



New York State Energy Research and Development Authority

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February 14, 2003

TO: Members of the NYS Energy Planning Board
FROM: Peter R. Smith, Acting President
RE: Renewable Portfolio Standard

Pursuant to the objective in the *2002 State Energy Plan* (page 1–39), NYSERDA has undertaken a preliminary investigation into the feasibility of establishing a Statewide renewable portfolio standard (RPS) for electricity generation, and how an RPS might harmonize with a restructured and competitive electricity market and the goals from planned State actions to promote renewable energy development. The results of this preliminary investigation are included in the attached document.

Through additional study and analysis, NYSERDA plans to continue its efforts to study the feasibility of implementing an RPS in New York State. In doing so, any suggestions or input from your respective staffs would be greatly appreciated.

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Preliminary Investigation into Establishing a Renewable Portfolio Standard in New York

Summary

The preliminary findings of NYSERDA's investigation¹ into establishing a Statewide renewable portfolio standard (RPS) for retail electricity sales in New York indicate that an RPS can be implemented in a manner that is consistent with and supports the State's existing wholesale market and emerging retail market for electricity.² The RPS could be established by regulation in such a way that it would provide:

1. Market certainty to renewable resource developers ensuring that there would be a retail market for power generated;
2. Confidence to the financial community that such projects would generate sufficient return on investments that compensate investors for financial risks; and
3. Assurances to customers interested in purchasing clean energy resources that there would be clean energy options available along with greater customer choice in service providers.

Pursuing an RPS is likely to have minimal impact on the operation of the current wholesale market for electricity and could be an important component in the emerging retail electricity market. The RPS could improve energy security, complement the State's current environmental disclosure program³ and help diversify New York's electricity generation mix. It is expected that greater energy diversity would reduce the flow of dollars leaving the State to pay for energy imports, spur increased economic development opportunities in developing renewable resources and, help to attract renewable resource manufacturers and installers.

Defining Renewable Energy Resources

Renewable energy resources have been defined in several places including Governor Pataki's Executive Order 111, the 2002 New York State Energy Plan and Final Environmental Impact Statement and in Part 204 of the Department of Environmental Conservation's

¹ This investigation was conducted in response to a recommendation in the *2002 New York State Energy Plan and Final Environmental Impact Statement* (State Energy Plan) and was conducted through limited primary research, which included direct contact with other states to learn of their activities and experiences, and substantial secondary research of published sources.

² The State Energy Plan recommended ... "NYSERDA will examine and report on the feasibility of establishing a statewide renewable portfolio standard (RPS) for electricity generation, assess the economic impacts of an RPS, and determine whether and how an RPS might be harmonized with a restructured and competitive electricity market and the goals from planned State actions to promote renewable energy development." (Page 1-39).

³ In order to complement the State's current environmental disclosure program, the existing environmental disclosure program may need to be modified to allow for the purchase and sale of environmental attributes or renewable energy credits (REC).

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regulations establishing the energy efficiency and renewable resource set-aside program as part of the Department's nitrogen oxide budget and allocation program for stationary sources. Renewable energy resources eligible for purchase under the Governor's Executive Order No. 111 (EO 111) are defined to include: wind, solar thermal, photovoltaics, sustainable managed biomass, tidal power, geothermal, methane waste, and fuel cells. The *State Energy Plan* defines renewable energy as "... energy derived from resources that are not depletable or are naturally replenished when used at sustainable levels." The *State Energy Plan* includes electricity generated from hydroelectric facilities as a renewable resource, whereas EO 111 does not include hydroelectric resources in the definition of resources that could be used to meet state agency renewable resource purchase requirements that are outlined in the Executive Order. Additionally in DEC's Part 204 regulations renewable energy projects are defined as a power generation technology that produces electricity from wind energy, solar thermal energy, photovoltaics, methane waste, or sustainably managed biomass; but not the combustion or pyrolysis of solid waste.⁴ Currently hydroelectric resources located within the State account for approximately 15% of the State's total electricity sales.

Currently there are 12 states that either have an RPS, or are in various stages of implementing an RPS. The definition of what constitutes a renewable resource varies by state. Some states count existing hydroelectric generation as part of their renewable energy contributions but disallow any new hydroelectric resources from counting toward meeting RPS requirements. Other states allow new hydroelectric generation to qualify as a renewable resource, although only hydroelectric sites with a capacity of less than 60 megawatts are eligible to be included. Other states disallow hydroelectric resources entirely.

While renewable-based fuel cells are not commercially available, several states include natural gas (and other fossil-fuels) fuel cells as eligible renewable resources. In terms of waste to energy facilities, New Jersey is the only state that these facilities are eligible to meet the RPS requirements. However the inclusion of these facilities is predicated on the requirements that it is located in a state that offers retail competition and meets undefined "high environmental standards".

Therefore defining what renewable resources are eligible to meet an RPS in New York is a threshold question to be addressed

RPS Implementation Status

RPS requirements have been established, or are being established, in 12 states. Seven of these states provide retail choice to electricity customers,⁵ similar to New York's retail choice option. Of the other five states that have an RPS requirement, three states have not restructured

⁴ 6 NYCRR §204-1.2 (b)(67).

