

US EPA ARCHIVE DOCUMENT

DRAFT REPORT

**State Set-Aside Programs for Energy Efficiency and Renewable Energy
Projects Under the NO_x Budget Trading Program:
A Review of Programs in Indiana, Maryland, Massachusetts, Missouri,
New Jersey, New York, and Ohio**

Climate Protection Partnerships Division
Office of Atmospheric Programs
U.S. Environmental Protection Agency

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A. Introduction

In the NO_x SIP call (63 FR 57356, October 27, 1998), EPA established NO_x emission reduction requirements for 22 eastern states and the District of Columbia to address the interstate transport of ozone and ozone precursors. EPA set emission budgets for each affected state for the May 1st through September 30th period each year (referred to as the "ozone season" or "control period" throughout this report).¹ As a control strategy under the NO_x SIP call, EPA and the states designed an interstate trading program to reduce emissions from large electric generating units and industrial combustion units (generally referred to as "NO_x budget" units). The states establish a trading budget and allocate allowances (each allowance equals one ton of NO_x) to these units. In addition, states may reserve allowances from the budget to address new units or to provide incentives for certain activities. EPA refers to this trading program as the NO_x Budget Trading Program (NBP).

States can use one type of incentive, an energy efficiency/renewable energy (EE/RE) set-aside, to award NO_x allowances for energy efficiency and renewable energy projects. These projects can prevent emissions by reducing energy demand or increasing the supply of clean energy. To date, six states have developed an EE/RE set-aside program, and a seventh has proposed a set-aside program. Thus, about 1/3 of the affected states have elected to include an EE/RE incentive program.

This report is intended to provide an overview of the states' set-aside programs. The report: 1) identifies the states that have established EE/RE set-aside programs; 2) discusses how the states address the primary elements of an EE/RE set-aside program; and 3) identifies any coordination between EE/RE set-aside programs with other EE/RE programs. Appendix A provides a brief table for each state program that summarizes their key elements. The report will be useful for state agency staff and EE/RE project developers and participants to understand the different program features, and to consider application of similar programs in other contexts.

¹ Because of litigation, the emission reduction requirements of the NO_x SIP call were dropped for Wisconsin, delayed until 2007 for affected portions of Georgia and Missouri, and, for 2004 only, limited to May 31 to September 30 in eleven states.

B. Other EPA Background Materials

EPA has developed two documents to assist states that decide to establish an EE/RE set-aside program. The first guidance document entitled "Guidance on Establishing an Energy Efficiency and Renewable Energy (EE/RE) Set-Aside in the NO_x Budget Trading Program" was released in March 1999. The guidance discusses the elements that a state may consider in deciding whether to establish an EE/RE set-aside and how it should be designed, such as the size of the set-aside, eligibility, and the length of awards. The second guidance document entitled "Creating an Energy Efficiency and Renewable Energy Set-Aside in the NO_x Budget Trading Program" was released as a draft guidance document in April 2000 (EPA-430-K-00-004). This document includes additional detail on designing the set-aside application process, allocating to eligible projects, translating energy savings into emissions reductions, determining a timeframe for implementation and awards, and establishing documentation and reporting procedures. A third report, "Designing Measurement and Verification Requirements," is under development and will provide additional guidance to states on options for measuring and verifying the potential emissions reductions resulting from EE/RE projects.

While the guidance documents contain significant discussion on the EE/RE set-aside elements, EPA has emphasized throughout that most of the program design issues can be determined by the individual states based on their own set of circumstances. Therefore, this report uses the EPA guidance documents as an outline for discussing the elements of the various state programs, but variations between EPA's earlier guidance documents and actual state practices are expected. The discussion of those differences in this report does not make judgments about the appropriateness or adequacy of an individual state's program. This report compares the different approaches in the states and in EPA's guidance in order to provide information that others can use to understand these programs and to evaluate options for designing similar programs.

C. Which States Have Developed Set-Aside Programs?

Currently, seven states have developed EE/RE set-aside programs as part of their NO_x SIP call programs. These states are Indiana, Maryland, Massachusetts, Missouri (proposed), New Jersey, New York, and Ohio.

States with EE/RE set-asides for the NO_x SIP call: IN, MD, MA, NJ, NY, and OH. Missouri has a proposed set-aside program.

Missouri's EE/RE set aside is part of a proposed rule that the state included as part of their April 2005 submittal in response to the NO_x SIP call. EPA has issued final approvals for the other six states' SIP submittals, but has not yet finalized an approval for Missouri.

Maryland Department of the Environment requires the maintenance of a set-aside for clean air projects under their NO_x Reduction and Trading Program regulations, but has not yet reached final agreement on a detailed implementation process.

D. What Are the Sizes of the Set-Aside Programs?

The EPA guidance recommends that states establish an EE/RE set-aside program that is between 5 and 15 percent of their NO_x trading program budget. States have established EE/RE set-aside programs (see Table 1, below), ranging from one to five percent of their NO_x trading program budget. Most states were unwilling to divert as large a portion of their allowances from the affected budget sources to EE/RE projects. Despite this, the amount of allowances available in states such as Indiana (1,115 tons) and New York (1,241 tons) are sizeable since their overall budgets are relatively large.

It is important to note that EE/RE projects can also potentially prevent multiple emissions from energy production. The extent to which EE/RE projects displace emissions will depend both on (1) which sources do not have to generate as much electricity because an efficiency project reduces demand or a renewable project displaces the need for generation, and (2) on the type of EE/RE project. Generally, the evaluation of these benefits requires an analysis of emission rates based on electricity dispatch modeling. In addition, any evaluation of reduced emissions must take into account the extent to which a renewable energy project, such as a landfill methane project, may result in emissions. For instance, in New Jersey, more than half of the allowances from the EE/RE set-aside have been distributed to landfill gas operations.

Table 1
Size of Set-Aside Account by State

State	Size of Set-Aside	
	NO _x Tons	Percent of 2003* Trading Program Budget
IN	1115	2%
MD	436	3%
MA	643	5%
MO	134	1%*
NJ	410	5%
NY	1241	3%
OH	454	1%

* Missouri's proposed EE/RE set aside is 1% of the state's 2006 NO_x Trading Program budget.

E. What Projects or Actions are Eligible?

1. General Types of Projects

EPA guidance suggests that an EE/RE set-aside should provide allowance awards only for projects that meet the following criteria:

- Reduce or displace the electricity load from the electric generating units (EGU) that are affected under the NO_x SIP call;
- Lead to energy savings during the summer ozone season;
- Include activities that are not already required by federal regulation and are not used to generate compliance or permitting credits otherwise in the SIP;
- Operate in the ozone season for which an applicant will receive allowances;
- Be capable of being measured and verified; and
- Convert to at least a one ton increment (alone or by aggregating eligible projects).

In addition, EPA recommends that the project should not benefit a NO_x budget unit by freeing up allowances that the source already has been allocated (for example, by retiring a unit). Generally, the EPA guidance indicates that states consider allowing core sources to qualify for allowances under the EE/RE set-aside only if the action entails:

- Installation of a new combined heat and power (CHP) system project (provided allowances have not already been distributed to the project from the new source set-aside);
- Renewable energy projects, including wind, solar, biomass, and landfill methane; or
- A demand side management action either within or outside the source's facility.

The various state eligibility provisions appear reasonably consistent with EPA guidance on the issue of project eligibility. In one of the more notable differences, some state programs permit NO_x budget units to receive set-aside allowances for in-plant efficiency improvements. In addition, Ohio has a separate companion set-aside for innovative technology projects (that reduce NO_x emissions from either stationary or mobile sources). Because it is not specifically part of the EE/RE set aside program, this report does not address this separate program. Table 2 summarizes the types of projects that may qualify for allowances from the states' EE/RE set-aside programs.

