

Emissions Trading: Economic Incentives, Recent Developments and Current Proposals

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A pressing question concerning the regulation of air pollution in the United States is how can air pollutants be regulated on a more effective level while simultaneously providing facilities an economic alternative to controlling their pollution emissions? The approach of command and control regulation (CAC)¹ remains largely intact in the United States regardless of the adoption of the alternative regulatory mechanism of emissions trading.² However, regardless of the popularity of CAC, economists suggest that the best method to regulate air pollutants from point sources is from incentive-based regulation such as emissions trading as opposed to the approach of command and control.³ As seen since the mid-1990's, emissions trading programs have been suggested and implemented in an attempt to combat air pollution emissions from point sources.⁴

I. Introduction to Emissions Trading

Government agencies assigned to regulate air pollutants in the United States use ambient standards and set emission and effluent controls to achieve them.⁵ The Clean Air Act (CAA), as amended in 1990, provides for national ambient air quality standards to protect "health" and "welfare," and provides for the regulation of emissions from stationary sources by the states through federally approved state implementation plans.⁶ The methodology of the Clean Air Act called for a combination of command and control with the addition of emissions trading devices.⁷ Since the Kyoto Protocol signing in 1997, emissions trading has been a subject of

¹ Command and control regulation (CAC) is a regulatory scheme that was first advocated and implemented in the 1970's when major environmental legislation was being created regarding air pollution. *See generally* BERND HANSJÜRGENS, EMISSION TRADING FOR CLIMATE POLICY: US AND EUROPEAN PERSPECTIVES 63-64 (Cambridge University Press 2005) (a general discussion of command and control regulation). The approach required uniform emissions across sources and mandated the adoption of particular control technologies. *Id.*

² EBAN S. GOODSTEIN, ECONOMICS AND THE ENVIRONMENT 21 (John Wiley & Sons, Inc. 2010).

³ *Id.*

⁴ The mid-1990's saw the first wide-spread application of emissions trading. HANSJÜRGENS, *supra* note 1, at 93. Sulfur Dioxide (SO₂) emissions have been traded since 1995 between coal burning electric facilities nationwide. *Id.* In addition to the sulfur dioxide trading, trading permits have been issued in select areas of the United States such as the LA basin and the Northeastern United States concerning sulfur oxide and nitrogen oxide. *Id.*

⁵ Dennis D. Hirsch, 18B *Environmental Law Practice Guide* § 4B.01 (2010).

⁶ *Id.* *See also* CAA § 112, 42 U.S.C. § 7412. The Act provides for the direct regulation and for national emission standards from moving sources, from new stationary industrial sources, and notably, for emissions of hazardous air pollutants. *Id.*

⁷ Hirsch, *supra* note 5.

intense debate in the United States regarding the economical advantages and efficiency of emissions trading regulation as opposed to other regulatory schemes.⁸

The appeal of emissions trading reflects its ability to achieve a target level of pollution in the atmosphere at minimum costs in the absence of regulator information on control costs.⁹ In other words, an emissions trading program provides a way of achieving cost savings without the need for the regulator to collect information about abatement costs.¹⁰ In contrast to a more traditional regulatory program, emissions trading is a regulatory program that allows targeted facilities considerable flexibility in how they comply with government regulation of air pollution.¹¹

There are two basic types of emissions trading: (1) cap and trade and (2) baseline credit systems. A cap and trade system is a quantity instrument (limiting emissions) that derives from a property approach (parceling temporary use rights).¹² Cap and trade may possess economic efficiency advantages regarding tax incentives.¹³ This system controls the quantity of emissions while allowing the market to determine the price of regulatory allowances.¹⁴ In a cap and trade system, policymakers set a cap on a certain type of air-pollutant and require companies to hold rights or allowances to the emissions permitted under that cap.¹⁵ Having established this cap, the policymakers then divide the cap into allowances or transferable permits.¹⁶ These allowances add up to the total set emissions cap of a specific air pollutant.¹⁷ Then, the policymakers establish a program and under this specific program decide whether these allowances will be distributed to each facility in a particular industry either at no cost to the industry, by an auction at market price, or by a combination of these two approaches.¹⁸ Finally, the policymakers establish an individual set amount of these allowances each facility should have at the end of a

⁸ HANSJÜRGENS, *supra* note 1, at 2.