⁵ Arizona, Connecticut, Maine, Massachusetts, Nevada, New York and Texas

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their electricity market ⁶ and therefore require regulated utilities to provide the renewable energy resources either through direct investments in or purchases of renewable resource facilities. The remaining two states⁷ require the utility provider of last resort to satisfy the RPS requirement within a wholesale market context. Several other states are considering implementing an RPS .⁸

Of the seven states that have implementing an RPS in a retail choice environment, New Jersey, Nevada and Texas have demonstrated some early success in advancing new renewable resource development. Texas's RPS goal of having 850 MW of renewable resources on line by 2005, was met by the end of 2001.⁹ Three state's RPS requirements (Arizona, Connecticut, and Massachusetts)are just beginning to be implemented so there are only some preliminary results in terms of renewable resource development, while the Maine RPS, which been in effect since March 2000, has not led to any new renewable resource development within the state. The Connecticut RPS, which initially did not include "default service providers" is being redesigned to include these providers as having to meet the RPS requirements . This initial exclusion discouraged new renewable resource providers from entering the Connecticut market because there were no assurances that the investments they make in developing or procuring renewable resource would be recovered without a mandatory purchase obligation on the part of the default service providers *i.e.*, the providers of last resort.

There are several reasons that have been cited that have slowed the implementation of several state's RPS. These include statutory omissions in those states in which the RPS was required by law and in other instances the slow progress in bringing on new renewable resources were attributed to RPS design flaws. Some of these design flaws include: overly-broad eligibility; non-binding renewable resource percentage goals; lack of penalties for noncompliance; insufficient lead time for first year compliance; and, an apparent unwillingness by load serving entities to enter into long-term power purchase agreements which are necessary to finance renewable projects.

Overly broad eligibility criteria has led to disputes regarding what constitutes a renewable resource that meets the eligibility requirements of the RPS, *e.g.*, debates over whether waste-to-energy facilities which can be defined as sustainable biomass and therefore should be included as an eligible RPS resource. Additionally establishing a renewable percentage goal that lacks enforcement provisions creates a situation where load serving entities have no incentive to meet the RPS requirements because there no penalties imposed if the goal is unmet. Furthermore renewable resources initially will be more expensive than conventional energy resources. In

⁶ Iowa, Minnesota, and Wisconsin

⁷ New Mexico and Pennsylvania

⁸ California, Colorado, Hawaii, Maryland, New Hampshire, Rhode Island, Oklahoma, Utah, and Vermont.

⁹ The Texas RPS was implemented in 2002. Yet, a substantial amount of renewable energy that contributes toward the RPS goal came on-line during 2001. The Texas RPS requires 2,000 MW of new renewable capacity to be installed by 2009.

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order to ensure that renewable resources come on-line to meet the RPS requirements some thought should be given to allowing for the availability of long-term power purchase agreements and guaranteed markets for green power to stimulate renewable resource markets development.

The three states that have developed an RPS under a traditional regulated utility setting (Iowa, Minnesota, Wisconsin) are all considered on track or fully compliant in meeting their respective RPS requirements. These states met their respective RPS requirements by purchasing wind energy. While Minnesota¹⁰ and Wisconsin are on track to meet future renewable resource purchase requirements, utilities in Iowa met the RPS requirement several years ago with 250 megawatts of wind power and, as a result, the RPS purchase requirement was met and no further purchase have been required.

Two states, (New Mexico and Pennsylvania) require providers of last resort to meet the RPS. The New Mexico RPS requires that 2% of the electricity purchased in the state come from renewable resources, increasing to 10% by 2007 and thereafter. Pennsylvania's RPS is required for a limited amount of competitively bid default service providers in several utility restructuring settlement agreements. Pennsylvania has been unable to attract competitive default service providers to the degree it had hoped because the renewable purchase requirements can be met with existing generation. Additionally, because the RPS is not specific, the effect that the RPS requirement has had on spurring new renewable development is unclear.

Key RPS Features and Characteristics

The New York RPS requirement under consideration requires that at least 25% of the retail electricity sales in the State be generated from renewable energy resources within 10 years. Given that renewable energy already comprises approximately 17% of the State's generation (depending on rainfall), the State would need to procure an additional 8-10 percentage points of new renewable resources over the next 10 years.⁹ Several of the other state's RPS requirements are defined terms of capacity in megawatts, while others are stated in terms of energy *i.e.*, megawatt hours. Setting a capacity goal in terms of megawatts would be easier to meet. An energy goal, however, could provide greater fuel and supply diversity as well as greater environmental benefit, albeit at a greater overall energy cost to consumers. Additionally, since electricity demand is expected to grow over time,¹⁰ renewable electricity generation would need to increase at a faster rate than the States's expected growth in electricity requirements over the

¹⁰ The Minnesota legislature passed a non-binding goal of 1% in 2005, increasing each year to reach 10% in 2015. No mechanism was established to require compliance toward meeting the goal, therefore the goal is met by the good faith efforts of the State's utilities.