Table 2
Summary of Eligible Projects under the EE/RE Set-Aside Provisions

EE/RE Project Type	States
<u>End-use energy efficiency.</u> Special considerations: MA: Projects must directly result in energy savings at a facility located in MA. Electrical, thermal and mechanical energy savings are eligible. Combined heat and power systems with actual energy efficiency of at least 60% are also eligible. MA specifically includes any new building or addition that exceeds the requirements of the MA state Building Code 780 CMR 1301.0 et seq., Energy Conservation. However, NO_x Budget Units are not eligible to receive allowances for energy efficiency projects NJ: Initiatives must be by consumers that purchase from a provider licensed in NJ and must not lead to increases in other emissions. OH: Combined heat and power systems are eligible if they are not NO_x budget units.	IN, MA, NJ, NY, OH, MO
<u>Renewable energy.</u> Special considerations: IN: Includes wind, solar, and certain hydropower projects. MA: Includes wind, solar, photovoltaics, ocean thermal, wave/tidal energy, certain hydropower projects, fuel cells that do not employ a fuel processor that emits NO_x, and geothermal. MO: Includes wind, solar, photovoltaics, biogas, geothermal, certain hydropower projects, and biomass (specifically excludes municipal waste). NJ: Includes wind, solar, and fuel cells. NY: Includes wind, solar, photovoltaics, methane waste, or sustainably managed biomass (and specifically excludes waste-to-energy facilities). OH: Includes wind, solar, landfill methane generation, and biomass.	IN, MA, NJ, NY, OH, MO
<u>Methane waste gas capture.</u> Special considerations: MO, NY, and OH: Methane generation is included in the list of eligible renewable energy projects, not as a separate category.	IN, NJ, NY, OH, MO
<u>In-plant energy efficiency.</u> Special considerations: IN: Allocation process discounts awards to applicants that own/operate NO_x trading sources as compared to projects sponsored by non-affected sources. MO and OH: EGUs may receive allowances for on-site energy efficiency improvements. NY: Such projects eligible only after all eligible EE/RE projects receive allowances.	IN, MO, NY, OH
<u>Other:</u> NJ: Other environmentally beneficial electric generation as approved by NJDEP.	NJ

2. Time Constraints for Eligibility

Some states also include constraints on the time frame for a project to be eligible to receive allowances from the set-aside. These time limits include:

- **Indiana** requires that a project must have been implemented within two years of the submittal of a request.
- **Massachusetts** limits applicability to projects that were built, in use, or installed and operational after December 31, 1999. Energy efficient projects can earn allowances for up to 7 years and renewable energy projects may earn allowance for each year that they continue to generation electricity.
- **Missouri** proposes to limit allowances for EE/RE to projects that commence operation after September 1, 2005.
- **New Jersey** limits applicability to projects that commenced in 1992 or later.
- **New York** allows for requests to be submitted within five years of initial project implementation.

EPA's guidance suggests that states credit early actions. However, none of the states have established policies to encourage early actions for EE/RE projects.

3. Aggregation of Projects

EPA guidance encourages states to allow for the aggregation of projects by a single entity, such as end users, energy service companies, or other entities. Because the amount of energy savings from a single EE/RE project often may not qualify for even one allowance, often it will be necessary to aggregate the savings from multiple projects to take advantage of the set-aside program. Examples of entities that can serve as an aggregator may include state energy offices, real estate investment trusts, or industry trade associations. States generally allow aggregation in their set-aside programs:

- **Indiana, Massachusetts, Missouri, and New York** allow for the aggregation of smaller projects if submitted through a single application and project sponsor.
- **Indiana, Massachusetts and Missouri**, also indicate that aggregation is necessary if individually, the projects do not lead to a reduction in NO_x of at least one ton. (Missouri's proposed rule uses conventional arithmetic rounding to the nearest ton.)
- In their application process, **Indiana** specifically requests that the applicant submit information on related projects.

- **New Jersey's** regulations do not address aggregation of projects. However, New Jersey has processed applications for aggregated projects undertaken by an energy retrofit company over the past several years (about 40% of the total set-aside allocations for 2000-2003), and expects to continue to accept this type of aggregated project application in the future.
- **New York** specifically encourages aggregation of efficiency projects but is still developing guidance and procedures on this issue. New York has indicated that they may also consider awarding allowances to applicants that have only a contractual relationship to an efficiency project.
- **Ohio** encourages the aggregation of projects, but requires that multiple sponsors must designate one authorized account representative for the aggregated projects.

Given the nature of many EE/RE projects, multiple sponsors may exist for a given project. Especially with aggregating projects, it would be possible for multiple sponsors to seek allowances for the same project. While not all states address this issue directly, Indiana, Massachusetts, and Ohio note that if more than one application or project sponsor claims credit for a particular project, those applications will be rejected. Missouri's proposal also specifies that only one entity may claim eligibility for allowances for a given project. New Jersey notes that to date, there have been no occurrences of multiple individuals submitting applications for the same project. The application must be resubmitted by a single sponsor or individual application in order to receive allowances under the set-aside.

F. How is the Application Process Designed?

1. One-Step versus Two-Step Approach

EPA guidance provides details on how states may design their application process to minimize confusion and maximize the efficiency of allowance distributions from the set-aside. EPA presents two options, a one-step or a two-step process. First, a one-step process where applicants submit their claim for allowances after the ozone season during which the project was implemented, including information verifying emission reductions or energy savings. The second option is the two-step process where applicants submit a proposal for their project prior to implementation, receive preliminary approval from the state, and then subsequent to the ozone season during which the project is implemented submit additional information that verifies the completion and benefits of the project.

Indiana and Ohio have established a two-step application process, with some of the following key features:

- **Indiana** requires that requests be submitted by September 1 in the calendar year prior to the control period for which the applicant seeks EE/RE set-aside allowances for the project.
- **Ohio** requires that the applicant submit the request by November 15th of the year prior to the year for which allowances are to be reserved. The initial step determines project eligibility and adequacy of the measurement and verification plan. Ohio EPA will approve or deny the initial applications by March 1st. The second step occurs after the applicable compliance period and involves the sponsor's project verification report (to be submitted by October 31st), the agency's review, and the issuance of the allowances (to be completed by February 15th).

In contrast, Massachusetts, Missouri, New Jersey and New York use a one-step application process:

- **Massachusetts** required that a request for public benefit set-aside allowances be submitted by September 1, 2004 for 2003 and 2004 allowances (which were based on 2002 and 2003 energy savings, respectively), and by April 1, 2005 for 2005 allowances (which are based on 2004 energy savings). The April 1 deadline applies for 2005 and all subsequent years.
- **Missouri** proposes that project sponsors submit a complete application on DNR forms by the last business day of November following the period of May 1 through September 30 during which the eligible project activities occurred. Project sponsors may opt to request a pre-application eligibility review preceding project activities that will serve as a basis for an application for awards.
- **New Jersey** and **New York** have established a one-step application process with the submittal of claims required by October 30th and July 1st, respectively, following the ozone season during which the project was in place.

2. Level of Documentation

EPA recommends that states require, at a minimum, that the application for set-aside allowances include certain basic information on the project sponsor, a description of the project or activity (including an implementation schedule and an estimate of the project's lifetime), the resulting electricity savings or generation with supporting documentation, an explanation of the measurement and verification method, three seasons of baseline energy use data, and verification that the information submitted is accurate. The state programs address this element with varying degrees of detail:

- **Indiana** has developed several forms and other documents to be used for the set-aside program and has included these forms in Appendix A to their guidance (*Indiana NO_x Budget Trading Program, Energy Efficiency & Renewable Energy Set-Aside Guidance Manual, January 2003*). In addition, Indiana provides a detailed description of the application and distribution procedures. Indiana's application includes all of the elements recommended by EPA but does not specifically request three ozone seasons of historical data, only that the project sponsor should provide any historical data that would help facilitate a review of the project.
- **Massachusetts** requires applicants to establish a NO_x allowance account with the EPA and to complete an application form. The application form requires the name and contact information of a project proponent and a statement of whether the proponent represents a single project or several aggregated projects. The type of project (energy efficiency or renewable energy) must be indicated, along with narrative project description(s), address(es), a summary of project dates (when buildings were completed, materials and equipment were installed, and procedures were made operational), and the number of allowances requested. Calculations must be attached for the allowance request figures, and additional information (such as site information, plans, specifications, drawings, calculations and operation and maintenance procedures) may be required by the state environmental agency. The application certification must be signed by a responsible official, authorized by the project proponent.
- **Missouri** proposes that it will provide mandatory forms for applications and re-applications. Submissions will require certification by a professional engineer attesting that information and calculations submitted in the application are complete and accurate. Applicants must demonstrate electricity savings or renewable generation using measurement and verification procedures approved by the state environmental agency and calculate the NO_x allowance award request according to the agency's methods. If the applicant intends to reapply in subsequent years, the application must indicate the stream of benefits expected for subsequent years.
- **New Jersey** generally requires that a claim for incentive allowances include information on the project sponsor, including documentation that the person submitting the claim is eligible; electricity savings or generation, including all relevant calculations and methods; whether the allowances should be issued as allowances or discrete emission reduction (DER) credits (a separate emission trading concept managed by the state); and a certification statement. New Jersey has indicated that to date, there have been no requests for DER credits.
- **New York** does not include specific criteria for documentation within the application process, only that the request for allowances must include information

demonstrating NO_x reductions based on the Department's measurement and verification protocols. New York has indicated that they are currently in the process of developing guidance on this issue.

