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JACKFAUCETT-530-2-4-02

EMISSIONS TRADING FOR SMALL BUSINESSES

Contract No. SBAHQ-95-M-0594

Final Report

**Submitted to:
U.S. Small Business Administration
Office of Procurement and Grants Mgmt.
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Washington, DC 20416**

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1 INTRODUCTION

In recent years, states, regional associations and the U.S. Environmental Protection Agency (EPA) have greatly increased their interest and activity regarding emission trading. Emissions trading is an economic incentive-based alternative to command-and-control regulation. In an emissions trading program, sources of a particular pollutant (most often an air pollutant) are given permits to release a specified number of tons of the pollutant. A government or trading agency issues only a limited number of permits consistent with the desired level of emissions. The owners of the permits may keep them and release the pollutants, or reduce their emissions and sell the permits. The fact that the permits have value as an item to be sold or traded gives the owner an incentive to reduce their emissions.

When applied properly, emission trading is an economic incentive that can reduce the aggregate cost of meeting local or regional air quality standards, while providing less bureaucratic intrusion into the operation of individual businesses. It also provides greater flexibility in meeting production goals and emission reduction requirements. Approximately thirty emission trading programs currently exist or are being developed. Our study began with a list, developed by the Sierra Club in 1994, of twenty-nine such programs.¹

Emission trading promises benefits to those who participate. This study focuses on two questions: (1) Will these benefits lure firms located in regions with emission trading programs into participation? (2) Will emission trading provide benefits to small businesses? This study defines small businesses as those facilities emitting less than fifty tons per year of an air pollutant.

After reviewing all emission trading programs, including those existing and proposed, nine were chosen for this study. The programs were chosen in order to develop a fairly representative sample of the various emissions trading programs throughout the United States. After each program's description, we address three specific questions including:

- What impact does the program's eligibility requirement have on small businesses?
- How will small businesses learn about the program?

¹ Daniel A. Seligman, *Air Pollution Emission Trading: Opportunity or Scam? A Guide for Activists*, The Sierra Club, Center for Environmental Innovation Understanding Green Markets Project, Washington, DC September 1994.

- To what extent is the program utilized, currently or prospectively, by the small business sector?

This report is comprised of nine sections, including this introductory section. Section 2 describes the various categories of emission trading programs. Section 3 discusses the potential benefits of emission trading to small businesses. Section 4 deals with programs that offer assistance in obtaining offsets, required by the Clean Air Act (CAA), to major new or expanded emission sources in non-attainment areas. Section 5 discusses offset programs that, after more than two decades, are still under development. Section 6 examines the “RECLAIM” program developed and used by the South Coast Air Quality Management District (SCAQMD) as the major tool in meeting regional air quality goals. This innovative program incorporates declining, but tradable, emission allocations. In contrast, “command and control” regulatory programs apply a standard regulatory approach that requires specific technologies for emission reductions. Section 7 focuses on “open market trading systems.” These trading systems are not dependent on providing an initial emission allocation to each firm. Instead, they allow individual firms to trade while preserving all the features of command and control regulations. Section 8 describes the efforts of the Northeast States for Coordinated Air Use Management (NESCAUM). NESCAUM is developing a cap and trade system for reducing NO_x in the thirteen northeastern and mid-Atlantic states that make up the Ozone Transport Region defined in the Clean Air Act Amendments (CAAA) of 1990. Section 9 provides concluding remarks.

2 CLASSIFICATION OF EMISSION TRADING PROGRAMS

Before discussing small business' role or participation in emission trading, this study provides a description of various types of emissions trading programs. Descriptions are provided for five basic types of programs including examples of current programs.

2.1 Comprehensive Systems with Fixed Emission Allowances (Cap and Trade Systems)

Cap and trade systems are trading systems in which emission reduction criteria are developed for each participating source so that, in the aggregate, they meet the emission reduction goals of the regulatory program such as the State Implementation Plan (SIP) required under the Clean Air Act. Aggregate total emissions per period (for example, tons per year or pounds per hour) are capped at the outset and the cap serves as a performance standard. This is done for each individual source in the system. Emission reductions may be achieved by closing or curtailing the activities of a source, changing fuels or production methods, or adding emission control devices. Such systems allow new sources to purchase emission allowances (EAs) from existing sources to use as offsets. They also allow existing sources to purchase EAs from each other; provide greater productivity; meet less stringent emission control requirements; allow flexibility in the timing of emission control installation; or facilitate EA trading among sources within the system to lower costs. An example of this type of emission trading program is the acid rain emissions trading program under Title IV of the Clean Air Act.

2.2 Comprehensive Systems with Declining Emission Allowances (Declining Cap and Trade Systems)

Declining cap and trade systems are trading systems similar to the fixed cap version except the emission cap on the system, and on each source, declines from year to year at a pre-stated rate. An example of this type of emission trading program is the South Coast Air Quality Management District's RECLAIM program for NO_x and SO_x.

2.3 Open Market Trading Rule Systems

The U.S. Environmental Protection Agency recently proposed open market trading systems, which would allow emission trading when system-wide emission reduction assignments have not

first been developed. They are non-comprehensive because only sources that choose to participate in an emission trading program, such as suppliers and purchasers of discrete emission reductions (DERs), must define allowable emissions per period. Three notable features of the EPA-proposed system are (1) intertemporal banking; (2) denial of credits for source shutdowns; and (3) responsibility by the DER purchaser for supplier compliance with its emission reduction program. These features are discussed below in more detail. The U.S. EPA recently discontinued preparation of a model open market trading rule that states could adopt *in toto*. Instead, EPA will issue a guideline. EPA has also discontinued development of protocols that describe the steps taken when creating and using DERs under various circumstances. An example of this type of emission trading program is provided by the State of Michigan, which has implemented an open market trading system.

2.4 New Source Review (Offset) Systems

The set of rules governing the purchase of offsets by major new and expanded sources from existing sources are called offset systems, and often include the registration of emission reductions by an existing source, and a clearinghouse to inform interested parties of emission reductions available for use as offsets. Offsets of major new and expanded emissions have been required by the Clean Air Act under its New Source Review section since 1977. However, many states have not yet developed efficient rules for granting offsets. This results in major new and modified sources performing *ad hoc* procedures for an offset, and state pollution agencies submitting a SIP revision for offset accommodation. Some examples of these types of trading programs include the State of New York's NSR Program, the South Coast Air Quality Management District's NSR Program, and the Bay Area Air Quality Management District's NSR Program.

2.5 Emission Reduction Credit (ERC) Trading

In this non-comprehensive system, emission reductions are calculated by first assigning a specific cap to the source. This cap is based on current emission control requirements and activity levels of the source. A reduced cap, agreed upon under a new emission reduction protocol, is then quantified. The difference is documented by authorities in an emission reduction certificate (ERC). The source that seeks to use the ERC must also determine its baseline cap and the new cap to which it will be subject. As a result, all firms participating in emission trades have an emission cap. Other firms may not have one. In the Massachusetts Banking and Trading Program, ERCs generated by shutdowns are available for offsets for new facilities.

2.6 Discussion

It should be noted that the programs just discussed deal with *emission* trading. It is also possible to develop programs in which sources trade air quality impacts rather than emissions. In that case, if one source decreases its emissions by a certain amount, a second source is allowed emission increases such that overall there will be no negative impact on air quality. Such a program requires the additional transaction costs of attempting to determine the air quality impacts of the various changes in emissions.

To avoid the complication of attempting to determine actual air quality impacts emissions are universally used as a proxy. This assumes that either: (1) the emissions of one source have the same impact on air quality as those of another source; (2) the differences in the impacts are negligible; or (3) that impact differences will average out over time. All economic incentive programs developed to date have either traded emissions at a one-to-one ratio or developed a simple set of emission zones. Both the simplicity and accuracy of the emission trading systems are important criterion.

3 POTENTIAL BENEFITS TO SMALL BUSINESS

Properly devised emission trading programs can benefit both small and large firms. However, in many programs small businesses cannot realize these benefits because of restrictions contained within the specified regulations or by high implementation costs.

