, at B1 (describing the Long Island Lighting Company's decision to stop selling pollution credits to utilities whose emissions could hurt its own state's environment).

allowance trading signals an acceptance of pollution, this argument seems largely rhetorical. In any event, it has held little sway in the ongoing implementation of the emissions trading program.

C. *Federalism Concerns*

One early issue under the trading program was the role of state regulatory agencies.²⁵⁸ States' interests in the program include its effect on their own regulation of utilities as well as their ability to control trades that they believe are harmful to the state.

The former concern was shared by many state regulators, such as Patricia Qualls from the Arkansas Public Service Commission, who said, "[i]t is critical that state commissioners know the rules of the game before it starts."²⁵⁹ The prospect of new federal regulations that would interfere with state regulations justifiably worried state regulators.²⁶⁰ The lack of concern expressed after implementation of the program suggests that the EPA has adequately addressed such concerns.

The ability of states to prevent trades is a different story. As noted, the EPA has been resisting state attempts to block trades, even to prevent problems such as hot spots.²⁶¹ For now, there is no sign that states will be given greater control over trades; rather, the EPA appears to be aware of the hot spot issue and willing to address problems if they arise. If these problems become more serious or if the EPA is headed by an administration more sympathetic to states' power, this position could change.

D. *Summary*

The commentary surrounding the implementation of allowance trading mirrors much of the debate leading up to the amendment's passage, with economic issues such as liquidity and the regulatory scheme dominating. Like pre-passage comments, post-passage debate does not appear to have made a significant impact on the structure of the program. In some cases, criticism has sped up agency action,²⁶² but actual changes in implementa-

²⁵⁸ See discussion *supra* Part III.D.

²⁵⁹ Mary O'Driscoll, *Turf Battle Looms over Allowance Accounting, Say NARUC Members*, ENERGY DAILY, Dec. 13, 1991, available in 1991 WL 2673782 (discussing opinions made at a federal and state regulators workshop).

²⁶⁰ See *supra* text accompanying notes 152-153.

²⁶¹ See *supra* text accompanying notes 254-257.

²⁶² See *supra* text accompanying notes 234-237.

tion are not apparent. This result may be due to the apparent success of the trading system in reducing both costs and emissions. As a whole, most commentators have expressed a favorable opinion of allowance trading and only minor suggestions have been made, much of those merely echoing early debate. This is not to say that comments are not useful. Indeed, various implementation strategies, particularly those involving the creation and maintenance of the permit market, were considered early on both by legislators and the EPA. Invariably, choices must be made between implementation options—e.g., phasing in participating utilities versus an open system—and, after the EPA made up its mind, it has had little reason to change. The differing viewpoints involved in the policy discourse on trading appear primarily to have given early recognition to many implementation concerns, and most of these concerns have been addressed. Perhaps the true sign of success is that there has been no serious suggestion to end the trading of pollution permits. To the contrary, permit trading has not only been recommended for international environmental issues,²⁶³ but corporations are also now using permits to control their own emissions.²⁶⁴ This success casts even further doubt on the relevance of theories attempting to explain the dearth of market-based regulations²⁶⁵ and gives credence to the idea that such schemes are gaining ground.

CONCLUSION

It is not surprising that, when the executive and legislative branches were held by different parties, legislation reflected compromise. The emissions trading program may be unique in its ability to meet different groups' goals without the need for serious compromise. Perhaps the most significant concession was made by the utilities in their acceptance of reduced emissions caps. While some utilities still resisted the concept, there was no argument against the idea that some form of emissions control would have to remain, and emissions trading, at least, provided utilities with the flexibility that they had so often asked for. Also, by distributing permits to existing utilities, rather than us-

²⁶³ See Kriz, *supra* note 30, at 2848.

²⁶⁴ See John J. Fialka, *Global-Warming Debate Gets No Consensus in Industry*, WALL ST. J., Apr. 16, 1998, at A24 (describing British Petroleum's decision to use pollution trading among its own production units).

²⁶⁵ See *supra* text accompanying notes 24-29.

ing an initial auction, much of the potential opposition to the program from these polluters was avoided. Realizing that allowing polluters to choose how to comply with the law would achieve even greater environmental benefits, environmental groups were willing to accept this flexibility.

The win-win aspect of the program, at least for those interests who were well represented, comes through clearly in early debates and later commentary. Much of the criticism of trading focused solely on implementation concerns, rather than on whether to start trading at all. The prospect that a solution can be found that accommodates both sides of an issue seems to provide the most important lesson of emissions trading. If such a solution is found, one can hope to achieve the relatively easy passage and implementation that has hallmarked the CAA emissions trading program, as well as its perceived success in achieving greater environmental gains and cost savings. Moreover, the perceived disadvantages to trading, as evidenced by the infrequency of such plans relative to traditional schemes, did not appear to have a significant impact on the passage of the amendment. While this may be the result of unique characteristics of tradable permit schemes, their growing popularity may hint that the regulatory tide is turning.

Economic theory is often used to promise better outcomes than the status quo, but it does not include a politically feasible way to achieve that superior state. The economic theory behind pollution trading seems to have been able to achieve both analytical and political success. While some criticism of the general idea of trading remains,²⁶⁶ the program was able to achieve diverse support in a manner that would make any political actor envious. By appealing to the self-interest of all major parties involved, the trading program used the public choice theorists' median voter outcome to its advantage. Through pollution trading, this outcome now appeals to virtually every effected party, making room for compromise and the chance for successful legislation (i.e., the policy window) much larger. In the end, the ability of trading not only to achieve legislative success, but also to meet its expectations once implemented, makes its future use even more desirable.

²⁶⁶ See *supra* text accompanying note 247.

Political actors would be wise to take note of tradable permits and consider expanding their use to other environmental regulations. While the success of these permits is not guaranteed in other areas,²⁶⁷ their ability to garner widespread support and achieve greater environmental protection at a lower cost looks encouraging. The key for trading as a concept is the ability to realistically promise benefits to all parties involved. Such a promise is obviously difficult for other pollution control strategies to fulfill, yet marketable permits remain underutilized in the environmental arena. Building upon the legislative and environmental gains made by permits in the CAA context, policymakers should look for new ways to integrate this innovative approach into their regulatory schemes.

²⁶⁷ See David M. Driesen, *Is Emissions Trading an Economic Incentive Program?: Replacing the Command and Control/Economic Incentive Dichotomy*, 55 WASH. & LEE L. REV. 289, 320-22 (1998) (discussing the need for adequate monitoring and emission caps in implementing allowance trading programs); Schmalensee et al., *supra* note 14, at 66-67 (concluding that allowance trading is not appropriate for isolated pollutants with a local effect and noting that monitoring and enforcement still remains a barrier to wider implementation of such programs).