- **Ohio** requires that applicants submit a proposal including a detailed project description and an estimated number of allowances that will be requested, and the method for measurement and verification. Following implementation, Ohio requires that the project sponsor submit a project report that verifies the expected reductions as estimated in the initial application.

G. How are Allowances Calculated and Awarded?

1. Measurement and Verification

EPA is currently developing a report on measurement and verification (M/V) protocols and programs.² This report will highlight measurement and verification programs currently used for demand-side management and renewable energy programs. Programs in Massachusetts, Missouri, New Jersey, New York, and Ohio address this issue with specific procedures.

- **Massachusetts** stipulates that measurement and verification of energy saved or generated by each project shall adhere to the International Performance Measurements and Verification Protocol, March 2002, DOE/GO-102002-1554 (IPMVP), or the U.S. EPA's Conservation Verification Protocol. Also required are measurement and verification provisions of NEPOOL's Operating Procedure 18 "Metering and Telemetering," or other provisions acceptable to the state agency.
- **Missouri**, in lieu of specific measurement and verification procedures, proposes to rely on a requirement that all applications be submitted with certification by a professional engineer attesting that information and calculations submitted in the application are complete and accurate. The state agency also has the right to require verification of data and calculations presented in the application as a condition for awarding the allowances and may include site visits by the agency or its agents.
- **New Jersey** has a specific guidance document for energy efficiency projects (see "Measurement Protocol for Commercial, Industrial and Residential Facilities," inc by ref. at NJAC 7:27-31.21).

² An M/V protocol is used to measure and verify that the energy savings from a specific EE/RE project have occurred. Based on those savings, the state establishes a process to convert the energy savings to an emissions equivalent in order to allocate allowances.

- **New York** requires that applicants follow protocols as specified by the state, and is currently developing additional guidance material that will clarify their M/V procedures.
- **Ohio** states in its guidance that sponsors must use established M/V procedures. The guidance refers to M/V procedures developed by U.S. Department of Energy and EPA as examples.

The current EPA guidance on developing EE/RE set-aside programs contains a discussion on accounting for "business as usual" (BAU), and M/V uncertainty in awarding NO_x allowances. The concept of "business as usual" adjustments is that states may not want to provide a full allowance award for EE/RE projects that would occur even without the EE/RE set-aside program. Adjustments for M/V uncertainty represent a mechanism to incorporate a trade off for allowing less rigorous M/V protocols for various projects.

Although the states do not have any specific adjustment factors for BAU or M/V uncertainty in their programs, some of the states intend to address this issue:

- **Indiana, Missouri, and New York** have indicated that they do not plan to adjust for either BAU or M/V uncertainty in the evaluation or verification phase following project implementation. While not addressing BAU or M/V uncertainty, **New Jersey** does clarify that calculations for energy generation should not include any portion of electricity that is generated through the use of supplemental firing of fossil fuels (oil, gas or coal). **Missouri's** proposal also specifies that allowance calculations must be for net renewable generation in plants that co-fire with other fuels.
- **Massachusetts** applicants must make normalization adjustments for energy savings in accordance with the IPMVP, and may be required to include thermodynamic steam table energy extrapolations, the American Society of Mechanical Engineers' Standard for Measurement of Fluid Flow in Pipes Using Orifice, Nozzle, and Venturi (ASME MFC-3M-1989); manufacturers' efficiency specifications for useful energy determinations; or other measurements and verification protocols acceptable to the Department.
- **Ohio** EPA previously noted that it may want to adjust for BAU and M/V uncertainty, but its recent guidance does not include any procedures for such adjustments.

2. Converting Energy Savings/Displaced Generation to NO_x Tons

Because allowances are expressed in terms of tons of emissions, the EPA guidance summarizes how a NO_x emissions factor can be used to convert energy savings or displaced generation into emissions reductions. EPA recommends that states use a NO_x emissions rate of 0.0015 lbs/kWh or (1.5 lbs/MW-hr), which is based on a typical average

system heat rate of 10,000 Btu/kWh and the NO_x emissions limit of 0.15 lbs/mmBtu in the SIP call rule. However, EPA also offers an alternative of using marginal NO_x rates. The use of marginal emission rates provides increased accuracy in the estimate of expected emission reductions associated with EE/RE projects.

There is no specific guidance regarding exactly how allowance awards should be calculated for potentially eligible projects. EPA anticipates that this determination will be made by each state and that the calculation may vary depending on the type of project. Most of the states indicate through rule language or follow-up interviews that they will apply a conversion rate of 1.5 lbs/MW-hr for all types of projects. The conversion procedure in some states remains open. The general approaches taken by states are as follows:

- **New Jersey's** regulation states that the calculation of allowance awards under the set-aside will use the 1.5 lbs/MW-hr allocation rate.
- **Missouri's** proposal also states that the calculation of allowance awards under the set-aside will use the 1.5 lbs/MW-hr allocation rate. Converted allowances will be rounded to tons using conventional arithmetic rounding.
- **New York** uses a 1.5 lbs/MW-hr allocation rate.
- **Ohio** uses the EPA recommended 1.5 lbs/MW-hr allocation rate and incorporates in its guidance how that conversion factor applies to specific types of EE/RE projects.

Indiana provides a detailed approach that uses different conversion procedures for different types of projects. A primary element of the draft revisions to Indiana's regulations is to clarify some of these calculation procedures. Based on the final regulations (as affected by the draft revisions), the key features of Indiana's approach include:

- For end-use energy efficiency projects that claim a reduction in consumption of electricity and are sponsored by end-users or non-utility third parties, Indiana uses EPA's recommended conversion factor of 1.5 lbs/MW-hr. For projects that are sponsored by budget source account holders, the formula is modified to incorporate a 75% discount factor (applicant must use 0.000375 rather than 0.0015 lbs/kWh).
- EPA's recommended factor also is used for zero-emission renewable energy and methane gas capture projects.
- For end-use energy efficiency projects that claim a reduction in the consumption of energy other than electricity and are not NO_x budget units, Indiana uses a specific formula based on the ratio of energy consumed per unit of product before

and after the EE project and the NO_x rate before and after the project. Again, if NO_x budget account holders are the project sponsors, the formula incorporates a 75% discount factor.

- For high efficiency generation, such as combined cycle units (50% energy efficiency threshold), microturbines (40% energy efficiency threshold), and fuel cell systems (40% energy efficiency threshold) that are sponsored by end-users or non-utility third parties and are not budget units, and for high efficiency generation projects that are for the predominant use of a single end-user and are sponsored by NO_x budget units, the NO_x allowances are determined by the following formula: $(\text{kWG} * (0.0015 - \text{NO}_x))/2000$, where kWG and NO_x represent the number of net kW hours of electricity and the amount of NO_x (in lbs/kW-hr), respectively, as generated by the project during the ozone control period.
- For high efficiency cogeneration, such as combined heat and power (CHP) systems, that are sponsored by end-users or non-utility third parties and are not budget units, the regulations provide a detailed formula that accounts for the overall efficiency in terms of electricity and steam production.
- For improvements to existing fossil fuel fired electric generating units or the installation of high efficiency generating equipment that replaces or displaces retired units and meets applicable efficiency thresholds in the rule, the regulations discount the allowances by 75% and calculate the allowances based on the difference in NO_x emissions before and after the replacement or improvement.

Massachusetts' NO_x Allowance Trading Program regulation, 310 CMR 7.28 specifies several different allowance calculation formulas, depending upon the type of project for which the allowances are requested. Projects and aggregations of projects that involve less than five allowances may use other reliable, replicable quantification methods if the MA DEP finds them acceptable. The key features of the allowance calculation formulae are:

- Allowances for renewable energy projects that generate electrical energy and energy efficiency projects that save electrical energy are based on EPA's recommended conversion factor of 1.5 lbs/MWh, where MWh is the net electrical energy generated by a renewable energy project or the amount of electrical energy saved by an energy efficiency project.
- Allowances for renewable energy and energy efficiency projects that generate or save useful net thermal energy will be based on a conversion factor 0.44 lbs per mmBtu output, where mmBtu output represents the useful net thermal energy generated by the renewable energy project or the amount of thermal energy saved by the energy efficient project.

