EXECUTIVE SUMMARY

On March 16, 1995, President Clinton announced 25 major initiatives for reinventing federal environmental regulations. Among these 25 initiatives, the President's first priority was for the United States Environmental Protection Agency (EPA) to develop an open market air emissions trading rule. In establishing this open market trading initiative, President Clinton recognized that "[e]xpanding use of market trading on a local and regional level will give companies broad flexibility to find lowest cost approaches to emission reductions."[1] The federal open market trading initiative is consistent with the belief that a healthy economy and a healthy environment are not mutually exclusive propositions.

What Is Open Market Trading?

Open market trading is a tool that enables a source to use discrete emission reductions (DERs) to comply with the requirements of an air quality regulation or emission limitation. A source may use DERs whenever the source desires operational flexibility or lower compliance costs. DERs are produced by sources which, by installing new control equipment or modifying their operations, voluntarily reduce their own emissions either below levels required by existing regulations, or below their historical actual emissions if their emissions are already lower than required.

By harnessing market forces, open market trading improves air quality while lowering the cost of clean air to society. Open market trading reduces compliance costs and increases emission reduction activity. It spurs innovation and investment in reducing pollution without new government mandates. It facilitates emission standards and compliance schedules based on science and public health, rather than cost and available supply of control equipment. It creates operating flexibility while eliminating the need for waivers, exemptions, or other forms of administrative relief common under current state and federal air regulations. Most importantly,

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[1] President Clinton, Reinventing Environmental Regulations, March 16, 1995, as quoted at 60 Fed. Reg. 39668 (August 3, 1995).

open market trading is a market mechanism open to all; any type of source - stationary, area, or mobile - may benefit from open market trading.

The NESCAUM/MARAMA Emissions Trading Project

In large measure, open market trading is the product of the NESCAUM/MARAMA Emissions Trading Project.[2] The NESCAUM/MARAMA Demonstration Project was organized in 1993 as a collaborative effort between industry, environmentalists, and air quality regulators. The purpose of the project is to improve existing air emissions trading programs and policies through implementation of actual credit creation and credit use strategies. Through a process of learning by doing, Demonstration Project participants generate insights into how to make the current regulatory structure - including existing emissions trading policies - more efficient and effective. These insights are the basis of open market trading.

To date, the NESCAUM/MARAMA Demonstration Project has involved more than 25 corporations and trade associations, five environmental organizations, and representatives from more than 13 state and federal environmental and energy agencies. Individually or collectively, these participants have:

* achieved over 14,000 tons of voluntary NO_x reductions and 350 tons of voluntary VOC reductions during the ozone season, with an additional 4,000 tons of voluntary NO_x reductions achieved outside the ozone season;[3]

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[2] The Northeastern States for Coordinated Air Use Management (NESCAUM) is an association of state air quality directors from each state in New England, New York, and New Jersey. The Mid-Atlantic Regional Air Management Association (MARAMA) is an association of state air quality directors from Pennsylvania, New Jersey, Delaware, Maryland, Virginia, North Carolina, the District of Columbia, Allegheny County, Pennsylvania, and the City of Philadelphia.. NESCAUM initiated the Demonstration Project in 1993. MARAMA became an official sponsor of the Demonstration Project in 1994.

[3] Ozone - a principal component of "smog" - is the product of oxides of nitrogen (NO_x) and volatile organic compounds (VOCs) stewing in the atmosphere on hot and sunny days. In the northeastern United States, the period between May 1 and September 30 is classified as the "ozone season" because of the preponderance of hot, sunny days during these months.

* reviewed eight trades of these voluntary emission reductions - three of which were interstate trades - for use in complying with state and federal air quality requirements;

* demonstrated that a market for emission reductions exists, and through the market, discovered that the cost of making reductions in the northeastern United States can be as little as $750 to $1,000 a ton for NO_x and $2,000 a ton for VOCs;

* developed 43 replicable methodologies involving the creation, use, and transfer of discrete emission reductions;

* participated in the development of a working registry that provides on-line information about the quantity and quality of the DERs generated during the project.

In light of these accomplishments, the principles of open market emissions trading are now being applied in several states and at the federal level. To date, over 40 trades involving 37 separate facilities in three northeastern states have occurred as a result of the work undertaken by participants in the Demonstration Project.