⁹ JOHN J. SIEGFRIED, BETTER LIVING THROUGH ECONOMICS 43 (President and Fellows at Harvard College 2010).

¹⁰ HANSJÜRGENS, *supra* note 1, at 3.

¹¹ Brian C. Murray & Heather Hosterman, *Climate Change, Cap-and-Trade and the Outlook for U.S. Policy*, 34 N.C.J. INT'L L. & COM. REG. 699, 705-707 (2009).

¹² Jonathan B. Wiener, *Local Property, Global Justice: Law and Resources in the Era of Climate Change*, 19 DUKE J. COMP. & INT'L L. 515, 521 (2009).

¹³ *Id.* at 518.

¹⁴ Hirsch, *supra* note 5.

¹⁵ TERRY DINAN, AN EVALUATION OF CAP-AND-TRADE PROGRAMS FOR REDUCING U.S. CARBON EMISSIONS viii (2008).

¹⁶ *Id.*

¹⁷ *Id.*

¹⁸ Hirsch, *supra* note 5.

program period.¹⁹ The facilities are then free to sell or buy these allowances to each other based on their environmental achievements towards reducing their emissions.²⁰

In a baseline credit system, an emissions performance profile (the baseline) is set instead of setting a specific emissions cap.²¹ Baseline levels are determined by the establishment of an applicable rate of environmental impacts per unit of production multiplied by the source's production for the year (rate-based programs).²² In a project-based program, another form of a base-line credit system, the government awards credits for specific projects that reduce environmental impacts to levels below what the facility's level would have been absent the program.²³ The baseline is an estimate of what the source's impacts would have been in the normal course of business.²⁴

II. Domestic Emission Trading Initiatives and Proposals

Since 1999, emissions trading programs and recent proposals have been used to decrease nitrogen oxide (NOx)²⁵ emissions in the northeastern United States in order to address the regional transport of ozone and facilitate attainment with the National Ambient Air Quality Standards for ground-level ozone.²⁶ The Ozone Transport Commission (OTC) NOx Budget Program was the first cap and trade program formed by a group of states and represents the first large-scale application of the cap and trade model to a program other than acid rain.²⁷ The OTC NOx Budget Program significantly reduced NOx emissions from large combustion facilities in

¹⁹ *Id.*

²⁰ *Id.*

²¹ BRIAN DAWSON & MATT SPANNAGLE, *THE COMPLETE GUIDE TO CLIMATE CHANGE*, 139 (Routledge 2009).

²² Hirsch, *supra* note 5.

²³ *Id.*

²⁴ *Id.*

²⁴ "Nitrogen oxides" (NOx) is the term used to describe the sum of nitric oxide (NO), nitrogen dioxide (NO₂), and other oxides of nitrogen. U.S. ENVTL. PROTECTION AGENCY, *Nitrogen Dioxide*, <http://www.epa.gov/airquality/nitrogenoxides/> (last updated Oct. 28, 2010). Most airborne NOx comes from combustion-related emissions sources of human origin, primarily fossil fuel combustion in electrical utilities, high-temperature operations at other industrial sources, and operation of motor vehicles. *Id.* However, natural sources, like biological decay processes and lightning, also contribute to airborne NOx. *Id.* Fuel-burning appliances, like home heaters and gas stoves, produce substantial amounts of NOx in indoor settings. *Id.*

²⁶ U.S. ENVTL. PROTECTION AGENCY, *Cap and Trade: Multi-State NOx Programs*, (April 9, 2009), <http://www.epa.gov/capandtrade/documents/nox.pdf>.