- For energy efficient projects saving thermal or mechanical energy in a manufacturing process where energy consumption is measured on a unit of production basis, a specific formula is used based on both the ratio of energy consumed per unit of product and the NO_x rate before and after the project. Note that the formula used to calculate allowances for these projects is identical to that used for similar projects under Indiana's set-aside program. However, unlike Indiana, the Massachusetts set-aside provisions do not apply a 75% discount factor to projects sponsored by NO_x budget account holders.
- Energy efficiency projects that are combined heat and power (CHP) systems with actual energy efficiency equal to or greater than 60% must show calculations proving this level of efficiency and compare actual emissions for the CHP to a conventional system that includes a utility power plant for electricity and an industrial boiler for steam. The conventional system is assumed to have an emissions factor of 0.15 lbs NO_x/mmBtu, an electrical generation efficiency of 34%, and a steam boiler efficiency of 80%. Allowances are calculated by subtracting the CHP system NO_x emissions from the conventional system NO_x emissions (in lbs) and then dividing by 2,000 lbs/ton.

3. Distributing Allowances

The EPA guidance recommends that states distribute allowances with a "seasonal lag." Under this approach, the vintage year of the awarded allowances would be the year following the season in which the reductions are documented for a specific project. (The vintage year refers to the year in which allowances can first be used for compliance.) This recommended approach means that, although allowances will be distributed after the season in which the EE/RE activity created the energy savings/generation, the allowances received from the set-aside will be current season allowances when they are received. Thus, the allowances will not be treated as banked allowances, and the allowance value in the year the allowances are issued will not be affected by flow control provisions under the trading program. Similarly, the guidance indicates that if a same-year allocation approach is taken, the allowances should be distributed prior to the November 30th true-up deadline so that the recipients have the option to use their allowances for current year compliance purposes.

The states have followed various approaches on this issue. Only about half of the states issue allowances so that the source receives the allowances in the same year as the vintage year for the allowances (so that they can be used for compliance purposes prior to being classified as banked allowances). The basic approaches include:

- **Indiana** will issue allowances from the set-aside by December 31 of each year (after the state verifies project implementation and certifies energy, emission or electricity savings). The state agency indicates that it will reserve allowances with the initial application and then award those allowances after the results are approved the following year. Therefore, the allowances awarded will be issued

from the previous year's set-aside account, so that recipients will receive the allowances as banked allowances.

- **Massachusetts** required applications for 2004 Public Benefit Set-Aside (PBSA) allowances to be submitted by September 1, 2004. Applications submitted in 2004 could include requests for 2003 and 2004 designated allowances, but separate calculations were required for each year's energy savings or generation. From 2005 on, applications for allowances must be received by April 1 of each year, and will be designated to the year in which the request is submitted. Also from 2005 on, allowances may be requested for only one year at a time. Applications must be made annually for allowance requests based on projects with multi-year renewable energy project generation or energy efficiency project savings. For all years, allocations are based on the previous year's savings or generation (e.g. 2004 savings and generation form the basis for 2005 allowances). Allocations are made on November 1 of the year of application.
- **Missouri** proposes to award allowances with a vintage year for the control period following the control period during which the qualifying activity took place. For example, sponsors of project activities that take place during the 2006 control period will receive 2007 vintage year allowances. Allowances will be calculated and awarded by March 1 preceding the control period for which they are requested.
- **New Jersey** states that the set-aside allowances for each project will be distributed from the following year's set-aside account at the time of post-season reserve allocation.
- **New York** provides that allowances will be distributed within two years following the start of the control period for which the request was made. The vintage year of the allowances awarded will correspond to the year in which the energy reductions or savings were achieved. For example, for verifiable savings or generation in 2003, an applicant will receive their 2003 vintage allowance award in 2004 or 2005. Thus, these allowances would be received as banked allowances.
- **Ohio** will reserve current year allowances by March 1st based on the initial project applications it receives and approves. The agency then will distribute those allowances following the ozone season and project verification, by February 15th.

4. Determining the Length of the Award

The EPA guidance provides a general discussion regarding the length of the award that states should grant, noting that a longer term award may discourage new projects and tie up too many allowances in the set-aside and a shorter term award may not provide an adequate incentive. EPA specifically recommends that awards for eligible EE/RE projects be granted from the set-aside for at least three consecutive years, with verification

on an annual basis. However, states may set longer or shorter awards depending on the circumstances within the state as well as the characteristics of each individual project.

States were generally consistent on the initial length of an award. Six states (IN, MA, MO, NJ, NY, and OH) award allowances for only one year, and then allow for applicants to resubmit their claim for an award under the set-aside each year. These states then apply the following:

- **Missouri, Indiana, New York, and Ohio** specifically state in their rule that each eligible project may not receive allowances for more than five consecutive years.
- **Massachusetts** requires that EE/RE project sponsors submit separate annual applications for each year that they generate or save energy. Energy efficiency projects are eligible for allowances for energy saved during each of the seven years immediately following the project's first year of use (new buildings and additions), installation (materials), or operation (equipment or procedures). Renewable energy projects are eligible to apply for each year during which they continue to generate electricity.
- **New Jersey** has indicated that no limit has been established for the total number of consecutive years that a single project can qualify for allowances.

H. What are the Allocation Procedures if the Set-Aside is Over-Subscribed?

EPA guidance on this issue suggests that states could either allocate the allowances on a first-come, first-served basis or could prorate the allowances in the set-aside to ensure that all applicants receive an award. To encourage EE/RE initiatives, EPA recommends that states consider expanding the size of the set-aside if the number and size of eligible projects exceed the available supply of allowances. The state approaches to this issue include:

- In the event that there is a shortage of allowances in the set-aside, **Indiana** will transfer any unused allowances from the new unit set-aside as needed. If there is still a shortage after this transfer, Indiana will give first priority to end-use efficiency, renewable energy and methane gas capture projects, second priority to high efficiency generation, third priority to high efficiency coal or natural gas projects that lead to the replacement or displacement of less efficient units, and finally to in-plant energy efficiency projects. In the event that there is a shortage within any of these four priority groupings, the allowances will be allocated on a pro rata basis (with the previous priority grouping(s) receiving a 1:1 allocation).
- Similarly, **New York** gives first priority to end-use efficiency and renewable energy projects and any other projects will receive allowances from the set-aside only if available. In addition, within these priority groupings, New York issues

allocations on a first-come, first-served basis, with all requests received within the same calendar quarter considered to be simultaneous submittals. If the number of allowances requested "simultaneously" exceeds the set-aside allowances, then the remaining allowances will be allocated on a pro rata basis.

- In **Massachusetts**, unused allowances from the new unit set-aside, up to a maximum of 2% of the state NO_x trading program budget, will be used to meet excess demand for public benefit set-aside allowances. If this approach is not sufficient to meet demand, then allowances will be distributed on a pro rata basis.
- **Missouri** proposes to determine awards based on each applicant's position in an eligible projects queue.
- **New Jersey** has not had to prorate allowances in past years under the Ozone Transport Commission NO_x Budget Program or the SIP call NO_x Budget Trading Program. Starting with 2004, the state established a process to transfer any unused allowances from the new unit set-aside to meet the demand and, if there is still a shortage, would distribute the allowances on a pro rata basis.
- **Ohio** will prorate allowances if the program is over subscribed. The minimum allocation would be one ton.

I. What are the Allocation Procedures if the Set-Aside is Under-Subscribed?

EPA provides several suggestions for addressing the issue of an under-subscribed set-aside account, such as auctioning or distributing the remaining allowances to core sources or other interested parties, distributing the allowances to EE/RE projects already in place (in addition to the allowances they have already received), retiring the unclaimed allowances, or reserving the allowances for distribution to eligible projects implemented during the following ozone season. EPA indicates that the best option may be to either reallocate under-subscribed allowances to core sources each year that they are unclaimed for that specific ozone control period, or to reserve the unclaimed allowances for use in following ozone seasons.