3.1 Scale Economies

Most of the emission control equipment and procedures developed to date have been designed for large emission sources. They incorporate fixed costs (including wages for specialized workers) that become negligible when averaged over large emission reductions, but balloon when averaged over smaller source reductions. This is true for mobile source programs as well as stationary source programs. Thus, a substantial percentage of small sources may find that the costs, measured in dollars-per-ton of emission reductions, are greater than those for larger sources are. If transaction costs are low enough, small sources may find it cheaper to purchase ERCs from larger sources rather than install costly controls. As a result, emission-trading programs provide a lower cost alternative to small businesses.

3.2 Less Stringent Controls on Small Sources

Emission control standards may be less stringent for small sources than for large ones. If emission trading is introduced without changing the relevant stringency of the standards, it may be less costly for small sources to implement additional controls than it is for large sources. In this case, small sources will be able to create emission reduction credits to sell to large sources. As a result, emission-trading programs provide small businesses with a profitable secondary product.

3.3 Inadvertent Creation of Surplus Emissions

If, in an effort to meet its emission reduction requirements, a small source chooses to install sufficient emission reduction equipment, it may find that it has reduced emissions by more than is necessary. Because control equipment often produces discrete emission reductions, it may not be feasible to exactly meet the control requirement. If a surplus emission reduction is large enough, and emission trading transaction costs are small enough, small sources may find it

advantageous to sell the emission reduction or trade it internally. As a result, emission-trading programs allow small businesses the ability to sell excess emission reductions.

3.4 Buyout Option

If a small firm emits sufficient amounts of a pollutant, the emission value of a new source offset (or trade with another existing source) may be worth more than the firm's earnings. That is, the assets of the firm such as buildings, land, and allowable emissions may be worth more when sold separately than when used in production. This is true when the firm's technology is outdated. The small entrepreneur will realize a greater return on his assets by selling them outright. He may then choose to use the proceeds of the sale in a new venture. By allowing sales of "shutdown" emissions, the net worth of the small business community may be increased. Even if the firm continues production, its potential shutdown emission can be used as collateral for improvements. As a result, emission-trading programs increase the value of a small business.

3.5 Emission Curtailment Payment Option

A small business may wish to reduce its hours of operation, which may lead to a reduction of emissions per week or per day. If the small business can sell the resulting emission reduction, it will provide revenues to partially offset the output loss. Thus, when a small firm experiences a slow period it will have another revenue source if there is a flexible enough trading system.

3.6 Increased Flexibility

If a small firm has a fixed cap on its emissions instead of specific control requirements, or if it has an option to purchase emission credits easily for short periods of time, it gains flexibility in meeting production requirements. For example, it can alter the controls it uses, using more stringent controls when work volume is high, or it can change its process. Under the right emission control regime, the small firm does not need to apply for permission to make these changes. If emissions exceed the firm's allowance, then only measuring the emissions created, using a prearranged protocol, and purchasing additional emission credits are necessary. The flexibility benefit is most likely to be realized under an emission allowance system (cap and trade).

3.7 Convenience Value of Emission Trading

Under most trading regimes, an emission source gains flexibility with the timing of its compliance strategy. Alternatively, a source may wish to wait for a more advanced control device to be perfected and therefore purchase credits for the period, until installation of its controls. A sufficiently flexible trading system with low transaction costs facilitates this use of emission trading.

3.8 Discussion

In order to serve the interests of small businesses, a low transaction cost is a necessary attribute in any emission trading system. Other attributes that help expand a small business' trading scope include:

- the ability to make trades for specific, relatively short time periods;
- allowance for shut down credits;
- allowance for curtailment credits; and
- the ability to use ERCs for a variety of purposes.

Unfortunately many existing and proposed systems do not contain these attributes. For example, the Open Market Trading Rule (OMTR) proposed by EPA disallows source shutdowns or curtailments as the basis for an emission trading reduction. Also, many existing rules have high transaction costs — the costs of locating a trading partner, certifying emission reductions, and processing individual SIP amendments associated with each trade.

There are, however, legitimate reasons that many programs do not contain these attributes. For example, there are other issues behind the proposed prohibition of shutdowns. If a single dry cleaner closes down, its customers are likely to go to other dry cleaners. Therefore, there are similar dry cleaning activities resulting in the release of comparable emission amounts by the other dry cleaners. Two features of a trading system could alleviate this concern: capping all emissions, (at least all emissions for a particular industry), and including very small sources in the system. Thus, new emissions from other dry cleaners will either meet their caps or they (the

other dry cleaners) will have to implement a new compliance strategy — such as purchasing offsets or installing new equipment.

As discussed earlier, nine existing or proposed emission-trading programs are examined in this study. Each is assessed with respect to their usefulness to small businesses, and these assessments are made along specified parameters. This includes the identification of cases in which small businesses are precluded from opportunities to reduce pollution control costs.

The nine programs include:

1. The Bay Area AQMD's New Source Review (offset) program;
2. New York State's offset program;
3. The South Coast Air Quality Management District's (SCAQMD's) offset program;
4. The State of Texas' offset program;
5. Maryland's proposed offset program;
6. SCAQMD's RECLAIM for NO_x and SO_x (the only one that trades EAs);
7. Michigan's rule which was developed in light of the OMTR;
8. Pennsylvania's proposed application of OMTR; and
9. Northeast States for Coordinated Air Use Management (NESCAUM).

As shown in Exhibit 1, six of these programs are in use while three are in development. The rules cover four of the five trading system types discussed in above. In addition, the four areas of the country in which trading is active are represented including the West Coast, the Great Lakes Region, Texas, and the Northeast.

EXHIBIT 1: Classifications of the Nine Emission Trading Programs Analyzed in this Study		
Type of Trading System	Existing	Proposed
Offsets (New Source Review)	<ul style="list-style-type: none"> ▪ BAAQMD ▪ New York ▪ SCAQMD ▪ Texas 	<ul style="list-style-type: none"> ▪ Maryland
Allowances	<ul style="list-style-type: none"> ▪ SCAQMD RECLAIM 	
OMTR	<ul style="list-style-type: none"> ▪ Michigan 	<ul style="list-style-type: none"> ▪ Pennsylvania
Interstate		<ul style="list-style-type: none"> ▪ NESCAUM

4 EXISTING NEW SOURCE REVIEW PROGRAMS

This section describes programs intended to implement state, federal, and local new source review programs. If new sources, and modifications of existing sources, add more than a stated emission amount into the atmosphere, then they must obtain an offset. An offset occurs when a surplus emission reduction is conveyed to a new or modified source in order to compensate for the source's emission increase.

New source review is a federal requirement. However, some air quality management districts have developed more stringent new source review requirements. The CAA modified the federal new source review requirements. The CAA created several categories of non-attainment, based on the observed level of the ambient air quality. It also established different emission levels for each category requiring offsets.

Offset trading under new source review programs is the original type of emission trading programs. To date, most emission trading experiences have been with offset trading. Obtaining offsets has been a requirement in many states for almost twenty years. However, most states have not developed specific procedures and handle offset trades on an *ad hoc* basis. Two methods by which offset programs can increase efficiency include making lists of offsets available through a clearinghouse and streamlining the completion procedure. These methods help reduce transaction costs associated with offset trades and may also reduce offset costs by providing a more competitive market environment.

The established programs described in this section include:

- The Bay Area Air Quality Management District's Emission Banking Program in California;
- The New York State Department of Environmental Conservation's New Source Review Program;
- The South Coast Air Quality Management District's New Source Review Program in California; and
- The State of Texas' Emission Reduction Credit Banking Rule.

Program 1: Bay Area Air Quality Management District (BAAQMD) Emission Banking Program (Offsets for NSR)

Prior to 1991, POC (photochemical organic compounds, similar to VOC) and NO_x emission increases of forty and one hundred tons or more per year, respectively, triggered the offset requirement for new or modified sources. This requirement was based on the CAA's New Source Review requirements, since POC and NO_x are ozone precursors. In 1991, the BAAQMD adopted a more stringent "no net increase program" under which POC and NO_x emission increases, equaling more than one ton per year, required an offset. More recently, legislation limiting "no net increase" programs was passed by the California State Legislature. The legislation states that an offset is required for each pollutant emission increase equaling more than fifteen tons per year.²

To complement the offset requirements, an emission-banking program has been established. New and modified sources of POC and NO_x obtain offsets faster and less expensively by utilizing the bank. These reductions must be due to changes in permit requirements, emission controls, production schedules, or partial or complete facility closures. If there are no complicating factors, the process of obtaining a banking certificate, for credits up to forty tons per year, may take up to 210 days (seven months). For credits over forty tons per year, a longer process involving public notification and hearings is required.