²⁷ *Id.*

the Northeast and Mid-Atlantic regions.²⁸ For example, the total emissions in the 2002 ozone season were approximately 60% below the 1990 levels.²⁹

Title IV of the 1990 Amendments of the Clean Air Act sought to address the problem of acid rain through a cap and trade system that focused on sulfur dioxide (SO₂)³⁰ emissions.³¹ The market that the Amendments of the Clean Air established offered facilities, facing high marginal abatement costs, the opportunity to purchase the right to emit SO₂ from facilities with lower costs.³² This in turn yielded savings, providing an important economic benefit.³³ This program was a major incentive for companies to comply with policymaker's air pollution guidelines.³⁴ If these facilities could lower their emissions far enough below their allowance requirements, then they could sell their extra allowances and generate a profit from these low emission levels.³⁵ This incentive, in turn, lowers the national costs of lowering pollution reduction goals.³⁶ For example, in 2007, the cost of the Acid Rain Trading Program was \$2-3 billion a year but the annual benefit was estimated at \$12-78 billion by using this market based cap and trade approach to lowering emissions of SO₂.³⁷ The first phase of this program began in 1995, but beginning in 2000, SO₂ emissions from these electric power facilities was capped at 9.5 million ton (compared to 1980 emissions of 17.3 million tons) and in 2010 the cap is set at 8.95 million tons.³⁸

²⁸ *Id.*

²⁹ *Id.*

³⁰ Sulfur dioxide (SO₂) is one of a group of highly reactive gasses known as "oxides of sulfur." U.S. ENVTL. PROTECTION AGENCY, *Sulfur Dioxide*, <http://www.epa.gov/airquality/sulfurdioxide/> (last visited Oct. 29, 2010). The largest sources of SO₂ emissions are from fossil fuel combustion at power plants (73%) and other industrial facilities (20%). *Id.* Smaller sources of SO₂ emissions include industrial processes such as extracting metal from ore, and the burning of high sulfur containing fuels by locomotives, large ships, and non-road equipment. *Id.*

³¹ MICHAEL GERRARD, GLOBAL CLIMATE CHANGE AND U.S. LAW 633 (American Bar Association 2007).

³² CURTIS CARLSON ET AL., SULFUR DIOXIDE CONTROL BY ELECTRIC UTILITIES: WHAT ARE THE GAINS FROM TRADE? 1292 (World Bank 1998).

³³ *Id.*

³⁴ *Id.*

³⁵ *Id.*

³⁶ GERRARD, *supra* note 31.

³⁷ *Id.*

³⁸ U.S. ENVTL. PROTECTION AGENCY, *Cap and Trade: Acid Rain Program Basics*, (April 9, 2009), <http://www.epa.gov/capandtrade/documents/arbasics.pdf>.

The Clean Air Act's Offset Trading Program is an example of a baseline credit system.³⁹ This program operates in regions where national clean air standards have not been attained.⁴⁰ Parties that wish to build a new facility or modify an older facility that increases emissions, these parties are required to secure offsetting emission reductions.⁴¹ Companies can obtain emission reduction credits from other facilities in the area that have reduced emissions.⁴² To earn these credits, a facility has to show that it has calculated its baseline level in accordance with program rules and must demonstrate its reduction credits are credible, quantifiable, federally enforceable and permanent.⁴³

III. North Carolina Emission Trading Initiatives

The Environmental Protection Agency is currently taking final action to approve a request submitted on July 24, 2009, from the State of North Carolina, through the North Carolina Department of Environment and Natural Resources, Division of Air Quality.⁴⁴ The purpose of the request is to re-designate the Great Smoky Mountains National Park 1997 8-hour ozone nonattainment area to attainment for the 1997 8-hour ozone national ambient air quality standards (NAAQS).⁴⁵ The GSMNP Area for the 1997 8-hour ozone standard is comprised of portions of Haywood and Swain Counties in North Carolina.⁴⁶ EPA's approval of the re-designation request is based on the determination that the GSMNP Area has met the criteria for re-designation to attainment set forth in the Clean Air Act (CAA), including the determination that the GSMNP Area has attained the 8-hour ozone standard.⁴⁷

IV. Looking Towards the Future: EPA's Transport Rule Proposal

The Environmental Protection Agency is set to issue proposed regulations regulations in the Federal Register that would require Electrical Generating Units (EGUs) above 25 MW in 27

³⁹ GERRARD, *supra* note 31, at 634.

⁴⁰ *Id.*

⁴¹ *Id.*

⁴² *Id.*

⁴³ *Id.*

⁴⁴ Approval and Promulgation of Implementation Plans and Designations of Areas for Air Quality Planning Purposes, 74 Fed. Reg. 63995 (proposed Dec. 7, 2009).