The states' approach on this issue appears to be generally consistent with EPA's guidance to reallocate some unused allowances to core sources or for retirement under the state's environmental benefit provisions. All of the other states provide for a system of allocating some or all of the unused allowances to existing NO_x budget units:

- **Missouri, New York** and **Ohio** will allocate all unused allowances to existing NO_x budget units on a pro rata basis.
- **Indiana** will keep 50 percent of any unused allowances in the set-aside account for the following year and the remaining 50 percent will be allocated to existing NO_x

budget units on a pro rata basis. Indiana also places a cap on the amount of allowances that can remain in the set-aside account; any leftover allowances in the set-aside that exceed twice the annual size of the set-aside (i.e., that exceed 2,196 tons) will be allocated to core sources.

- **Massachusetts** will allow any unused allowances to remain in the set-aside account and be made available in future seasons until the number of allowances exceeds 10 percent of the NO_x trading program budget. Then, all allowances in excess of 5 percent of the budget will be allocated to NO_x budget units on a pro rata basis.
- **New Jersey** kept all unused allowances from the 2003 reserve for the following year. Starting with the 2004 set-aside account, the state began to transfer unused allowances first to the new source-growth reserve, as needed, and then to existing budget sources to the extent those units received only a pro-rata share of the full allowance allocation they were eligible to receive under the basic allocation formulas. If there is no shortfall in the allowances available for allocating to existing budget units or to units under the new source/growth reserve, unused allowances in the EE/RE set-aside are retained in the set-aside for use in future years.

J. How is Each State Coordinating the Set-Aside with Other Programs?

All state environmental agencies plan to administer the basic elements of the set-aside program. However, some of the agencies will be coordinating with other state agencies in various capacities, such as the development of allocation procedures or the review of applications under the program. State coordination activities include the following:

- In **Indiana**, the Indiana Department of Commerce (IDOC), Energy Policy Division has been involved with the development of Indiana's set-aside program, including the guidance manual. The Indiana Department of Environmental Management (IDEM), Office of Air Quality will be responsible for the actual allocation and transfer of the allowances, but will be coordinating with IDOC with respect to project review and the determination of actual energy savings or generation. IDOC will be assisting with ongoing management and is currently the only other agency working with the Office of Air Quality. IDEM's Office of Pollution Prevention and Technical Assistance may be involved in the future, but the nature and capacity of any coordination has not been determined.
- **Maryland** is not currently coordinating with any other state agencies in the development or implementation of their set-aside program. However, the Maryland Energy Office is exploring options, independent of any initiatives under the trading program, for promoting EE/RE projects through tax incentives or other

means. It is unclear at this time whether these efforts will eventually be coordinated with the set-aside program.

- **Massachusetts** is coordinating with the Department of Energy Resources (DOER), which is responsible for the oversight and promotion of renewable energy state-wide. MA DEP staff have indicated that they likely will allow any application for a renewable energy project to be submitted to DOER for a preliminary review prior to its submittal to DEP. In addition, for projects that are ratepayer funded, DEP will be coordinating with the Department of Telecommunications and Energy (DTE). Among other responsibilities, DTE oversees the siting of energy facilities and also ensures that ratepayers' rights are protected.
- **Missouri's** Department of Natural Resources has oversight for both energy and environmental issues and is not currently coordinating with other agencies. In the future, the Public Service Commission may help with marketing.
- **New Jersey** DEP is not currently coordinating with any other state agencies in the implementation of the set-aside program and did not indicate if there would be any future involvement of other agencies.
- In **New York**, the New York State Energy Research and Development Authority (NYSERDA) administered the pilot phase of the EE/RE set-aside program (1999-2002) under the Ozone Transport Commission's NO_x Budget Program and provided funding for the municipal projects under this program. For the NO_x Budget Trading Program under the NO_x SIP call, the New York Department of Environmental Conservation (NYDEC) is coordinating with NYSERDA in developing guidance materials for the application and award process, conversion calculations, and measurement and verification procedures. NYDEC will take into consideration the policies for promoting EE/RE projects under the State Energy Plan as developed by the State Energy Planning Board and NYSERDA.
- **Ohio** EPA is working with Ohio's Department of Development, Office of Energy Efficiency in developing guidance documents, evaluating aggregated projects, and establishing measurement and verification procedures.

K. What Program Actions Have States Taken So Far?

1. Guidance and Forms

- **Indiana** has developed a comprehensive guidance document, *Indiana NO_x Budget Trading Program: Energy Efficiency and Renewable Energy Set-Aside Guidance Manual*, as well as application forms. Detailed information is included on estimating energy savings and calculating NO_x allowances.

- **Massachusetts** has developed a form: BWPAQ26, *Application for PBSA NO_x Allowances* with accompanying instructions: BWPAQ26, *Instructions for PBSA NO_x Allowances Application*. The form must be submitted both electronically and in hard copy, accompanied by a spreadsheet showing calculations used to determine the amount of energy saved or generated according to the formulas in the regulation (PBSA Procedures, 310 CMR 7.28(6)9.b).
- **Missouri's** Department of Natural Resources is developing guidance that will be made available in 2006 before the first control period eligible for state set-aside program allowances.
- **New Jersey** has M/V guidance that it has used for its EE/RE set-aside program.
- **New York's** Department of Environmental Conservation (NY DEC) is collaborating with the New York State Energy Research and Development Authority (NYSERDA) in developing guidance for the application and award process, conversion calculations, and measurement and verification procedures.
- **Ohio's** Environmental Protection Agency has worked with the State Office of Energy Efficiency in releasing a guidance document.
- **Maryland** has not yet developed any guidance documents or forms that are specific to the set-aside program.

2. Projects Reviewed and Approved

New Jersey and New York started SIP call EE/RE set-aside programs in 2003; Indiana, and Massachusetts implemented programs in 2004; and Ohio will implement its program in 2006. Maryland's set-aside program became available in 2003, but project approvals are unlikely until more specific implementation procedures are agreed upon. New York and New Jersey previously have evaluated and approved EE/RE set-aside projects under the OTC trading program. Thus experience with processing applications under the NO_x Budget Program EE/RE set aside to date is limited:

- **New Jersey** has received 2 to 4 applications per year, averaging 60 tons NO_x, for environmental retrofits and landfill gas recovery.
- **New York's** first claims for NO_x Budget Trading Program EE/RE set-aside allowances occurred in 2004.
- Under the **Massachusetts** set-aside program, two renewable energy projects (hydro) and many energy efficiency projects (including light bulbs, boiler controls, motors, LED exit signs, computer "sleep" mode software, ENERGY STAR® homes, thermostats, refrigerators, insulation, chiller and HVAC controls and

occupancy sensors). Ninety six vintage 2003 PBSA allowances and 208 vintage 2004 PBSA allowances were approved.

- **Missouri** proposes to begin accepting applications following the 2006 control period.
- **Ohio** will make set-aside allowances available beginning in 2006 and expects applications to start in 2005.
- As of 2004, **Indiana** had not had requests for allowances under their EE/RE set aside programs.
- In 2003, **Maryland** received two applications for set-aside allowances from new wind power generators. No determinations were made regarding the applications, and the plants may not have been built.

L. Detailed State-by-State Program Information

The appendix to this report provides summary tables and contact information for each state.

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Appendix A
State Summary Tables

Indiana's EE/RE Set-Aside Program (326 IAC 10-4)	
Size of set-aside	2% of state NO _x trading program budget (1,115 tons)
Start date	September 1, 2003
Administered by	Indiana Department of Environmental Management (IN DEM); The Department will consult the Indiana Department of Commerce (IDOC), Energy Division concerning verification and certification of energy, emission, or electricity savings.
Project eligibility	Time constraint: Eligible projects must have been implemented within 2 years of a request (from the beginning of the first ozone control period for which the request is made). Types of Projects (see section 2(18)): • End-use efficiency projects including DSM • Highly efficient electricity generation for use by single user (CHP with Rated EE≥60%, microturbine projects ≤500kW with Rated EE≥40%, CC projects >500kW with Rated EE≥50%, or fuel cell systems (regardless of whether part of CHP) with Rated EE≥40%). • Renewable energy projects (wind, photovoltaic, or hydropower). • Methane gas capture from municipal solid waste landfills, water treatment plants sewage treatment plants, or anaerobic digestion systems operating on animal or plant wastes. • Coal-fired EGUs with Rated EE=42% and natural gas-fired EGUs with Rated EE=50% that replace or displace retired EGUs. • In-plant energy efficiency projects. • Note: Rated EE is the percentage of gross energy input recovered as useable net energy output in the form of electricity and/or thermal energy. For EGU, 1 kw-hr (3,412 Btu) of electricity divided by unit's design heat rate (using higher heating value of the fuel). For CHP, divide sum of net electric output (Btu/unit of time) and utilized thermal output (Btu of thermal energy/unit of time) by gross energy input (based on higher heating value of fuel, per unit of time).

