ADOPTING A GEORGIA ENERGY EFFICIENCY AND RENEWABLE ENERGY SET ASIDE
Submitted to the Georgia Environmental Protection Division Air Protection Branch as part of the Regional NOX SIP Public Comment Process
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The following organizations are dedicated to assisting in the development of an effective set-aside program for energy efficiency/ renewable energy for the State of Georgia to incorporate in its Regional NOX State Implementation Plan: Georgians for Clean Energy, Southface Energy Institute, Southern Alliance for Clean Energy, and Renewable Energy Policy Project. These groups have compiled the following background information about an energy efficiency/ renewable energy set-aside and are in the process of preparing a strawman version as a tool for further development of an energy efficiency and renewable energy set aside program tailored to Georgia's situation and needs.

Why have an energy efficiency and renewable energy set-aside?

New federal requirements will force Georgia to reduce its NOx emissions in the near future. As part of a program that includes 21 other states and the District of Columbia, Georgia will have to institute a State Implementation Plan (SIP) to show that they are keeping the NOx emissions within the allocated budget. The EPA estimates that as a result of this program, Georgia will have to reduce its current NOx emissions by 65%. Most of Georgia's NOx emissions (75%) come from electricity generation.

Creating an energy efficiency/renewable energy (EE/RE) set-aside will benefit Georgia in many ways.

- An EE/RE set-aside will help to reduce the emissions of other major pollutants including carbon dioxide (CO2), sulfur dioxide (SO2), and mercury (Hg) that stem from the current use of fossil fuel energy sources.
- An EE/RE set-aside creates a more even playing field in the marketplace for comparing the true societal costs of generating electricity from heavily-polluting fossil-fuel power plants and cleaner end-use and renewable sources.
- By lowering electricity demand and energy usage, an EE/RE set-aside will increase the rate of market penetration for energy efficient equipment, thereby reducing the need for new power plants and the pressure on new source allocations; an EE/RE set aside is a cleaner option for meeting growth in energy demand than a new source allocation
- Environmental impacts on air and water, caused by electricity demand from strong economic and population growth, can be reduced with the increased use of energy efficient end-use technologies because it translates to a lower energy intensity per capita.

- An EE/RE set-aside will encourage and provide incentive for power generation using zero-emission technologies such as solar and wind sources and low-emission, advanced biomass technologies.

The U.S. Environmental Protection Agency (EPA) supports the use of an energy efficiency and renewable energy set-aside to the extent that it has committed resources to the preparation of three major documents detailing the development and administration of this option. In a document prepared by the Climate Protection Division in 2000, the EPA states, "An effectively administered energy efficiency set-aside can be a key component of a cost-effective strategy for reducing NOx pollution, preventing ozone formation, and mitigating the transport of NOx emissions across state boundaries."

ILLUSTRATIVE EXAMPLE

The following example is largely hypothetical and is intended to illustrate how using energy efficiency and renewable energy can actually reduce the cost to a state of complying with NOx limits. Lets assume the "state" in our example generates 100 units of electricity with a technology and fuel type that emits 1.8 units of NOx per unit of electricity. Total NOx emissions are 180 units. EPA regulations require the state to reduce NOx emissions to a cap of 100 units. There are two ways to do this. One is to introduce NOx limiting technological fixes in which case every unit of electricity will be required to reduce emissions to one unit of NOx per unit of electricity. The other is to use efficiency to reduce generation and/or renewable energy to replace fossil generation and reduce the amount of NOx emitted.

Technical Fix

Technical fixes are generally programs that switch fuel, modify the technical characteristics of generators, or switch out generators from, for example, coal fired to natural gas. If the state chooses the technical fix, it will:

- Generate 100 units of electricity;
- Reduce NOx emissions by 80 units; and
- Emit 100 units of NOx which will be offset by the 100 units of NOx allowances budgeted to the generating units.

The state will meet its budget limits and be in compliance.

Efficiency and Renewable Energy Alternative

An alternative method for meeting the NOx budget limit is to use efficiency and/or renewable energy to offset NOx emissions. For example, if electricity efficiency and renewable generation replaced 50% of the fossil generation, then the total NOx emissions would drop from 180 to 90 units and the state would be in compliance. Of course, it is not realistic to expect a 50% reduction but the EPA does encourage the use of conservation and renewables to reduce NOx emissions. The EPA encourages states to "set-aside" 5-15% percent of their allowed NOx emissions for qualified efficiency and renewable programs.