⁴⁵ *Id.*

⁴⁶ *Id.*

⁴⁷ *Id.*

eastern states and Washington, D.C., to reduce emissions of NO_x and SO₂ and EGUs in an additional four states to limit emissions of only NO_x.⁴⁸ The EPA proposes to allow for interstate trading of emissions allowances under restrictions designed to ensure that each state is able to meet National Ambient Air Quality Standards.⁴⁹

Under this implementation plan, referenced as the Transport Rule, facilities could engage in interstate trading of emissions allowances under certain restrictions designed to ensure that each state is able to meet the NAAQS.⁵⁰ The EPA has also presented two alternative approaches for comment. One implementation option would create a total of 82 markets for three new types of state-specific emissions allowances and would allow for intrastate trading.⁵¹ The other option would prohibit allowance trading entirely.⁵² The Transport Rule would replace CAIR⁵³ and associated trading programs that were invalidated by the D.C. Circuit Court of Appeals in cases such as *North Carolina v. EPA*.⁵⁴ The proposed rule, which was released on July 6, 2010, would modify 40 CFR Parts 51, 52, 72, 78, and 97.⁵⁵ Comments to the proposed rule are due 60 days after it is published in the Federal Register.⁵⁶

To implement the Transport Rule trading programs, the EPA would utilize an allowance management system "operated essentially the same as existing systems that are currently in use for CAIR and the Acid Rain Program under Title IV."⁵⁷ The system would include compliance accounts for covered sources and general accounts for any person that chose to participate in the

⁴⁸ COMMODITIES NOW, *Environmental Protection Agency Proposes New Emissions Trading Program*, (Jul. 27, 2010) <http://www.commodities-now.com/news/environmental-markets/3169-epa-proposes-new-emission-trading-programs.html>.

⁴⁹ *Id.*

⁵⁰ *Id.*

⁵¹ *Id.*

⁵² *Id.*

⁵³ The Clean Air Interstate Rule (CAIR) was initiated by the Environmental Protection Agency in 2005 and was designed to achieve further reductions in emissions of sulfur dioxide and nitrogen oxides beyond those established in the 1990 CAA amendments. The emissions reductions were put into place to assist states in meeting their National Ambient Air Quality Standards for ground level ozone and particulate matter. The EPA selected 28 States and the District of Columbia to participate in the program either because they were not meeting the guidelines of the National Ambient Air Quality Standards or these states were contributing to the emissions of downwind states. DEP'T OF ENERGY, ANNUAL ENERGY OUTLOOK (2010).

⁵⁴ See *North Carolina v. EPA*, 531 F.3d 896 (D.C. Cir. 2008).

⁵⁵ COMMODITIES NOW, *supra* note 48.

⁵⁶ *Id.*

⁵⁷ *Id.*

trading programs.⁵⁸ Promulgation of a final Transport Rule would not affect any Acid Rain Program requirements, and Title IV sources that are subject to the Transport Rule would still need to comply with all Acid Rain provisions.⁵⁹

V. Conclusion

As an ending remark, emissions trading programs have become a prominent method regarding the regulation of air pollutants, especially NOx and SO2. Congress has seen many proposals set to initiate emissions trading programs throughout designated areas of the country.⁶⁰ The proposals have indicated a strong initiative to work towards achieving a nationwide standard of controlling air pollution that benefits both society as a whole and the economic interests of the participants wishing to comply with these programs. Emissions trading programs have great potential to become the main regulatory scheme in controlling air pollutants in the United States.

⁵⁸ *Id.*

⁵⁹ *Id.*

⁶⁰ The Regional Greenhouse Gas Initiative (RGGI) has included an offset provision in its cap-and-trade program. Murray & Hosterman, *supra* note 11, at 705-707. The Lieberman-Warner America's Climate Security Act of 2008 proposed to cut emissions by seventy percent from 2005 levels by 2050, with domestic and international offsets as a significant component of the policy's cost-containment design. *Id.* Although the bill did not pass, it did provide the foundation for offset provisions in future climate change legislation. *Id.*