(cont.)

Indiana's EE/RE Set-Aside Program (326 IAC 10-4) (cont.)	
Application & award process	Applicant submits request for allowances from the set-aside for one control period at a time and must reapply each year. Requests must be submitted by September 1 prior to the ozone season for which allowances are requested. Allowances will be awarded by December 31 of each year only after verification of project implementation and certification of energy, emission or electricity savings.
Conversion calculations	Allowances granted from the set-aside will be calculated based on applicable procedures under 326 IAC 10-4-9(e)(3)(C). Note that applicants that do not own or operate EGUs get favorable treatment under these formulas.
Length of award	1 year; applicants may renew annually for up to 5 consecutive years.
Procedures if over-subscribed	First priority will be given to eligible end-use energy efficiency, renewable energy projects, and methane gas capture (Section 2(18)(A), (C), and (D)). Second priority to highly efficient generation through CHP, microturbine, CC, and fuel cell projects (Section 2(18)(B)). Third priority to highly efficient coal and natural gas-fired units that replace retired EGUs (Section 2(18)(E)). Last priority to improving existing EGUs (Section 2(18)(F)). Any unused allowances in the new unit set-aside may be transferred to the EE/RE set-aside as needed. If there is still a shortage after unused new unit set-aside allowances are transferred, allocations will be awarded on a pro-rata basis. Allowances will be distributed on a 1:1 basis within each of the four priority groups listed above, unless there is a shortage within one of the four groups, in which case allowances will be prorated for that group.
Procedures if under-subscribed	50% will remain in the set-aside for use in the next year's allocation and 50% will be allocated to core sources (pro rata). But, once the level of banked allowances remaining in the EE/RE set-aside exceeds 2,158 tons (per ozone season), the number of allowances above that amount will be allocated to existing NO_x budget units on a pro rata basis.

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Indiana's EE/RE Set-Aside Program (326 IAC 10-4) (cont.)	
Measurement and verification (M/V) procedures	Rule does not include specific verification procedures, but indicates that any request for set-aside allowances will be subject to verification of project implementation and certification of energy, emission or electricity savings by IDEM in consultation with the IN Department of Commerce. IDEM indicates that they will be using M/V guidance issued by EPA and the U.S. Department of Energy (DOE). Guidance issued by IDEM includes some information on M/V procedures and references the following DOE documents: • <i>U.S. DOE's M&V Guidelines: Measurement and Verification for Federal Energy projects, Version 2.2</i> • <i>International Performance Measurement and Verification Protocol, Concepts and Options for Determining Energy Savings, Volume 1, October 2000.</i>
Adjustments (e.g., business as usual projects or M/V uncertainty)	There are no specific adjustment procedures but may be addressed on an as-needed basis during project review.
Comments	Indiana is considering the need for a marketing strategy to raise awareness of the program and attract applicants.
Available guidance documents	<i>Indiana NO_x Budget Trading Program, Energy Efficiency & Renewable Energy Set-Aside Guidance Manual</i> , January 31, 2003, Prepared by Office of Air Quality, Indiana Department of Environmental Management and Energy Division, Indiana Department of Commerce. This guidance document includes information on eligibility, NATS, allocation procedures, documentation and reporting requirements, measurement and verification procedures, contacts, and resources. Application forms with instructions are included as an appendix to the guidance document.
State contact	Roger Letterman, IDEM, 317-232-8342, rletterm@dem.state.in.us

Maryland's EE/RE Set-Aside Program (COMAR 29.11.29, November 2002 Draft)	
Size of set-aside	3% of state NO _x trading program budget (436 tons)
Start date	May 1, 2003
Administered by	Maryland Department of the Environment (MDE)
Project eligibility	Clean air projects
Application & award process	Procedures not yet specified.
Conversion calculations	Not yet specified.
Length of award	Not yet specified.
Procedures if over-subscribed	Not yet specified.
Procedures if under-subscribed	Not yet specified.
Measurement and verification procedures	Not yet specified.
Adjustments (e.g., business as usual projects or M/V uncertainty)	Not yet specified.
Available guidance documents	None; MDE has not yet developed guidance documents.
State contact	Gene Higa, MDE, 410-537-3353, ghiga@mde.state.md.us, or Parker Dean, 410-537-3364

Massachusetts' EE/RE Set-Aside Program (310 CMR 7:28)	
Size of set-aside	5% of state NO _x trading program budget (643 tons)
Start date	Implemented in July 2004
Administered by	Massachusetts Department of Environmental Protection (MA DEP)
Project eligibility	Projects must have been built, in use, or installed and operational after December 31, 1999. Types of eligible projects include: Renewable Energy Projects (REPs) that generate electrical energy or useful net thermal energy and do not emit NO_x including: solar photovoltaic or solar thermal energy; wind energy; fuel cells that do not employ a fuel processor that emits NO_x; ocean thermal, wave, or tidal energy; hydro and geothermal energy. (Note: Energy generated from nuclear fuel, biomass, landfill gas, fuel cells with fuel processors that emit NO_x, and hydro using pumped storage are not renewable energy under 310 CMR 7.28.) Energy Efficiency Projects (EEPs) that directly result in electrical, thermal, or mechanical energy savings at a facility located in Massachusetts, including: • Construction of a new building or addition that exceeds 780 CMR 1301.0 <i>et seq.</i>, <i>Energy Conservation</i>. • Installation, replacement or modification of equipment, fixtures, or materials. • EEPs that are combined heat and power systems with actual energy efficiency equal to or greater than 60%. • Commencement or modification of building or facility operation and maintenance procedures. (Reductions in labor, load shifting, and any other measures that do not directly result in energy savings are not EEPs under 310 CMR 7.28.(2). Projects resulting in energy savings for a budget unit are not EEPs under 310 CMR 7.28.(2)).

(cont.)

Massachusetts' EE/RE Set-Aside Program (310 CMR 7:28) (cont.)	
Application & award process	Applications for 2004 Public Benefit Set-Aside (PBSA) allowances were required to be submitted by September 1, 2004. The application could include requests for both year 2003 and year 2004 designated allowances, but separate calculations were required for each year's energy savings or generation. From 2005 on, applications for PBSA allowances must be received by April 1 of each year, and will be designated to the year in which the request is submitted (but based on energy generation or savings in the previous year's control period). Also from 2005 on, allowances may be requested for only one year at a time. Applications must be made annually for allowance requests based on projects with multi-year REP generation or EEP savings. For all years, allocations are based on the previous year's savings or generation (e.g., 2004 savings/generation form the basis for 2005 allowances). Allocations are issued on November 1 of the year of application.
Conversion calculations	Allowances for REPs that generate electrical energy and EEPs that save electrical energy are based on EPA's recommended conversion factor of 1.5 lbs/MWh, where MWh is the net electrical energy generated by a REP or the amount of electrical energy saved by an EEP. Allowances for REPs and EEPs that generate or save useful net thermal energy will be based on a conversion factor 0.44 lbs per mmBtu output, where mmBtu output represents the useful net thermal energy generated by the REP or the amount of thermal energy saved by the EEP. For EEPs saving thermal or mechanical energy in a manufacturing process where energy consumption is measured on a unit of production basis, a specific formula is used based on both the ratio of energy consumed per unit of product and the NO_x rate before and after the EEP. EEPs that are combined heat and power (CHP) systems with actual energy efficiency equal to or greater than 60% must first show calculations proving this level of efficiency and compare actual emissions for the CHP to a conventional system that includes a utility power plant for electricity and an industrial boiler for steam. The conventional system is assumed to have an emissions factor of 0.15 lbs NO_x/mmBtu, an electrical generation efficiency of 34%, and a steam boiler efficiency of 80%. Allowances are calculated by subtracting the CHP system NO_x from the conventional system NO_x (in lbs) and then dividing by 2000 lbs/ton.