The banking program includes a Small Facility Bank that serves new sources emitting POC and NO_x in amounts between fifteen and fifty tons per year. Emission credits in the Small Facility Bank are derived from a "growth allowance" that is incorporated in the BAAQMD's Clean Air Plan. The required amounts of emission reductions are increased by a small amount to provide extra emission reductions for the growth allowance. As long as the growth allowance is in place and emission reductions needed to supply credits to the Small Facility Bank have been made, small sources may apply for free offsets. To qualify for a banking credit, new controls must go beyond the control levels already required by BAAQMD regulations or Best Available Retrofit Control Technology (BARCT) levels in the Clean Air Plan.

² Two sources were the basis for this discussion: BAAQMD, *Regulation 2 Permits Rule 4 Emissions Banking*, 15 June 1994 and a conversation with Mr. William R. deBoisblanc, P.E., Manager of New Source Review, BAAQMD.

Any source that reduces its emissions by one ton per year can bank emission credits. However, firms like gasoline stations and dry cleaners whose services are thought to have an “inelastic demand” (the same demand for gasoline or dry cleaning will exist even if one firm shuts down) may not get credit for shut downs.

As far as withdrawals from the Small Facility Bank are concerned, sources that would emit fifty tons per year or less of a pollutant (the working definition of a small source in this study) are not required to get an offset. The BAAQMD is not obliged to keep track of their emissions. Such sources are only required to obtain permits and install basic emission controls.

Currently, there is nothing in place to prevent a source emitting fifty tons per year or less from selling its emissions once it applies a more stringent control, or reduces or eliminates its production.

(b) How small businesses learn about the program.

The BAAQMD has a somewhat dated brochure that describes the emission-banking program, including the Small Facilities Bank, but does not have an outreach program. If small sources wish to deposit emission credits in the bank, they usually must hire a consultant. They also need to have their production and emission control records in good order.

In practice, many small sources do not cash in their emissions because they either are not aware of the opportunity or consider the up-front effort to be too great. Hundreds of small shutdowns

³ California Air Resources Board, *Emission Reduction Offsets Transaction Cost Summary Report for 1994*, May 1995. The BAAQMD recorded eight transactions in which 137.9 tons per year of POC were traded at an average price of \$7,800.

fund the bank. The bank discovers a shutdown when the bill for the source's permit renewal fee is returned marked "no longer at this address."

(c) The extent of usage by the small business sector.

The cost of purchasing an existing Banking Certificate to use as an offset is determined by the market value and is not controlled by the District. Each year the California Air Resources Board (CARB) is required to publish the cost of all purchases of ERCs that occur in the state. Emission offsets in the District's Small Banking Account are provided at no cost to qualifying applicants. However, the applicant may incur some costs in order to qualify, particularly if installation of Best Available Retrofit Control Technology (BARCT) on existing sources is required. These costs and the fact that the District's determination of no "real" emission reduction is likely for a small business, discourage small businesses from utilizing the bank. According to Mr. deBoisblanc, manager of New Source Review at BAAQMD, it is unlikely that small business has utilized the bank. In his words, it is "not a real active bank," and is used primarily by large firms for internal trades.

Program 2: New York State Department of Environmental Conservation (DEC) New Source Review Program (OFFSETS)

The New York State Department of Environmental Conservation (DEC) requires an offset from new or modified sources adding over forty tons per year of VOC, NO_x, or SO₂. Triggers for other emittants differ. There are a total of fifteen air contaminants to which the emission-offset requirements apply. The offset requirement is more stringent in areas classified as severe; including downstate regions. Any measurable net increase in these regions must be offset. The *de minimis* level for the offset requirement eliminates the need for most small sources (under fifty tons per year, as a working definition in this study) in upstate New York to obtain an offset. Downstate, many new and expanding small sources will need to offset or net out their emissions.⁴

The same regulation requiring emission offsets also describes the requirements needed for certification and registration of emission reductions. These reductions are from emission sources

⁴ Sources for this section include Part 231 New Source Review in Non-attainment Areas and Ozone Transport Regions of the Code of New York State. This source was supplemented by conversations with Dave Lang of the Department of Environmental Conservation, Bob Crowder of Empire State Development, and Jo Nicoff of the Erie County Industrial Agency on June 3, 1996. Tria Case of the Small Business Assistance Program was contacted on June 20, 1996.

subject to emission control regulations. Source size is not listed as a criterion for certifying and registering an emission reduction. There are no barriers to a small source, except the cost of verification of the emission before and after the emission reduction and the cost of the emission reduction. These represent small sources wishing to sell an emission reduction credit to a new or modified source that needs to obtain offsets.

Emissions from shutdowns and operational cutbacks are allowed to be certified and registered as long as the reduction is surplus, quantifiable, permanent, and enforceable. The regulations refer to two classes of sources—those with and those without permits. Emission reduction credits can be obtained by sources of either type. However, sources without permits are more likely to encounter problems when documenting the production and emission control history required to demonstrate certifiable emission reduction.

Sources that took emission reductions after November 1990, —when the U.S. Clean Air Act Amendments were passed but before October 15, 1994, the day the New Source Review regulations took effect—may file for emission reduction credits. This is especially critical for firms that have shutdown sources, whole facilities, or may need netting out emission reductions in the future. In order to decrease their offset requirements should they expand, firms may need netting out emission reductions.

The deadline for filing completed applications for registering and certifying emission reductions taken before October 15, 1994, was October 15, 1996. Most firms and many public officials were not immediately aware of this and worked feverishly to disseminate this information. There was talk of doing away with the deadline. This deadline did not affect sources certifying current emission reductions. Sources that reduced emissions below the required level before 1990 are not eligible for ERCs.

The state maintains a list from which it culls firms with registered emission sources that it uses in its outreach effort. However, they have experienced difficulty in contacting potential emission reduction credit owners. This is especially true in the case of facility shutdowns, because ownership is not always clear. In addition, there are the unregistered but legal emission sources that might benefit from applying for an emission reduction credit. Records of these sources do not exist. However, it is thought that many are small sources.

New York keeps a registry of certified emission reduction credits which it will update every Wednesday. Mostly large sources have certified emission reductions. Only one offset deal has been undertaken to date. However, brokers frequently contact firms on the registry. They do so to purchase emission reduction credits or to help firms in applying for them. In return they get a

share in the profit when they are sold. Those small sources that have obtained credits have done so at a broker's urging.

Bob Crowder of Empire State Development—New York State's development agency—believes that demand for credits listed on the registry will eventually come from new sources. Mr. Crowder estimates that there are 2,000 credits (measured as one ton per credit) for NO_x and a possible demand for 3,000 credits. However, not all listed credits are likely to be for sale. Some utilities have registered credits intending to give them to newly located customers in their service areas. Some brokers anticipate high emission reduction credit prices. One estimate is \$5,000 per ton for NO_x emissions. The fact that reductions taken before November 1990 cannot be converted to ERCs, may limit economic development. There is already evidence of offset shortage development.

(a) Impact of program's eligibility requirements on small businesses.

The offset and emission reduction credit programs do not explicitly discriminate between large and small sources. However, small sources are likely to find the cost of certifying emission credits high, especially since these costs are spread over a small number of emission reduction credits. This, however, need not be the case. If a firm has kept good records of its production levels, environmental controls, and emissions, then costs associated with shutdowns will not be high. The offset program could place a burden on small sources that net emissions or obtain offsets.

(b) How small businesses learn about the program.

Seminars are held in five locations to inform emission sources of the program. These are sponsored by the Galson Corporation and co-sponsored by the New York State Department of Environmental Conservation, Empire State Development and the local power company. Local small businesses are invited to these seminars. The application process, required to receive emission reduction credits before the deadline, is reviewed. The firms invited may include small firms, but small firms are not systematically targeted.