Set-Aside

Here is how a set-aside works. A percent of the total state NOx budget is allocated to efficiency and renewable energy. If our state sets-aside 10% of its budget that means 10 units of NOx credits will be available for qualified efficiency and renewable projects. Under the EPA cap, saving one unit of electricity will save one unit of NOx emissions.

NOx Compliance Using a Set-Aside

Rather than using a technical fix, our state sets-aside 10 NOx credits for efficiency and renewable generation. For this example, let's concentrate on efficiency. For the set-aside to work, 10 units of electricity must be saved, those programs can then claim the NOx credits and sell them back to electric generators. Generators will buy the credits, but at a cost equal to or less than their cost of technically reducing NOx emissions.

The Numbers

Under the set-aside, our hypothetical state will look as follows:

- Fossil fueled electric generation will drop to 90 units;
- Energy efficiency or renewable energy will supply the other 10 electrical units to consumers;
- NOx emissions, before a technical fix, will be 162 units (90 electric units times 1.8 NOx emissions per electric unit);
- Technical NOx reductions required will be 62 units (tons);
- Budgeted NOx emissions will be 90 units (tons);
- Purchased NOx credits will be 10 units (tons);

Emissions will be 100 units (tons) which will match the budgeted and purchased NOx credits.

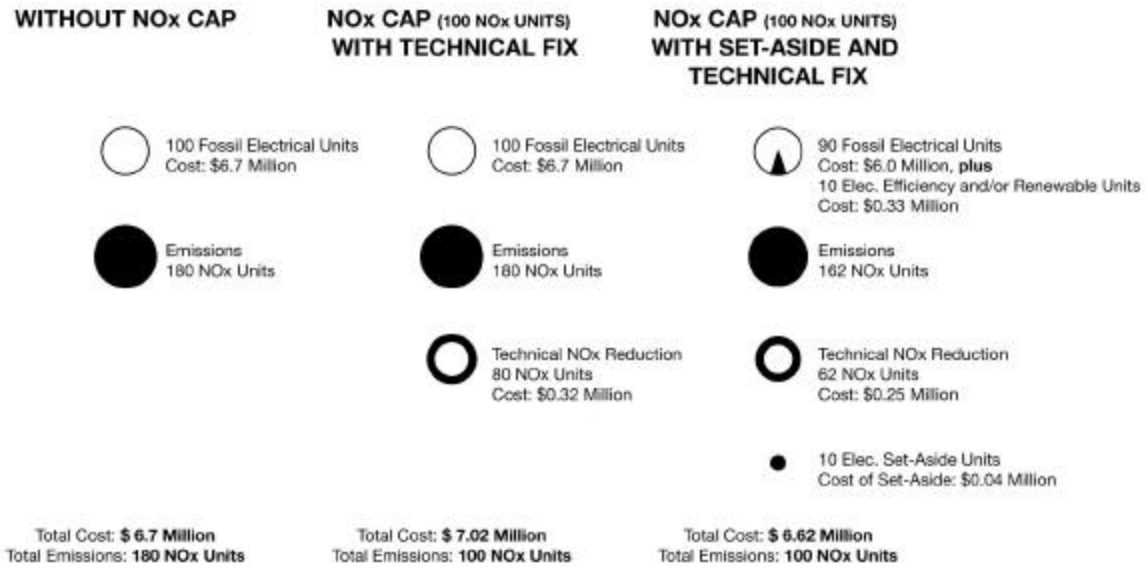
The Calculations

A set-aside will lower the cost of complying with the NOx budget. To show how this works, we make a number of assumptions and introduce a few calculations to allow us to estimate the cost of complying in our hypothetical state. The EPA in a Guidance document urged states to assume that every kWh saved, as part of a qualified set-aside program, will reduce NOx emissions by .0015 pounds. (Using this assumption, each kWh generated also emits .0015 pounds of NOx.) A NOx unit is one ton or 2000 pounds, so under the EPA guidance recommendations 1.3 million kWh emit one ton of NOx. Under the cap, our hypothetical electrical unit equals 1.3 million kWh. The cost for a technical fix is estimated at $4000 per ton. We assume that electricity costs $.05 per kWh to generate and $.025 to save.