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Massachusetts' EE/RE Set-Aside Program (310 CMR 7:28) (cont.)	
Length of award	REPs and EEPs must submit separate annual applications or each year that they generate or save energy. REPs are eligible for each year that they continue to generate energy. EEPs are eligible for allowances for energy saved during each of the seven years immediately following the EEP's first year of use (new buildings and additions), installation (materials), or operation (equipment or procedures).
Procedures if over-subscribed	Allowances will be transferred from the new unit set-aside, if available (transferred allowances not to exceed 2% of NO _x trading program budget). If the additional allowances from the new unit set-aside are not available, or are not sufficient to meet all claims under the public benefit set-aside, allowances will be allocated on a pro-rata basis.
Procedures if under-subscribed	Unused allowances will be banked in the set-aside account. If the number of banked allowances in the public benefit set-aside exceeds 10% of the total state budget at the end of the ozone season, then all allowances in excess of 5% of the total budget will be allocated (pro rata) to NO _x budget units based on net control period electrical and useful thermal energy output for the previous calendar year.
Measurement and verification (M/V) procedures	Measurement and verification of energy saved or generated by each project shall adhere to the International Performance Measurements and Verification Protocol, March 2002, DOE/GO-102002-1554 (IPMVP), or the U.S. EPA's Conservation Verification Protocol. Also required are measurement and verification provisions of NEPOOL's Operating Procedure 18 "Metering and Telemetry," or other provisions acceptable to the Department.
Adjustments (e.g., business as usual projects or M/V uncertainty)	Applicants must make normalization adjustments for energy savings in accordance with the IPMVP, and may be required to include thermodynamic steam table energy extrapolations, the American Society of Mechanical Engineers' Standard for Measurement of Fluid Flow in Pipes Using Orifice, Nozzle, and Venturi (ASME MFC-3M-1989); manufacturers' efficiency specifications for useful energy determinations; or other measurements and verification protocols acceptable to the Department. Massachusetts allows projects seeking less than 5 allowances to avoid excessive measurement and verification burden by proposing alternative methods (subject to MA DEP approval).
Available guidance documents	BWP AQ 26, "Application for PBSA NO _x Allowances," and the accompanying instructions set, BWP AQ 26, "Instructions for PBSA NO _x Allowances Application." There is no application fee, but the form must be submitted both electronically and in hard copy and accompanied by a spreadsheet showing calculations used to determine the amount of energy saved or generated according to the formulas in the regulation. (See PBSA Procedures, 310 CMR 7.28(6)9.b).
State contact	Marilyn Levenson, MA DEP, 617-574-6825, marilyn.levenson@state.ma.us Eileen Hiney, MA DEP, 617-292-5520, eileen.hiney@state.ma.us

Missouri's EE/RE Set-Aside Program (Proposed Rule 10 CSR 10-6.360, 3-15-05)	
Size of set-aside	1% of state NO _x trading program budget (134 tons)
Start date	May 1, 2006
Administered by	Missouri Department of Natural Resources (DNR)
Project eligibility	Any entity may request allocations from the energy efficiency and renewable generation set-aside, including electricity generating units (EGUs) affected by the proposed rule. Projects must have commenced operation after September 1, 2005, and must reduce energy use, generate electricity from renewable resources, or provide combined heat and power (CHP) benefits during (May 1 - September 30) control periods. There are four categories of eligible projects: energy efficiency, renewable generation, renewable biomass generation, and combined heat and power. • Eligible energy efficiency projects result in reduced or more efficient electricity use through the voluntary modification of maintenance and operating procedures in a building or facility, or the voluntary installation, replacement, or modification of equipment, fixtures, or materials. Projects undertaken by NO_x budget electric generating units and demand side projects face the same eligibility requirements. • Eligible renewable electricity generation includes wind, photovoltaic systems, biogas, geothermal, and certain types of hydro power generation. Nuclear power is not considered renewable. Biogas includes electricity generation from methane from landfills, wastewater treatment plants, or agricultural livestock waste treatment systems. Eligible hydropower includes: Low Impact Hydropower Institute-certified projects; projects with a head of ten feet or less; or projects with a dam that pre-dates the rule. • Eligible biomass generation projects fire biomass fuels with or without fossil fuels. Municipal solid waste is not considered a biomass fuel. • The DNR will establish threshold efficiency levels for specific CHP technologies. • Projects must not be required by the federal government and not be used for generating compliance or permitting credit otherwise in the SIP. • A project or an aggregation of multiple projects under a single allowance request must reduce NO_x emissions by at least one ton using conventional arithmetic rounding. • Renewable and biomass generation projects must be located in Missouri and be owned, leased, operated or controlled by an affected Missouri electric utility or an affiliate, and supply power that is primarily marketed or distributed to end users in the utility's native load or who are located in the Missouri SIP region. Energy efficiency and combined heat and power projects must be located in the portion of Missouri that is in the NO_x SIP region.

(cont.)

Missouri's EE/RE Set-Aside Program (Proposed Rule 10 CSR 10-6.360, 3-15-05) (cont.)	
Application & award process	• The DNR will provide forms for project sponsors to request a pre-application eligibility review covering eligibility requirements that can be determined prior to receipt of a complete application. • Only one entity may claim eligibility for a project. • Applications must be received by the last business day of November following the May 1 through September 30 control period during which the eligible project activities occurred. • The DNR will provide application forms that must be submitted by the project's authorized NO_x account representative and certified by a professional engineer - attesting that information and calculations submitted in the application are complete and accurate. The DNR has the right to require verification of data and calculations presented in the application as a condition for awarding allowances, and DNR agents may visit sites. • The application must demonstrate electricity savings or renewable generation and calculate the NO_x allowance award requested using DNR approved M and V standards and must indicate the anticipated stream of benefits (if any) for subsequent years.
Conversion calculations	• Allowances for end-use electrical energy efficiency projects will be calculated as the number of MWh saved during a control period multiplied by 1.5 pounds NO_x per MWh and rounded to tons using conventional arithmetic rounding. The DNR will provide a factor to adjust the calculation of electricity saved to account for transmission and distribution line losses. • Allowances for renewable generation projects from wind, photovoltaic systems, biogas, geothermal, and hydropower projects shall be calculated as the kWh of electricity generated during the control period multiplied by 1.5 pounds NO_x per MWh and rounded to tons using conventional arithmetic rounding. • Allowances for biomass generation projects shall be based on net NO_x emission reductions. Net NO_x emissions shall be calculated as the number of kilowatt hours of electricity generated during a control period multiplied by an emissions factor of 1.5 pounds of NO_x per MWh, minus the tons of NO_x emitted by the renewable generating project during the control period. When biomass is co-fired with other fuels, its share of electric generation and NO_x emissions will be calculated based on the total heat content for all fuels used in the co-firing process. • Methods for calculating CHP allowances will be determined by the DNR.
Length of award	Up to 5 years with annual re-applications.

(cont.)

Missouri's EE/RE Set-Aside Program (Proposed Rule 10 CSR 10-6.360, 3-15-05) (cont.)	
Procedures if over-subscribed	If the number of allowances claimed for award is more than the allowances allocated to the set-aside as provided in Table 1 of the proposed rule, the DNR shall base awards on the applicants' position in a queue of eligible projects.
Procedures if under-subscribed	If the number of allowances awarded is fewer than the allowances allocated to the set-aside as provided in Table 1 of the proposed rule, the DNR shall transfer surplus allowances to the accounts of the NO _x Budget EGUs on a pro-rata basis proportionate to their allocations.
Measurement and verification procedures	Applications must be submitted with certification by a professional engineer attesting that information and calculations submitted in the application are complete and accurate. The DNR shall have the right to require verification of data and calculations that are presented in an application as a condition for awarding allowances to the applicant. If the applicant intends to reapply in subsequent years, the application must indicate the stream of benefits that is expected in subsequent years.
Adjustments (e.g., business as usual projects or M/V uncertainty)	No adjustment procedures specified.
Available guidance documents	The DNR plans to publish guidance documentation before the start of the 2006 ozone season.
State contact	John Noller, 573-526-3769, John.noller@dnr.mo.gov

New Jersey's EE/RE Set-Aside Program (NJAC 7:27-31)	
Size of set-aside	5% of state NO _x trading program budget (410 tons) State NO _x trading program budget is 13,022 tons, but NJ will only allocate a maximum of 8,200 tons to all sources combined.
Start date	May 1, 1999 (under OTC); May 1, 2003 (under SIP call)
Administered by	New Jersey Department of Environmental Protection (NJ DEP)
Project eligibility	The following if initiated in 1992 or after: • End-use efficiency projects, initiated by consumers that purchase from a provider licensed in NJ (must not lead to emission increase of any HAP or other pollutants). • Renewable energy (solar or wind) projects (provided equipment is not considered to be a budget source). • Methane gas capture from landfills (provided equipment is not considered to be a budget source). • Fuel cell technology (provided equipment is not considered to be a budget source). • Other environmentally beneficial projects approved by NJ DEP. Although no special provisions for early action projects, 2002 projects were eligible to receive 2003 NO_x SIP call set-aside allowances under seasonal lag allocation approach.
Application & award process	Following the ozone season during which the project was in place, applicant submits claim by October 30, which should include the following: • Documentation that the applicant/project qualifies, • Specification of the amount of electricity generation or savings, and the calculations that were used (including data & methods), • NATS general account identification number, • Whether allowances or open market trading DER credits should be issued, and • Certification in accordance with NJAC 7:27-1.39
Conversion calculations	Allowances are calculated by multiplying energy savings/generation (E) in MW-hr by the ratio of the rate at which allowances are allocated (1.5 lbs/MW-hr). Allowances = (1.5/2,000) * E. Energy generation calculations must exclude any portion of electricity generated through the use of supplemental fossil fuels (oil, gas or coal).