Brokers, some of whom are sponsored by utilities, contact individual firms to encourage them to certify emission reductions. Again, these are not necessarily small firms. In fact, the brokers are looking for larger emission reductions because it will take fewer of them to develop an offset. In some parts of the state, an offset is only needed for emission increases in excess of forty tons per year.

Prior to the utilization of seminars and broker encouragement, brochures describing ERC issues were sent to 42,000 small businesses.

(c) Usage extent of the small business sector.

So far, there has been little, if any, small source participation in the emission reduction credit program, because the *de minimis* level (in upstate New York) for requisite offsets discourages small sources under fifty tons per year to get offsets. In addition, there have not been many new and expanding new sources downstate that require offsets.

Program 3: South Coast Air Quality Management District (SCAQMD) New Source Review Program (OFFSETS)

The South Coast Air Quality Management District (SCAQMD) uses an “aggregate” offsetting compliance with federal and state requirements. The District is classified as an extreme non-attainment area for ozone under the federal CAA. There is a 1.3:1 ratio for internal trades, meaning that 1.3 reduction units are required for every unit of increased emissions. When there is an external trade, the federal requirements for offsetting VOC and NO_x emissions in the District is 1.5 reduction units for every unit of increased emissions from a major new or modified source—that being a source emitting over ten tons per year. State law requires that there be a 1:1 offset ratio for all sources. The SCAQMD meets these requirements in the aggregate by setting an external offset ratio of 1.2:1 on new emissions in excess of four tons per year of criteria air pollutants. They utilize a 1:1 ratio when the offset is obtained through an internal trade. Sources with emissions less than four tons per year are exempt from offsets.⁵

In essence, SCAQMD is increasing offset requirements on new sources and modifications emitting between four and ten tons per year. They are using external offsets in order to make up for offset ratios that are less than those required by federal law for sources over ten tons per year and less than offset ratios required by state law for sources under four tons per year. The affected sources include those that meet the working definition of small sources used in this study (50 tons per year or less).

SCAQMD also operates an emission reduction credit bank where sources can get their emission reductions certified. Emissions from source shutdowns or from controls beyond the required

⁵ Sources for this section are conversations with Greg Wood and Francis Goh of the SCAQMD, June 21, 1996.

levels are allowed. Previously granted exempted emissions, free offsets, and other such subsidized emission credits are subtracted from the emission reduction credit. No specific source categories are prohibited from obtaining emission reduction credits. The regulations quote the federal emission-trading rule that states emission reductions must be “real, quantifiable, permanent, federally enforceable, and not greater than the equipment would have achieved if operating with the current Best Available Control Technology (BACT).”

To get an emission reduction credit, the source must document its emissions over recent years and apply the recommended guidelines. These guidelines are included in the regulations and require emission assessment before and after emission reduction. The credit application must be made within 90 days of the reduction implementation. If there are no complications, the time from the initial application through the preliminary decision to grant credits is 210 days or about seven months.

Emissions may be utilized to subsidize small and publicly held source offset exemptions; to lower offset ratios for larger sources; and to free offsets to sources with very low emission rates. Emission offsets for sources employing over 500 workers are obtained from the four- to ten-ton per year sources as well as from “orphan emissions” which are the emissions from sources that shutdown without applying for emission reduction credits within 90 days.

(a) Impact of program’s eligibility requirements on small businesses.

Small enterprises are included in the rules. Existing small sources are not forced into participation. Sources adding four to ten tons per year of emissions face a higher external offset ratio than they would have faced under federal or state requirements.

(b) How small businesses learn about the program.

The SCAQMD has an extensive informational and public relations program. This program is on the Internet (<http://www.aqmd.gov/>). At the Internet site, the Small Business Assistance Office offers help in determining the cheapest method for rule compliance. This is done after conducting a no-risk audit of the source's compliance status. It also helps arrange financing for purchases of air pollution control equipment.

(c) The extent of usage by the small business sector.

All small businesses with four to fifty tons per year of new VOC or NO_x emissions will have to obtain offsets. Sources under fifty tons per year are also eligible to provide offsets, but the practice is not widespread.

Program 4: Texas Natural Resource Conservation Commission (TNRCC) Emission Reduction Credit Banking Rule and Area Emission Reduction Credit Organizations (AERCO)

The TNRCC developed several rules and programs to reduce the cost of meeting emission control goals. These range from emission caps, for individual sources that allow flexibility within the cap, to using alternate fuels in fleet vehicles. The rules are listed in Exhibit 2.⁶

EXHIBIT 2: TNRCC MARKET INCENTIVE PROGRAMS FOR AIR POLLUTION CONTROL IN TEXAS
<ol style="list-style-type: none"> 1. Flexible Permits 2. Alternative Means of Control (AMOC) 3. "Flexible Approach" 4. NO_x RACT Trading 5. Emission Reduction Credit Banking and Trading 6. Area Emission Reduction Credit Organizations (AERCO) 7. Accelerated Vehicle Retirement Program 8. Alternative Fuels Credit Program

Two programs from the list are pertinent to small business' participation in emission trading. They are Emission Reduction Credit Banking and Trading, and Area Emission Reduction Credit Organizations. Both of these rules deal with the ERC provision for offsets and netting.

In the Houston-Galveston area of Texas, the offset ratio for VOC is 1.3:1 and is triggered by any emission over one ton. The area has an exemption for NO_x emissions. This means that they do not need to be offset. There are also standard exemptions. Sources with standard exemptions do not have to get offsets. Standard exemptions have been developed for certain industries such as

⁶ Information used in this section was developed from two sources. The first was information found in *Market Incentive Programs for Air Pollution Control in Texas*, a presentation to the Market Incentives Conference sponsored by SCAQMD on January 24, 1996 by Texas Resource Conservation Commission in Austin, Texas. The second source were calls to Ruth Reiman and Christine Bergren on June 21, 1996.

auto body painters and woodcutters. If a source's industry is on the list and the source complies with straightforward emission control requirements, they are granted the standard exemption. While many small businesses receive standard exemptions, other unlisted industries do not. It is possible that the standard exemption list will be expanded.

The Emission Reduction Credit Banking and Trading Program establishes the rules and criteria for creating Emission Reduction Credits (ERCs) to be used for offsets and netting. Reductions of VOC or NO_x emissions may be used to create ERCs if they: (1) occurred after January 1, 1990; (2) are quantifiable and surplus to any reductions required by law; and (3) are permanent and federally enforceable. The criteria for measuring the size of the credit are laid out in the rule. Credits have a five-year life and depreciate at three-percent per year from the date of the emission reduction. The ERCs may be traded between any parties within the same non-attainment area.

No fees are charged for processing ERCs, and their development is uncomplicated if the firm keeps good records. If the emission reduction is less than ten tons, it is registered, but no certificate is issued. If the emission reduction is over ten tons, an engineer reviews the reduction and a certificate is issued.

The fact that a certification is not issued for emission reductions of fewer than ten tons may have a negative impact for small businesses. A certificate is easily sold because it represents certified emission amounts. It may be applied to the buyer's need for an offset without further action. On the other hand, a registration can be sold and transferred to another party, but before it can be used, an engineer must certify it. Therefore, a registration for a certain emission reduction amount is worth *less* than a certificate for the same amount because there is less certainty concerning the emission amount it offsets.

The Houston-Galveston area is classified Severe-17 ozone non-attainment, as it failed to meet the National Ambient Air Quality Standard for that pollutant. Since an ERC must be used in the non-attainment area in which it is generated (unless the ERC is used as an offset for a new or modified facility), the user must purchase and retire enough ERCs to meet the offset ratio requirement in that non-attainment Houston-Galveston area. The user must also purchase and retire either ten percent or the offset ratio, whichever is higher. These restrictions have resulted in only one offset having been sold in the Houston-Galveston area, the price of which is unknown. However, it has been estimated that the price of a VOC emission certificate could be as much as \$10,000 per ton.

The Texas legislature has also established an organization called Area Emission Reduction Credit Organizations (AERCO). The AERCO board represents various groups interested in economic growth, the environment, and small businesses.

These organizations promote ERC creation and transfers, relative to offsets, as economic growth opportunities. The stringent offset rule facing most new industries could make growth difficult if efforts are not made to certify as many ERCs as possible. AERCO seeks to purchase or broker ERCs so that a new source will not have difficulty knowing where to obtain offsets. AERCO in the Houston-Galveston area is currently trying to raise funds and become organized. It brokered the one trade mentioned above.