The accomplishments of the Demonstration Project occur in a consensus-based, voluntary, and nonadversarial setting. This demonstrates that where there is a common commitment to the goals of improving public health and protecting the environment, there can be common ground in achieving real regulatory reform. This discovery is as important as any of the project's other accomplishments.

The Phase III Project Report

Open market trading evolved from insights gained through experimentation with various emission reduction creation and use strategies. These insights continue. This report presents the efforts of the third phase of the Demonstration Project to review, rethink, and expand upon the basic principles of open market trading developed during the first two phases of the Demonstration Project. The range of issues covered in the report demonstrates that project participants can often be their own toughest critics. Project participants believe that a

willingness to wrestle with tough issues give credibility to the Demonstration Project and the principles of open market trading that emerge from the project.

Topics covered in the first volume of this report include quantification of emissions in an open market, demand for reductions, certainty in an open market, localized air quality impacts due to trading, emission reduction registry design, and the need for and design of a comprehensive program audit. Appendices to the first volume of this report contain several worksheets, tools, and materials designed to assist a source in understanding and participating in open market trading.

A second volume to this report reproduces the methodologies and much of the documentation pertaining to the creation and use strategies implemented during the third phase of the Demonstration Project. These methodologies, sometimes referred to as "protocols," are presented in the hopes that they will serve as templates and/or guidance to those sources interested in creating or using discrete emission reduction credits in an open market trading program. Copies of these protocols may also be found on the registry developed during the course of the Demonstration Project.

Participants in Phase III of the Demonstration Project developed the following new insights into open market trading. These insights are presented here according to topic.

Quantification

* Integrity in the quantification of emissions, whether for the purpose of creating or using DERs, depends upon the integrity of a source's emission baseline data and the process of measuring emissions. Emission baselines should be established using the best data that accurately reflects a source's particular circumstance. Where best data is not available, conservative assumptions should be used in developing baselines. The process of emission measurement needs to account for bias, imprecision, and operating variability. Statistical analysis may be used to address questions of imprecision. Bias should be addressed by making assumptions, and the justifications for those assumptions, explicit.

* Required use of pre-established emission measurement standards or emission quantification procedures are neither practical nor desirable.

  - A central principle of an open market is to encourage new strategies. New strategies may depend upon on new ways to quantify emissions. A requirement that limits sources to existing measurement techniques may limit the range of sources that may participate in trading and may stifle innovation in reducing emissions and measuring emissions.

  - Through three years of the Demonstration Project, project participants have discovered that measurement methodologies developed for specific DER creation or use strategies often exceed measurement standards under existing regulations. Typically, command-and-control programs specify the measurement method, procedure, and frequency necessary to produce emission measurement results acceptable for the purpose of demonstrating compliance with the program's emission reduction requirements. Cost, feasibility, and convenience all play a role in how these standards are set. Once these standards are set, they are written into regulation, and compliance with these regulations hold a source harmless against allegations that their measurements are biased or imprecise. This approach to measurement integrity takes the guess work out of achieving quality; however, project participants have come to realize the "certainty" associated with a command-and-control definition of measurement integrity is achieved by accepting a certain degree of bias and imprecision.

* Emission reductions associated with early compliance and over-compliance with existing air quality standards are benefits derived from an open market trading program. However, Demonstration Project participants realize that a certain amount of early compliance or over-compliance may occur independent of any incentive offered by a trading program. Project participants believe that this potential phenomenon needs to be tracked as part of a comprehensive program audit. Some of these concerns may be resolved as the trading program is implemented and emission standards and compliance schedules tighten around this new flexibility tool. Clearly, a trading program that fails to

encourage innovation and significant new efforts at over-control must be carefully examined and improved. A trading program that fails to reduce costs or contribute to the attainment of public health goals should not be allowed to continue in its current form.

* Project participants believe that emission reductions derived from beneficial changes in activity levels should be creditable in an open market trading program. Strategies that reduce emissions by increasing energy efficiency are one example of a beneficial change in activity level.

* During Phase II, the Demonstration Project established a principle that open market trading involves a 10 percent premium on each use of DERs, with the DERs accrued under this provision retired solely for the benefit of the environment. Project participants continue to consider the 10 percent premium a bedrock principle of open market trading.