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New Jersey's EE/RE Set-Aside Program (NJAC 7:27-31) (cont.)	
Length of award	1 year. The rule does not specify a limitation on the total number of years that a particular project can qualify for allowances under the incentive reserve. Applicants must renew annually.
Procedures if over-subscribed	From 2003 ozone season onward: If necessary, any unused allowances in the new source/growth reserve will be transferred to the incentive reserve and distributed to applicants on a pro rata basis.
Procedures if under-subscribed	2002 ozone season: Any remaining allowances (which are issued from the 2003 incentive reserve) were held in the 2004 incentive reserve. From 2003 ozone season onward: First, any remaining allowances in the incentive reserve will be transferred to the new source/growth reserve (provided the number of allowances to be allocated under the new source/growth reserve exceeds the number of available allowances). Second, if there are still additional allowances available from the incentive reserve and if the overall demand for allowances from all sources exceeds tons to be allocated (i.e. 8,200 tons), then these extra allowances will be distributed to NO_x budget sources on a pro rata basis. Third, any allowances left in the incentive reserve shall remain in the reserve for the following year's allocations.
Measurement and verification procedures	See guidance document entitled "Measurement Protocol for Commercial, Industrial and Residential Facilities," incorporated by reference at NJAC 7:27-31.21.
Adjustments (e.g., business as usual projects or M/V uncertainty)	Not specified in rule.
Available guidance documents	None, except for M/V guidance noted above.
State contact	Tom McNevin, NJ DEP, 609-984-9766, tmcnevin@dep.state.nj.us

New York's EE/RE Set-Aside Program (6 NYCRR Part 204)	
Size of set-aside	3% of state NO _x trading program budget (1,241 tons)
Start date	May 1, 2003 (for SIP call rule)
Administered by	New York Department of Environmental Conservation (NY DEC)
Project eligibility	• End-use efficiency projects • Renewable energy projects (wind, solar, photovoltaics, methane waste, or sustainably managed biomass). Combustion or pyrolysis of solid waste is specifically excluded as a "renewable energy project" • In-plant energy efficiency projects • Fossil fuel-fired EGUs that produce electricity more efficiently than the annual average heat rate of fossil EGUs and non-EGUs with a thermal efficiency that exceeds 80% Requests must be submitted within five years of project implementation. There are no awards for reductions prior to May 1, 2003. A project must have been implemented after May 1, 2003 to be eligible for EE/RE set-aside NO_x allowances.
Application & award process	Applicant submits a request to reserve a portion of the set-aside by July 1 after the control period for which the allowances are requested, and should include a demonstration of NO_x emission reductions and/or avoidances. NY DEC will issue a guidance memorandum specifying the application and awards procedures. NY DEC will distribute allowances within two years from the start of the control period for which the request was made. The vintage year of the allowances awarded will be based on the control period during which the energy savings or generation was achieved. Therefore, these allowances will be subject to any relevant banking and flow control provisions. Note that the vintage of the fractional allowances awarded for a particular project will generally be the year in which the allowance becomes whole, but may vary depending on available allowances.
Conversion calculations	Converting energy savings to NO_x tons will most likely be based on a rate of 1.5 lbs/MW-hr, which was the rate used under the OTC program (1999-2002). NY DEC will issue a guidance memorandum specifying and finalizing the procedures.
Length of award	1 year; applicants may renew annually for up to 5 consecutive years.

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New York's EE/RE Set-Aside Program (6 NYCRR Part 204) (cont.)	
Procedures if over-subscribed	First priority will be given to eligible end-use energy efficiency and renewable energy projects. Other eligible projects will be granted reservation requests only if there are remaining allowances in the set-aside. Allocations will be awarded on a first-come, first-served basis. Requests are assumed to have been submitted simultaneously if received within the same calendar quarter. Allowances will be distributed on a pro rata basis if "simultaneous" requests exceed the number of allowances in the set-aside.
Procedures if under-subscribed	Any allowances remaining in the set-aside will be allocated to core sources (pro rata), based on the control period to which the set-aside allocation applies. Note that allowances are only allocated from the set-aside in whole ton increments, so any "fractional" allowances are banked and held in the name of the NO_x Budget unit and distributed only when they can be combined with other fractional shares and issued to the unit as whole-ton increments.
Measurement and verification (M/V) procedures	Rule does not include specific verification procedures, but indicates that any request for set-aside allowances must demonstrate that the NO_x emission reductions or avoidances can be measured and verified in accordance with NY DEC protocols. NY DEC will issue a guidance memorandum specifying the M/V procedures.
Adjustments (e.g., business as usual or M/V uncertainty)	NY DEC does not plan to allow for adjustments during project review for "business as usual" or M/V uncertainty.
Available guidance documents	NY DEC is currently working on guidance materials that will address the application and award process, conversion calculations, and M/V procedures. NY DEC is working with the New York State Energy Research and Development Authority (NYSERDA) to develop the guidance and will take into consideration the policies for promoting EE/RE projects under the State Energy Plan as developed by the State Energy Planning Board and NYSERDA.
Other notes	NY's OTC trading rule had different set-aside approach, as it only applied to EE projects, and allowances were given to NYSERDA to recognize energy performance contracting programs carried out through NYSERDA. Total set-aside was 115 tons. Aggregation of projects was specifically allowed, and NY DEC would consult with NYSERDA to determine credit to be given for specific projects.
State contact	Mike Sheehan, NY DEC, 518-402-8396, mpsheeha@gw.dec.state.ny.us A.J. Shroff, NY DEC 518-402-8403, aishroff@gw.dec.state.ny.us

Ohio's EE/RE Set-Aside Program (OAC 3714-05)	
Size of set-aside	1% of state NO _x trading program budget (454 tons)
Start date	May 1, 2006
Administered by	Ohio Environmental Protection Agency (OH EPA) The Ohio Department of Development, Office of Energy Efficiency will be providing assistance in the areas of evaluating aggregated projects and measurement and verification procedures.
Project eligibility	• End-use efficiency projects (including demand side management) • EGU in-plant energy efficiency improvements • Renewable energy projects (wind, solar, biomass, or landfill methane generation)
Application & award process	Prior to the ozone season, applicant submits a project proposal, including a detailed description of project and an estimate of the number of allowances requested. OH EPA notifies applicant if project is approved, based on criteria determined by OH EPA. After the ozone season, applicant submits a completed project report that verifies completion and achievement of proposed reductions. Allocations are determined and awarded following the ozone season and upon verification of the project's success. Deadline for awarding allocations is February 15th.
Conversion calculations	Conversion calculation procedures are specified for different types of EE/RE projects in Ohio EPA guidance. Based generally on EPA's recommended conversion factor of 1.5 lbs/MW-hr.
Length of award	1 year; applicants may renew annually for up to 5 consecutive years.
Procedures if over-subscribed	Pro-rata distribution.
Procedures if under-subscribed	Any allowances remaining in the set-aside will be allocated to core sources (pro-rata), based on the previous year's allocations.
Measurement and verification (M/V) procedures	Rule does not include specific verification procedures, but guidance states that most use established procedures and that allowances will be awarded/distributed only after the Director of the EE/RE program verifies the reductions claimed by the applicant.

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Ohio's EE/RE Set-Aside Program (OAC 3714-05) (cont.)	
Adjustments (e.g., business as usual projects or M/V uncertainty)	None at this time.
Available guidance documents	Ohio EPA Guidance Manual: Energy Efficiency/Renewable Energy and Innovative Technology Projects (July 2005).
State contact	Jim Tichich, 614-644-4844, jim.tichich@epa.state.oh.us