(a) Impact of program's eligibility requirements on small businesses.

Small businesses in Texas are helped by the fact that many receive special exemptions and therefore do not need permits or offsets. However, some small businesses do not qualify for special exemptions. If these firms wish to develop a new or expanded emission source, they need to offset emissions over one ton. If they have surplus emissions to sell, they can not get them certified until the offset is ready to be used—unless the surplus exceeds ten tons per year.

(b) How small businesses learn about the program.

Texas has an active small business environmental (not just air pollution) hotline with an 800 number. The hotline helps small businesses apply for permits and special exemptions, and answers questions about offsets and ERCs. The hotline's communications staff develops fact sheets on special topics and mails them to either anyone who calls, or is on a trade association list of industries affected by a specific rule. Sometimes the small business hotline uses radio spots to inform small businesses of important environmental issues. If the value of ERCs ever reaches the level commonly predicted in the Houston-Galveston area, the hotline will inform small businesses of opportunities that exist for them to develop and sell offsets.

(c) The extent of usage by the small business sector.

The only ERC transaction, to date, did not involve a small business. This, however, is due to the one-ton offset trigger applicable to any new small business facility (although some small businesses do need more than the one-ton offset trigger) that wishes to expand production and thereby makes substantial increases in emissions. It is likely that small businesses will purchase offsets in the near future unless the requirement totally stifles them. On the supply side, the provision of ERCs by small businesses is hampered by the fact that certificates are given only for

emission reductions over ten tons. However, in a strong market, emission registrations could sell at a slight discount. In addition, small sources in the ten- to fifty-ton per year range will have opportunities to sell certified emission reductions for perhaps as much as \$10,000 per ton.

5 OFFSET PROGRAMS IN DEVELOPMENT

Although offset requirements have been on the books for nearly two decades, some state programs are still in the developmental stage. Maryland is an example of a state that has been discussing offset trading (and broader forms of emission trading) since the late 1970's.

Program 5: Maryland Department of the Environment (MDOE) Emission Reduction Credit (ERC) Program

The MDOE expects ERC program completion designed to facilitate offsets and netting by November 1996. Offset requirements differ across the state.

Montgomery and Prince George's Counties are in the District of Columbia Non-attainment Area, along with some Virginia counties. Their offset ratio is 1.2:1 and is triggered by a major new source—one with fifty tons or more of VOCs or NO_x. If an existing major source increases emissions of VOC or NO_x by twenty-five tons or more, it must offset the increase using an offset ratio of 1.15:1.

If a new major source—one emitting twenty-five tons or more of VOC or NO_x—locates in Baltimore City or one of the five surrounding counties, the offset ratio is 1.3:1. As in Montgomery and Prince George's Counties, if an existing major source increases emissions of VOC or NO_x by twenty-five tons or more, it must offset the increase using an offset ratio of 1.15:1.

The rest of the state is in the Ozone Transport Region (OTR). In the OTR, a major source of VOCs is one that emits fifty tons or more annually. A major source of NO_x is one that emits 100 tons or more annually. A new major source triggers the offset requirement using a ratio of 1:1. A forty-ton increase of VOC or NO_x by a major source requires offsets with a ratio of 1.15:1.

Although the specific size triggers and offset ratios have changed over the years, offsets have been required for major new sources in Maryland since the late 1970's. Discussions concerning an ERC program have been ongoing. The result is, those new sources locating in Maryland have had to work with MDOE to locate sources that can supply offsets in compliance with federal emission trading rules without a bank, clearing house, or any systematic procedure. Once found, the offset requires a SIP revision before it can be certified. The hope is that the ERC program will

streamline the offset process and therefore make it easier for firms to expand or locate new sources in Maryland.

A draft rule dated June 16, 1995 details a brief, clear procedure. This rule deals with the creation of ERCs for VOC and NO_x. It allows a source to obtain an ERC for emission reductions of over one ton per year. An earlier draft had a higher minimum. Emissions may be reduced in a variety of ways. Methods include (1) installing control equipment, (2) using lower-emitting raw materials, (3) reducing production or hours of operation, (4) installing modification operations, or discontinuing on-site installation or installations. The listed methods of emission reduction for the purpose of obtaining ERCs are not meant to preclude other means, and will not do so if the emission is surplus, federally enforceable and meets the other federal requirements.

The application process is straightforward. The chief requirements are emission documentation before and after the change, and indication of the method used to reduce emissions.

The rule differentiates between a “shutdown” and a “partial shutdown.” In a partial shutdown, the owner still has some installation of the same SIC operating elsewhere in the state. In a shutdown, all installations of a SIC owned by the same person in the region are closed, until a new owner reopens them. As the draft rule states, “A person who generates an ERC from over-control or partial shutdown shall retain control of its transfer or use.” However, if the premises are shut down, the owner may transfer the whole ERC to the buyer within a year. If the source is not sold in a year, the owner may sell fifty-percent of the ERC. The other fifty-percent goes to the state. If after a year the ERC is unused, it is controlled by the state.

ERCs from partial shutdowns have unlimited lives. They remain in force until they are used or the owner violates an ERC condition. All other ERC creations, except shutdowns, also have unlimited lives.

(a) Impact of program’s eligibility requirements on small businesses.

The ERC program does not explicitly address small businesses. However, the one-ton limit on ERCs is viewed as an incentive to small business ERC generation. The application process requires only information essential for ERC measurement. The cost of this information depends on the quality of the firm’s records and the complexity of its operations.

The only provision that could hurt small businesses is the shutdown provision. This requires the sale of the ERC along with the premises. It also requires the forfeiture of all or a major part of,

the ERC portion if the sale does not occur. This provision works against declining industries, seeking to pull out or take up work in a new industry.

(b) How small businesses learn about the program.

It is currently unclear how information on opportunities for ERC creation and sale will reach small businesses in Maryland. The MDOE's Small Business Assistance Office, a section of the Environmental Permit Service Center, states that because the program is not multimedia in nature, responsibility lies with the regulatory development program. This would assume that anyone affected by the rule is informed⁷. A representative from the Department of Business and Economic Development (DBED), an office devoted to business liaison, was non-committal as to its potential role.⁸ A small business development center in DBED describes the contact process for small businesses as follows:⁹

There are five regional offices. When a small business needs to be notified, the central office contacts the five regional offices with the message. It is then up to the regional offices to disseminate the message. They may put stories in the local press, give it to local chambers of commerce, or ask various persons such as industry and trade associations.

(c) The extent of usage by the small business sector.

The program is still in development and has not been used. However, persons contacted in Maryland did not associate the ERC program with small businesses. It is therefore not likely that small businesses will participate, even though in most respects the ERC program is designed to prevent discrimination against small businesses.

⁷ Conversations with Linda Moran of MD DOE's Environmental Permit Service Center, Small Business Assistance Office on June 21, 1996.

⁸ Conversation with Ernie Kent of DBED on June 21, 1996.

⁹ Conversation with John Simpkins of Maryland's Small Business Development Center in DBED on June 21, 1996.

6 RECLAIM: THE ONLY EXISTING CAP AND TRADE SYSTEM

RECLAIM is a cap and trade system similar to the Title IV Acid Rain Trading Program implemented by the CAAA of 1990. RECLAIM differs from Title IV in that the emission allowances decline each year. RECLAIM is the only cap and trade program dealing with Criteria Air Pollutants currently in place as part of a SIP.

Program 6: South Coast Air Quality Management District (SCAQMD) Regional Clean Air Incentives Market (RECLAIM) for NO_x and SO_x

The air quality in the SCAQMD region of California is the worst in the nation. The SCAQMD is the only region classified as ozone extreme. As a result, the Air Quality Master Plan developed by SCAQMD is the nation's most stringent. The SCAQMD introduced RECLAIM to improve air quality at a lower cost while providing more flexibility in meeting control requirements and production schedules.