The Cost

The following charts outline the costs of the alternative methods for meeting NOx caps in our state:

	NO CAP	CAP WITH TECHNICAL FIX	CAP WITH SET-ASIDE CASE
Electric Generation	100 units	100 units	90 units
Cost of Electric Generation	$6.7 million	$6.7 million	$6.0 million
NOx Emissions (tons)	180 units	180	162
Technical NOx Reduction (tons)		80	62
Cost of Technical NOx Reduction @ $4,000 per ton	N/A	$.32 million	$.25 million
Cost of Energy Efficiency Measures @ .025 per kWh			$.33 million
Cost of Set-Aside Credits			$.04 million
Total Credits		100	100
Total Emissions		100	100
Total Cost	$6.7 million	$7.02 million	$6.62 million



What Happens

Project sponsors submit applications for qualified energy efficiency and renewable projects. With end-use energy efficiency projects, electric demand and energy usage is lowered, thereby reducing the demand for new source allocations and helping to minimize the cost of allowances traded by lowering the market equilibrium for their demand and supply in the near-term. For renewable energy projects, electricity demand that is not reduced due to greater implementation of end-use energy efficiency is supplied by sources that have zero-emissions or low emissions. In effect, an EE/RE set-aside creates a more even playing field in the marketplace for comparing the true societal costs of generating electricity from heavily-polluting fossil-fuel power plants and cleaner end-use and renewable sources.

How is an EE/RE set-aside program created?

The following set-aside program elements in a state's initial SIP submittal must be developed:

1. Identification of a state's intent to include an EE/RE set-aside;
2. The size of a state's EE/RE set-aside;
3. Statement of whether early credit for actions taken prior to 2003 will be rewarded; and
4. An allocated NOx budget for each state that accommodates the EE/RE set-aside.

After the initial SIP submittal, the state must develop a plan outlining how its EE/RE set-aside will be run. This plan should address:

(1) which state office(s) will administer the allowances from an EE/RE set-aside,
(2) what information is needed from program participants to apply for set-aside allowances, and how it will be collected,
(3) what protocols the state will use to measure and verify EE/RE projects,
(4) how NOx emissions associated with the energy saved/displaced will be determined, and
(5) when and how the state will inform EPA about the EE/RE set-aside allowance claims.

THREE STAGES

Once a state has decided to include an EE/RE set-aside in their SIP, the plan development must address the following three stages of program development and implementation:

A. The state must develop elements necessary to establish a set-aside in its initial SIP submission.

B. The state must develop essential design elements for administering the program and quantifying and allocating allowances under its EE/RE set-aside.

C. The state must develop procedures for measuring and verifying the energy savings and emissions reductions from EE/RE projects in its NOx Budget Trading Program set-aside.

Establishing a Set-Aside. The state must address the following key questions:

1. What types of projects are eligible for awards, and who would receive allowances?
2. How can pool size be used to help a state focus allowance awards on new projects?
3. How should the pool be sized to award credit for actions implemented before 2003?
4. How does pool size depend on the number of control periods the award will be given for (length of award)?
5. How can the state adjust its set-aside pools to handle over and under subscription?

Within and beyond these requirements, there is a good deal of flexibility in developing a set-aside program that will be well suited for the particular needs of Georgia and its citizens.

What types of energy efficiency and renewable energy projects would be eligible?

The EPA intends for any end user who invests in or implements energy efficiency or renewable energy be eligible for EE/RE set-aside allowances. For example, commercial and industrial building owners and operators; energy service companies; home builders associations; home owners associations; federal, state, and local government agencies; commercial businesses; manufacturers and other industrial energy users; and manufacturers that lease or sell high energy efficiency equipment. These groups, and others who can demonstrate a reduction or displacement in electricity would be eligible for the EE/RE set-aside allowance. Only projects that reduce or displace the use of electricity are eligible to receive the allowances. In this way, a group is not rewarded an allowance unless a specific project reduces or displaces electricity use.

There are 7 general criteria the EPA sets out as a guideline to determine if a project is eligible to receive an EE/RE set-aside allowance. They are:

1. The project reduces/displaces electricity load from core source EGUs in the SIP call region.
2. The project is not required by a Federal government regulation.
3. The project is not/will not be used to generate compliance or permitting credits otherwise in the SIP.
4. The project is in operation for the year(s) it will receive allowances.
5. The project reduces/displaces energy during summer ozone season.
6. The project is measured and verified in accordance with methods outlined in the EPA's guidance.
7. The project translates into not less than one (1) ton of NOx allowances, or can be aggregated with other projects into one-ton increments of NOx allowances.

Additional and more specific information on eligible projects can be found at the EPA's website: http://www.epa.gov/appdstar/state_local_govnt/state_outreach/pdfs/1stfinalset-asid.pdf in section 4.

What types of projects should be encouraged?

The program is designed to encourage new projects that would not otherwise be developed under a business-as-usual scenario. Providing the set-aside allowances will encourage projects promoting energy efficiency and renewable energy to occur before they would have occurred under business-as-usual. To encourage this, the EPA recommends that the state make the size of the allowances pool big enough to include business-as-usual projects (projects increasing energy efficiency or using renewable energy that would have been undertaken without the allowances) and the new projects that are being undertaken as a result of the set-aside allowances.