⁹ According to data collected with regard to the State's Environmental Disclosure Program, administered by the Department of Public Service, renewable retail electricity sales in New York (taking into account all imports and exports) amount to approximately 18% of electricity sales.

¹⁰ The State Energy Plan estimates that electricity demand (sales) will grow approximately 1.3% annually over the period 2003 through 2013.

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2003 through 2013 time period if the 25% goal is to be met.

Implementation Considerations for New York

Several issues need to be addressed if New York is to meet its RPS goal. Some of the key issues include, but are not limited to:

1. Defining eligible renewable generation. Determining what constitutes a renewable resource that meets the eligibility requirements of the State's RPS is a threshold issue. There are several definitions that have been used to date in New York from Executive 11 to DEC section 204 regulations
2. Determining the contribution of existing renewable resources in meeting RPS requirements. Most RPS states include all existing renewable resources as eligible to meet the RPS requirements. New York's existing electricity mix has between 15-17% of its generation from both large and small hydroelectric and biomass facilities. These facilities should be counted toward meeting the 25% goal in 2013. New renewable resources could be defined more narrowly, however those resources already included in electricity sales should be credited toward meeting the RPS requirements.
3. Determining the starting date for the RPS. Based on how respective RPS requirements were implemented in other states, all renewable resources in operation, under construction, or in an active planning stage as of the date of the Governor's Annual Message to the Legislature in January of 2003 could be included in the initial design of the RPS.
4. Determining the role of sales based on out-of-state renewable purchases or green-attribute purchases toward the goal. Including sales based on out-of-state renewable energy purchases and green-attribute purchases could count toward the State's goal. As regional electricity markets emerge (see FERC's Standard Market Design), it becomes important to support renewable resource sales that are located within the regional electricity market. As a result of the regional nature of the electricity market, there could be environmental and energy diversity benefits of renewable purchases that would accrue to New York even if the facility was not located within the State, although some sort of discounting or greater incentive for in-state renewable development could be implemented. In addition developing a renewable energy credit trading (REC) market could support the State's RPS efforts by making it more compatible with surrounding states' RPS requirements.
5. Establishing a procurement process. New renewable resources to support sales could be procured through a single Statewide auction (request for projects), annually, or as necessary, until the desired amount of new resources are secured. The auction could be offered by a single entity (or several entities simultaneously), and used to identify and competitively select the lowest cost renewable resources needed to meet the RPS goal.

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6. Determining the organization or entity obligated to meet the RPS goal. In the first instance RPS requirements could be required of the provider of last resort, *e.g.*, load serving entities, with the stipulation that if resources are selected through competitive procurement, all costs could be recovered through rates charged customers. Alternatively, customers could choose to participate in the auction directly with their load serving entity.
7. Considering of the binding nature of the RPS requirement. It appears that voluntary programs are demonstrating much slower progress in meeting the goals of a RPS as compared to programs that have penalty provisions for non-compliance. For this reason, New York's RPS should consider whether and to what extent penalty provisions are included in the implementation of the RPS.
8. Sharing of obligations. Consideration could be given to how much any single load serving entity or provider of last resort should be expected to contribute toward the Statewide RPS goal. If a load serving entity already has a larger share of renewable energy sales in its mix that exceeds the RPS requirement, consideration could be given to providing a credit or some other type of banking or trading mechanism that would allow the load serving entity to either bank or trade the excess above the RPS requirement.
9. Defining the role of the New York Power Authority (NYPA), Long Island Power Authority (LIPA), and New York State Energy Research and Development Authority (NYSERDA) in helping meet the RPS. NYPA and LIPA do not fall under the regulatory jurisdiction of the Public Service Commission, although both authorities are exploring options to enter into long term power purchase agreements for renewable energy resources. The renewable energy purchases of NYPA and LIPA could count toward the statewide RPS goal, as well as toward EO 111 compliance. NYSERDA through its statutory R&D and system benefit charge programs could also continue to support renewable industry development, feasibility studies, and necessary certification and related infrastructure development work that supports the development of a well functioning renewable resource market in New York State. NYSERDA or the Department of Public Service, either separately or collaboratively, could also administer a statewide renewable resource procurement auction to support sales referenced above.
10. Assessing the costs to support the RPS. Given the current retail choice market in New York, it may not be equitable for the customer of load serving entities to bear the full cost of renewable energy sales premiums. A mechanism may need to be developed to recover above market costs for meeting the requirements of a RPS from customers that purchase energy from a competitive supplier other than a utility or a load serving entity under the regulatory jurisdiction of the PSC.

An RPS Can be Implemented in a Competitive Jurisdiction

The preceding list of issues, although not exhaustive, finds that an RPS can be implemented in a competitive electricity market. However additional research is necessary into the design and operation of the RPS, as well as the compatibility of a New York RPS with those of neighboring states and regions to ensure that a cost-effective, reliable and robust renewable energy market develops to the benefit of New York's citizens, businesses and industries.