RECLAIM is a comprehensive NO_x and SO_x emission trading system that was started in 1994. A RECLAIM version was also considered for VOCs but was not adopted. Another emission trading approach that requires less effort to measure emissions for compliance is under consideration. Participating sources have to keep annual NO_x and SO_x emissions below the RECLAIM Trading Credits (RTCs) in their possession. They obtain RTCs not only from the emission allocation process described below, but also from emission reduction credits (ERCs). They also obtain RTCs by converting ERCs to RTCs (obtained through the pre-existing NSR Offset program) and other sources' RTC Certificates.

RECLAIM is comprehensive because it supplants all other emission control programs. This includes New Source Review (offsets) as well as the many specific emission control rules that the sources would otherwise have been required to follow. RECLAIM allows flexibility in emission control timing, as some sources may fall behind their emission reduction schedule while others are ahead.

The RTCs allocated to each existing source are different every year. Their numbers decline through 2003. Allocations for the years 1994 through 2000 are based on a straight-line reduction rate from the calculated 1994 and 2000 allocations. These are based on (1) the product of the source's base throughput and its 1994 emission factor, and (2) its base throughput and 2000

emission factor. Each piece of equipment is calculated and then summed to obtain the facility's allocation.

Another straight-line emission reduction rate is established from 2000 to 2003. The 2003 emission factors are to be determined so that total emissions for RECLAIM participants will equal the amount estimated for them in the 1991 Air Quality Master Plan.

Emission allocations for the years after 2003 will equal those for 2003 unless the district decides that additional reductions are required. In that case, there are specific rulemakings and actions that must be undertaken to establish the revised allocations.

As a result of RECLAIM, the SCAQMD expects to stay on schedule in reducing aggregate emissions from participating sources.

RECLAIM is comprehensive for its participatory sources. Those programs involving non-participatory NO_x and SO_x and pollutant sources are excluded. A list of excluded NO_x and SO_x sources are:

- dry cleaners
- fire-fighting facilities
- landfill gas control construction and operation, processing or landfill gas energy recovery facilities
- facilities that have converted all sources to electric power prior to October 15, 1993
- police facilities
- public transit
- restaurants
- potable water delivery operations
- Southeast Desert Air Basin facilities located in Los Angeles and Riverside County
- facilities that permanently ceased all source operations before January 1, 1994

Other initially excluded sources are allowed to join. Most of these are public operations or institutions such as schools and hospitals. No one is allowed to opt out once they join.

The other eligibility requirements eliminate sources that do not require a written permit including another party's rented equipment and on-site, off-road mobile sources. In addition, SO_x sources that burn only natural gas are excluded. Otherwise, all sources emitting four tons or more of NO_x or SO_x annually are included.

RTCs based on emission reductions from participating sources may be traded. The facility that sells RTCs may make up for its reduced number of RTCs by (1) implementing a process change; (2) installing additional emission control equipment; or (3) decreasing production or shutting down equipment or facilities. If it is an RTC's current year, the seller must report which of these options it is using. Otherwise, such a disclosure is unnecessary. Buyers may receive the RTC as (1) an increase in their facility allocation if they are RECLAIM participants; (2) an RTC Certificate which may be held or transferred to any other person; or (3) an offset if the buyer is installing a new source or modification subject to RECLAIM. Anyone holding RTCs may have them permanently retired if they want to promote cleaner air.

Those small businesses that either are included in RECLAIM or choose to join will no longer have to comply with specific emission control requirements. Instead they will need to demonstrate compliance with an annually declining emission cap. The choice of a compliance strategy and implementation of an emission-monitoring program will become major air quality concerns for the source. For a particular source, the total cost of RECLAIM may either be more or less than the cost of complying with the command and control requirements the source would have faced otherwise. If the cost to a RECLAIM source is more than that for command and control, the reason will most likely lie with the cost of more stringent emission monitoring requirements. RECLAIM also requires more initiative from the source in terms of thinking about and choosing emission control strategies.

In 1994, twenty-four NO_x offsets were transferred in SCAQMD.¹⁰ While the data does not state which ones or how many were from sources subject to RECLAIM, it may be presumed that most of them were. The median price for these offsets was \$10,000 per ton as reported by the California Air Resources Board (CARB). Since an offset, as defined by the CARB, is a perpetual decrease in emissions, the price of an RTC with a one-year term will be less. Information concerning this was not available.

¹⁰ California Air Resources Board, *Emission Reduction Offsets Transaction Cost Summary Report for 1994, May 1995*.

(a) Impact of program's eligibility requirements on small businesses.

The eligibility requirements for SO_x and NO_x RECLAIM do not discriminate against small businesses. However, the requirements do exclude dry cleaners and restaurants which are often small.

(b) How small businesses learn about the program.

As stated previously, the SCAQMD has an extensive informational and public relations program on the Internet. The Small Business Assistance Office offers help in determining the cheapest rule compliance method. This is done after conducting a no-risk audit of the source's compliance status. The Office also helps arrange financing for purchases of air pollution control equipment.

(c) The extent of usage by the small business sector.

RECLAIM firms' usage rate is widespread. This includes all small businesses, other than restaurants and dry cleaners, that emit over four tons or more of NO_x or SO_x annually. Once in the system, the cost of trading is negligible. The essential cost of RECLAIM—operating the emission monitoring system—will accrue to the source whether it trades or not. Hence, we expect any small business included in RECLAIM to trade emission allowances. We can expect this if a compliance strategy for the source that incorporates trading is clearly the most profitable option available to the source.

7 OPEN MARKET TRADING SYSTEMS

In 1994 and 1995, officials at EPA developed what they called an “open market trading rule” (OMTR). OMTR allows emission sources in a non-attainment area or compliance zone—one subject to emission limitations with respect to ozone precursors VOC and NO_x—to enter voluntarily into trading. It is not necessary to first establish emission allocations (caps) for the emissions of all potential trading partners. The system is therefore open to all interested parties. The exit door to the open market trading rule is open as well. This means that once a source participates, it is under no obligation to maintain its participation.

The open market trading rule contrasts with RECLAIM (discussed previously) for which the emission caps are developed for all participating sources in advance. In the case of RECLAIM, the caps decline every year for the first decade.

EPA’s effort to develop OMTR stimulated several states to develop rules of their own. Some, like Pennsylvania, hoped that EPA would develop a model rule or “template” that they could adopt and EPA would approve instantly.¹¹ Others, like Michigan, convened a committee of stakeholders. They worked diligently to develop their own rule (based on the open market concept) that would meet their needs while conforming with the requirements of the Clean Air Act, state rules, and implementation plans.¹²

The EPA version of OMTR published in the Federal Register on August 25, 1995, has several key features including:

- It allows a source to create an emission credit or “discreet emission reduction” (DER), for VOC and NO_x emissions. This is accomplished by applying additional controls or different production techniques or inputs over a period of time. Also, it is allowable to measure the difference in emissions compared to a baseline emission calculation that assumes the same activity level. Emission reductions taken prior to the start of the 1995 ozone season cannot be credited. Production curtailments and shutdowns are not allowed as means of generating DERs.

¹¹ Letter of October 5, 1995 to Air and Radiation Docket and Information Center (6102) ATTN.: Docket No. A-95-21, from Pennsylvania’s Department of Environmental Protection, signed by James W. Rue, Deputy Secretary for Air, Recycling and Radiation Protection.

¹² Conversation with Lou Jager of Michigan’s Department of Environmental Quality on July 10, 1996.

- The source registers DERs with the authorities and ensures that DERs are real, properly quantified and surplus. However, authorities will not represent DERs as valid. There is no responsibility placed on a source that creates an invalid DER.
- The life of a DER is unlimited. It can be used instead of a required emission reduction in any future year.
- Anyone can purchase a DER. Another source can use the DER to help demonstrate compliance with the terms of its operating permit. However, the source using the DER is deemed to be out of compliance if the authorities determine that the DER was invalid or insufficient.
- The DER calculation required for a compliance application parallels the calculation required when a DER is generated. The source surrenders ten-percent of the value of the DERs when they are used.

In sum, the OMTR limits both the generation and use of DERs and places a risk on the user. Additionally, because DERs have unlimited lives (that is, they can be banked indefinitely without losing value) they may be used in a manner that jeopardizes attainment of NAAQS.