How will quantification be done?

The state must evaluate EPA's recommendations for establishing a set-aside in the context of its electricity sector. EPA's recommendations are that:

(1) the set-aside be 5-15% of the total NOx budget,
(2) eligible projects meet seven project criteria (defined above), not more than one applicant for each project should receive allowances, and that allowances should be awarded to end user,
(3) the EE/RE credit offset pool be large enough to reward new projects as well as "business-as-usual" projects,
(4) the program give credit for early actions,
(5) the award length be three years, and (6) that over-subscription be handled on a first come, first served basis, while under-subscription be handled via pro-rata reallocation of EE/RE credits.

To facilitate inclusion of an EE/RE set-aside in the state's NOx Budget Trading Program, each state must (1) outline the criteria and design elements of the set-aside program, (2) recommend adjustments to the EGU core source budget allocations to accommodate the allowances that are being set aside; and (3) develop and submit a proposal to include an EE/RE set-aside and the number of allowances that will be in it as part of the SIP submission.

Each state must evaluate EPA's recommendations for designing the administrative and quantitative elements a set-aside program in the context of its electricity sector. EPA's recommendations are that (1) applications be submitted and evaluated using a "two-step" process, (2) energy savings and displacements be translated into emissions reductions using an emissions factor of 0.015 lbs NOx/kWh, (3) uncertainty in business-as-usual estimates be addressed using a compensation factor of 0.75, (4) the award process be based on a seasonal lag, (5) all processes be coordinated to ensure proper timing of the application, award, and verification process, and (6) that documentation, tracking and reporting procedures lead to establishment of appropriate NOx Allowance Tracking System (NATS) accounts and periodic and on-going documentation.

Each state must address how to verify that the resultant electricity savings from energy efficiency and renewable energy projects are real, and accurately measured. Each state must examine the characteristics of energy efficiency and renewable energy projects that may cause uncertainty in measuring electricity savings, and provide an overview of the mechanisms available to limit and/or account for this uncertainty. In addition, each state must assess the specific protocols available for varied types of energy efficiency and renewable energy projects, and discuss how they will handle the uncertainty associated with available methods of measurement and verification.

How have other states handled EE/RE set-asides?

Ohio

- The energy efficiency/renewable energy project set-aside has been allocated NOx allowances equal to 1% of the tons of NOx emissions in the state trading program budget.
- Any project that reduces end-use demand for electricity during the control period can be considered for implementation. This includes demand-side management practices, or the displacement of electric energy through the use of wind power, solar power, biomass or landfill methane generation.
- Innovative technology projects have also been allocated 1% of the tons of NOx emissions in the state trading program budget.
- Innovative technology projects can be any project utilizing technology that has not been adequately demonstrated in practice, but that would have a substantial likelihood of reducing NOx emissions compared to current practices. An innovative technology project could include technology to decrease electrical energy or fuel use either in stationary or mobile sources.
- The Director of the Ohio Environmental Protection Agency shall review proposals based on criteria determined by the director, and notify applicants of approved projects.
- The Ohio Department of Development will determine the methodology for monitoring and verification.

New York

- New York will be implementing a new NOx emissions trading program budget beginning in 2003. Its current NOx emissions trading program ends in 2002.
- The new program budget includes a 3% set-aside for energy efficiency and renewable energy projects.
- Projects demonstrating avoided NOx emissions during the control period through end-use energy efficiency measures or renewable energy sources are given priority over in-plant energy efficiency projects or fossil fuel fired electricity generating units which produce electricity more efficiently.

- The NY Environmental Conservation Department will determine NO_x allowance distributions from the energy efficiency and renewable energy set-aside allocation.
- Project monitoring and evaluation are being done by the New York State Energy Research and Development Authority (NYSERDA). Their report is forthcoming.

Indiana

- The allocated allowance for energy efficiency and renewable energy for each ozone control period is 1,079 tons.
- Priority is given to:
    - End-use energy efficiency projects including demand-side management;
    - Zero-emission renewable energy projects including wind, photovoltaic, and hydropower; and
    - Projects generating electricity through the capture of methane gas from sanitary landfills, water treatment plants, or sewage treatment plants.
- Administrative details will be forthcoming in a guidance document available Fall, 2002.
- The Energy Policy Division of the Indiana Dept. of Commerce helps with developing project criteria, selection, administration, monitoring and verification.
- Measurement and verification methodology will be determined on a case-by-case basis.