Demand for DERs

* The key to any market for any product is demand. Demand for DERs is driven by the need to improve air quality. As standards tighten, demand will increase. Demonstration Project participants believe that increasing demand for emission reductions is good for the vitality of the emissions trading market and good for the goal of ozone attainment. The report contains a full discussion of the many ways in which regulatory efforts for stationary, area, and mobile sources may benefit from the use of DERs.

Compliance

* Although there are many ways to structure compliance responsibilities in an open market program, Demonstration Project participants believe that a user liability structure is the most efficient and effective mechanism for ensuring program integrity. A user liability structure is identical to the liability structure under current regulations. The user of DERs is responsible for quantity and quality of DERs in the same way that an owner or operator of a source is responsible for the purchase and performance of control equipment. The generator of the DER is responsible for the truth and accuracy of all data presented to

substantiate the DERs being sold. The generator's representations are enforceable by the regulator authority, through normal enforcement procedures, and by the purchaser of the DERs, through commercial law. This liability structure enables sources to avoid the long delays associated with regulatory pre-approval of credits and trades characteristic of many trading programs.

* As with any commercial transaction, there are many private sector mechanisms available to minimize risk and uncertainty that may be associated with a buyer liability structure. These mechanisms include the use of independent third party verification, purchase of DERs quantified according to established protocols, and warranty/indemnification clauses in contracts between buyers and sellers of DERs. As a service to future market participants, the Demonstration Project developed a series of checklists and worksheets to guide sources through the process of generating and using DERs. These checklists and worksheets are appended to the report.

* Demonstration Project participants developed an enforcement policy for an open market trading program that address the four elements of any credible enforcement policy. These four functions are: deterrence, predictability, fairness, and public confidence. The overarching principle of the policy is that enforcement personnel should consider the timing of the problem and the actions of the user before alleging a violation and pursuing administrative or judicial remedies. Project participants believe that only those sources that fail to report and cure problems or actively conceal known problems should be subject to the possibility of criminal prosecution.

Preventing Localized Impacts

* The credibility of air emissions trading rests upon the public's confidence that trading will produce the same or better results than can be achieved under the traditional command-and-control regulatory structure. This is particularly true when trading may have an impact on local concentrations of particular pollutants. Demonstration Project participants are sensitive to this concern and studied methods for addressing this concern as it applies to VOC emissions, many of which are classified as hazardous or toxic.

Reductions in air toxics is essential to public health and the environment. Any air emissions trading program that may involve toxics, at a minimum, must be governed by the principle of "do no harm." Demonstration Project participants interpret this principle to include three points.

1. Trading should not result in an increase in local ambient concentrations of air toxics.

2. The trading program should consider whether trading will result in forgone reductions in air toxics.

3. Attention should be paid to the location of creation and use activities so as to avoid shifting concentration of air toxics in time or space.

Registry Design

* A registry is critical to an open market trading program. A registry enables regulators and other interested parties to track the creation, use, and transfer of DERs. A registry provides market participants with a forum for locating, pricing, and trading DERs. A registry gathers information that may be useful in conducting periodic program audits. A registry may serve as a repository for the notices, protocols, and other documentation that substantiate the creation and use of DERs. This last function is not as critical, but it does address concerns over preserving the paper trail necessary for effective enforcement over several years. It may not be necessary for a single registry to perform all four functions. However, project participants believe that a well-designed registry can accomplish all four functions.

Program Audit

* Every regulatory program benefits from periodic review and, if necessary, revision. In particular, emissions trading programs require a systematic performance audit. Public confidence in the idea that market mechanisms are capable of achieving real public health and environmental benefits requires efforts to provide assurances that the program is

really achieving its stated objectives. This is particularly true in the early stages of trading program implementation. Broadly speaking, a properly conducted audit evaluates whether a trading program is meeting environmental and economic goals. The audit can also identify those areas where the program is failing, and produce information necessary to develop effective remedial measures. Finally, an audit can place a trading program's performance into context; first, by comparing the trading program's performance with the past performance of the regulatory system without trading; and second, by comparing the trading program's performance with other trading programs targeted toward addressing a similar environmental goal.