At a hearing held on August 31, 1995,¹³ Michigan argued against a number of features of the proposed rule. The comments included concerns about the adverse treatment of curtailments and shutdowns and the limited uses for DERs. Michigan's primary concern was that by declaring the rule to be a template or model rule, it would make it much more difficult for those states (using a different approach to open market trading) to obtain approval. Pennsylvania submitted comments to the docket on October 5, 1995.¹⁴ Their concern was the opposite of Michigan's. Pennsylvania wanted to adopt the OMTR by reference. This, they felt, would save the two years or so it would take to develop a rule in state. However, the rule's wording would have required Pennsylvania to rewrite its program completely.

After the hearing, EPA decided to downgrade the OMTR to a guidance document. However, it remains difficult for states to obtain approval for measures that contradict the OMTR (for example, the use of credits based on source shutdowns or curtailments). As Nancy Mayer of

¹³ Testimony of Brian Roosa, Associate Director of State of Michigan, Washington Office on Open Market Trading Rule for Ozone Smog Precursors, Thursday, August 31, 1995.

¹⁴ Submitted comments by the State of Pennsylvania. October 5, 1995

EPA said, it is very difficult for states to demonstrate that shutdown credit utilization does not lead to degraded air quality.¹⁵

In spite of these challenges, both Michigan and Pennsylvania are moving ahead with their own versions of OMTR. Michigan put its program in place in March 1996, and submitted it for EPA approval. EPA has judged the submittal to be complete and the remaining approval process will take about a year. Pennsylvania has initiated their rule-making process. Discussion of these two rules follows.

Program 7: State of Michigan's Open Market Trading Rule (OMTR)

The worst air quality area in Michigan is designated moderate non-attainment for ozone. The New Source Review and other emission control requirements are not very stringent. Michigan sought to use emission trading to reduce emission control costs for both new and existing firms. It also sought to increase available flexibility for meeting air quality requirements. In order to do so, Michigan has developed its own version of an open market trading rule. They hoped the EPA rule would provide them with a solid regulatory platform. Their testimony shows that Michigan's regulators were disappointed.

In objecting to EPA's OMTR, Michigan stated that it was too restrictive. The restrictive aspects, were (1) shutdown prohibitions and credit generation curtailments and (2) the restriction of credit for offsets, bubbles, and netting. Michigan also wanted to allow firms credit usage in order to cover increased emissions. They wanted to do this because short-term increases in demand for their products, if their permit limited their total emissions or shifts.

The basic features of Michigan's OMTR include:

- Source creation of emission reduction credits for VOC and all the Criteria Air Pollutants except ozone. This is done accomplished by applying additional controls, different production techniques or inputs, production curtailments, or source shutdowns. Credits can be of two types. One type is similar to EPA's DERs and it documents reductions already taken, with the exception that they remain five years after the year of generation (they can be banked for five years). A permanent reduction such as a reduction due to a shutdown, permanent control, or permit condition is used for an offset. For example, the emission reduction credited for each subsequent year (say for 1998) may be used for an

¹⁵ Phone conversation with Nancy Mayer of the U.S. EPA, OAQPS on July 10, 1996.

offset in any of the following five years (1999, 2000, 2001, 2002, 2003). Credit may be received for emission reductions taken in any year after 1991.

- Emission reduction credit registration with the requisite authorities. These authorities then certify it for completeness and place it in a registry. A ten-percent reduction in the number of credits is taken upon registration. The reduction then becomes a legally enforceable operating requirement. Significant penalties are levied against any source that misrepresents reductions.
- Emission reduction credit utilization for netting, offsetting, bubbling, or compliance. Penalties exist for trading and using false or insufficient credits.
- Emission reduction credits for VOC or NO_x generated during the ozone season. These may be used at any time, but those generated outside the ozone season may not be used during the ozone season. In addition, banked emissions generated during an ozone season lose ten-percent of their value each year until they expire.
- Trading between separate non-attainment areas, separate attainment areas, and attainment and non-attainment areas is permitted if using appropriate ratios.

Michigan's plan is to make trading a useful economic tool that increases flexibility for producers, and reduces compliance costs. In designing their program, they sought to allow any activity that would not worsen air quality.

For reasons stated above, the New Source Review and other emission control requirements are not very stringent. As a result, many smaller sources are not heavily regulated, but may participate in emission trading. Because they are not heavily regulated, their costs for emission controls are likely to be moderate in comparison to those of larger, more heavily regulated sources. Michigan officials expect that a large portion of the emission reduction credits will come from small sources. These small sources will make voluntary reductions and sell emission reduction credits through the registry for a good price. Credits based on source shutdowns are expected to fetch prime prices, especially when used as offsets.

(a) Impact of program's eligibility requirements on small businesses.

The program places no limits on eligibility. Small sources are expected to benefit from the program. Written procedures for implementing the rule should make it conducive for small source participation.

(b) How small businesses learn about the program.

Currently, there is no specific plan in place to help small businesses learn about the program. The Department of Environmental Quality (DEQ) held seminars to introduce the emission trading rules to the business community in September 1995. An effort was made to inform small businesses of the seminars through mailings, information dissemination to trade groups, and Internet notices. Dave Fiedler of the Small Business Assistance Program believes the real work will come after the workshops.¹⁶ His group will seek speaking engagements at trade group meetings to promote the opportunities afforded by emission trading. They will also prepare plain English descriptions of the rules.

DEQ plans to develop an instruction booklet for the establishment and use of credits. Plans also exist for developing quantifying emission protocols from unregulated sources such as mobile sources and some small businesses. DEQ is currently working with a small source (a printer) on a quantification protocol for the use of alternative inks to generate emission reduction credits. They are in contact with the National Federation of Independent Businesses and the Printing Industry of Michigan on this effort. All instructions and forms developed by DEQ will go on their web page.

(c) The extent of usage by the small business sector.

Michigan adopted emission-trading rules on March 16, 1996. They expect major usage by small businesses. Applications have already been received by some small sources and the state views these businesses as prime candidates for ERC generation.

Program 8: State of Pennsylvania's Open Market Trading Rule (OMTR)

Pennsylvania is also preparing a comprehensive emission-trading rule along the lines of the OMTR. They initiated the endeavor in early 1996, after learning that EPA would not provide a model rule in a form they could use for automatic EPA approval.

So far, regulations have not been prepared. However, Dean Van Orden of Pennsylvania's Department of Environmental Protection, described provisions for small business representation during rule preparation. At the outset, the Small Business Compliance Advisory Committee was briefed that the rule making was in progress. Also, a list of small businesses that could generate

¹⁶ Conversation with Dave Fielder of Michigan's DEQ Small Business Assistance Program on July 10, 1996.

emission reduction credits was prepared. Mr. Van Orden said that he was hopeful that emission quantification protocols could make the cost of generating a credit low enough to attract small businesses.

Discussions have been based on an open market approach and the state is reviewing methods on how to include "area sources" in trading. Mr. Van Dorn stated that EPA has stopped working on protocols for quantifying emission reductions. This will complicate Pennsylvania's task of preparing an Open Market Trading Rule.

The Small Business Compliance Advisory Committee will review the proposed rule. The committee is composed of four small business owners, representatives of the Sierra Club, the Pennsylvania Department of Commerce, the Department of Environmental Programs, the Chamber of Commerce and other individual participants.

(a) Impact of program's eligibility requirements on small businesses.

Until the rule is formally drafted, it is not known whether the emission-trading program will allow the trading of shutdown and curtailment credits, or whether a size standard for participation will apply. In comments to EPA's proposed OMTR, Pennsylvania stated its agreement with EPA's OMTR requirement that shutdowns and curtailments "should not be creditable actions...only a source's positive actions should create credits in the OMTR."

(b) How small businesses learn about the program.

The Small Business Compliance Advisory Committee employs a contractor. Once the emission-trading program is in place, the contractor will publish a relevant article in the committee's newsletter. Seminars, mailings, web sites, and bulletin boards will be used to publicize the rule and to inform small businesses as to the rule's affect on them. The contractor's mailing list will include a small business inventory as well as individuals that have inquired about the program.¹⁷

(c) The extent of usage by the small business sector.

It is not clear how often the small business sector will use the emission-trading program being developed in Pennsylvania. The DER is aware that some protocols can be made simple enough to keep the cost of generating an emission reduction credit within the reach of small businesses.

¹⁷ Scott Kepner of the Pennsylvania Department of Environmental Programs Bureau of Air Quality Compliance and Enforcement is on the Small Business Compliance Advisory Committee.

However, the DER is also on record as opposing the benefit to small businesses of using shutdowns and curtailment in emission trading.

8 PROPOSED INTERSTATE EMISSION TRADING

Many non-attainment areas for ozone and other pollutants (such as fine particulates and haze) find that even after substantial reductions of all local ozone precursors, the area remains non-attainment. The reason is that ozone and its precursors, NO_x and VOC, can be transported for hundreds of miles. Numerous days of ozone non-attainment in San Diego and the Eastern Desert area in California occur for this reason. Likewise, downwind areas in the Great Lakes and the East Coast regions north of Virginia, cannot solve their ozone problems without help from upwind areas.

The CAAA, as previously noted, address ozone issues by creating an Ozone Transport Region composed of Maryland, Delaware, New Jersey, Pennsylvania, New York, Connecticut, Rhode Island, Massachusetts, New Hampshire, Vermont, Maine, the northern portion of Virginia, and the District of Columbia. Within this region, even areas that do not themselves experience NAAQS ozone violations must require emission offsets from new and expanded sources of VOC and NO_x. Other guidelines, not normally required for attainment areas, must also be followed.

The attention to NO_x emissions throughout the OTR is a new development. In the past, ozone SIPs have focused on the reduction of VOC only. With respect to acid rain, the emphasis has been on SO_x reductions. NO_x emissions nationwide actually increased from 1983 to 1993, according to EPA's Trend Reports.¹⁸ Hence the CAAA represents two major changes to ozone reduction strategy. These changes are (1) emission controls in attainment areas because of their impact on far-away non-attainment areas, and (2) equal treatment of NO_x and VOC unless given dispensation by the Administrator of EPA.

The CAAA established the Ozone Transport Commission (OTC) to implement the NO_x reduction strategy. The OTC formally adopted the September 1994 Memorandum of Understanding (MOU). This calls for all utility and large industrial combustion facilities to make major NO_x reductions, during ozone season, by 1999 and again by 2003. These reductions would be achieved by first establishing the 1990 baseline emissions for the affected sources and then estimating the aggregate reductions needed by 1999 and 2003. The collected data would then be used to establish emission caps for each affected source. Sources could buy or sell allocations to meet actual emission requirements every ozone season.

¹⁸ U.S. EPA, OAQPS, *National Air Quality and Emission Trends Report*, 1993, October 1994.

Two interstate associations, the Northeast States for Coordinated Air Use Management (NESCAUM) and the Mid-Atlantic Regional Air Management Association (MARAMA) formed a NO_x Budget Task Force. The task force developed a model rule to implement the program defined by the MOU. They presented the rule in late 1995. The rule represents a consensus among the participating states on the issues involved in MOU implementation. The model rule will guide individual states as they develop state programs to implement the NO_x Emission Budget Program.

The NO_x Budget Program Model Rule developed by NESCAUM/MARAMA is described in the following section. One issue remains unresolved; namely the relationship between the NO_x Budget and SIPs. The program's introduction addresses the interaction between the NO_x Budget and proposals for open market trading rules. The NESCAUM/MARAMA Emissions Trading Demonstration Project, which advances the concepts and practices of open market trading were to have discussed this issue. However, their Phase III report issued by the Emission Trading Demonstration Project¹⁹ is silent on the subject.

Interstate emission trading program development has increased. As the NESCAUM/ MARAMA Model Rule neared completion, another organization, the Ozone Transport Assessment Group (OTAG) started developing a broad interstate trading framework for emission reduction credits between sources of ozone precursors. The OTAG was charged by the EPA with implementing the CAAA, with respect to ozone, in the thirty-seven states east of the Mississippi. Also, the Western Governor's Association has announced its Air Quality Initiative to develop a regional approach. The approach, which is based on the cap and trade concept, would control the precursors to fine particulates and haze.

The final section of this report discusses NESCAUM's NO_x Budget Program Model Rule.

Program 9: Northeastern States for Coordinated Air Use Management (NESCAUM)/Mid-Atlantic Regional Air Management Association (MARAMA) NO_x Budget Program Model Rule

As discussed above, the NO_x Budget Program Model Rule is intended to facilitate region-wide NO_x reduction required for regional non-attainment areas to meet the NAAQS. Many sources affected by the budget are not in non-attainment areas.

¹⁹ NESCAUM/MARAMA, *Emissions Trading Demonstration Project, Phase III*, Summer 1996.

The budget program involves the following steps:

- Preparation of an emission baseline for 1990 by OTC. This was completed.
- The OTC allocation of emission allowances for 1999 and 2003. Emissions were allocated to each state. Each state will now be responsible for the allocation of allowable emissions to specific sources in the state.
- Emission limits by the state for each targeted source during the ozone season (May through September). These limits are to be less than, or equal to, the allowances they hold for the season. One allowance equals one ton of NO_x.
- Emission allowance trading between sources. This is referenced in the Model Rule as "cap and trade."
- Source monitoring and annual reporting of emissions. During a reconciliation period (October through December) sources may trade for additional permits needed to match their emissions if such permits are available.
- Penalties plus allowance reductions equaling three times the violated amount if a source's emissions exceed its allowances.
- Surplus allowance banking at the end of an ozone season for use in the next season. The OTC will control the use of banked emissions by raising the ratio of allowances to emissions to 2 to 1 when the total of banked emissions exceeds ten-percent of the total of annual emission allowances.

In addition to these established principles, the Model Rule also addresses issues for further study. It is believed that the rule should contain language functionally linking the NO_x Budget Program to other emission trading programs, such as open market trading programs. Also, it is felt that the program should include sources outside the OTR. Lastly, the program should permit non-utility parties, who implement energy savings, to obtain allowances for their creation of emission reductions.

(a) Impact of program's eligibility requirements on small businesses.

The program is limited to utility and large industrial combustion facilities that have decreased NO_x emissions beyond the amounts required for RACT. It is unlikely that small businesses will

be able to participate in the program except by possibly creating energy savings as non-utility parties. Since the OTC has not addressed this issue, it is not clear what opportunities will be available.

(b) How small businesses learn about the program.

The means have not been established for small businesses to receive information, even if the program is shown to provide them with opportunities.

(c) The extent of usage by the small business sector.

Given the lack of clear evidence regarding small business participation, their potential use of the program is judged to be small or non-existent. However, there is a slight possibility that small businesses could benefit from and would participate in energy saving programs. These programs would allow them to earn allowances they could sell to large entities directly affected by the program.

9 CONCLUSIONS

The potential exists for emission trading programs to benefit small businesses in their roles as buyers and sellers. However, one question still needs to be addressed: To what extent are these programs utilized, either currently or prospectively?

Many people were interviewed for this study. Of that group, only those involved in the recently inaugurated open market trading system in Michigan, envision small businesses reaping major benefits. They foresee that small businesses could create DERs by installing more stringent emission controls. Those DERs could then be sold to large businesses. Other programs see small businesses as ERC suppliers, but only as a result of shutdowns or production curtailments.

Opportunities for small businesses (or any other group) to benefit as ERC purchasers are few. In regions with bad air quality, small businesses are required to purchase ERCs to offset new emissions. Since this participation is a requirement and not voluntary, it cannot be counted as a trading benefit. Rather, it is a method of meeting the air quality goals of small businesses. The RECLAIM program in the SCAQMD, is one program in which small businesses can purchase ERCs. Another program in which this is possible, is the open market trading rule in Michigan. Pennsylvania's proposed rule will also permit small businesses to purchase ERCs.

Transaction costs will hamper small business participation in emission trading. Most NSR rules impose high transaction costs on any ERC provider. Indeed, many protocols for open market trading rules are not yet developed. Therefore, small businesses seeking to use these systems are forced into creating protocols. Complicated protocols can be costly to small businesses. Michigan and Pennsylvania are aware that simple protocols will appeal to small businesses.

Emission trading is still in the nascent stage. The potential benefits to small businesses exist, but rules and protocol development will determine whether emission trading is boon or bust for small businesses.